

TrueNet®

Structured Cabling Solutions

1st Edition



KRONE

To navigate through this catalogue – click on any of the sections, headers or product descriptions in the following content pages and you will be taken directly to the relevant page.

To search for a particular item, part number or word, use the “Search” function within Adobe Reader – available on the navigation bar.

Welcome to the first edition of the TrueNet® structured cabling products catalogue from ADC KRONE.

Geographic and Product Coverage

This catalogue has been developed for use within the geographic region of Europe, Middle East and Africa (EMEA). It includes a comprehensive range of fibre and copper solutions for infrastructure cabling and connectivity for the Enterprise.

In this publication the copper portfolio focuses upon products most appropriate to those countries where Unshielded Twisted Pair (UTP) is the dominant product type. For other languages and further Shielded Twisted Pair (STP and S/FTP) cabling products – please contact your local office, their details can be found on the last page of this catalogue.

How To Use This Catalogue

This catalogue has been designed to follow the layout of a typical structured cabling installation. The information in this catalogue has been categorised into the following sections:

- **Introduction**
- **Technical Reference**
- **Campus & Backbone**
- **Data Centre & Communications Room**
- **Horizontal Cabling**
- **Work Area**
- **Complementary Solutions**
- **Cross Referenced Index**
(product descriptions by part number and part numbers by product description)

The diagram on the following page provides details of which products can be found in each catalogue section. To identify the products you need for a project, look for sections relevant to your project and follow the grey arrows to the red section tabs on the edge of each page. Opening the catalogue at these tabs will lead you to the products of interest to you.

You can also find the product you want if you only have a part number or a description – use the part number and product description indices at the back of the catalogue to find the relevant page number.

Catalogue Sections

How To Use This Catalogue: Breakdown of Section Categories

ENTERPRISE

10/06 • 102588BE TrueNet® Structured Cabling

Campus & Backbone

Fibre Cable	Category 7 Cable
Blown Fibre	Augmented Category 6 Cable

Data Centre & Communications Room

19" Fibre Panels	Category 5e
Fibre Connectors	Voice Solutions
Fibre Frame Solutions	Physical Layer Management
FiberGuide®	Power-over-Ethernet
Augmented Category 6	Accessories
Category 6	

Horizontal Cabling

Fibre To The Desk Cable	Category 6 Cable
Category 7 Cable	Category 5e Cable
Augmented Category 6 Cable	

Work Area

Fibre To The Desk	Media Conversion
Augmented Category 6	Wireless – WFX WLAN Array
Category 6	Industrial
Category 5e	
Adaptors, Faceplates & Accessories	

Complementary Solutions

Other Enterprise Solutions	
Other Infrastructure Solutions	
Voice Solutions	

Catalogue Sections

1. Introduction

Introduction to ADC KRONE and the TrueNet® portfolio of structured cabling products including ADC KRONE TrueNet® solutions for the following vertical markets: Education, Financial Services, Healthcare, Local and National Government, Manufacturing and Retail.

2. Technical Reference

Detailed reference guide to the installation of copper and fibre cabling including 'How to Choose the Right Cabling Infrastructure' and 'Designing the Optimised Data Centre'.

3. Campus & Backbone

Products for use in installations between buildings (campus) and between floors (backbone) including Augmented Category 6 copper and Fibre

4. Data Centre & Comms Room

Products for use in Data Centres and where data communications services are distributed into the building infrastructure including panels, frames and cable management for both fibre and copper connectivity specifically Augmented Category 6 and Category 6/5e. Also included are Physical Layer Management (PLM) and Power-over-Ethernet (PoE) products.

5. Horizontal Cabling

Products for use when wiring-out individual floors of a building or smaller installations including Fibre to the Desk (FTTD), Augmented Category 6, Category 6/5e cable and jacks.

6. Work Area

Products that are designed to interface with the data communications user's equipment including wall outlets and faceplates for both copper and fibre connectivity, wireless connectivity and media conversion products (e.g. fibre to copper).

7. Complementary Solutions

This section includes ADC KRONE products that interface with, or are complementary to, TrueNet structured cabling products. They include Power Distribution, Digital Signal Cross-connects and Outside Plant cabinets and traditional Voice Telephony connectivity products.

8. Index

To find the page for a specific product where you know at least the part number or the product description, use the index which is in two sections, organised firstly by the part number and then by the product name to help you find the right page.

Contents

1. Introduction

TrueNet® Structured Cabling	1.02
TrueNet System Warranty	1.06
Solutions for Data Centres	1.07
Solutions for the Education Sector	1.08
Solutions for the Financial Services Sector	1.09
Solutions for Local and National Government Sectors	1.10
Solutions for the Healthcare Sector	1.11
Solutions for the Manufacturing Sector	1.12
Solutions for the Retail Sector	1.13

2. Technical Reference

Industry Standards	2.02
Environmental Compliance (RoHS)	2.14
How to Choose the Right Cabling Infrastructure	2.15
10Gigabit Ethernet (CopperTen™)	2.18
Choosing the Right Patch Panels	2.22
Designing the Optimised Data Centre	2.27
Key Optical Fibre Cable Management Practices	2.32
Key Optical Fibre Connector Types	2.33
Laser Optimised Fibre	2.35

3. Campus & Backbone

3.03: Fibre Cable

Introduction	3.04
Fibre Optic Tight Buffered Cable	3.06
Fibre Optic Loose Tube Cable	3.10
Fibre Optic Steel Tape Armoured Cable	3.14
Fibre Optic Interconnect Patch Cable	3.18

3.23: Blown Fibre

Introduction	3.25
Cables	
Singlemode	3.26
Multimode	3.30
Tubes	
Internal	3.34
Duct Grade	3.35
Direct Burial	3.36
Installation Equipment	3.37
Blowing Accessories	3.40

3.51: CopperTen™

Category 7 4PR S/FTP Horizontal Cable	3.52
Augmented Category 6 4PR LSZH UTP Horizontal Cable	3.54

Contents

4. Data Centre & Communications Room

4.03: 19" Fibre Panels

Fibre Distribution Unit (FDU).....	4.04
Fibre Optic 24 Port Metal Split Patch Panel	4.06
Fibre Optic 1U Plastic Patch Panel	4.08

4.11: Fibre Connectors

SC Connector.....	4.12
MT-RJ Connector	4.14
LC Connector	4.16

4.19: Fibre Frame Solutions

Next Generation Frames.....	4.20
OMX600	4.31

4.33: FiberGuide®

Introduction.....	4.34
Features and Benefits	4.35
FiberGuide® Fibre Management System	4.36
Plenum FiberGuide® System	4.44

4.51: Augmented Category 6

Patch Panels	4.52
Patch Cords.....	4.54

4.57: Category 6

Patch Panels	4.58
Termination Blocks	4.60
Patch Cords.....	4.61

4.65: Category 5e

Patch Panels	4.66
Termination Blocks	4.70
Patch Cords.....	4.72

4.77: Voice Solutions

Patch Panels	4.78
(for other Voice Solutions see the Complementary Solutions section of this catalogue)	

4.79: Physical Layer Management

Introduction.....	4.81
Patch Panels	4.82
Active Scanning Hardware	4.86
Software	4.88

4.91: Power-Over-Ethernet

Midspan Power-over-Ethernet Controller.....	4.92
Four-Port Midspan Power-over-Ethernet Unit	4.94

4.97: Accessories

Advanced Patching Frame (APF).....	4.98
Universal Data Distribution Cabinets	4.99
Wall-Mounted Distribution Cabinets	4.100
HighBand® Frames	4.101
Miscellaneous.....	4.102

Contents

5. Horizontal Cabling

Introduction.....	5.03
5.05: Fibre to the Desk	
TrueNet® Tight Buffered, Internal/External, LSZH Duct Grade and Hybrid Cable	5.06
5.11: CopperTen™	
Category 7 4PR S/FTP Horizontal Cable.....	5.12
Augmented Category 6 4PR LSZH UTP Horizontal Cable	5.14
5.17: Category 6	
Category 6 4PR LSZH UTP Horizontal Cable	5.18
Category 6 4PR PVC UTP Horizontal Cable	5.20
Category 6 2x4PR UTP Horizontal 'Shotgun' Cable.....	5.22
Category 6 4PR LSZH S/FTP Horizontal Cable	5.24
Category 6 4PR LSZH/PVC F/UTP Horizontal Cable.....	5.26
5.29: Category 5	
Category 5e 4PR LSZH UTP Horizontal Cable	5.30
Category 5e 4PR PVC UTP Horizontal Cable	5.32
Category 5e 4PR Outback® Cable	5.34
Category 5e 4PR LSZH/PVC F/UTP Horizontal Cable	5.36

6. Work Area

6.03: Fibre To The Desk	
Faceplates	6.04
Patch Cords.....	6.06
Pigtails	6.12
Glossary	6.14
6.15: Augmented Category 6	
Modular Jacks	6.16
Distribution Boxes	6.18
Loaded Faceplates	6.19
Patch Cords.....	6.21
6.23: Category 6	
Modular Jacks	6.24
Surface Mount Boxes	6.26
Distribution Boxes	6.27
Consolidation Boxes	6.29
Loaded Faceplates	6.31
Patch Cords.....	6.34
6.35: Category 5	
Modular Jacks	6.36
Surface Mount Boxes	6.38
Distribution Boxes	6.39
Consolidation Boxes	6.41
Loaded Faceplates	6.43
Patch Cords.....	6.46

Contents

6. Work Area (continued)

6.49: Adaptors, Faceplates and Accessories

Adaptors and Faceplates	6.50
Accessories	6.56

6.57: Media Conversion

Intelligent Ethernet Management Platform	6.58
Optical Extension Platform	6.60
Common Equipment	6.61
Line Cards	6.64

6.71: Wireless – WFX WLAN Array

Introduction	6.72
WFX WLAN Array	6.75
WFX-3100 Remote Power System	6.76
WFX-3300 Management Platform	6.77

6.81: Industrial

DIN Rail Distributor IP20	6.82
Industrial Outlet IP67/65	6.83

7. Complementary Solutions

Other Enterprise Solutions	7.02
Other Infrastructure Solutions	7.03
Voice Solutions	7.05

8. Index

Index by Part Number	8.02
Index by Product Name	8.14



10/06 • 102588BE TrueNet® Structured Cabling



Introduction

TrueNet® Structured Cabling	1.02
TrueNet System Warranty.....	1.06
Solutions for Data Centres	1.07
Solutions for the Education Sector	1.08
Solutions for the Financial Services Sector	1.09
Solutions for Local and National Government Sectors ...	1.10
Solutions for the Healthcare Sector	1.11
Solutions for the Manufacturing Sector	1.12
Solutions for the Retail Sector.....	1.13

TrueNet® Structured Cabling Solutions

Introduction

The TrueNet® Structured Cabling System is the integrated portfolio of high-performance copper and fibre cable, connectivity, and cable management products from ADC KRONE.

The precisely tuned TrueNet system exceeds ISO and EN standards and provides a clear path for uninterrupted data throughput within the entire network.

True End-to-End Solutions

The TrueNet system delivers proven cable, connectivity, and cable management solutions for fibre, 10 Gigabit Ethernet copper, and Category 5e/6 from the comms room/Data Centre to the desktop.

Power-over-Ethernet Solutions

Deliver power to VoIP phones, WiFi access points, and other IP devices over the local area network with ADC KRONE's IEEE 802.3af compliant Power-over-Ethernet Controllers.

Category 6 Solutions

TrueNet Category 6 patch panels, patch cords, outlets, jacks and cable are impedance matched to deliver extra bandwidth and better attenuation with zero bit errors.

Category 5e Solutions

TrueNet Category 5e patch panels, patch cords, outlets, jacks and cable form an end-to-end channel optimised to preserve signal strength and deliver zero bit error performance in Gigabit Ethernet applications.

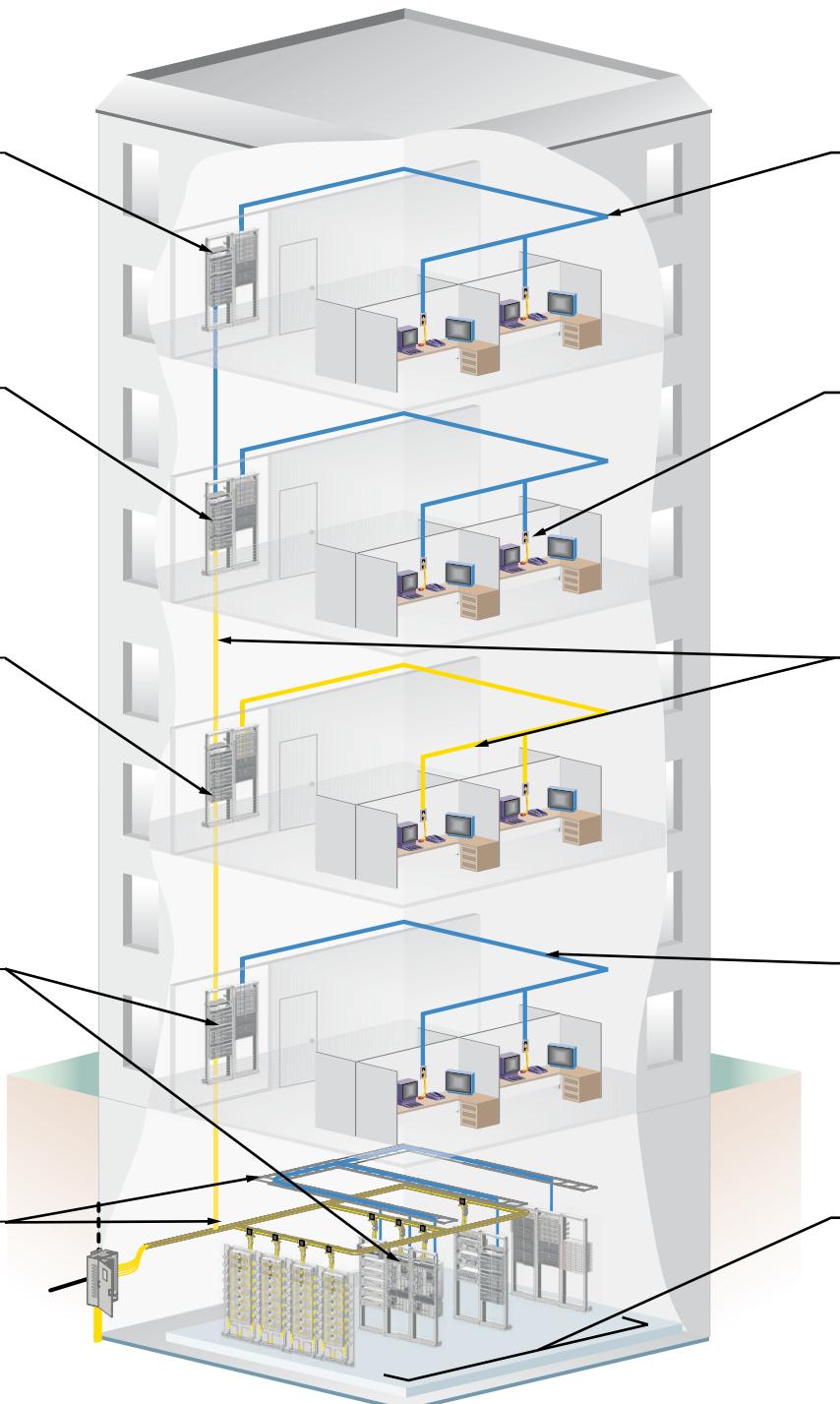
Physical Layer Management

TrueNet PLM – a fully integrated physical layer management solution for copper and fibre enterprise networks. TrueNet PLM provides 'best practise' service delivery with security, reliability and performance at the physical layer.

Cable Solutions

ADC KRONE's high-performance TrueNet low smoke and PVC cables support both backbone and horizontal applications. The complete solution includes fully shielded (STP), foil shielded (FTP) and unshielded (UTP) variants.

“With TrueNet, you can push networks to the performance edge. Innovative products that exceed industry standards and support advanced applications such as 10GigE copper, VoIP and Wi-Fi today and tomorrow.”



CopperTen™

(Augmented Category 6)

ADC KRONE's patent-pending CopperTen™ Solution is the world's first complete system to meet the IEEE requirements for Augmented Category 6 over 100 metres. Also available in STP.

Work Area Solutions

ADC KRONE's high-performance Category 5e, Category 6 and CopperTen modular jacks are field-configurable for flush, surface, and desk mounting applications.

Fibre Solutions

In the backbone or to the desk, optical networks achieve peak performance with TrueNet fibre connectors, patch cords, raceways, and panels featuring integrated cable management and bend radius protection.

Cable Management Solutions

Protect, route and manage network cables for optimised signal integrity with ADC KRONE's portfolio of cable management, labelling, and racking solutions.

Complementary Solutions

A global network infrastructure leader, ADC KRONE offers complete solutions for data centres, storage area networks, central offices, campuses, wireless and WiFi networks and other high-performance applications.



TrueNet® Structured Cabling Solutions

Introduction

True Performance

With TrueNet, you can push networks to the performance edge. Innovative products that exceed industry standards support advanced applications such as 10GigE over UTP, VoIP and Wi-Fi today and tomorrow. Building upon a high-performance TrueNet infrastructure foundation, network managers and designers are assured a flexible evolution path to next-generation technologies and services.

A Tradition of Innovation

With thousands of patents worldwide, ADC KRONE continually invests in innovation to support emerging technologies and to enhance our customers' network operations.

The ADC KRONE Augmented Category 6 solution, TrueNet® CopperTen™, supports 10 Gigabit Ethernet over unshielded and shielded copper to a full 100m. To achieve these high-performance specifications, UTP CopperTen incorporates patent-pending features including a unique oblique filler that minimises alien crosstalk (interference from adjacent cables).

In other areas such as the Data Centre market, ADC KRONE offers the broadest, vertically integrated product portfolio in the industry. Competitors can only match our expansive portfolio by forming alliances and loose collaborations with other companies:

- Industry leading fibre and copper cable solutions
- Advanced fibre management
- Ultra-reliable, high-density fibre terminations
- Augmented Category 6 (CopperTen™)

Setting the Standards

ADC KRONE's TrueNet solutions meet or exceed all major cabling standards. We are actively establishing and advocating next-generation technologies and standards worldwide through work with these leading industry organisations:

- ISO: International Organisation for Standardisation
- IEC: International Electrotechnical Commission
- IEEE: Institute of Electrical and Electronic Engineers
- TIA: Telecommunications Industry Association
- EIA: Electronic Industries Alliance
- BICSI: Building Industry Consulting Service International
- ANSI: American National Standards Institute
- MEF: Metro Ethernet Forum

In this document, we will refer to the international standards from ISO/IEC and, where appropriate, to American standards from TIA/EIA.

Training and Certification

Studies show that over 70% of network downtime can be directly attributed to physical layer problems, specifically cabling faults. ADC KRONE recognises that the proper installation of structured cabling solutions is a critical success factor for high-performance networks. ADC KRONE's network of approved installers, TrueNet Integrators, undergo extensive training to ensure that TrueNet system installations meet the most stringent industry standards.

TrueNet® Structured Cabling Solutions

Introduction

ADC KRONE has led the development of new infrastructure technologies for nearly 75 years. In recent years, ADC KRONE has invested more than €600 million in research and development innovations, producing the steady flow of new technologies customers need to compete and deliver new services cost-effectively. As a vertically integrated manufacturer, ADC KRONE controls virtually every aspect of the manufacturing process—from concept, to design, to engineering, to prototype through to completed product ready for the network. Flexible manufacturing processes allow orders to be custom-tailored and ADC KRONE produces more than 60,000 different copper, fibre and wireless components for its customers every year.

True Reliability

Mission critical networks rely upon trusted TrueNet infrastructure products. Built and tested in ADC KRONE's world class facilities, TrueNet is backed by the industry's only zero bit error warranty that guarantees signal integrity throughout.



The new ADC KRONE production facility at Brno in the Czech Republic

World-Class Manufacturing Expertise

With its headquarters in Minnesota, USA, ADC KRONE maintains manufacturing facilities in Shakopee in Minnesota, North Bennington in Vermont, Sidney in Nebraska, Juarez and Delicias in Mexico, Berlin in Germany, Brno in the Czech Republic, Berkeley Vale in Australia, Shanghai in China and Bangalore in India.

All these facilities produce ADC KRONE's network infrastructure products. In every aspect of manufacturing at ADC KRONE, our focus on quality and continuous improvement ensures that our customers receive only the best equipment available to them to meet their network needs.

ADC KRONE is committed to consistently delivering the highest possible quality in all that we do. A registered ISO9001 manufacturer, ADC KRONE is certified in 21 categories – the largest number of registrations of any ISO-certified company. Additionally, ADC KRONE facilities are approved to self-certify products for compliance with UL Safety Standards.

A best-in-class manufacturer, ADC KRONE occupies more than 11,400 square metres of manufacturing space in the EMEA (Europe, Middle East & Africa) region, including a production facility in Brno, Czech Republic. ADC KRONE will continue to invest in both machinery and people at the new location, with the main focus on the production of copper and fibre connectivity products.

TrueNet® Structured Cabling Solutions

Introduction

Backed by the TrueNet Warranty

ADC KRONE's TrueNet system is backed by an industry-leading warranty that not only addresses physical component performance, but also data throughput. Cable and connectivity solutions are tuned to eliminate impedance mismatches to levels five times more rigorous than industry standards. As a result, TrueNet optimises network speed by eliminating data re-transmissions. The TrueNet System Warranty covers all aspects of the structured cabling system for horizontal and backbone networks that support voice and data. A 20-year, all-inclusive, industry standards compliant warranty addresses all parts, labour, and technical support. An additional 5-year throughput warranty guarantees zero bit-error rate performance throughout the structured cabling channel.

About ADC

ADC serves its customers as ADC KRONE in the EMEA (Europe, Middle East & Africa) and Asia Pacific regions of the world. Founded in 1935, ADC is a leading supplier of global network infrastructure products and services, with experience of more than half a century. In 2004, ADC acquired the KRONE Group, a leading global supplier of copper and fibre-based connectivity solutions and cabling products. ADC holds hundreds of patents including LSA-PLUS® and the original bantam jack technology still used in networks today. The integration of these two companies positions ADC KRONE with annual sales exceeding US\$1 Billion and an employee base exceeding 7,000 professionals in more than 100 countries worldwide.

Customers around the world include leading communications service providers and enterprises of all types including Bank of England, BellSouth, Bloomberg, British Telecom, Chase Manhattan, Cingular, CitiBank, Deutsche Telekom, Glaxo Smith Kline, Hong Kong Telecom, Morgan Stanley, Nextel, Optus, Reliance Telecom (India), Qwest, Telstra, T-Mobile, SBC, Seagrams, Sprint, Verizon, Westpac and many others.

In Europe, Middle East and Africa, ADC KRONE utilises its global scale to better service customers, maintaining its position as industry leader.

Learn More About TrueNet Structured Cabling Solutions

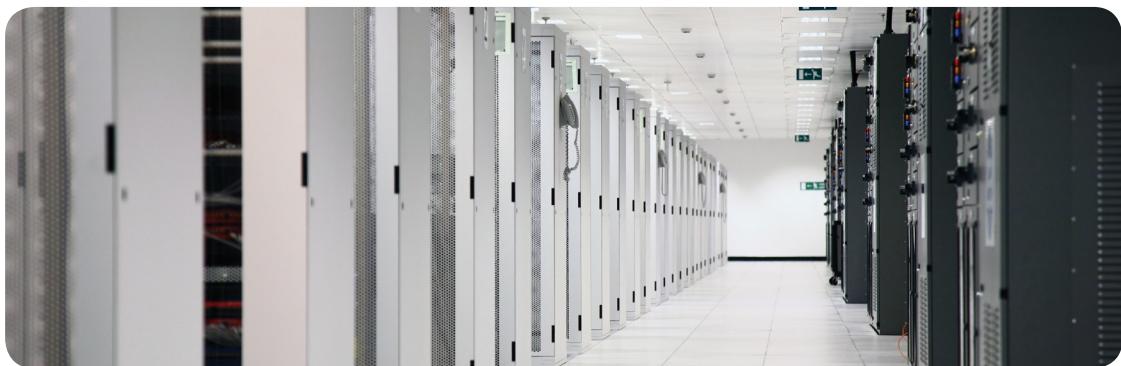
Within this catalogue, you'll find complete descriptions and ordering information for the most popular TrueNet Structured Cabling Solutions. Because we continually enhance our product portfolio and our specifications, we encourage you to visit our website – www.adckrone.com – or contact an ADC KRONE representative to keep pace with the latest innovations.

TrueNet® Structured Cabling Solutions

Introduction

TrueNet® Solutions for Data Centres

When your company's reputation and its business success depend on delivering SLAs (service level agreements) of 99.999% or better, it is essential that the structured cabling system – the network foundation – is ultra reliable and error-free.



TrueNet from ADC KRONE is the only solution in the world to offer a zero bit error warranty, guaranteeing full data bandwidth from any port to any port 24x7, 365 days a year across the entire portfolio of singlemode and multimode fibre, shielded and unshielded copper. The entire passive network is warranted to be bit error-free for the first five years of operation in addition to a 20 year system warranty, when installed by an ADC KRONE TrueNet Integrator.

ADC KRONE's TrueNet PLM physical layer management solution enables the whole of the fibre and copper infrastructure to be managed from a single central point or NOC (network operations centre).

An increasingly essential task for network managers is detecting internal network attacks and keeping audit-trails for good governance and compliance with legislation such as Sarbanes-Oxley and its country-specific equivalents. TrueNet PLM automates the whole process.

Solutions

In the central fibre and copper distribution frame room, bandwidth, flexibility and cable-management are key. The APFI advanced patching frame is the ideal solution. High density 24/32 port 1U patch panels for copper and the fibre split patch panel with two completely independent 12 duplex port fibre trays in a 1U housing provide the connection density within the frame. FiberGuide®, the best fibre management solution available, gives protection, bend radius management and the unique ability to add in new fibre exits without disturbing existing fibres.

In the customer suites, co-location and active equipment cabinets, utilising TrueNet CopperTen™ means that 10Gigabit/s Ethernet can now be delivered on copper as well as on fibre. Available in both unshielded (UTP) or shielded (S/FTP) formats offering high noise immunity and alien crosstalk rejection. CopperTen facilitates the use of active equipment with standard copper interfaces from 10/100Mbit/s right through to 10Gigabit/s – without any re-configuration necessary. TrueNet fibre split patch panels allow both singlemode and multimode fibre to be delivered to the cabinet in a single 1U unit – saving space for the active equipment.

Whether the network is purely passive or a switched solution, TrueNet PLM gives you total control – banishing paper records and instead constantly scanning all connections to give total central management and 100% accurate and up to the minute information.

TrueNet PLM can raise alarms when any link is accidentally or maliciously disconnected or changed or if any unauthorised equipment is connected to the network – at the same time keeping a full audit trail of all connections and disconnections. It offers automated work-order generation for MACs (moves adds and changes) with LED guidance and alarms for the technician meaning that it is virtually impossible for incorrect patching to take place – at the same time significantly speeding up the MAC process.

TrueNet® Structured Cabling Solutions

Introduction

TrueNet® Solutions for Education



Whether the network is for a school, college or university, bandwidth is becoming a very important issue – as video services are used more and more by education professionals to support their seminars and lectures.

Increasingly, remote-teaching and distance-learning use streamed and on-demand video-casting which can place massive bandwidth demands on the network as lessons and lectures need to be delivered in near-broadcast quality video formats.

Schools are spread-out, and universities occupy immense campuses – often spread over several sites around a city. This type of topology brings its own challenges where correct planning of backbone capacity and future flexibility are key to the success of the network in years to come.

This is where network planners need an infrastructure partner with the experience of ADC KRONE that has designed network solutions for hundreds of educational institutions around the globe. ADC KRONE can offer all of the available technologies and so our engineers will offer you totally impartial advice – to ensure that your specific solution is ideal for your project in terms of capital cost, operating cost, flexibility, futureproofing and planned upgrade paths.

Most colleges and universities, and indeed many schools, have grown over the years and now have a wide range of buildings from very old to ultra-modern. Frequently, there is a serious lack of ducting between buildings – but the cost of digging-in new ducting is prohibitive. With solutions like TrueNet blown fibre ADC KRONE engineers can help solve these problems now and provide a solution that gives all the upgrade/flexibility the organisation's network is likely to need over the next 15 to 20 years.

We normally recommend a minimum of TrueNet Category 6 for educational networks, since its 250MHz bandwidth gives far better scope for video services. TrueNet CopperTen is already highly popular in educational installations because it allows Ethernet at 10 Gigabit/s and video up to 500MHz. All TrueNet copper cabling solutions are available in both unshielded (UTP) and shielded (STP/FSTP) formats to ensure you have the best and most appropriate solution for your individual project.

Solutions

TrueNet blown fibre allows maximisation of limited ducting. Once the miniature ducts are installed within the existing ducting, additional bandwidth can be installed – without disruption – often in a matter of hours. Lower capacity fibre bundles can be removed and re-used improving cost efficiency and eco-friendliness.

TrueNet Category 5e and Category 6 offer zero bit-error warranties essential for full Gigabit data-rate operation at all times. TrueNet CopperTen increases the data-rate ten-fold to 10 Gigabit/s and is ideal for high video bandwidths and low latency for digital video and voice (VoIP).

TrueNet Blown Fibre provides Gigabit and 10 Gigabit solutions with the option to blow in more capacity at any time, while TrueNet CWDM-ready fibre will enable 10 Gigabits/s now futureproofed to deliver up to 80 Gigabit/s per fibre pair in the future using Coarse Wave Division Multiplexing technology.

TrueNet Power-over-Ethernet technology enables VoIP phones, IP CCTV cameras, access security and other devices to be powered directly through the RJ-45 jack removing the need for a.c. power sockets and unreliable external power supply units.

TrueNet PLM physical layer management enables the structured cabling system to be fully managed from the network operations centre (NOC) and can massively cut network downtime as well as improving network utilisation by up to 40%.

TrueNet® Structured Cabling Solutions

Introduction

TrueNet® Solutions for Financial Services

There are few industries where the IT infrastructure is so critical. For example in trader environments, a single floor can be trading €60 billion at any instant. Downtime can cost €millions, MACs (move, adds and changes) are needed in minutes, not days. Milliseconds can make all the difference to a trader's competitive advantage. Bandwidth and low latency are key to success.

High-density solutions are crucial, with traders needing up to 16 outlets each, maybe more, often with 10,000 outlets per trader floor. Easily re-locatable multi-outlet under-floor units like TrueNet MINI-POD are essential to facilitate rapid physical desk moves.

Security is a key issue, as is the ability to generate full audit-trails of network connections and network access – helping to comply with "good governance" and legislation such as Sarbanes-Oxley and its international equivalents.



Solutions

TrueNet category 6 is the minimum standard our engineers recommend for financial services installations. With 250 MHz bandwidth, it enables video distribution as well as Gigabit Ethernet. TrueNet® CopperTen™, supporting IEEE802.3an 10 Gigabit/s, in both unshielded (UTP) or shielded (S/FTP) formats, gives 10 times the data capacity and video up to 500MHz. It is ideal for the comms room and data centre as well as the horizontal network.

In the financial services data centre, CopperTen handles all data rates from 10Mbit/s right through to 10Gigabit/s with no reconfiguration necessary – facilitating the use of everything from legacy equipment to 10 Gigabit/s active equipment – all with a single solution. Cost effective, it means that network managers can bring all active equipment ports out onto patching frames so that active equipment like switches can be left un-touched in locked cabinets – greatly reducing the chances of accidental disconnections and potentially disastrous downtime.

In comms closets and the comms room, TrueNet APFII high capacity patching frames for copper and fibre, together with FiberGuide® fibre management, provide high levels of patching-density and cable management.

TrueNet OM3/3e multimode fibre delivers 10 Gigabit/s capability, while OS1 singlemode and TrueNet CWDM-ready fibre will allow for up to 80 Gigabit/s when the need arises. The TrueNet fibre split patch panel, with two independent 12 duplex port patch-panels in a 1U housing, means that expansion capacity can be built-in without working fibres ever having to be disturbed.

TrueNet PLM, our physical layer management solution, means that all of the physical layer can be actively monitored from the NOC (network operations centre). It integrates with NOC software and actively scans all connections constantly. Achieving as much as 40% greater active equipment utilisation, it keeps constant audit-trail records for systems such as Sarbanes-Oxley and "good governance" compliance requirements and raises alarms if essential circuits are accidentally disconnected or if any authorised equipment is connected in a secure area.

Specialist TrueNet Integrators concentrate on financial services projects. Their expertise is key to project success. Understanding the logistics necessary, they are adept at working out-of-hours, with restricted access and have the capacity to turn around massive projects rapidly.

For many financial services organisations only ADC KRONE can offer the true global partnership they need with a full range of shielded and unshielded solutions to meet all local country needs. Local and international support is always to hand.

TrueNet® Structured Cabling Solutions

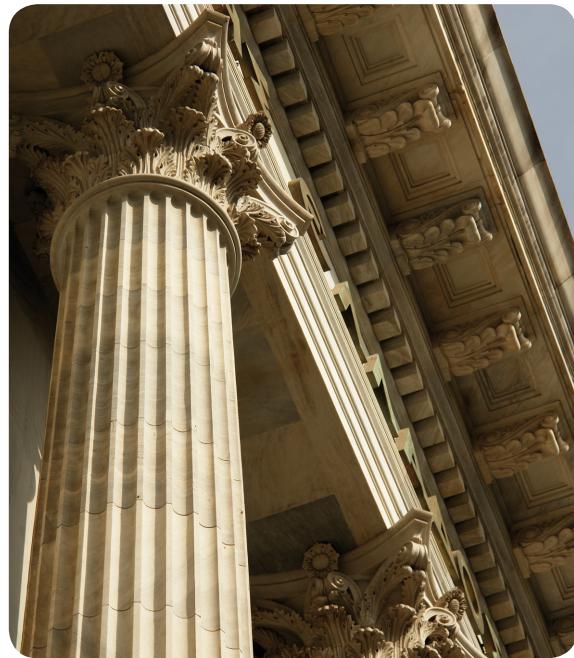
Introduction

TrueNet® Solutions for Local and National Government

Often thought to be a very difficult market to serve and restricted by many regulations, the experience of ADC KRONE and its integration channel delivers many successful solutions to the public sector.

Due to historical reasons, Government buildings often have a mixture of networks, bought and extended under different purchasing schemes, and not always ideal to support the moves in most countries towards e-Government – where services and information are increasingly being made available to the electorate via an ever-growing array of IT systems.

ADC KRONE and many of its TrueNet Integrators have vast experience in this area – worldwide. For every situation, our engineering teams are happy to sit down with your specifiers and procurement personnel to devise specifications that will facilitate the network standardisation needed to help provide e-Government. Specifications which can then be put out to tender.



With our global array of products and services, we can design a migration plan whatever the existing network or the project challenges – such as listed buildings, lack of cable ducts and limited budgets.

We can design, supply, install and commission a network for the IT department to operate – or increasingly, with our channel partners, we can provide every type of solution right through to fully outsourced IT services under Framework Contract arrangements.

We understand the concepts of best-value tendering and regularly demonstrate that we can deliver the highest quality with low TCO (total cost of ownership). We understand the need of Government departments and agencies to be able to demonstrate that they are spending the electorate's money in the most responsible manner. Our ability to supply every type of structured cabling solution means that we can offer the most appropriate solution for each and every tender.

With our global stature and that of our TrueNet Integrators, we can readily demonstrate our financial stability and the capacity to deliver any size of project from small extension to massive new-build or data centre.

Solutions

There is no one-size-fits-all solution for Government or public sector IT requirements. The TrueNet portfolio includes Category 5e, 6 and 6a (10 Gigabit/s) in both shielded and unshielded formats – as well as a fibre in OM1, OM2, and OM3/3e multimode, OS1 singlemode and even CWDM (Coarse Wave Division Multiplexing) ready fibre for extra high data-rates. With this massive range, we can build any network requirement in any country.

Uniquely, TrueNet solutions are warranted to be bit error-free for the first five years when installed by one of our TrueNet Integrators – in addition to our 20 year TrueNet System Warranty.

TrueNet structured cabling solutions are complemented by TrueNet Power-over-Ethernet (PoE) and TrueNet Physical Layer Management (PLM) solutions for network powered devices and advanced network management requirements respectively.

TrueNet® Structured Cabling Solutions

Introduction

TrueNet® Solutions for Healthcare



Introduction

From doctor's surgeries to health centres and major hospitals, they all have special requirements that need robust, dependable, always-available networks to underpin vital functions – often critical functions, where every second counts. From accessing patient records, to X-ray, MRI and CT scans; and from building automation to intensive care – increasingly it is a single structured cabling solution that has to provide this functionality 24x7, 365 days per year.

Healthcare network managers need high quality, highly reliable network hardware at an affordable price. Equally important is to work with an infrastructure solutions partner who understands the needs of the Healthcare sector – such as outstretched campus environments often with a wide mixture of old and new buildings and who can overcome the challenges of congested ducting which was installed without today's ITC requirements in mind. A partner experienced in the logistics of providing new and upgraded infrastructure in a working care-delivery environment – with busy consultation rooms, hospital wards and operating theatres that cannot be interrupted.

Solutions

Every project requires its own unique solution, but based on tens of years of experience in Healthcare around the globe, ADC KRONE engineers know that blown fibre (often with a mixture of OS1 singlemode and OM3e multimode fibre) provides one of the most economical and flexible backbone solutions; while TrueNet blown-fibre and TrueNet shielded copper solutions from Category 5e to CopperTen™ Category 6a, are ideal for areas of high electromagnetic interference (EMI) such as near MRI scanners and X-ray machines.

TrueNet blown fibre allows almost infinite flexibility because once the miniature ducts are installed, additional bandwidth can be installed – without disruption – often in a matter of hours. Lower capacity fibre bundles can be removed and re-used improving cost efficiency and eco-friendliness.

TrueNet Category 5e and Category 6 offer zero bit-error warranties essential for full Gigabit data-rate operation at all times. TrueNet CopperTen increases the data-rate ten-fold to 10 Gigabit/s and is destined to become essential for rapid transfer of the very large files associated with scans and X-rays.

TrueNet Blown Fibre provides Gigabit and 10 Gigabit solutions with the option to blow in more capacity at any time, while TrueNet CWDM-ready fibre will enable 10 Gigabits/s now futureproofed to deliver up to 80 Gigabit/s per fibre pair in the future using Coarse Wave Division Multiplexing technology.

TrueNet Power-over-Ethernet technology enables VoIP phones, IP CCTV cameras, access security and other devices to be powered directly through the RJ-45 jack removing the need for a.c. power sockets and potentially unreliable external power supply units.

Finally, TrueNet PLM physical layer management enables the structured cabling system to be fully managed from the network operations centre (NOC) and can massively cut network downtime – essential where the network has so many critical applications as well as improving network utilisation by up to 40%.

TrueNet® Structured Cabling Solutions

Introduction

TrueNet® Solutions for Manufacturing

Manufacturing organisations provide a wide range of network requirements and challenges – from everyday Category 5e or Category 6 in the general office, through high bandwidth requirements in the CAD design department to very long cable-runs and harsh environments on the shop floor or process plant.

Electromagnetic interference (EMI) is often a concern and the use of PROFINET (Industrial Ethernet) instead of FieldBus for industrial machine control is rising rapidly – bringing its own set of very specialist requirements.

In office environments, the structured cabling can be easily laid in false floors or affixed to the fabric of the building and is generally used for 'bursty' data transmission often with large files for images and presentations.

Down on the shop floor, it is very different. Conditions are harsh, often with extreme temperatures, high dust and humidity levels, vibrating machinery and the ever present risk of mechanical damage. There are chemical hazards to the structured cabling too from oily or aggressive atmospheres and there may be ultraviolet exposure out of doors.

Solutions

Within the office environment, TrueNet Category 5e and Category 6 – either shielded or unshielded – provide the ideal solution with TrueNet fibre providing the backbone links from comms closet to comms room.

In the CAD design department, if extra bandwidth is needed then TrueNet CopperTen™ provides 10Gigabit/s capacity to the IEEE802.3an standard.

Production offices and PROFINET connected machinery are ideally served by fibre links from the comms room to small wall or floor mounted cabinets containing active equipment such as switches and media converters.

From here, special harsh-environment cables can be used together with our TrueNet IP67/65 push-pull industrial Ethernet outlet – developed in conjunction with PROFIBUS specialists Harting. IP67/65 grade patch-cords provide the connection to industrial grade PCs and the PROFIBUS Machine Distributor in Ethernet controlled production machinery.

Although EMI is a concern, experience has shown that with TrueNet unshielded products it is rarely an issue. For additional EMI protection TrueNet shielded products from Category 5e to Category 6a (CopperTen) offer data rates right up to 10 Gigabit/s as well as the low latency needed for highly time-dependant industrial machine control data. Our engineers are happy to advise on the best solution for your specific requirements.

Together with our manufacturing-sector specialist TrueNet Integrators, ADC KRONE has the full suite of solutions to provide complete manufacturing plant communications and IT infrastructure however large or small the plant.



TrueNet® Structured Cabling Solutions

Introduction

TrueNet® Solutions for Retail

Many people don't realise what a dynamic business retail is. Spring sales, autumn sales, the Christmas rush and countless sales promotions all mean that every day can be a very different day. Even the weather can mean different goods need to be merchandised at short notice.

Very often, elements of the network need to be rapidly redeployed to support shopfloor needs. For example, temporary Electronic Point of Sale (EPOS) for the sales or the Christmas rush – or special EPOS positions in high traffic areas for sales promotions. They may be needed for a few days or a few months, but they are essentially temporary and retailers need a network installation that takes all of these in its stride yet remains as reliable as a fixed network.



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Retail network managers need a network partner that understands how retail works and how to ensure that networks help, not hinder, the retailer.

TrueNet structured cabling from ADC KRONE, with our highly flexible MINI-POD multi-port consolidation and distribution solutions mean that network access need never be more than a few metres away, perhaps out of sight in ceiling voids or unobtrusively located on pillars and walls – ready to be patched-through at a moments notice.

Network reliability is of the highest importance too. EPOS transaction data must not be lost or corrupted and there's no question of losing the 'window' to update the pricing database from Head Quarters. One cash till down could cost thousands of Euros per day. Worse still the whole store could be down. TrueNet from ADC KRONE is the only structured cabling solution in the world to carry a zero bit error warranty, guaranteeing that the passive network will not corrupt a single packet of data. Its the best warranty you can have.

For multiple-outlet stores, TrueNet PLM Physical Layer Management is ideal. The networks in every store can be managed by a single central Network Management Centre. Non-specialist staff can be directed to alter patching simply by following LED guidance lights on the patch panels without the need to despatch a technician to site. Constant scanning of the network hardware means that the Network Manager always knows, in real time, exactly what equipment is connected to where.

If ever an important circuit is accidentally or maliciously unplugged, or if unauthorised equipment is connected to the network, alarms are raised and corrective action can be taken immediately – cutting network downtime and speeding up time to repair.

Solutions

TrueNet, from Category 5e to Augmented Category 6, with its extra headroom, and TrueNet fibre all come with our unique five year zero bit error warranty, in addition to a 20 year solution warranty, when installed by a TrueNet Integrator.

Many of our TrueNet Integrators are specialists in retail networks and have regional, national and international coverage to give a true single-partner solution anywhere in the world.

The TrueNet PLM physical layer management solution is ideal for highly efficient centralised management of large stores and multi-branch operations – significantly reducing network downtime, increasing utilisation of active equipment and usually achieving payback within 12 months – then going on to increase profits in following years.



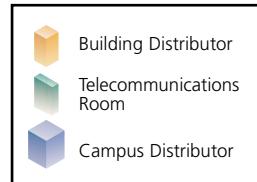
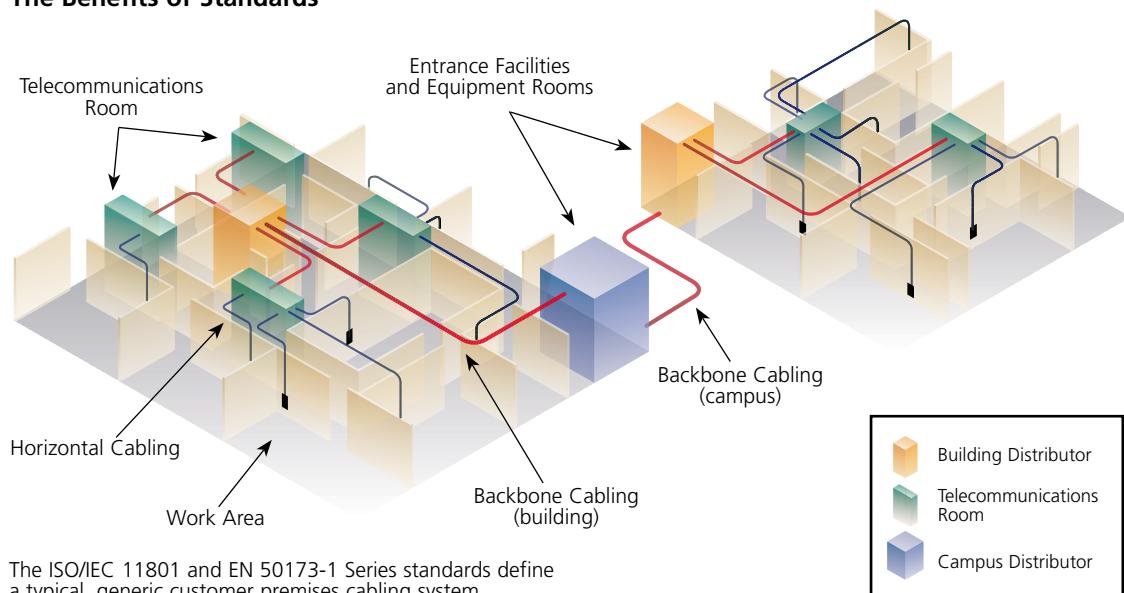
Technical Reference

Industry Standards	2.02
Environmental Compliance (RoHS)	2.14
How to Choose the Right Cabling Infrastructure.....	2.15
10Gigabit Ethernet (CopperTen™).....	2.18
Choosing the Right Patch Panels.....	2.22
Designing the Optimised Data Centre.....	2.27
Key Optical Fibre Cable Management Practices.....	2.32
Key Optical Fibre Connector Types	2.33
Laser Optimised Fibre.....	2.35

Technical Reference

Industry Standards

The Benefits of Standards



Imagine trying to link railroads together that are based on different gauges, to build anything with a combination of metric and imperial parts, to type a letter on something other than a QWERTY keyboard, or to wire a building for voice, data and video if all the components had different requirements.

The key to simplifying all these tasks is standardisation. Bringing standards to the wiring and cabling segments of the building industry has enabled the industry to define a common infrastructure that allows many companies to provide common components. Strict adherence to these standards benefits everyone.

ADC KRONE's Position on Standards

ADC KRONE is a strong proponent of standards-based design for structured cabling systems. A strictly defined set of standards helps ensure uniform application of physical layer networking products and creates a usable infrastructure for communications networks.

However, ADC KRONE also believes that by nature, the standards evolve into a lowest-common denominator indicator of performance. In order to accommodate various competing interests, a significant amount of "flexibility" gets built into the allowable tolerances. The cumulative effect of these tolerances can result in structured cabling channels in which different components can have radically different electrical performance characteristics.

Consequently, when various standards-compliant components from randomly selected vendors are used, the net result could be conformance to the standards, but not efficient performance.

The research undertaken by ADC KRONE for the TrueNet® structured cabling system revealed that only an impedance-matched structured cabling channel that conforms to a tightly defined subset of the performance standards is capable of flawless data transmission.

ADC KRONE, as a full system supplier, is able to deliver a complete system of impedance-matched components so there is no guesswork. Choosing standards-compliant components randomly from unrelated vendors will yield a standards-compliant channel, but may not result in optimum network performance.

Therefore, use the standards as a design guide, then make sure that you purchase standards-compliant matched components.

Entrance Facilities

The entrance facility provides a connection point between the outside plant facilities – whether it is public network services, private network customer premises or a combination of both – and the interior premises cabling. Products used in this area include cables, connecting hardware, voltage protection devices, splice closures, grounding and bonding, and other connecting hardware.

The demarcation point separating the service provider's cabling and the customer's cabling may be part of the entrance facilities. Because the location of the demarcation point is determined by local and national regulations, the local regulated carrier (telephone service provider) or competitive access provider should be contacted for detailed information.

The primary standards for this area are outlined in ISO/IEC 18010 Information Technology – Pathways and Spaces for Customer Premises Cabling; EN 50174 Series, Information Technology – Cabling Installation; and EN 50310, Application of Equipotential Bonding and Earthing in Buildings with Information Technology Equipment.

ADC KRONE manufactures special overvoltage blocks, protection devices and building entrance terminals for both optical fibre and copper cabling for use in this area.

Equipment Rooms

The ISO/IEC 11801 and EN 50173-1 standards make a distinction between equipment rooms and telecommunications rooms because of the nature of complexity of the equipment they contain. However, an equipment room may alternatively provide any or all of the functions of a telecommunications room.

Equipment rooms provide a controlled environment to house telecommunications equipment. This equipment may include connecting hardware, splice closures, grounding and bonding facilities and protection devices, where applicable. Switches, routers and other active equipment may reside in the same rack or cabinet space as the passive cabling infrastructure.

In the premises cabling backbone hierarchy, an equipment room may contain either the main cross-connect or the intermediate cross-connect. The equipment room may also contain network trunk terminations and auxiliary terminations that are under the control of the premises cabling administrator.

The primary standards for this area are outlined in ISO/IEC 18010 Information Technology – Pathways and Spaces for Customer Premises Cabling, and EN 50174 Series, Information Technology – Cabling Installation.

ADC KRONE manufactures a wide variety of optical fibre and copper (balanced) cabling solutions (cables, cords, patch panels, termination – punchdown – blocks, cable management solutions etc.) that are well suited for this area.

Telecommunication Rooms

Telecommunications rooms may provide various functions for the cabling system and because of this they are treated as a distinct subset in the cabling system hierarchy.

The primary function of a telecommunications room is to provide a termination point for horizontal cable distribution, that supports all voice, data, video and other applications requiring structured cabling. The telecommunications room also serves as a termination point for backbone cable. The cross-connection of these two parts of the premises cabling is an important function of the telecommunications room. Cross-connections may be accomplished using jumper wires or patch cords, and ADC KRONE products handle both methods equally well.

Telecommunications rooms may also house cross-connects for different portions of the backbone cabling system. These cross-connects are sometimes used to tie different rooms together in a ring, star or tree configuration.

Technical Reference

Industry Standards

Telecommunications rooms also provide a controlled environment for specific areas of a building. These rooms may house telecommunications equipment, connecting hardware and splice closures as well as devices such as switches. In some instances, the demarcation point and protection devices may be located in a telecommunications room.

Cable routing and installation practices for telecommunications rooms to prevent cable stress and to properly organise and manage cables are outlined in ISO/IEC 18010 Information Technology – Pathways and Spaces for Customer Premises Cabling, EN 50174 Series, Information Technology – Cabling Installation, and EN 50310, Application of Equipotential Bonding and Earthing in Buildings with Information Technology Equipment.

ADC KRONE manufactures a wide variety of termination blocks and patch panels capable of providing termination and cable management for a wide range of wire sizes and cable types found in telecommunications rooms.

The majority of ADC KRONE's panels use LSA-PLUS® contact technology. The silver plated contacts grip the conductor at a 45° angle providing lower resistance and superior torsional force, and are capable of accepting multiple and stranded conductors.

Class D, E and E_A (Category 5e, 6 and 6a, respectively) Cabling

Class D (Category 5e) is currently the minimum ISO/IEC and EN recommended Class of wiring for new installations. Electrical characteristics for NEXT, ACR-F (ELFEXT), PSNEXT, PSACR-F (PSELFEXT), delay skew, propagation delay, insertion loss, and return loss are specified to 100MHz. Class D was developed with the specific intent of supporting Gigabit Ethernet. Because all standards require backwards compatibility, Class D will also support all lower-rated applications and protocols such as 10/100/1000BASE-T.

Class E (Category 6) is gaining popularity for new installations. Electrical characteristics for NEXT, ACR-F (ELFEXT), PSNEXT, PSACR-F (PSELFEXT), delay skew, propagation delay, attenuation, and return loss are specified to 250MHz. Improvements in all electrical parameters are part of the higher Class E standard. Category 6, while providing a "bigger pipe" for improved throughput, also has a maximum 100 metres of support for 1000BASE-T transmission and short length support for 10GBASE-T.

Class E_A (Augmented Category 6 or Category 6a) is the cutting edge especially in UTP cabling. It is similar to Class E_A, but is characterised to 500MHz and is also capable of running 10GBASE-T. Testing parameters are similar to that of Class D and Class E, with the added benefit of compliance to Alien (Bundled) Crosstalk requirements: PSANEXT, average PSANEXT, PSAACR-F and average PSAACR-F.

Definitions of cabling test parameters can be found at: Fluke's Knowledge Base website at <http://kb.flukenetworks.com>

Class F is a standard for a fully shielded, 4-pair cabling system with transmission specifications referenced to 600MHz. The cable end interface is similar to the familiar RJ45 connector and backward compatible to existing Category 6 RJ45 connector, mainly to offer a solution where higher bandwidth than Class E_A is needed. The new Class F_A will go up to 1000 MHz.

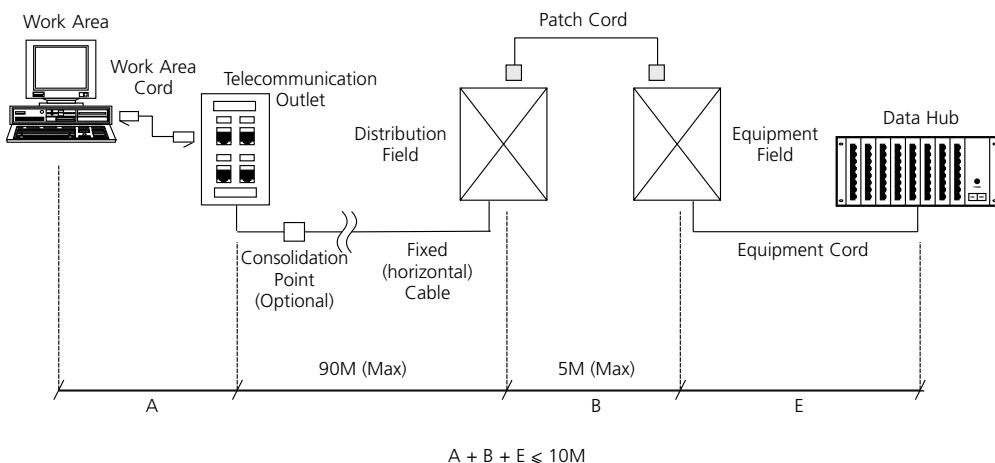
Technical Reference

Industry Standards

For More Information

Whilst this catalogue presents a brief overview of information contained in the standard, persons involved with the installation and maintenance of structured cabling systems should obtain a copy of the complete standard and/or related standards.

ISO/IEC 11801 Horizontal Channel/Link Model



Technical standards that address various aspects of commercial cabling include:

- ISO/IEC 18010 Information Technology – Pathways and Spaces for Customer Premises Cabling
- EN 50174 Series, Information Technology – Cabling Installation
- EN 50310, Application of Equipotential Bonding and Earthing in Buildings with Information Technology Equipment

For information on obtaining copies of any of these standards, please contact your national standards organisation or any distributor of standards.

Technical Reference

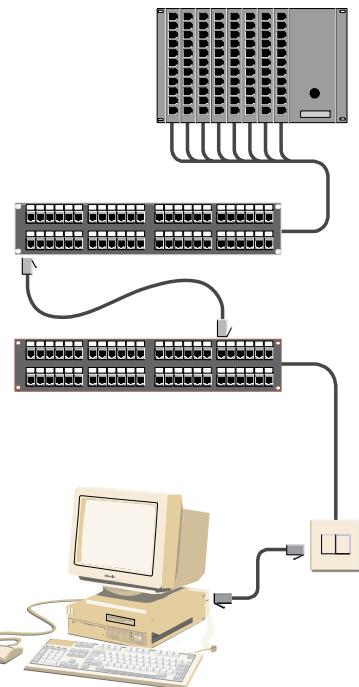
Industry Standards

Interconnection vs. Cross-Connection

Interconnection



Cross-Connection



The ISO/IEC 11801 Information Technology and EN 50173-1 Information Technology, address two basic wiring schemes for the telecommunications room: interconnection and cross-connection.

Both the backbone and the horizontal cabling are terminated on connecting hardware that meets the requirements of the ISO/IEC 11801 Information Technology and EN 50173-1 Information Technology. However, the standard prohibits the use of these terminations for moves, adds and changes. Connections must be made using an interconnection or a cross-connect cabling scheme.

An interconnect is a method of connecting a cabling subsystem (e.g. horizontal or backbone) to equipment (or another cabling subsystem) without the use of a patch cord or jumper. The cross-connect method moves the connections with the use of a patch cord or jumper.

Technical Reference

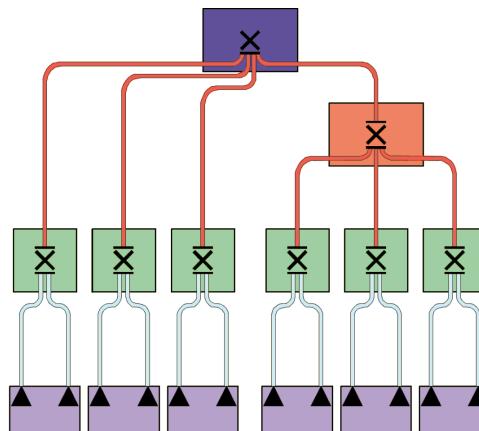
Industry Standards

Backbone Cabling

Backbone cabling provides interconnections between the telecommunications rooms, equipment rooms and entrance facilities. Backbone cabling consists of backbone cables, main and intermediate cross-connects, or inter-connects, mechanical terminations and cords. Backbone cabling can be within buildings (building backbone) or between buildings (campus backbone).

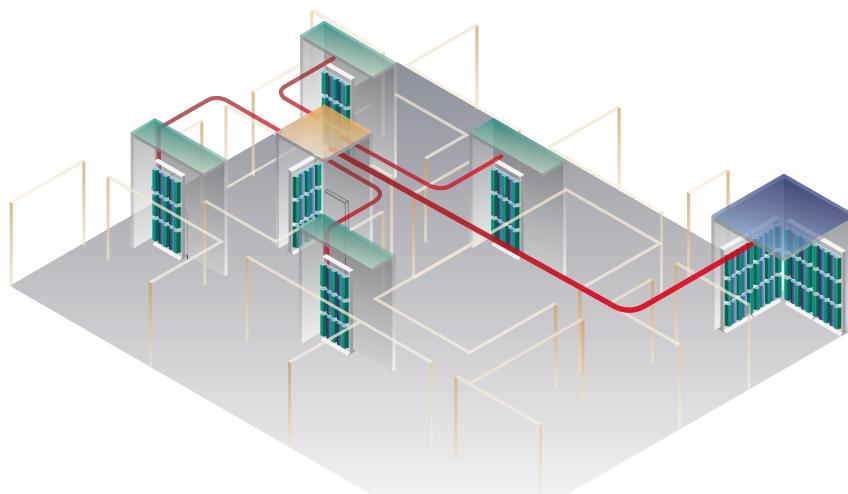
The ISO/IEC 11801 and EN 50173-1 standards require that backbone cabling use a hierarchical star topology.

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Backbone cabling uses a hierarchical star topology.

Technical Reference



	Building Distributor
	Telecommunications Room
	Campus Distributor
	Backbone Cabling

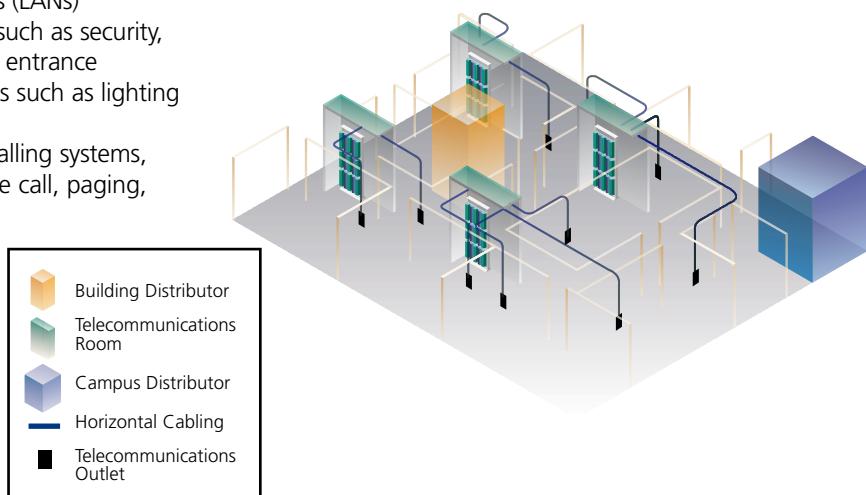
Technical Reference

Industry Standards

Horizontal Cabling

Horizontal cabling extends from horizontal cross-connect (or inter-connect) in the telecommunications room to the work area telecommunications outlet. Horizontal cabling includes the horizontal cables, the telecommunications outlet in the work area, the consolidation point connection (optional), the mechanical termination and patch cords or jumper wires and cable management solutions located in the telecommunications room.

- Voice service
- Internet service
- Video and conferencing services
- Data communications to support fax, storage servers, network printers
- Local area networks (LANs)
- Life safety systems such as security, fire alarm and door entrance
- Automation systems such as lighting and HVAC control
- Other building signalling systems, such as CCTV, nurse call, paging, audio and others



Relocation of offices is a common occurrence in Enterprises. Horizontal cabling is often one of the more dynamic areas of the premises system. However, after installation, horizontal cabling is often much less accessible than backbone cabling, and the time, effort and skills required to change or modify it can be extremely high. Horizontal cabling should be designed with the intention of minimising ongoing maintenance and relocation so that moves, adds and changes can be accomplished from the telecommunications and equipment rooms. Additional consideration should be given to accommodating a wide range of applications in order to reduce the necessity of changes to the cabling as users' needs evolve.

Care should be given to separate telecommunications cabling from electrical facilities that generate high levels of electromagnetic interference (EMI). Fluorescent lights, copy machines, heating/cooling devices, motors and transformers that support the building's mechanical requirements all contribute to EMI.

EN 50174-2 specifies separation of horizontal cabling pathways from common sources of EMI.

Horizontal cabling is required to use a hybrid star topology. Each work area telecommunications outlet is to be connected to a horizontal inter-connect or cross-connect in the telecommunications room. Each work area is to be served by a telecommunications room.

Maximum Distances

The maximum distance of a copper horizontal cabling run is 90 metres from the mechanical termination at the horizontal connection in the telecommunications room to the telecommunications outlet in the work area.

Patch cords used in the cross-connect facilities should not exceed 5 metres in length.

Technical Reference

Industry Standards

Work Area

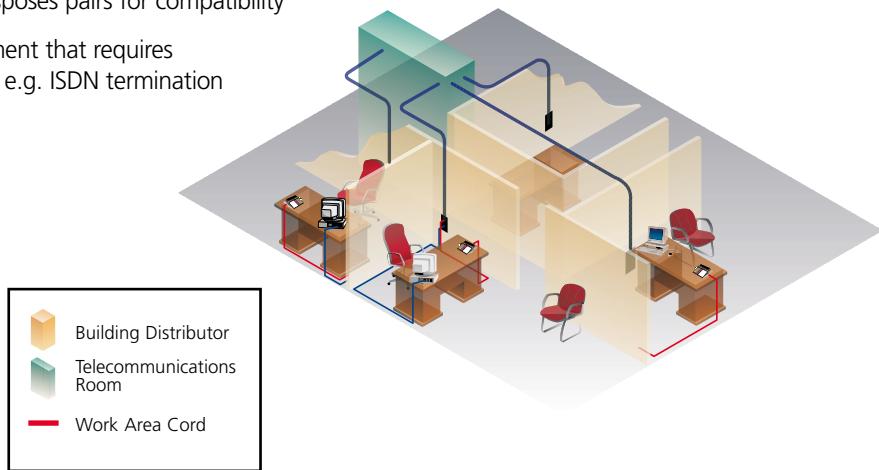
The work area components of a premises cabling system are the most visible to users. Work area components extend from the telecommunications outlet to the work area equipment, such as traditional telephones, VoIP devices, networked computers, fax machines and shared devices such as network printers.

The length of cords used in the work area are compatible with the maximum length for the horizontal cabling of 100 metres total. Work area cords should meet the requirements as specified in ISO/IEC 11801 and EN 50173-1.

Common cords used in the work area have identical connectors on both ends, but cords may vary widely in design depending on the application. Often adaptors are required to accommodate specific equipment.

Types of adaptors include:

- Special adaptors to mate an equipment connector to the telecommunications outlet when they are different styles and impedance (e.g. baluns)
- A "Y" adaptor to branch two services off of a single cable
- Adaptor which transposes pairs for compatibility
- Adaptors for equipment that requires termination resistors e.g. ISDN termination



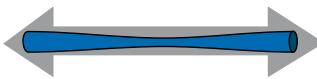
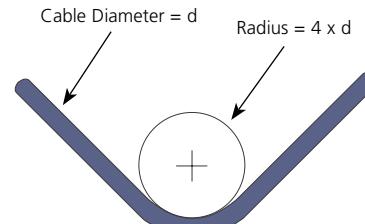
These and other types of adaptors can have a detrimental effect on the transmission performance of the telecommunications cabling system. It is important to consider the compatibility of these adaptors to premises cabling equipment before connecting them to the network.

A successful, high-performance premises cabling system requires more than simply purchasing the proper standards compliant cables and hardware. Care must be taken to ensure that the components are installed properly according to industry recognised practices.

Performance specifications detailed in the ISO/IEC 11801 and EN 50173-1 standards are based on the assumption that proper installation techniques and management practices have been followed. If recommended cabling precautions and installation methods are not observed, the specified transmission capabilities of cabling components may not be achieved.

Installation should be performed by trained, certified installers such as the ADC KRONE TrueNet Integrators who are authorised to provide the TrueNet System Warranty.

Cable Installation

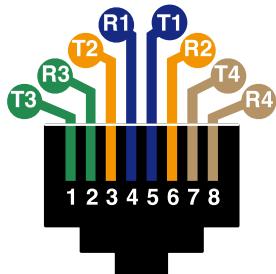
DO	DON'T
 <p>Do pull cables to minimise the distance of the run and eliminate large loops.</p>	 <p>Don't exceed 110 Newton's of pulling forces when running cables.</p>
 <p>Where bundling is necessary, bundle cables in a neat, orderly fashion, and use hook-and-loop ties.</p>	 <p>Don't crush or tie cable bundles too tightly, or use plastic cable ties.</p>
 <p>Do follow recommendations for cable bend radius. In spaces with terminations, cable bend radius should not be less than four-times the cable diameter for horizontal copper cable, and should not be less than ten times the cable diameter for multipair optical fibre cables.</p>	 <p>Don't ever bend or kink cable too sharply.</p>
<p>For Category 5e, make sure that pair twists are maintained within 12mm or less of the termination point. For Category 6 and above, ADC KRONE recommends that pair twists are maintained to the termination point (0mm).</p>	<p>Don't untwist pairs when terminating.</p>

Technical Reference

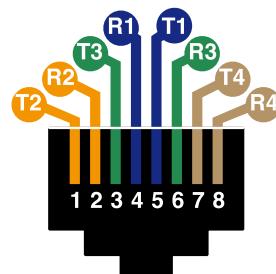
Industry Standards

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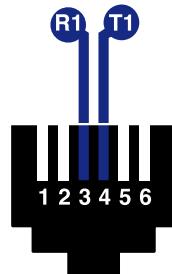
Jack Pin-Outs



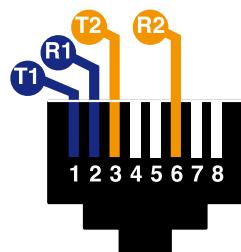
T568A RJ45



T568B RJ45



USOC RJ11



10BASE-T

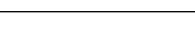


Token Ring

Technical Reference

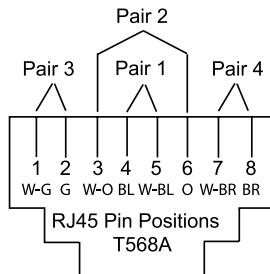
Industry Standards

25-Pair Cable Colour-Coding

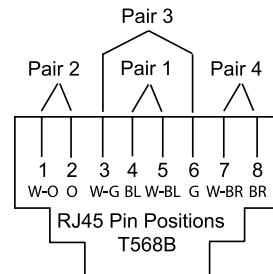
Pair Number	Pair Colour	Colour Coding	Tip & Ring
1		White/Blue Blue/White	Tip 1 Ring 1
2		White/Orange Orange/White	Tip 2 Ring 2
3		White/Green Green/White	Tip 3 Ring 3
4		White/Brown Brown/White	Tip 4 Ring 4
5		White/Slate Slate/White	Tip 5 Ring 5
6		Red/Blue Blue/Red	Tip 6 Ring 6
7		Red/Orange Orange/Red	Tip 7 Ring 7
8		Red/Green Green/Red	Tip 8 Ring 8
9		Red/Brown Brown/Red	Tip 9 Ring 9
10		Red/Slate Slate/Red	Tip 10 Ring 10
11		Black/Blue Blue/Black	Tip 11 Ring 11
12		Black/Orange Orange/Black	Tip 12 Ring 12
13		Black/Green Green/Black	Tip 13 Ring 13
14		Black/Brown Brown/Black	Tip 14 Ring 14
15		Black/Slate Slate/Black	Tip 15 Ring 15
16		Yellow/Blue Blue/Yellow	Tip 16 Ring 16
17		Yellow/Orange Orange/Yellow	Tip 17 Ring 17
18		Yellow/Green Green/Yellow	Tip 18 Ring 18
19		Yellow/Brown Brown/Yellow	Tip 19 Ring 19
20		Yellow/Slate Slate/Yellow	Tip 20 Ring 20
21		Violet/Blue Blue/Violet	Tip 21 Ring 21
22		Violet/Orange Orange/Violet	Tip 22 Ring 22
23		Violet/Green Green/Violet	Tip 23 Ring 23
24		Violet/Brown Brown/Violet	Tip 24 Ring 24
25		Violet/Slate Slate/Violet	Tip 25 Ring 25

Wiring to Standards

TIA/EIA T568A Standard



TIA/EIA T568B Standard



The ISO/IEC 11801 and EN 50173-1 standards define pin/pair assignments for eight-position modular jacks in the work area. The preferred wiring configuration is T568B. A second, optional configuration, T568A, is also used in parts of Europe, Middle East and Africa.

For modular RJ45 patch cords, T568A or T568B wiring are both usable, regardless of which wiring scheme is used in the horizontal cabling.

A crossover cord is wired T568A on one end and T568B on the other, and is typically used for peer to peer networking or to connect stacked hubs or switches. Many active devices now have a switch that crosses one port, negating the need for a crossover cable.

Wiring schemes also raise a variety of questions:

- Q: What's the difference between T568A and T568B?
A: The only difference is the positioning of the green and orange pairs of wires.
- Q: Is there a performance difference between T568A and T568B?
A: No. Both wiring schemes have to meet the same performance criteria.
- Q: Why two schemes?
A: The reason is related to old telephone legacy issues.
All you really need to know is that there are two schemes, and how to deal with them.

The solution really is fairly simple: Just pick one wiring scheme and use it consistently throughout your network. The only problem you would ever encounter would be if the two wiring schemes were accidentally mixed in an installation. T568B is the predominant scheme in EMEA; T568A is popular in some other countries. The safest way to determine which to use is to check with the network equipment provider to determine the predominant wiring scheme used in the equipment. The reason for this check is quite simple: you can change the wiring scheme used in the network but you cannot change the wiring scheme used in the network equipment.

Technical Reference

Environmental Compliance

RoHS Directive

Due to global environmental concerns, the need for lead-free solutions in electronic components and systems is receiving increasing attention. RoHS (Restriction of Hazardous Substances) is expected to be the first of many environmental directives to be issued that will have a profound effect on global trade. This initial directive took effect on July 1, 2006 and bans cadmium, hexavalent chromium, lead, mercury, PBBs (polybrominated biphenyls), and PBDEs (polybrominated biphenyl ethers) from electrical and electronic products, and their component parts offered for sale into the 25-country European Union. China is expected to adopt similar legislation in the near future.

ADC KRONE's Position

ADC KRONE has a long history of compliance with European and international environmental requirements. We are committed to pollution prevention, waste minimisation and continuous improvement in all activities. It is our policy to integrate sound business practices that promote the protection and preservation of the environment and that are in accordance with all applicable laws. Our product teams are currently working with external suppliers to result in compliant materials in all of our products. The majority of our product is compliant today; some products are still under evaluation and in process toward meeting our company goal to produce only RoHS compliant product. Since January 1, 2006, all new products have been RoHS compliant.

Technical Reference

How to Choose the Right Cabling Infrastructure

A Brief History of Cabling

Over the past 30 years there have been unprecedented advances in networking technology. Since the early 1970s with the development of Ethernet, rates for point-to-point data transfer have increased by a factor of ten thousand. From 1 Mb/s StarLan to 10 Gigabit Ethernet, the steady increase in bandwidth has been fuelled by an ever increasing demand for more speed, more applications, more memory and more devices.

Demand for faster speeds comes from continual increases in processor capability and advanced operating systems that enable development of new applications. These applications and their associated devices create more network usage and congestion, driving demand for more bandwidth. The need for this additional bandwidth is seen first at network bottlenecks. When a section of the network becomes a bottleneck, network equipment, such as Ethernet switches and servers, are replaced with the next generation of equipment with faster processors, more memory, improved operating systems and the inherent ability to run more complex applications.

Over time, network equipment speeds outpace the infrastructure that connects the devices, for example; in the transition of 10BASE-T to 100BASE-TX. Networks with Category 3 (Class C) cabling systems could support the first few generations of switches and computers that supported 10 Mb/s Ethernet over 100 metres. With the introduction of the 100BASE-TX protocol, bandwidth limitations between devices were removed. However, Category 3 (Class C) cabling was insufficient to support the 10x increase in bandwidth, which led to the development of Category 5 (old Class D) cabling to support 100 Mb/s over 100 metres.

Ignoring Category 4, which came and went quickly, network planners faced a decision on which cabling system to install. At that time, the majority of networks operated with 10BASE-T network devices. Yet Category 3 (Class C) cabling would not support the emerging 100BASE-TX protocol. The good news, however, was that Category 5 (old Class D) would run 100BASE-TX and was backward compatible with Category 3 (Class C). In other words, any application designed for Category 3 (Class C) (10BASE-T) would run just as well, if not better, on Category 5 (old Class D) cabling systems. The logical choice was to install Category 5 (old Class D) in anticipation of applications requiring 100BASE-TX.

The next step came with the development of 1000BASE-T applications which used all four cable pairs and required enhancement of the cable to manage the additional interference that this generated. The result was the Category 5e (new Class D) standard. There then followed the development of Category 6 but the applications and lower cost of electronics which initiated this development never reached the market and Category 6 (Class E) became a system choice to provide more headroom for existing applications and future proofing for potential new applications.

This brings us to the present day and the ratification of the 10GBASE-T Ethernet Standard. At these speeds the cabling industry had to design for interference, not just between cable pairs, but also between individual cables. This has resulted in the new Augmented Category 6 standard known as Category 6a (Class E_A).

Technical Reference

How to Choose the Right Cabling Infrastructure

Selecting the Infrastructure: Follow the Lead of IEEE

Network planners today must design cabling systems to withstand multiple replacements of active equipment. Most active network equipment, including computers, servers, Ethernet switches, routers and hubs, has a maximum useful life of three to five years before it becomes obsolete. In contrast, structured cabling historically has a useful life of 10 to 15 years. Therefore the structured cabling you install today must outlive at least three generations of networking equipment upgrades.

The challenge is how to determine what types of active equipment will exist in three product generations; the answer can be found with the IEEE. This organisation consists of networking equipment manufacturers such as Cisco, Nortel, Juniper and others that look at the future of networking, and develop solutions for future product generations. Using IEEE standards as a guide, it is possible to see the direction for both active equipment and cabling requirements for the next few generations.

IEEE Standards Activity

1000BASE-SX, LX	Gigabit Ethernet over optical fibre
1000BASE-T	Gigabit Ethernet over copper
1000BASE-LX4, ER/EW, SR/SW, LR/LW	10 Gigabit Ethernet over optical fibre
10GBASE-CX4	10 Gigabit Ethernet over short range copper
10GBASE-T	10 Gigabit Ethernet over copper

Building for Bandwidth in the Future

Technology advancements in networking will continue. New processor technology, coupled with new operating systems, will allow the creation of advanced applications and services. These new applications will demand more and more bandwidth, driving the need for higher speed protocols and cabling to support these protocols. Look to the IEEE and familiarise yourself with the protocols being developed for the future. This offers an invaluable guide toward building for bandwidth in the future.

If you own your space or have a long term lease, a good rule of thumb is to design your passive cabling infrastructure to endure at least three generations of active networking gear which today would mean an Augmented Category 6 / Class E_A solution.

ADC KRONE Total Infrastructure Solutions

ADC KRONE manufactures and distributes a complete portfolio of standards-based, technologically superior solutions that support voice, data, security, audio, video, controls and other building and campus systems. The TrueNet® Structured Cabling Solution provides a complete copper and fibre cable, connectivity and cable management solution from the entrance facility to the desktop and across the campus. Supported by an exceptional warranty, TrueNet is the choice of network managers worldwide who operate high-value and mission-critical networks.

The chart below shows just a few of the ADC KRONE cable solutions used to support common enterprise applications. Integral to each solution are the TrueNet patch panels, fibre frames, connectors, cable management, termination/splice/storage panels and other products for every unique requirement in the passive portion of your network.

IEEE Standard	Designation	Bandwidth	Distance Limitation	Common Applications	ADC KRONE TrueNet Solutions
802.3ab	1000BASE-T	1000 Mb/s	100 metres	Server and Enterprise backbone	<ul style="list-style-type: none"> • Category 5e and 6 • CopperTen Augmented Category 6
802.3z	1000BASE-SX	1000 Mb/s	220 to 550 metres	Enterprise backbone	<ul style="list-style-type: none"> • Laser Optimised Multimode fibre
	1000BASE-LX	1000 Mb/s	5 Kilometres	WAN, MAN	<ul style="list-style-type: none"> • Singlemode fibre
802.3an	10GBASE-T	10 Gb/s	100 metres (Cat 6a), 55 metres (Cat 6)	Data Centre, R&D Computing, High Resolution Video, Advanced Desktop Computing	<ul style="list-style-type: none"> • CopperTen Augmented Category 6 • Category 6
802.3ae	10GBASE-SR/SW	10 Gb/s	300 metres	Data Centre and Enterprise Backbone Cabling	<ul style="list-style-type: none"> • Laser Optimised Multimode fibre
	10GBASE-LR/LW	10 Gb/s	10 Kilometres	WAN, MAN	<ul style="list-style-type: none"> • Singlemode fibre
	10GBASE-ER/EW	10 Gb/s	40 Kilometres	WAN	<ul style="list-style-type: none"> • Singlemode fibre
	10GBASE-LX-4	10 Gb/s	300 metres	Data Centre and Enterprise Backbone Cabling	<ul style="list-style-type: none"> • Standard Grade Multimode fibre
	10GBASE-LX-4	10 Gb/s	10 Kilometres	WAN, MAN	<ul style="list-style-type: none"> • Singlemode fibre
802.3af	Power over Ethernet	10/100/1000 Mb/s	100 metres	VoIP, WiFi, RFID, IP Security	<ul style="list-style-type: none"> • Midspan PoE

Technical Reference

10Gigabit Ethernet: CopperTen™ Cabling Solution

For years, copper solutions have been the preferred medium over which most local area networks communicate. And in this same period, a debate has raged as to when optical fibre would displace copper as the preferred infrastructure.

For years, optical fibre has led the Ethernet industry forward in port speed progression. So if optical fibre is one step ahead why doesn't it replace copper? The answer is quite simple. To convert electrons to photons and then back to electrons adds cost (from an active hardware perspective). This makes the cost of fibre optic active hardware more expensive per port than the equivalent speed copper solution on Gigabit Ethernet switch ports.

The IEEE develops the electrical parameters needed to run transmission protocols and then asks ISO/IEC to standardise the cabling parameters. For 10Gigabit Ethernet over copper, an IEEE 802.3an Study Group was formed to discuss how best to approach running 10Gigabit transmission over a copper infrastructure. The group was composed of representatives from several different parts of the networking community, such as chip manufacturers, hardware manufacturers and cabling/connectivity manufacturers.

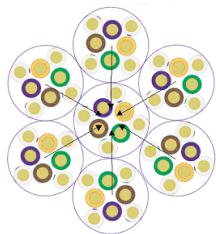
The study group discussions included which protocol encoding would be used, how it would relate to the bandwidth of the cabling infrastructure (what the frequency range is) and what measurement of Shannon's capacity is needed to support them, measured in bits per second. To achieve 10Gbps transmission, a Shannon's capacity of >18Gbps was specified for the cabling solution. The additional capacity over the actual data rate is due to the amount of bandwidth used within the active hardware noise parameters (i.e. jitter, etc.).

In order to prevent the effects of crosstalk within cables, pairs within a single cable are twisted at different rates (as the different colours in the cable would indicate). This technique is used to minimise the crosstalk between pairs along parallel runs. While this works well within the cable, it doesn't greatly reduce cable-to-cable crosstalk (alien crosstalk). The two options for minimising alien crosstalk are to use a UTP cable with patented geometry or use shielded F/UTP or S/FTP cable.

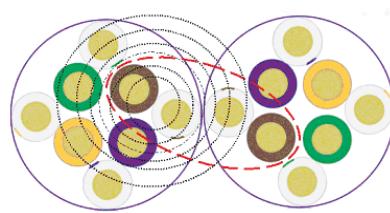
Technical Reference

10Gigabit Ethernet CopperTen™ Cabling Solution

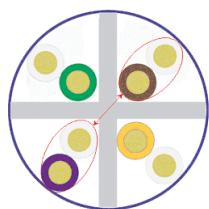
Alien crosstalk is quite simply the amount of noise measured on a cabling pair in a channel induced from a cabling pair in an adjacent channel. This is not only a concern for different twist lay pairs between cables, but more so between same twist lay pairs between adjacent cables.



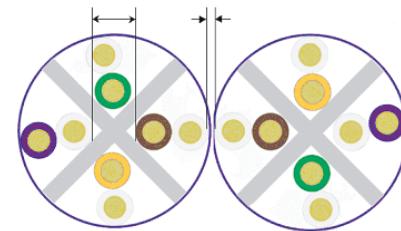
Example of a centre cable being impacted by the adjacent 6 cables in the bundle.



Example of how cables with same twist lays impact one another.



The star filler used within several Category 6 cable designs increases and controls the distance between pairs.



While the distance between pairs within the same cable is maintained, the distance between same lay lengths on adjacent cables is still compromised.

Initial testing on existing Category 6 UTP cable designs quickly showed that the rationale behind reducing the impact of crosstalk between pairs within a cable could not support alien crosstalk requirements. Twist lay variation and controlled distances between the pairs have been standard design practice for achieving Category 6 compliance. While the distance between pairs can be controlled within a cable jacket, it could not be controlled between same lay length pairs on adjacent cables.

Testing Shannon's capacity on existing Category 6 UTP solutions only yielded results in the 5Gbps range. The results achieved previously did not provide the needed additional throughput to allow for active electronic anomalies. This was a far cry from the desired 18Gbps. Therefore the question was asked: Is there a UTP solution capable of achieving the needed alien crosstalk requirements or would optical fibre finally rule the day? The August 2003 meeting of the 802.3an Working Group would yield three main proposals:

1. Lower the data rates to 2.5Gbps and use Category 6 UTP. This would be the first time optical fibre would not be matched in speed and that a tenfold increase in speed would not be achieved.
2. Allow 10Gbps data rates but reduce the length of the supported channel to 37-55 metres from the industry standard 100 metres for Category 6 UTP. This would greatly impact the flexibility of the cabling plant, considering most facilities are designed with the 100 metre distance incorporated into the floor plans.
3. Use shielded solutions and abandon the much more broadly adopted UTP as a transport medium for 10 Gigabit Ethernet over copper.

Technical Reference

10Gigabit Ethernet CopperTen™ Cabling Solution

Category 5e would also be dropped as a proposed transport medium entirely. Equipment manufacturers would now question the value of producing active hardware to support transmission rates that only increased by 2.5 times, or for 10 Gigabit Ethernet over copper if distance limitations of 55 metres were really worthwhile. UTP could very well have reached its limit.

The next meeting of the working group was pivotal in addressing the above questions. How could a UTP cable achieve the desired capacity of >18Gbps and maintain the 100 metre distances to which the industry has become accustomed while remaining within the normal size constraints?

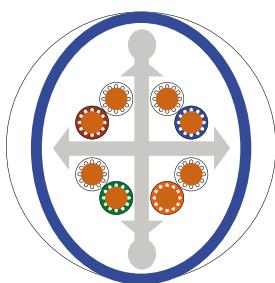
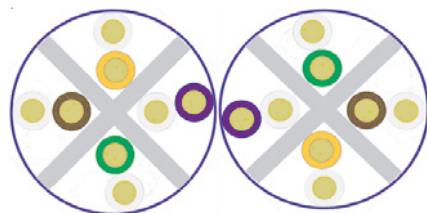
At the next meeting, ADC KRONE's CopperTen™ presented a solution to the 10 Gigabit Ethernet over 100 metres of UTP problem.

Addressing Pair Separation

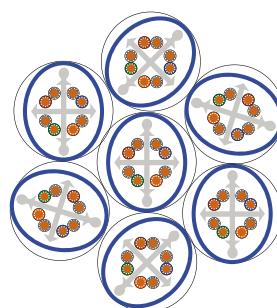
With standard Category 6 cable construction, increased pair separation within the cable is counter-productive to pair separation between cables.

The often-used star filler pushed the pairs within the cable as close to the jacket as possible leaving same pair combinations between cables susceptible to high levels of crosstalk.

In CopperTen cables' new design, the pairs are now kept apart by creating a higher degree of separation through a unique oblique star filler design. Crowned high points are designed into the filler to push the cables away from one another within the bundle. The bundled cables now have sufficient separation between same lay length (same colour) pairs to prevent alien crosstalk.



Elliptical, offset filler, which rotates along its length to create an air gap between the cables within a bundle.

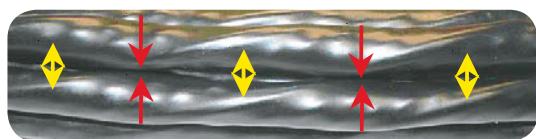


Technical Reference

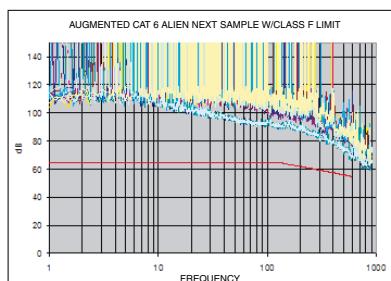
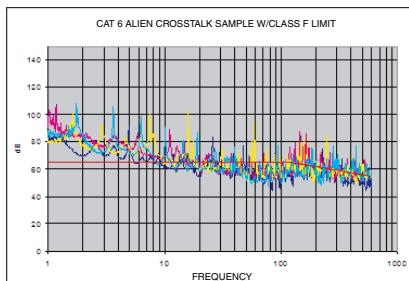
10Gigabit Ethernet CopperTen™ Cabling Solution

The unique design keeps cable pairs of the same twist rate within different cables at a greater distance from one another than in the past.

This effect is even more dramatic when viewed from the side of a cable bundle. The peaks of the elliptical filler (red arrows) are used as the contact points along the length of the run. These provide the greatest distance between the actual pairs by vaulting the sides of the ellipse (yellow arrows) where the pairs are housed.



The reduction of alien crosstalk is now greatly improved over the standard Category 6 cable and the new CopperTen cable. The improvements are approximately 20dB better on CopperTen cable than standard Category 6 cable. To put this in perspective: for every 3dB of extra noise there's a doubling effect resulting in standard Category 6 cable being more than six times noisier than CopperTen cable.



For the purpose of comparison, the Category 7 cable limit line was used to show the dramatic improvement in preventing alien crosstalk.

Technical Reference

Choosing the Right Patch Panels

Category 5e, 6, or Augmented Category 6? IDC punchdown, or modular? T568A or T568B? Shielded or unshielded?

Will I choose the right Ethernet patch panel for my application? Will this choice work with future applications? Am I getting the best overall value?

How do I ensure the integrity of my network? Can the infrastructure grow and change without service disruptions?

With all the choices you face as you design your network and select equipment, including the available Ethernet patch panels, it's easy to become confused and frustrated. Ultimately your choice of Ethernet panels should fit the applications you plan to run. ADC KRONE has written this short tutorial to guide you through these decisions, to make them as painless as possible and offer you the best solution for your network.

First, answer a few key questions. Your answers will help guide you in the decision process. Each of the most popular options available are explained, so you can draw conclusions based on your network needs.

Discovery Questions

- What applications are you or do you plan to run in this facility? Take into account not only what you are doing today, but what you probably will be doing tomorrow i.e. 10/100BASE-T? 1000BASE-T? 10GBASE-T?
- What type of LAN network are you designing? Data centre? Data backbone? Workstation?
- Is the project a new network installation or an addition to an existing network?
- Is the installation being built to expand existing capacity with current data capabilities or is it for new, faster data applications?

Answers to these questions will guide you to a particular cable type, a particular data patch panel, and the means to terminate the cable into the patch panel – whether the terminations into the patch panel involve cable terminations, pre-wired telco-type multi-pair cable ends, or standard RJ45 cable ends.

The general guidelines for network transmission capabilities segment the data network; Data Centre and data network backbone system applications require the highest level of transmission capabilities, while feeds to work areas generally require less. However, all network connectivity should be designed with only the highest network engineering standards available.

Technical Reference

Choosing the Right Patch Panels

So, which should you use? There is quite a bit of misleading information in the industry on this subject, the biggest myth being that Class E is required to run Gigabit Ethernet over copper (1000BASE-T). However, as of this writing, the ISO/IEC and EN recommends Class E or Class D as the minimum cabling for new network infrastructure installations.

When do I use Class E or Class D? Does the application standard (i.e. 1000BASE-T etc.) specify Class E as a minimal requirement? The ISO/IEC, EN, TIA and IEEE 802.3an committee have developed standards for 10 Gigabit Ethernet over twisted pair copper cabling. This standard will require a Class E_A (Category 6a) system to run the standard 100 metres length. The good news is that Class E_A, as is the case with all standards, will be backward compatible and will have no trouble running existing applications such as 10/100BASE-T and 1000BASE-T.

The TrueNet® CopperTen™ System is ADC KRONE's version of Class E_A (Category 6a). It provides not only support for the transmission protocols of today, such as 10/100/1000Mbps, but also that of the future with 10Gbps. It is worth noting that the complexity of Class E_A is transparent to the end user and installer. The products have simply been modified to overcome the shortcomings of standard Class E (Category 6) to achieve the desired signal to noise ratios, taking into account bundled crosstalk, to be compatible with the IEEE802.3an requirements.

Cable Type Summary

The chart below summarises the industry standard UTP cable types used in current networking installations for 100m channels.

Class (Category)	Bandwidth	10/100BASE-T	1000BASE-T	10 GBASE-T
Class D (Cat 5e)	100MHz	Yes	Yes	No
Class E (Cat 6)	250MHz	Yes	Yes	No
Class E _A (Cat 6a)	500MHz	Yes	Yes	Yes
Class F	600MHz	Yes	Yes	Yes
Class F _A	1000MHz	Yes	Yes	Yes

In addition to the cabling described above, you should understand the issues of cable shielding, and stranded versus solid cable.

Technical Reference

Choosing the Right Patch Panels

Shielded vs. Unshielded Twisted Pair

Unshielded twisted pair (UTP) cabling provides immunity to electromagnetic interference (EMI) with the properties of the two conductors that make up a transmission pair being twisted together. When UTP cabling encounters electrical interference, the noise crossing the twisted pairs is cancelled by the twists in the cable (called "Common Mode Rejection").

Standard Category 5e, 6 and 6a cables contain four twisted pairs of conductors. For 10BASE-T and 100BASE-TX applications, only two pairs are used, one for the transmit circuit and one for receive circuit. For 1000BASE-T and 10GBASE-T all four pairs are required.

There are actually two methods of shielding a twisted pair cable. **Screened twisted pair cable (ScTP or F/UTP)** provides an overall screen of metal foil around the four pairs of conductors, but each individual twisted pair is unshielded. **Shielded twisted pair cable (S/FTP)** has each individual pair shielded, plus an overall screen around the four individually shielded pairs. The legacy token ring IBM Type 1 cable and Category 7 are examples of shielded cable. Shielded cable requires metal encapsulated connectors that bond the cable shield to the telecommunications ground, in order to carry the interfering signals safely away for a superior EMC performance compared to standard UTP.

Another advantage of the S/FTP cable with individually shielded pairs (PIMF – Pair In Metal Foil) is the superior headroom in NEXT, ACR etc. Because of the added costs and more complex installation issues, UTP has the majority of the global market.

Stranded vs. Solid Conductor Cable

Stranded cable is flexible and often used for patch cords and work area cords. Stranded cable is used for shorter patching applications due to its flexible cable construction, but also exhibits higher attenuation due to the smaller diameter conductors, and as such should not be used for long, permanent installations. Solid conductor cable is used for the "horizontal" cable runs from the telecommunications room to the work area wall outlet. The typical gauge for Category 5e cable is 24 AWG. Category 6/6a is 23 AWG – the larger conductor diameter improves attenuation characteristics and signal-to-noise ratio versus the smaller conductor diameter of Category 5e.

Patch Panel Rear Termination Options

Popular choices for patch panel rear terminations include insulation displacement connection (IDC) termination, and connectorised cable end terminations (RJ45 and RJ-21X). Most popular data patch panels are designed using IDCs, often requiring the manual punchdown termination of each individual wire.

Technical Reference

Choosing the Right Patch Panels

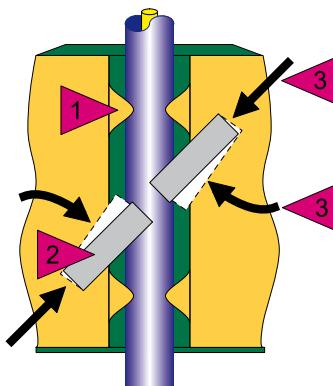
The majority of ADC KRONE's panels use LSA-PLUS® contact technology. The contacts grip the conductor at a 45° angle providing lower resistance and superior torsional force and are capable of accepting multiple and stranded conductors.

For patch panel to patch panel connections in a Data Centre or telecommunications room, pre-terminated cable assemblies and connectorised patch panels can improve installation time. Pre-connected solutions do require up-front planning – the distances between panels must be determined so the correct cable assembly length can be ordered.

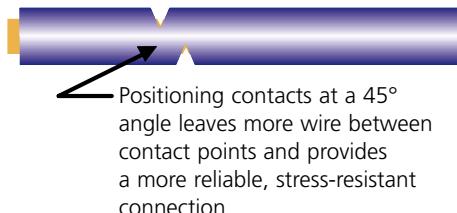
RJ45-to-RJ45 and RJ45-to-RJ-21X panels are the two most popular pre-connected systems. The RJ-21X, also known as 50-pin telco or 25-pair Amphenol connectors, is popular because six 4-pair Ethernet (1000BASE-T) or twelve 2-pair Ethernet (10/100BASE-T) circuits can be terminated at one time on a panel using the correct multi-pair cable assembly. The main requirement for 25-pair cable and connectors is the PowerSum NEXT or PSNEXT.

The LSA-PLUS® Contact Difference

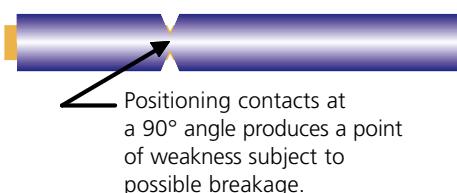
1. Insulation clamping ribs hold the wire securely and isolate the contact area from vibration and mechanical stress.
2. Contact tags at 45° angles across the axis of the wire make a solid, gas-tight connection.
3. Unique axial and torsional restoring forces maintain a durable connection.



Effects of LSA-PLUS® contact on wire:



Effects of other traditional contacts on wire:



Technical Reference

Choosing the Right Patch Panels

Cable Management

Network performance can be significantly impacted if cables are difficult to manage and easily damaged. Careful attention should be paid to the cable management scheme that surrounds patch panels and systems equipment.

Ideally, all equipment is permanently terminated in a cross-connect field so that moves, adds, and changes are done using semi-permanent patch cords. This enables circuit rerouting, upgrades for systems equipment, and routine maintenance with less downtime – and less chance for damaging active equipment ports and cables.

At a minimum, the network should include the following characteristics:

- *Access to cables.* Especially as rack density increases, it is important that cables can be easily identified and traced for moves, adds and changes. Otherwise, simple rearrangements turn into hours of technician time and downtime.
- *Cable routing.* Establishing defined cable routing paths within racks, between racks, and between equipment rooms ensures that patch cords and cables remain organised and neat. This increases both the service life of cables and the availability of services for users.
- *Physical protection and storage.* Cables dangling from overhead or laying direct on the floor invite problems. The proper method is to provide storage within each rack so that inadvertent damage and downtime is avoided.

Technical Reference

Designing the Optimised Data Centre

The Data Centre is a pivotal resource in any Enterprise. Most organisations simply shut down when employees and customers are unable to access servers, storage systems and networking devices. Businesses can lose millions of Euros in a single hour of downtime.

According to recent surveys, the utilisation of the physical and power infrastructure in many Data Centres is much less than 50 percent. This unused capacity is an avoidable capital cost, and one that contributes significantly to unreliability and lack of flexibility in the data network.

Many critical decisions must be made in order to arrive at an overall Data Centre design that maximises flexibility and minimises costs. These decisions include:

- Planning for the space you need today, and the space required to accommodate future growth
- Establishing a well-deployed cabling setup to reduce cable congestion and confusion, and to increase network up-time
- Creating an architecture within the Data Centre that allows for an effective administration system for efficient and secure operation, maintenance and repair of the cabling infrastructure

Space and Layout

Data Centre space is valuable, so designers need to ensure that there is a sufficient amount of it and that it is used wisely. This must include the following:

- Ensuring that future growth is included in the assessment of how much space the Data Centre requires
- Ensuring that the layout includes ample areas of flexible white space, i.e. empty spaces within the centre that can be easily reallocated to a particular function, such as a new equipment area
- Ensuring that there is room to expand the Data Centre if it outgrows its current confines. This is typically done by ensuring that the space that surrounds the Data Centre can be easily and inexpensively annexed

Technical Reference

Designing the Optimised Data Centre

Layout

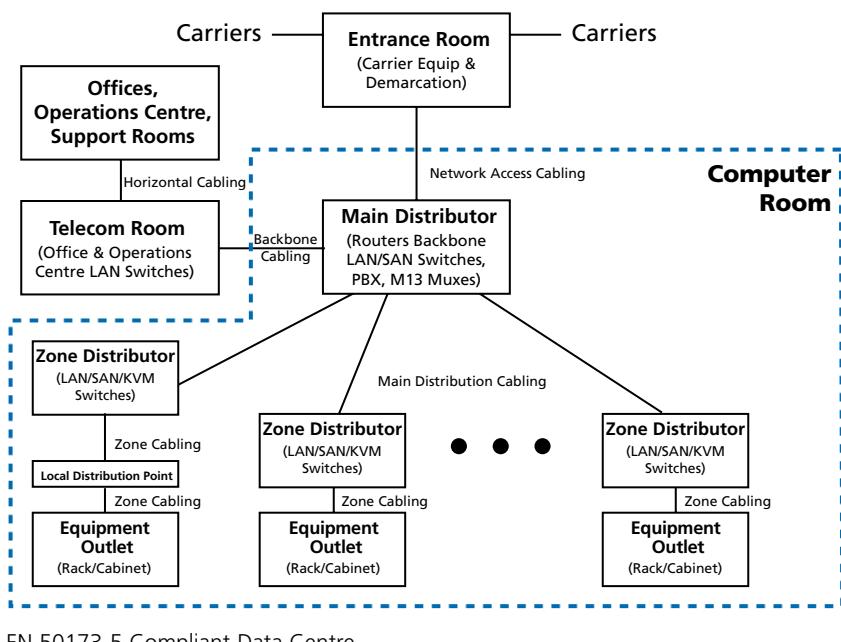
In a well-designed Data Centre, functional areas are laid out in a way that ensures that:

- Space can be reallocated easily to respond to changing requirements, particularly growth
- Cable can be easily managed so that cable runs do not exceed recommended distances and changes are not unnecessarily difficult

Layout Help: EN 50173-5

EN50173-5, for Data Centres, offers guidance on Data Centre layout. According to the standard, a Data Centre should include the following key functional elements:

- One or more entrance rooms
- Main distributor
- Zone distributor
- Local distribution point
- Equipment outlet



EN 50174-1 Operating Procedures

The next release of EN 50174 (due mid 2007) defines requirements of administration systems to enable effective operation and maintenance of Data Centres. This includes how moves, adds and changes are managed and the requirement for automated methods of recording and logging cord connections in larger Data Centres.

Entrance Room

The Entrance Room houses carrier equipment and the demarcation point. It may be inside the computer room, but the standard recommends a separate room for security reasons. If it is housed in the computer room, it should be consolidated within the main distribution area.

Technical Reference

Designing the Optimised Data Centre

Main Distributor

The Main Distributor (MD) houses the main cross-connect, the central distribution point for the Data Centre's structured cabling system. This area should be centrally located to prevent exceeding recommended cabling distances and may include a horizontal cross-connect for an adjacent equipment distribution area. The standard specifies separate racks for optical fibre, twisted pair and coaxial cable.

Zone Distributor

The Zone Distributor (ZD) is the location of the horizontal cross-connects, the distribution point for cabling to equipment distribution areas. There can be one or more ZD's, depending on the size of the Data Centre and cabling requirements. A guideline for a single ZD is a maximum of 2,000 4-pair twisted pair or coaxial terminations. Like the MD, the standard specifies separate racks for optical fibre, twisted pair and coaxial cable.

Local Distribution Point

This is the structured cabling area for floor-standing equipment that cannot accept patch panels. Examples include some mainframes and servers.

Equipment Outlet

This is the location of equipment cabinets and racks. The standard specifies that cabinets and racks be arranged in a "hot aisle/cold aisle" configuration to effectively dissipate heat from electronics.



Data Centre with flexible white space

Key Principles of Cable Management

The key to cable management in the optimised Data Centre is an understanding that the cabling system is permanent and generic. It's like the electrical system, a highly reliable and flexible utility that you can plug any new applications into. When it's designed with this vision in mind, additions and changes aren't difficult or disruptive. Highly reliable and resilient cabling systems adhere to the following principles:

- Common rack frames are used throughout the main distribution and horizontal distribution areas to simplify rack assembly and provide unified cable management
- Common and ample vertical and horizontal cable management is installed both within and between rack frames to ensure effective cable management and provide for orderly growth
- Ample overhead and under-floor cable pathways are installed – again, to ensure effective cable management and provide for orderly growth
- Twisted pair and coaxial cable are separated from optical fibre in horizontal pathways to avoid crushing optical fibre – electrical cables in cable trays and optical fibre in troughs mounted on trays
- Optical fibre is routed using a trough pathway system to protect it from damage

Racks and Cabinets

Cable management begins with racks and cabinets, which should provide ample vertical and horizontal cable management. Proper management not only keeps cabling organised, it also helps keep equipment cool by removing obstacles to air movement. These cable management features should protect the cable, ensure that bend radius limits are not exceeded and manage cable slack efficiently.



Cable racks

It's worth doing some calculations to ensure that any rack or cabinet provides adequate cable management capacity. The formula for Category 6 UTP cables is shown below. The last calculation (multiplying by 1.30) is done to ensure that the cable management system is no more than 50 percent full.

Formula	$\text{Cables} \times 6.35^2 \times 1.30 = \text{Cable Management Requirement (mm}^2\text{)}$
Example	350 cables $\times 40.32 \times 1.30$ approx = 18,350mm ² (minimum cable management of 150 x 150mm or 100 x 200mm)

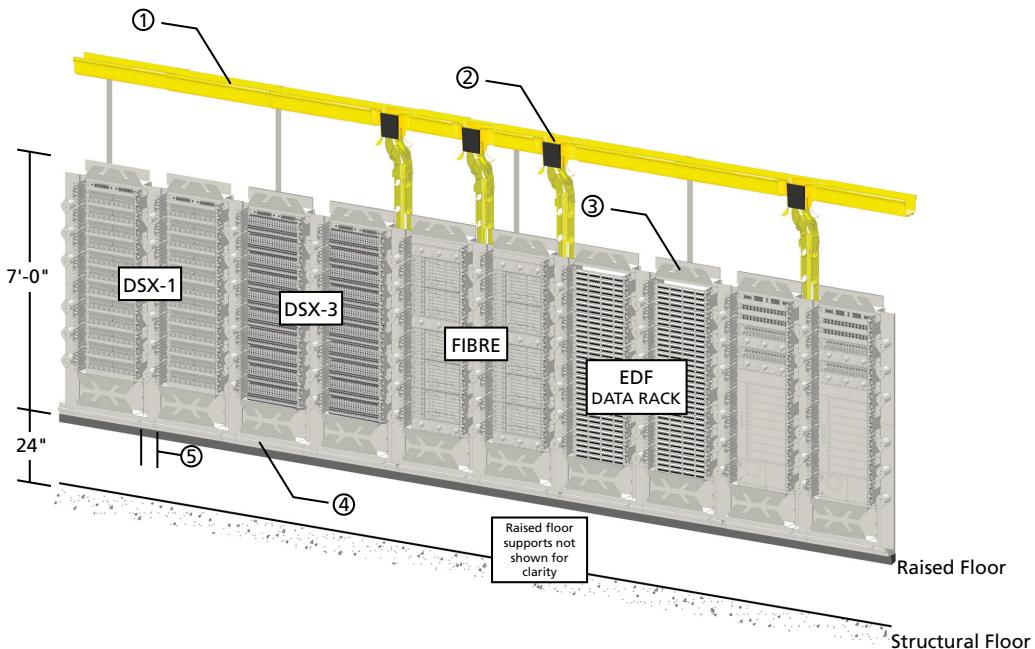
Cable Routing Systems

A key to optimised cable routing is ample overhead and under-floor cable pathways. Use the under-floor pathways for permanent cabling and the overhead for temporary cabling. Separate optical fibre from copper and coaxial cables to ensure that the weight of other cables doesn't crush the more fragile optical fibre. For more information on optical fibre cable and its proper management, see the next page.

Ideal Rack and Cable Routing System

What is an ideal rack and cable routing system? ADC KRONE's vision is illustrated below. Here are some of the key features:

- 1 The FiberGuide® assembly is mounted to the overhead cable racking and protects fibre optic cabling
- 2 Express Exits™ units are mounted where they are needed, allowing flexible expansion or turn-up of new network elements
- 3 Upper and lower cable troughs are used for patch cords and jumpers, and an overhead cable rack is used for connection to equipment located throughout the Data Centre
- 4 Racks are equipped with upper troughs and lower troughs, providing adequate space for cable routing
- 5 Vertical cable managers are shown. Cable managers are also options to best meet the specific requirements of the Data Centre installation and applications. See page 4.33 for FiberGuide specifications



Fully-populated, fully-integrated line up

Technical Reference

Key Optical Fibre Cable Management Practices

Proper cable management practices make optical fibre networks less susceptible to accidental damage, quicker to install, less expensive to own and operate over the long term and easier to expand as needs grow.

Key cable management concepts include:

- **Bend radius:** At turns in optical fibre runs, maintain a 35mm bend radius. Tighter bends may cause micro-bending of individual fibres that allow light to escape the signal path, resulting in signal attenuation. More severe bends can break fibre strands completely, resulting in signal loss.
- **Cable troughing:** Used to route optical fibre cable, troughing systems provide a protected pathway for optical fibre to traverse spans between rooms and equipment racks. Good troughing systems will keep optical fibre separate from copper cable, protect it from out-of-tolerance bends and promote neat, easily accessible runs.
- **Vertical cable protection:** Allowing optical fibre to hang unprotected from the back of equipment can be a recipe for disaster. Exposed cables are easy to snag accidentally with a hand or foot, which can result in damage to the connector or optical fibre itself. Additionally, over time the weight of hanging optical fibre can cause bends outside the acceptable limit and consequently, damage to the fibre. Proper vertical cable management in panels or equipment bays provides adequate support, cable protection and a transition from the vertical run to the back of the equipment that does not damage the optical fibre.
- **Cable pile-up:** In horizontal optical fibre runs, it is unacceptable to allow a pile of optical fibre cable to exceed 50mm. Beyond that point, the weight of the bundle will surpass the crush tolerance limit of the optical fibre at the bottom of the stack, resulting in microscopic damage and signal attenuation.
- **Cable segregation:** Keep optical fibre runs separate from legacy copper cable. Copper cable is relatively heavy and can crush optical fibre cables. Additionally, segregating coax from optical fibre ensures that technicians repairing coax do not accidentally damage the fibre cable while working on the copper.
- **Labelling:** As you would in a copper environment, develop good labelling practices. Know where optical fibres originate and terminate. Doing so will reduce maintenance time and the likelihood that a maintenance technician will make hasty decisions on optical fibre routing that can lead to a rat's nest of cable and patch cords.
- **Density:** When selecting products for an optical fibre network, remember future maintenance. The more densely connectors are packed onto a panel, the more difficult it will be for even the most dexterous technicians to maintain. Remember, inevitably cables will be moved, so the ability to trace and re-route them is critical to working efficiently.
- **Future proofing:** When planning rack configurations with a given number of terminations to accommodate a relatively low number of optical fibres for today's requirements, don't forget the future. An optical fibre path that easily supports 12 optical fibres today may be inadequate to support the 200 optical fibres needed in a few years. Planning up front for the future can save the expense of ripping out outgrown capacity down the road.

Proper cable management is extremely important to the success of an evolving high-performance communications network. The fact that a single optical fibre may transmit mission-critical signals underlies the importance of taking the steps necessary to manage optical fibre's installation and use.

Technical Reference

Key Optical Fibre Connector Types

Singlemode versus Multimode Optical Fibre

Optical fibre cable comes in two varieties: singlemode and multimode. Both have applications in structured cabling systems. Singlemode optical fibre cables transmit a single ray of light used to carry modulated signals. It is normally used in applications requiring the transmission of signals over a long distance, for example, between separate facilities on a campus.

Multimode optical fibre cable carries multiple light rays with different reflection angles within the fibre core. With a fibre core that's thicker than singlemode optical fibre, multimode optical fibre is better suited for short runs, such as those between equipment and panels. Multimode should be used to connect devices such as optical routers and servers.

Optical fibre cable offers a level of security that exceeds copper or microwave transmission because it is difficult to tap into without breaking.

Ultra Physical Contact Connectors and Angled Physical Contact Connectors

Attaching a connector to an optical fibre cable will cause some of the light traversing that optical fibre to be lost. Regardless of whether the connector was installed in the factory or the field, its presence will be responsible for some light being reflected back towards its source, the laser. Commonly known as return loss (RL), these reflections can damage the laser and degrade the signal's performance. The degree of signal degradation caused by RL depends on the laser's specifications; some lasers are more sensitive to RL than others.

The amount of optical return loss generated is related to the type of polish that is used on the connector.

The "angled physical contact" (APC) connector is best for high bandwidth applications and long haul links since it offers the lowest return loss characteristics of connectors currently available. In an APC connector, the endface of a termination is polished precisely at an 8-degree angle to the fibre cladding so that most RL is reflected into the cladding where it cannot interfere with the transmitted signal or damage the laser source. As a result, APC connectors offer a superior RL performance of -65dB.

However, it is extremely difficult to field terminate an angled physical contact connector at 8 degrees with any consistent level of success. Therefore, if an APC connector is damaged in the field it should be replaced with a factory-terminated APC connector.

The "ultra physical contact" (UPC) connector – while not offering the superior optical return loss performance of an APC connector – has RL characteristics that are acceptable for data transmissions. When using UPC connectors, make sure your laser's specifications can handle the return loss your UPC connectors will generate.

Offering typically -55dB RL, ultra physical contact connectors rely on machine polishing to deliver their low optical return loss characteristics. Ultra physical contact polishing refers to the radius of the endface polishing administered to the ferrule, the precision tube used to hold a fibre in place for alignment. The rounded finish created during the polishing process allows fibres to touch on a high point near the fibre core where light travels. Unlike APC connectors, UPC connectors can, with the proper tools and training, be repaired in the field.

Technical Reference

Key Optical Fibre Connector Types

Connectors Styles



LC (Lucent Connector)

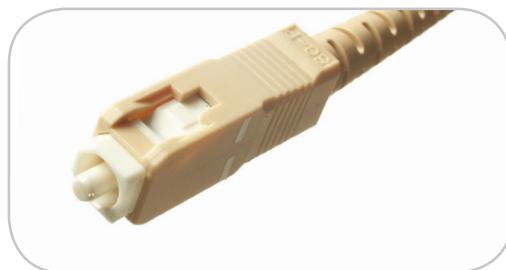
Latest generation of small form factor (SFF) connector, perfectly suited for use in Enterprise networks because of its all-round optical and mechanical performance.

The LC has been adopted by all major active manufacturers for data rates in excess of 1Gb/s.



ST® (Straight Tip)

Still commonly used in LAN applications and is best suited to multimode employment. Modern network designs now tend to move toward SFF or SC connector types.



SC (Subscriber Connector)

Along with the LC connector (see above) the SC is a popular choice of connector for data rates in excess of 10Gb/s.



MT-RJ (Mini Termination Registered Jack)

The MT-RJ was the first SFF connector type to be adopted in volume. The advantage of the MT-RJ is that it is small for higher density applications whilst still housing two fibres (Tx and Rx) in a single body.

The MT-RJ is particularly suited to multimode applications.

The above four connector types are recognised as the most commonly deployed within the LAN. Additionally, ADC KRONE also offer a range of patch cords and pigtails terminated with E2000, LX.5 and FC, for both multimode and singlemode applications. Contact ADC KRONE Customer Services for more details.

Technical Reference

Laser Optimised Fibre

Introduction

Over the past 25 years, Ethernet standards have evolved from 10 Mbps and 100 Mbps to 1Gbps and now 10Gbps. The rapid growth of Internet use and bandwidth-intensive applications combined with routine transmission of large files is driving the need for 10 Gigabit Ethernet (10GigE) in many network backbone and Data Centre connections. Implementation is happening all around us. Sales of 10GigE switch ports are increasing dramatically, and will continue to grow over the next decade.

With increased network speeds comes a rise in the significance of fibre optic cabling and connectivity. Most Data Centres today have equal amounts of fibre and copper terminations, and fibre links are vital to carrying backbone traffic to and from a large number of sources. With many grades to choose from, selecting the right fibre type for your network can be an overwhelming task. Careful consideration of price, bandwidth, and distance is critical to choosing fibre today that will support requirements in the future. Laser optimised 50 μ m multimode fibre offers many benefits for both today's and tomorrow's network and Data Centre applications, and it may be the key to maximising your investment.

An Inevitable Shift

Although 50 μ m multimode fibre was developed 10 years prior to 62.5 μ m, North America adopted fibre distributed data interface (FDDI)-grade 62.5 μ m fibre for Ethernet in the late 1980s. At that time, connectorisation and alignment were not as controlled as they are today, and the larger-core 62.5 μ m was ideal for use with larger light-emitting diode (LED) transmitters.

As backbone speeds increased to Gigabit Ethernet, LED signaling technology was no longer a viable solution. With a maximum modulation rate of 622 Mbps, LEDs could not be turned on and off quickly enough to support the higher bandwidth. This caused the industry to shift to low-cost vertical-cavity surface emitting laser (VCSEL) transmitters operating at 850nm (short wavelength). VCSELs have much faster rise and fall times than LEDs with more power and a smaller spot size.

Unfortunately, the use of VCSELs can cause differential mode delay (DMD), an effect that happens when the laser beam launched into a small area of the fibre's core splits into several modes of light traveling at different speeds. DMD ultimately causes the transmission pulse to spread out, which reduces the ability of the receiver to properly identify the signal and therefore reduces transmission capacity (see Figure 1).

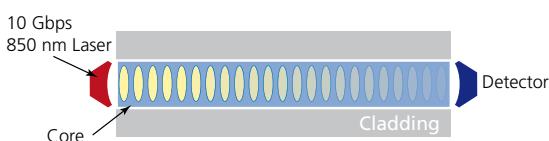


Figure 1. The Effect of DMD on Transmission

Because a larger fibre core has more modes of light excited and more modal dispersion, VCSELs do not perform as well with 62.5 μ m multimode fibre as they do with 50 μ m. So when low-cost 850nm VCSEL transmission technology was introduced for higher speeds, the industry moved away from 62.5 μ m fibre to 50 μ m. However, as the 10 Gigabit Ethernet standard developed, it became apparent that even 50 μ m multimode fibre could not take full advantage of the VCSEL point-like precision technology to run 10GigE over a 300-metre distance. As a result, fibre manufacturers began manufacturing laser optimised 50 μ m multimode fibre, which is now the most recommended fibre type for new installations and upgrades.

Truly Advanced Technology

What exactly is laser optimised fibre and what does it mean? It's important to acknowledge that the term "laser optimised" is not a marketing ploy or misnomer. Also referred to as OM3 fibre, laser optimised fibre is specifically designed, developed, and tested for effective use with 850nm VCSELs.

With standard fibre, defects and variations in the fibre core can affect the angle and speed that a light pulse can travel. This can effect the refractive index profile of the material, which is calculated as the ratio of the speed of light in a vacuum to the speed of light through the material. For example, the refractive

Technical Reference

Laser Optimised Fibre

index of a vacuum is 1.0, while air is slightly higher than 1.0, and glass ranges from 1.45-1.48. The higher the refractive index, the slower the speed of light through that media.

In laser optimised multimode fibre, manufacturers have removed impurities and carefully graded the index of refraction of the fibre core to enhance VCSEL transmission. By carefully controlling the refractive index profile, DMD is reduced and the several modes of light are able to travel at similar speeds thus increasing the modal bandwidth. This prevents the transmission pulse from spreading out, and as a result, the receiver can accurately detect the signal over longer distances, therefore maximising bandwidth (see Figure 2).

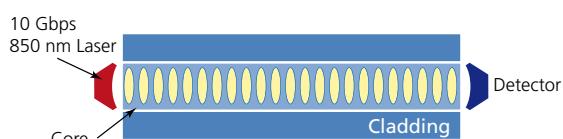


Figure 2. Laser Optimised Fibre Reduces DMD for Reliable Transmission

Laser optimised 50 μ m fibre provides a much higher modal bandwidth than standard 50 μ m or 62.5 μ m fibre. A 10GigE signal at a wavelength of 850nm is only guaranteed for 26 metres on standard 62.5 μ m fibre and for 86 metres on standard 50 μ m fibre. Standard laser optimised 50 μ m fibre can support 10GigE to 300m, which is the distance specified under TIA standards as the minimum distance for backbone cabling. Higher-grade laser optimised 50 μ m multimode fibre can even support 10GigE beyond the standard to distances up to 550 metres.

Laser optimised (OM3) 50 μ m fibre is now well accepted in the industry, and many cable and connectivity manufacturers offer a variety of 50 μ m fibre optic products. Laser optimised 50 μ m fibre has also been accepted and specified by all major standard bodies, most notably under IEEE 802.3 and ANSI/TIA/EIA 568-B. IEEE Gigabit Ethernet and 10Gigabit Ethernet standards with related fibre types and bandwidths/distances are shown in Table 1.

Channel	Gigabit Link @ 850nm Laser IEEE 802.3z 1000BASE-SX	Gigabit Link @ 1310nm Laser IEEE 802.3z 1000BASE-LX	10 Gigabit Link @ 850nm Laser IEEE 802.3ae 10GBASE-SR	10 Gigabit Link @ 1310 CWDM Laser IEEE 802.3ae 10GBASE-LX4*
62.5/125 μ m multimode fibre				
OM1	300m	550m	35m	300m
50/125 μ m multimode fibre				
OM2	750m	600m	80m	300m
OM3	970m	600m	300m	300m
OM3e	1040m	600m	550m	300m

*LX4 standard uses Wide Wave Division Multiplexing scheme

Table 1. Fibre Type and Distance per IEEE Standards

As shown in Table 1, standard 62.5 μ m and 50 μ m only support 10GigE to 300m using Wavelength Division Multiplexing (WDM) electronics, which uses four laser sources at 2.5 Gigabit each and is cost prohibitive. With 62.5 μ m fibre making up much of the installed base, the IEEE is exploring ways to run 10 Gigabit Ethernet over 300 metres of 62.5 μ m fibre with the use of a singlemode laser source. The proposed standard, however, is slow to develop and does not currently appear as cost effective as upgrading to laser optimised 50 μ m multimode fibre, the benefits of which are many.

Technical Reference

Laser Optimised Fibre

Maximising Your Investment

With the same percentage of terminations as copper, fibre optic cabling and connectivity is a significant part of the Data Centre. Fibre backbone links are also the most critical links because they carry data to and from a large number of sources, including telecommunication rooms and the outside world. As emerging technologies continue to be layered onto the network, laser optimised 50µm fibre will be key to maximising your investment in all LAN applications.

Laser optimised 50µm multimode fibre is ideal for use in any LAN infrastructure or Data Centre application, including campus backbone, riser, storage, or horizontal connections. Laser optimised 50µm fibre is available in several grades and construction types to meet a variety of applications and cost benefits. For example, ADC KRONE's TrueNet® Structured Cabling solutions include three grades of laser optimised multimode fibre – OM2, OM3, and OM3e, which support 10GigE to 80m, 300m, and 550m respectively. Each of these laser optimised grades is also available in a variety of constructions including outside plant, indoor/outdoor and armoured.

Because fibre optic cabling is backwards compatible, but not forwards, it's critical to choose fibre today that will support current and future bandwidth requirements. Laser optimised 50µm fibre is compatible with legacy LED signalling technology while enabling migration to higher speeds. In other words, you can install laser optimised fibre today for use with slower data rates, and when the need for more bandwidth arises, you only need to upgrade electronics to VCSEL-based transceivers for GigE or 10GigE. As discussion begins surrounding next-generation Ethernet like 40Gbps or 100Gbps, it's expected that laser optimised 50µm multimode fibre will also support those speeds through higher-grade fibres or WDM schemes.

When you consider the total investment to upgrade or deploy a network or Data Centre, the cost difference between fibre types is minimal. Singlemode fibre electronics, however, can cost two to three times more than multimode electronics. In addition, it is anticipated that the cost per port of 10GigE over fibre will continue to decrease. So choosing laser optimised 50µm multimode fibre just makes sense – it's the one fibre type that allows for affordable electronics while reaching all areas of your LAN, providing the most flexibility and future growth for your Data Centre and backbone infrastructure.

Conclusion

As you set out to choose a fibre type for your LAN infrastructure and Data Centre connections, it's important to recognise that within the rank of multimode fibre are higher performance grades known as laser optimised multimode fibre. Gigabit and 10 Gigabit Ethernet speeds in the backbone are a reality today, and so is this remarkable advanced fibre technology. Laser optimised 50µm multimode fibre offers the following benefits over other types of fibre:

- Offers the most bandwidth with cost-effective 850nm VCSELs
- Ensures reliable transmission through advanced technologies
- Thoroughly recognised and specified by standards bodies
- Enables easy migration to Gigabit and 10 Gigabit network speeds
- Ideal for use in any LAN or Data Centre fibre connection
- Available in several products, grades, and cable constructions

It is important to carefully examine your network and evaluate the distances and bandwidths required now and in the future. To maximise your investment, you must choose the correct type and grade of fibre to support future needs.





Fibre Cable	3.03
Blown Fibre.....	3.23
CopperTen™	3.51



Campus & Backbone Fibre Cable

Introduction.....	3.04
Fibre Optic Tight Buffered Cable.....	3.06
Fibre Optic Loose Tube Cable.....	3.10
Fibre Optic Steel Tape Armoured Cable.....	3.14
Fibre Optic Interconnect Patch Cable	3.18



ADC KRONE has over 15 years of fibre cable manufacturing experience and offers a complete family of high performance cable and related products.

- Loose tube cable (Internal/External)
- Tight buffered cable
- Intrafacility and distribution cable
- Patch cord cables

Features

- Each fibre tested to specifications after cabling
- Each fibre type available in all standard ADC KRONE cable designs
- All multimode fibre types exceed Gigabit Ethernet industry standards (IEEE 802.3z)
- OM3 fibre is laser-optimised for 300 metre 10GigE applications (IEEE 802.3ae)
- OM3e fibre for 550 metre 10GigE applications is also available

Campus & Backbone

Fibre Selection Criteria

TrueNet® Structured Cabling

Optical Specifications

	Fibre Core Size	Maximum Attenuation (dB/km)	Typical Attenuation (dB/km)	Guaranteed Minimum Bandwidth (MHz.km)
Channel		850nm/1300nm	850nm/1300nm	850nm/1300nm
OM1	62.5/125	3.5/1.5	3.2/1.0	200 ¹ /600 ¹
OM2	50/125	3.5/1.5	2.7/0.8	500 ¹ /500 ¹
OM3 ³	50/125	3.5/1.5	2.7/0.8	2000 ² /500 ¹
OM3e ³	50/125	3.5/1.5	2.7/0.8	4700 ² /500 ¹
		1310nm/1550nm	1310nm/1550nm	1310nm/1550nm
Singlemode⁴	9/125	1.0/1.0	0.4/0.3	NA

Guaranteed Ethernet Transmission Performance

	Fibre Core Size	Fast Ethernet 100Mbps	Gigabit Ethernet 1GigE	10 Gigabit Ethernet 10GigE
Channel		850nm/1300nm	850nm/1300nm	850nm/1300nm
OM1	62.5/125	300m/2km	330m/550m	35m/300m ⁵
OM2	50/125	300m/2km	550m/550m	86m/300m ⁵
OM3	50/125	300m/2km	900m/550m	300m/300m ⁵
OM3e	50/125	300m/2km	1040m/550m	550m/300m ⁵
		1310nm/1550nm	1310nm/1550nm	1310nm/1550nm
Singlemode	9/125	2km/NA	5km/NA	10km/40km

¹ Bandwidth specified by overfilled launch (OFL)

² Bandwidth specified by laser-based launch

³ DMD Compliance TIA/EIA-492AAAC

⁴ Compliant to G652D

⁵ 10 Gigabit Ethernet distance guarantees, at 1300nm, are achieved via four 3.125GigE channels multiplexed with Wide Wavelength Division Multiplexing (WWDM) technology (10GBASE-LX4)

Campus & Backbone

Fibre Optic Cable

TrueNet® Tight Buffered, Internal/External, LSZH Duct Grade Cable

Features

- Outer sheath
 - Black, Low Smoke Zero Halogen (LSZH)
 - UV stabilised for outdoor applications
 - Sheath thickness 1.1mm
- Fire retardancy
 - 2 to 12 Cores IEC 60332-1 and 60332-3c
 - 16 to 24 Cores IEC 60332-1
- Aramid yarn – for added 'crush' protection to the optical cores
- Available with OM1, OM2, OM3, OM3e, and OS1 grade glass
- Hybrid MM and SM options available
- Covered by the TrueNet System Warranty



Ordering Information

Description	Catalogue Number*
Fibre Optic Cable, Tight Buffered, OM1 (62.5/125 µm) LSZH, Black	70xxLZHIOC062
Fibre Optic Cable, Tight Buffered, OM2 (50/125 µm) LSZH, Black	00xxLZHIOC050
Fibre Optic Cable, Tight Buffered, OM3 (50/125 µm) LSZH, Black	7023 3 229-xx
Fibre Optic Cable, Tight Buffered, OM3e (50/125 µm) LSZH, Black	7023 3 243-xx
Fibre Optic Cable, Tight Buffered, OS1 (9/125 µm) LSZH, Black	7023 3 228-xx

*Replace xx with the number of cores

TrueNet® Tight Buffered, Internal/External, LSZH Duct Grade Hybrid Cable

Ordering Information

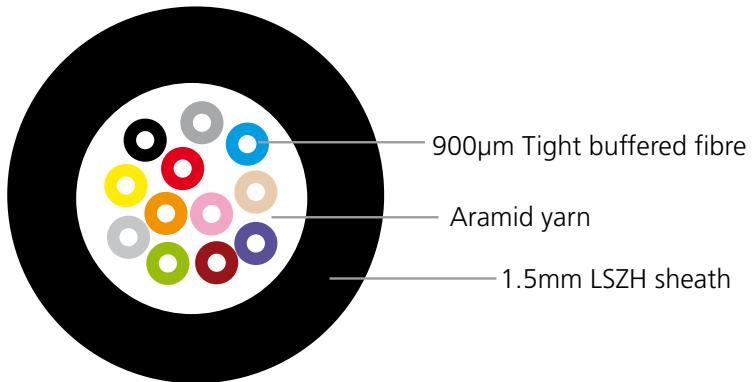
Description	Catalogue Number
Fibre Optic Cable, Tight Buffered, 8F OM2, 4F OS1, LSZH, Black	7023 4 242-12
Fibre Optic Cable, Tight Buffered, 8F OM2, 6F OS1, LSZH, Black	7023 4 243-14
Fibre Optic Cable, Tight Buffered, 6F OM2, 6F OS1, LSZH, Black	7023 4 233-12
Fibre Optic Cable, Tight Buffered, 12F OM2, 6F OS1, LSZH, Black	7023 4 263-18
Fibre Optic Cable, Tight Buffered, 8F OM3, 4F OS1, LSZH, Black	7023 4 342-12
Fibre Optic Cable, Tight Buffered, 8F OM3, 6F OS1, LSZH, Black	7023 4 343-14
Fibre Optic Cable, Tight Buffered, 6F OM3, 6F OS1, LSZH, Black	7023 4 333-12
Fibre Optic Cable, Tight Buffered, 12F OM3, 6F OS1, LSZH, Black	7023 4 363-18

Campus & Backbone

Fibre Optic Cable

TrueNet® Tight Buffered, Internal/External, LSZH Duct Grade Cable

10 / 06 • 102588BE TrueNet® Structured Cabling



Compliances

- ISO11801 OM1, OM2, OM3 or OS1 channels
- IEC 60332-1 2 to 24 cores
- IEC 60332-3c 2 to 12 cores
- DIN/VDE: I-V (ZN) H 2.24
- Cenelec: HD 624.7 S1
- DIN/VDE 819 part 107
- RoHS

Applications

- Between main cross-connects and telecommunications room
- Horizontal cable runs from cross-connect to telecommunications room
- Areas requiring flame retardance and LSZH
- Horizontal and vertical cable runs from telecommunications rooms to consolidation points
- Outdoor ducts

Optical Performance

	Fibre Core Size	Maximum Attenuation (dB/km)	Typical Attenuation (dB/km)	Guaranteed Minimum Bandwidth (MHz-km)
Channel		850nm/1300nm	850nm/1300nm	850nm/1300nm
OM1	62.5/125	3.5/1.5	3.2/1.0	200 ¹ /600 ¹
OM2	50/125	3.5/1.5	2.7/0.8	500 ¹ /800 ¹
OM3 ²	50/125	3.5/1.5	2.7/0.8	2000 ³ /500 ¹
OM3e ²	50/125	3.5/1.5	2.7/0.8	4700 ³ /500 ¹
		1310nm/1550nm	1310nm/1550nm	1310nm/1550nm
Singlemode⁴	9/125	1.0/1.0	0.4/0.3	NA

¹ Bandwidth specified by overfilled launch (OFL)

² DMD Compliance TIA/EIA-492AAAC

³ Bandwidth specified by laser-based launch

⁴ Compliant to G652D

Cable Core

Each of the fibres is held in a 900μm tight buffered jacket. These fibres are bundled with aramid yarns to form a core.

Campus & Backbone

Fibre Optic Cable

TrueNet® Tight Buffered, Internal/External, LSZH Duct Grade Cable

Transmission Performance – Guaranteed Minimum Link Lengths

	Fibre Core Size	Fast Ethernet 100Mbps	Gigabit Ethernet 1GigE	10 Gigabit Ethernet 10GigE
Channel		850nm/1300nm	850nm/1300nm	850nm/1300nm
OM1	62.5/125	300m/2km	330m/550m	35m/300m ¹
OM2	50/125	300m/2km	550m/550m	86m/300m ¹
OM3	50/125	300m/2km	900m/550m	300m/300m ¹
OM3e	50/125	300m/2km	1040m/550m	550m/300m ¹
		1310nm/1550nm	1310nm/1550nm	1310nm/1550nm
Singlemode	9/125	2km/NA	5km/NA	10km/40km

¹10 Gigabit Ethernet distance guarantees, at 1300nm, are achieved via four 3.125GigE channels multiplexed with Wide Wavelength Division Multiplexing (WWDM) technology (10GBASE-LX4)

Cable Marking

The cable legend will be marked on the sheath as follows:

ADC TRUENET – XX – Y...Y/125 – mmmm – ZZZZZ – ZZZZZZZ

Where,

XX = Fibre optic core count

Y...Y = Glass type 62.5/125

50/125

OM3

OM3e

9/125

mmmm = Metre mark

ZZZZ – ZZZZZZZ = Manufacturing batch data

Campus & Backbone

Fibre Optic Cable

TrueNet® Tight Buffered, Internal/External, LSZH Duct Grade Cable

Mechanical Specifications

	Units	2	4	6	8	12	16	24
Number of fibres		2	4	6	8	12	16	24
Nominal cable diameter	mm	4.5	5	5.5	6	6.5	7	8.5
Nominal cable weight	Kg/km	25	30	30	40	45	50	80
Minimum bend radius installed	mm	50	50	50	50	75	75	115
Minimum bend radius loaded during install	mm	100	100	100	100	100	130	230
Maximum tensile load (installed)	N	280	280	280	340	340	340	340
Maximum installation load	N	1000	1000	1000	1200	1200	1200	1200
Impact	J (Nm)	20	20	20	20	20	20	20
Compressive strength (crush)	N/100mm	3000	3000	3000	3000	3000	3000	3000
Torsion	Cycles +/- 1 turn	5	5	5	5	5	5	5
Temperature range (operating and installation)	°C	-20 to +70						
Storage	°C	-40 to +70						

TrueNet® Structured Cabling

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Campus & Backbone
Fibre Cable

Campus & Backbone

Fibre Optic Cable

TrueNet® Loose Tube, Internal/External, LSZH Duct Grade Cable

Features

- Outer sheath
 - Black, Low Smoke Zero Halogen (LSZH)
 - UV stabilised for outdoor applications
 - Gel water blocked (IEC 60794)
 - Sheath thickness 1.5mm
- Fire retardancy
 - 2 to 24 Cores IEC 60332-1
- Glass fibre armour
- Available with OM1, OM2, OM3, OM3e, and OS1 grade glass
- Hybrid multimode and singlemode options available
- Covered by the TrueNet System Warranty



Ordering Information

Description	Catalogue Number*
Fibre Optic Cable, Loose Tube, OM1 (62.5/125 µm) LSZH, Black	7023 3 220-xx
Fibre Optic Cable, Loose Tube, OM2 (50/125 µm) LSZH, Black	7023 3 222-xx
Fibre Optic Cable, Loose Tube, OM3 (50/125 µm) LSZH, Black	7023 3 227-xx
Fibre Optic Cable, Loose Tube, OM3e (50/125 µm) LSZH, Black	7023 3 246-xx
Fibre Optic Cable, Loose Tube, OS1 (9/125 µm) LSZH, Black	7023 3 224-xx

*Replace xx with the number of cores

TrueNet® Loose Tube, Internal/External, LSZH Duct Grade Hybrid Cable

Ordering Information

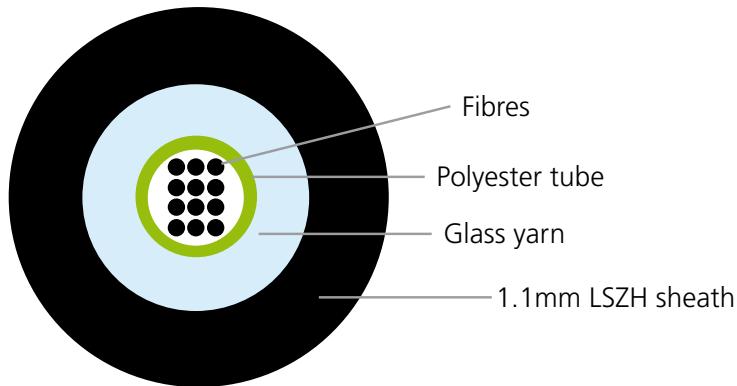
Description	Catalogue Number
Fibre Optic Cable, Loose Tube, 8F OM2, 4F OS1, LSZH, Black	7023 4 542-12
Fibre Optic Cable, Loose Tube, 8F OM2, 6F OS1, LSZH, Black	7023 4 543-14
Fibre Optic Cable, Loose Tube, 6F OM2, 6F OS1, LSZH, Black	7023 4 533-12
Fibre Optic Cable, Loose Tube, 12F OM2, 6F OS1, LSZH, Black	7023 4 563-18
Fibre Optic Cable, Loose Tube, 8F OM3, 4F OS1, LSZH, Black	7023 4 642-12
Fibre Optic Cable, Loose Tube, 8F OM3, 6F OS1, LSZH, Black	7023 4 643-14
Fibre Optic Cable, Loose Tube, 6F OM3, 6F OS1, LSZH, Black	7023 4 633-12
Fibre Optic Cable, Loose Tube, 12F OM3, 6F OS1, LSZH, Black	7023 4 663-18

Campus & Backbone

Fibre Optic Cable

TrueNet® Loose Tube, Internal/External, LSZH Duct Grade Cable

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Compliances

- ISO11801 OM1, OM2, OM3 or OS1 channels
- IEC 332-1 2 to 24 cores
- DIN/VDE: A-D (ZN = B) H n, n
- RoHS compliant

Applications

- Between main cross-connects and telecommunications room
- Campus and Backbone cable runs from cross-connect to telecommunications room
- Areas requiring flame retardance and LSZH
- Cable runs from telecommunications rooms to consolidation points
- Outdoor ducts

Optical Performance

	Fibre Core Size	Maximum Attenuation (dB/km)	Typical Attenuation (dB/km)	Guaranteed Minimum Bandwidth (MHz.km)
Channel		850nm/1300nm	850nm/1300nm	850nm/1300nm
OM1	62.5/125	3.5/1.5	3.2/1.0	200 ¹ /600 ¹
OM2	50/125	3.5/1.5	2.7/0.8	500 ¹ /500 ¹
OM3 ²	50/125	3.5/1.5	2.7/0.8	2000 ³ /500 ¹
OM3e ²	50/125	3.5/1.5	2.7/0.8	4700 ³ /500 ¹
		1310nm/1550nm	1310nm/1550nm	1310nm/1550nm
Singlemode⁴	9/125	1.0/1.0	0.4/0.3	NA

¹ Bandwidth specified by overfilled launch (OFL)

² DMD Compliance TIA/EIA-492AAC

³ Bandwidth specified by laser-based launch

⁴ Compliant to G652D

Cable Core

The cable core consists of a central, jelly filled, green polyester tube containing the fibres. The tube is water blocked and meets the requirements of IEC 60794.

For 2 to 16 fibres the tube diameter is 2.8mm, and from 18 to 24 fibres the diameter is 3.5mm.

The cable core is protected by a specially treated glass fibre yarn, which offers both robustness and tensile strength.

Campus & Backbone

Fibre Optic Cable

TrueNet® Loose Tube, Internal/External, LSZH Duct Grade Cable

Transmission Performance – Guaranteed Minimum Link Lengths

	Fibre Core Size	Fast Ethernet 100Mbps	Gigabit Ethernet 1GigE	10 Gigabit Ethernet 10GigE
Channel		850nm/1300nm	850nm/1300nm	850nm/1300nm
OM1	62.5/125	300m/2km	330m/550m	35m/300m ¹
OM2	50/125	300m/2km	550m/550m	86m/300m ¹
OM3	50/125	300m/2km	900m/550m	300m/300m ¹
OM3e	50/125	300m/2km	1040m/550m	550m/300m ¹
		1310nm/1550nm	1310nm/1550nm	1310nm/1550nm
Singlemode	9/125	2km/NA	5km/NA	10km/40km

¹10 Gigabit Ethernet distance guarantees, at 1300nm, are achieved via four 3.125GigE channels multiplexed with Wide Wavelength Division Multiplexing (WWDM) technology (10GBASE-LX4)

Cable Marking

The cable legend will be marked on the sheath as follows:

ADC TRUENET – XX – Y...Y/125 – mmmm – ZZZZZ – ZZZZZZZ

Where,

XX = Fibre optic core count
 Y...Y = Glass type 62.5/125
 50/125
 OM3
 OM3e
 9/125

mmmm = Metre mark

ZZZZ – ZZZZZZZ = Manufacturing batch data

Campus & Backbone

Fibre Optic Cable

TrueNet® Loose Tube, Internal/External, LSZH Duct Grade Cable

Mechanical Specifications

	Units	2	4	6	8	12	16	24
Number of fibres		2	4	6	8	12	16	24
Nominal cable diameter	mm	8	8	8	8	8	8	8.5
Nominal cable weight	Kg/km	65	65	65	65	65	75	75
Minimum bend radius installed	mm	60	60	60	60	60	60	60
Minimum bend radius loaded during install	mm	100	100	100	100	100	100	100
Maximum tensile load (installed)	N	700	700	700	700	700	700	700
Maximum installation load	N	1000	1000	1000	1000	1000	1000	1000
Impact	J (Nm)	20	20	20	20	20	20	20
Compressive strength (crush)	N/100mm	2000	2000	2000	2000	2000	2000	2000
Torsion	Cycles +/- 1 turn	5	5	5	5	5	5	5
Temperature range (operating and installation)	°C	-40 to +70						
Storage	°C	-40 to +70						

TrueNet® Steel Tape Armoured, Internal/External, LSZH Cable

Features

- Outer Sheath
 - Green, Low Smoke Zero Halogen (LSZH)
 - UV stabilised for outdoor applications
 - Gel water blocked
 - Sheath thickness 1.5mm
- Armouring
 - Corrugated steel
 - Thickness 0.15mm
 - Offers rodent protection
- Fire retardancy
 - 2 to 24 Cores IEC 60332-1
- Available with OM1, OM2, OM3, and OS1 grade glass
- Covered by the TrueNet System Warranty



Ordering Information

Description	Catalogue Number*
Fibre Optic Cable, Steel Tape Armoured, OM1 (62.5/125 µm) LSZH, Green	7023 3 287-xx
Fibre Optic Cable, Steel Tape Armoured, OM2 (50/125 µm) LSZH, Green	7023 3 276-xx
Fibre Optic Cable, Steel Tape Armoured, OM3 (50/125 µm) LSZH, Green	7023 3 288-xx
Fibre Optic Cable, Steel Tape Armoured, OS1 (9/125 µm) LSZH, Green	7023 3 277-xx

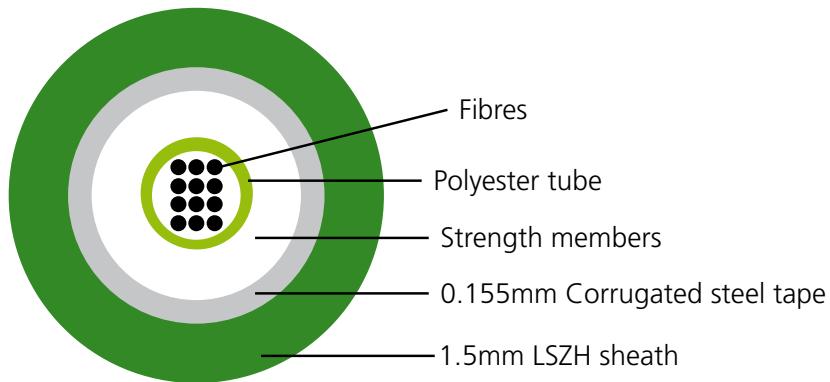
*Replace xx with the number of cores

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Fibre Optic Cable

TrueNet® Steel Tape Armoured, Internal/External, LSZH Cable

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Compliances

- ISO11801 OM1, OM2, OM3 or OS1 channels
- IEC 332-1 2 to 24 cores
- DIN/VDE: A-D (ZN) B H n
- RoHS compliant

Applications

- Between main cross-connects and telecommunications room
- Campus and Backbone cable runs from cross-connect to telecommunications room
- Areas requiring flame retardance and LSZH
- Cable runs from telecommunications rooms to consolidation points
- Outdoor ducts
- Tunnels
- Direct buried campus links

Optical Performance

	Fibre Core Size	Maximum Attenuation (dB/km)	Typical Attenuation (dB/km)	Guaranteed Minimum Bandwidth (MHz-km)
Channel		850nm/1300nm	850nm/1300nm	850nm/1300nm
OM1	62.5/125	3.5/1.5	3.2/1.0	200 ¹ /600 ¹
OM2	50/125	3.5/1.5	2.7/0.8	500 ¹ /800 ¹
OM3 ²	50/125	3.5/1.5	2.7/0.8	2000 ³ /500 ¹
		1310nm/1550nm	1310nm/1550nm	1310nm/1550nm
Singlemode⁴	9/125	1.0/1.0	0.4/0.3	NA

¹ Bandwidth specified by overfilled launch (OFL)

² DMD Compliance TIA/EIA-492AAAC

³ Bandwidth specified by laser-based launch

⁴ Compliant to G652D

Cable Core

The cable core consists of a central, jelly filled, green polyester tube containing the fibres. The tube is water blocked and the cable construction is based around a loose tube design.

For 2 to 16 fibres the tube diameter is 2.8mm, and from 18 to 24 fibres the diameter is 3.5mm.

The cable core is protected by a layer of strength members applied over the tube.

Campus & Backbone

Fibre Optic Cable

TrueNet® Steel Tape Armoured, Internal/External, LSZH Cable

Transmission Performance – Guaranteed Minimum Link Lengths

	Fibre Core Size	Fast Ethernet 100Mbps	Gigabit Ethernet 1GigE	10 Gigabit Ethernet 10GigE
Channel		850nm/1300nm	850nm/1300nm	850nm/1300nm
OM1	62.5/125	300m/2km	330m/550m	35m/300m ¹
OM2	50/125	300m/2km	550m/550m	86m/300m ¹
OM3	50/125	300m/2km	900m/550m	300m/300m ¹
		1310nm/1550nm	1310nm/1550nm	1310nm/1550nm
Singlemode	9/125	2km/NA	5km/NA	10km/40km

¹10 Gigabit Ethernet distance guarantees, at 1300nm, are achieved via four 3.125GigE channels multiplexed with Wide Wavelength Division Multiplexing (WWDM) technology (10GBASE-LX4)

Cable Marking

The cable legend will be marked on the sheath as follows:

ADC TRUENET – XX – Y...Y/125 – mmmm – ZZZZZ – ZZZZZZZ

Where,

XX = Fibre optic core count
 Y...Y = Glass type 62.5/125
 50/125
 OM3
 OM3e
 9/125

mmmm = Metre mark

ZZZZZ – ZZZZZZZ = Manufacturing batch data

Campus & Backbone

Fibre Optic Cable

TrueNet® Steel Tape Armoured, Internal/External, LSZH Cable

Mechanical Specifications

	Units	2	4	6	8	12	16	24
Number of fibres		2	4	6	8	12	16	24
Nominal cable diameter	mm	8.5	8.5	8.5	8.5	8.5	8.5	9.5
Nominal cable weight	Kg/km	75	75	75	75	75	75	85
Minimum bend radius installed	mm	55	55	55	55	55	55	55
Minimum bend radius loaded during install	mm	100	100	100	100	100	100	100
Maximum tensile load (installed)	N	500	500	500	500	500	500	500
Maximum installation load	N	1000	1000	1000	1000	1000	1000	1000
Impact	J (Nm)	10	10	10	10	10	10	10
Compressive strength (crush)	N/100mm	2000	2000	2000	2000	2000	2000	2000
Torsion	Cycles +/- 1 turn	5	5	5	5	5	5	5
Temperature range (operating and installation)	°C	-40 to +70						
Storage	°C	-40 to +70						

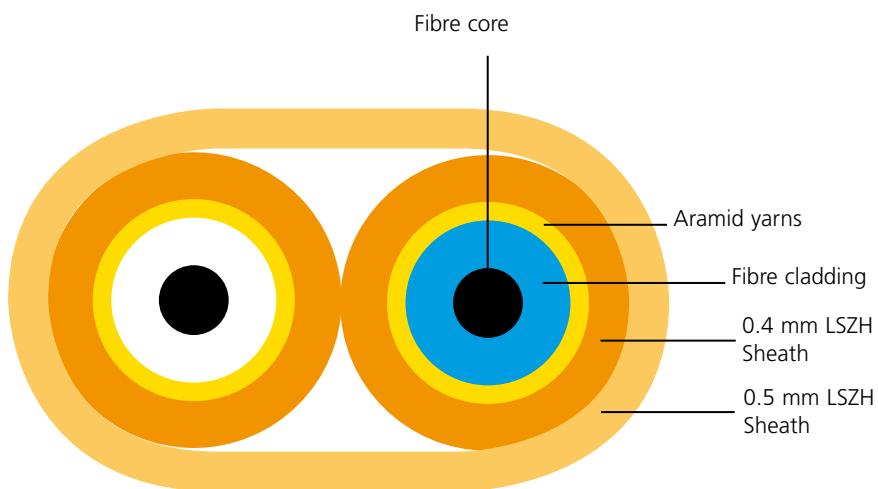
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Fibre Optic Cable

TrueNet® Fibre Optic Interconnect Patch Cable

TrueNet® Structured Cabling

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Features

- Outer sheath
 - Low Smoke Zero Halogen (LSZH)
 - UV stabilised
 - Sheath thickness 0.4mm
 - Over sheath thickness 0.5mm
- Fire retardancy
 - IEC 60332-1 and 60332-3c
 - Aramid yarn – for added 'crush' protection to the optical cores
- Available with OM1, OM2, OM3 grade glass

Ordering Information

Description	Catalogue Number*
Fibre Optic Cable, Steel Tape Armoured, (9/125 µm) LSZH, Green	7023 3 248-xx

*For xx use:

00 for OM1

01 for OM2

02 for OM3

TrueNet® Fibre Optic Interconnect Patch Cable

Compliances

- ISO11801 OM1, OM2, OM3
- IEC 60332-1 2 and IEC 60332-3c
- EN 50290-2-27:2002
- DIN/VDE 819 part 107
- RoHS compliant

Applications

- Patch cord cable
- Interconnect cable
- Point to point

Optical Performance

	Fibre Core Size	Maximum Attenuation (dB/km)	Typical Attenuation (dB/km)	Guaranteed Minimum Bandwidth (MHz.km)
Channel		850nm/1300nm	850nm/1300nm	850nm/1300nm
OM1	62.5/125	3.5/1.5	3.2/1.0	2000 ¹ /600 ¹
OM2	50/125	3.5/1.5	2.7/0.8	5000 ¹ /500 ¹
OM3 ³	50/125	3.5/1.5	2.7/0.8	2000 ² /500 ¹

¹ Bandwidth specified by overfilled launch (OFL)

² Bandwidth specified by laser-based launch

³ DMD Compliance TIA/EIA-492AAAC

Campus & Backbone

Fibre Optic Cable

TrueNet® Fibre Optic Interconnect Patch Cable

Transmission Performance – Guaranteed Minimum Link Lengths

	Fibre Core Size	Fast Ethernet 100Mbps	Gigabit Ethernet 1GigE	10 Gigabit Ethernet 10GigE
Channel		850nm/1300nm	850nm/1300nm	850nm/1300nm
OM1	62.5/125	300m/2km	330m/550m	35m/300m ¹
OM2	50/125	300m/2km	550m/550m	86m/300m ¹
OM3	50/125	300m/2km	900m/550m	300m/300m ¹
		1310nm/1550nm	1310nm/1550nm	1310nm/1550nm
Singlemode	9/125	2km/NA	5km/NA	10km/40km

¹10 Gigabit Ethernet distance guarantees, at 1300nm, are achieved via four 3.125GigE channels multiplexed with Wide Wavelength Division Multiplexing (WWDM) technology (10GBASE-LX4)

Campus & Backbone

Fibre Optic Cable

TrueNet® Fibre Optic Interconnect Patch Cable

Mechanical Specifications

	Units	
Number of fibres		2
Nominal cable diameter	mm	8.5
Nominal cable weight	Kg/km	75
Minimum bend radius installed	mm	55
Tight buffer dimension	µm	100
Maximum tensile load (installed)	N	500
Maximum installation load	N	1000
Impact	J (Nm)	10
Compressive strength (crush)	N/100mm	2000
Torsion	Cycles +/- 1 turn	5
Temperature range (operating and installation)	°C	-40 to +70
Storage	°C	-40 to +70



Campus & Backbone Blown Fibre

Introduction.....	3.25
Cables	
Singlemode	3.26
Multimode.....	3.30
Tubes	
Internal.....	3.34
Duct Grade.....	3.35
Direct Burial.....	3.36
Installation Equipment	3.37
Blowing Accessories.....	3.40



KRONE

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Campus & Backbone
Blown Fibre

Introduction

The TrueNet Blown Fibre system from ADC KRONE provides a simple solution to manage evolving network demands without the need for high initial capital expenditure or extensive network planning. Blown Fibre enables optical networks to adapt to changing business requirements.

The TrueNet solution allows optical fibres to be deployed on demand from one point of a network to another (internal or external) using compressed air to blow optical fibre into pre-installed tubes.

Building your network using the TrueNet Blown Fibre system could realise the following benefits:

Simplified Planning

- Network is built according to today's needs
- Fibre count can be increased as demand grows

Cost Effective

- Pay as you grow – install empty tubes and only pay for fibre as and when required spreading capital investment overtime
- Reduced splicing – minimises branching and splicing of traditional networks thus reducing engineering costs
- Deployment of fibres is related to actual requirement
- Elimination of unlit fibre

Increased Flexibility

- Future proof network build
- Networks are easily upgraded, branched or extended, giving maximum flexibility and uninterrupted fibre blowing right to the destination
- Simplified emergency restoration
- Latest and emerging fibre technologies can be deployed

Speed of Customer Connections

- Equivalent performance for first connections, significantly reduced timescales and costs for subsequent connections
- Existing tube routes can be interrupted at any place, allowing rapid network upgrades

The flexibility offered by a blown fibre solution can substantially minimise network bill costs. Given the uncertainty of trends in technology, demand growth, people movement and financial confidence, Blown Fibre provides a flexible, low total life cost and complete solution.

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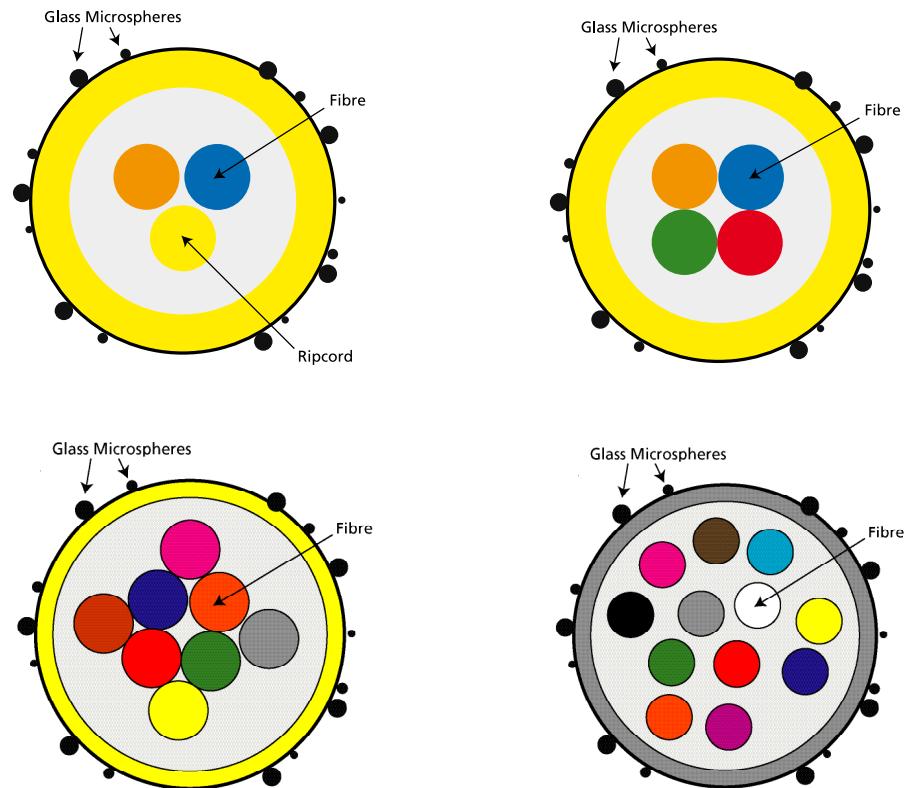
TrueNet® Blown Fibre

TrueNet® Structured Cabling

Campus & Backbone
Blown Fibre

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ADC KRONE's optical fibre units are specifically engineered for blown fibre applications. The fibres are contained in a soft inner acrylate layer which cushions the fibres and an outer harder layer which protects the fibres from damage. Glass microspheres, added to the outer layer during manufacturing, provide a low friction layer that assists in improving blowing distances, which are typically in excess of 1000m. The blown fibre units are identified by a colour coded outer layer.



Features

- Colour coded outer layer identifies the grade of fibre in the unit
- Blowing distances up to 1000m (750m for 12 core)
- Fibre units are manufactured to British Telecom specifications
- Fibres already installed can be removed and replaced with a higher fibre count, ensuring future capacity of the installation
- Once removed, the fibres can be re-used at another site, helping to keep the cost of installation down
- Fibres can be deployed from an external location to the internal presentation point, removing the need to splice at the building entry point

Campus & Backbone

TrueNet® Blown Fibre

Blown Fibre Unit OS1 Singlemode (9/125µm)

Ordering Information

Description	Catalogue Number
Blown Fibre, Singlemode, 2 Fibre Cores	
500m	7032 1 401-00
1000m	7032 1 400-01
2000m	7032 1 400-02
6000m	7032 1 400-03
Blown Fibre, Singlemode, 4 Fibre Cores	
500m	7032 1 401-01
1000m	7032 1 400-04
2000m	7032 1 400-05
6000m	7032 1 400-06
Blown Fibre, Singlemode, 8 Fibre Cores	
500m	7032 1 401-02
1000m	7032 1 400-07
2000m	7032 1 400-08
4000m	7032 1 400-09
Blown Fibre, Singlemode, 12 Fibre Cores	
500m	7032 1 401-12
1000m	7032 1 401-13
1500m	7032 1 401-03
2000m	7032 1 401-14
4000m	7032 1 401-15

Blown Fibre Unit Singlemode

Technical Data

Optical properties		Value	Units
Attenuation coefficient	1310nm	≤ 0.38	dB/km
	1550nm	≤ 0.26	dB/km
Mode field diameter	Petermann II	9.2 ± 0.4	µm
Cut-off wavelength (cabled)	λ_{cc}	≤ 1260	nm
Dispersion	1285 - 1330nm	≤ 3.5	ps/nm.km
	1550nm	≤ 18	ps/nm.km
Zero dispersion wavelength	λ_0	1300 - 1324	nm
	Slope	≤ 0.092	ps/nm ² .km

Geometrical properties

Reference surface diameter	125 ± 1	µm
Core to cladding concentricity error	≤ 0.7	µm
Reference surface non-circularity	≤ 1.5	%
Coating diameter (coloured)	245 ± 10	µm

Physical properties

Proof test level	≥ 1.0	%
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Blown Fibre Unit Singlemode

Specifications

Number of fibres	2	4	8	12	Units
Diameter	1.02± 0.06		1.4	1.38	mm
Sheath colour		Yellow		Grey	
Weight	0.8		1.5	1.66	g/m
Breakout (typical)	≤ 2	≤ 3	≤ 5	≤ 1	minutes
Blowing distance (typical)		1000		750	metres
Fibre colours	Blue, orange	Blue, orange, green, red	Blue, orange, green, red, violet, grey, yellow, brown	Blue, orange, green, red, violet, grey, yellow, black, white, pink, turquoise, brown	
Packaging	Fibre rosette into pan			Fibre on reel	

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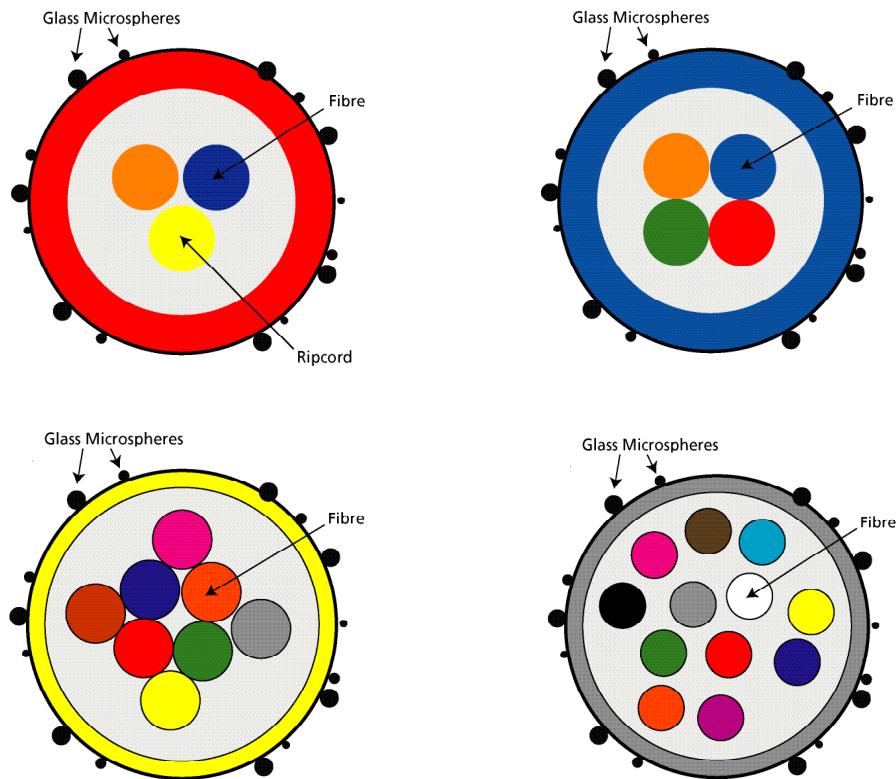
TrueNet® Blown Fibre

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Campus & Backbone
Blown Fibre

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Blown Fibre Unit Multimode



ADC KRONE's optical fibre units are specifically engineered for blown fibre applications. The fibres are contained in a soft inner acrylate layer which cushions the fibres and an outer harder layer which protects the fibres from damage. Glass microspheres, added to the outer layer during manufacturing, provide a low friction layer that assists in improving blowing distances, which are typically in excess of 1000m. The blown fibre units are identified by a colour coded outer layer.

Features

- Colour coded outer layer identifies the grade of fibre in the unit
- Blowing distances up to 1000m (750m for 12 core)
- Fibre units are manufactured to British Telecom specifications
- Fibres already installed can be removed and replaced with a higher fibre count, ensuring future capacity of the installation
- Once removed, the fibres can be re-used at another site, helping to keep the cost of installation down
- Fibres can be deployed from an external location to the internal presentation point, removing the need to splice at the building entry point

Blown Fibre Unit OM1 Multimode (62.5/125um)

Ordering Information

Description	Catalogue Number
Blown Fibre, Multimode 62.5/125um, 2 Fibre Cores	
500m	7032 1 401-06
1000m	7032 1 400-20
2000m	7032 1 400-21
4000m	7032 1 400-22
6000m	7032 1 400-23
Blown Fibre, Multimode 62.5/125um, 4 Fibre Cores	
500m	7032 1 400-25
1000m	7032 1 400-26
2000m	7032 1 400-27
4000m	7032 1 400-28
Blown Fibre, Multimode 62.5/125um, 8 Fibre Cores	
500m	7032 1 400-29
1000m	7032 1 400-30
2000m	7032 1 400-31
4000m	7032 1 400-32

Blown Fibre Unit OM2 Multimode (50/125um)

Ordering Information

Description	Catalogue Number
Blown Fibre, Multimode 50/125um, 2 Fibre Cores	
500m	7032 1 401-04
1000m	7032 1 400-10
2000m	7032 1 400-11
4000m	7032 1 400-12
Blown Fibre, Multimode 50/125um, 4 Fibre Cores	
500m	7032 1 401-05
1000m	7032 1 400-13
2000m	7032 1 400-14
4000m	7032 1 400-15
Blown Fibre, Multimode 50/125um, 8 Fibre Cores	
500m	7032 1 400-16
1000m	7032 1 400-17
2000m	7032 1 400-18
4000m	7032 1 400-19

Blown Fibre Unit OM3 Multimode (62.5/125um)

Ordering Information

Description	Catalogue Number
2F OM3 Multimode PANS	
500M	7032 1 406-01
1000M	7032 1 406-02
2000M	7032 1 406-03
4F OM3 Multimode PANS	
500M	7032 1 406-05
1000M	7032 1 406-06
2000M	7032 1 406-07
8F OM3 Multimode PANS	
500M	7032 1 406-09
1000M	7032 1 406-10
2000M	7032 1 406-11
12F OM3 Multimode PANS	
1000M	7032 1 406-14
2000M	7032 1 406-15

Blown Fibre Unit OM3e Multimode (62.5/125um)

Ordering Information

Description	Catalogue Number
2F OM3e Multimode PANS	
500M	7032 1 407-01
1000M	7032 1 407-02
2000M	7032 1 407-03
4F OM3e Multimode PANS	
500M	7032 1 407-05
1000M	7032 1 407-06
2000M	7032 1 407-07
8F OM3e Multimode PANS	
500M	7032 1 407-09
1000M	7032 1 407-10
2000M	7032 1 407-11
12F OM3e Multimode PANS	
1000M	7032 1 407-14
2000M	7032 1 407-15

Blown Fibre Unit Multimode

Optical Properties			Value	Units
Attenuation coefficient	850 nm 1300 nm	OM1 OM2, 3, 3e OM1 OM2, 3, 3e	≤ 3.5 ≤ 2.6 ≤ 1.0 ≤ 1.2	dB/km dB/km dB/km dB/km
Modal bandwidth	850 nm 1300 nm	OM1 OM2 OM3 OM3e OM1 OM2 OM3 OM3e	≥ 200 ≥ 500 ≥ 1500 ≥ 3500 ≥ 600 ≥ 800 ≥ 500 ≥ 500	MHz.km MHz.km MHz.km MHz.km MHz.km MHz.km MHz.km MHz.km
Effective modal bandwidth	850 nm	OM3 OM3e	≥ 2000 ≥ 4700	MHz.km MHz.km
10Gbe transmission distance	850 nm	OM3 OM3e	300 550	m m

Geometrical Properties

Cladding diameter	125 ± 2	µm
Core diameter	62.5 ± 3	µm
Core to cladding concentricity error	50 ± 3	µm
Cladding non-circularity	≤ 3	%
Coating diameter (coloured)	≤ 2	%
	250 ± 15	µm

Physical Properties

Proof test level	≥ 1	%
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Specifications

Number of fibres	2	4	8	12	Units
Diameter	1.02 ± 0.06		1.4		mm
Sheath colour	OM1 = red, OM2/3 = blue, OM3e = turquoise		Grey		
Weight	0.8	0.9	1.5		g/m
Breakout (typical)	≤ 2	≤ 3	≤ 5		minutes
Blowing distance (typical)	1000			750	metres
Fibre colours	Blue, orange	Blue, orange, green, red	Blue, orange, green, red, violet, grey, yellow, brown	Blue, orange, green, red, violet, grey, yellow, black, white, pink, turquoise, brown	
Packaging	Fibre rosette into pan				

Campus & Backbone

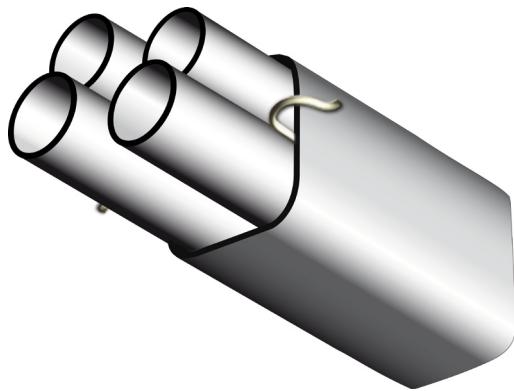
TrueNet® Blown Fibre

TrueNet® Blown Fibre Tubes (Internal)

HDPE (High Density Polyethylene) low friction tubes for blown fibre installations in-building applications.

Features

- Low friction internal coating for maximum fibre blowing distance
- 5mm O/D, one tube accommodates up to a 12 fibre unit
- LSZH indoor version with flame retardant properties
- Supplied on wooden drums



Ordering Information

Description							Catalogue Number
Assembly Type	Nominal O.D. (mm)	Rip Cord Quantity	Min. Bend Radius (mm)	Max Tensile (N)	Nominal Weight (g/m)	Metres	
1 Way	5.0	-	150	80	14	500	7032 1 400-43
2 Way	7.2 x 12.2	1	150	390	74	500	7032 1 400-44
4 Way	12.2	1	250	600	118	500	7032 1 400-45
7 Way	17.2	1	350	880	175	500	7032 1 400-46
12 Way	22.5	2	450	1500	267	500	7032 1 401-17
19 Way	27.2	2	550	2200	387	500	7032 1 400-47

Crush Performance

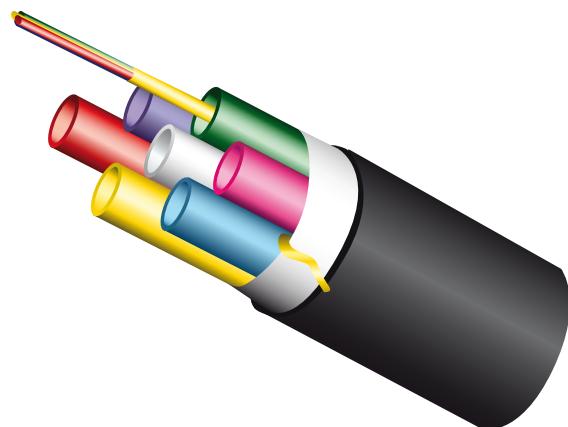
Tested in accordance with IEC 60794-1-2 method E3. After a maintained load of 400N for one minute there shall be no deformation of primary tubes greater than 0.5mm.

Campus & Backbone

TrueNet® Blown Fibre Tube Cable – External

Blown Fibre Tubes (Duct Grade/Direct Install)

The external tube cables are offered with a HDPE (High Density Polyethelene) outer sheath and a variable number of HDPE low friction tubes.



Features

- Rapid, dedicated customer connections using proven mechanical protection of HDPE
- Low friction internal coating for maximum fibre blowing distance
- Each tube accommodates one blown fibre unit (up to 12 fibres in a unit)
- External tube cables available in 1, 2, 4, 7, and 19 way assemblies
- Cable construction – Direct Install (duct grade), with aluminium moisture barrier
- 5mm tube construction

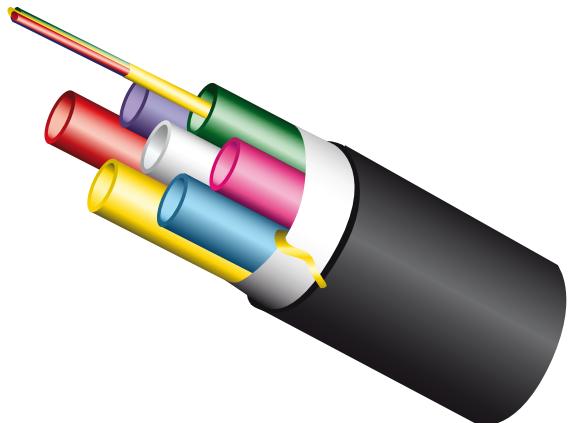
Ordering Information

Description						Catalogue Number
Assembly Type	Nominal O.D. (mm)	Min. Bend Radius	Max. Tensile Strength (N)	Nominal Weight (g/m)	Crush Rating (kN)	Metres
1 Way	9.4	12 x D	1W (490)	49	1	500
2 Way	8.8 x 13.8	12 x D	1W (780)	78	1	500
4 Way	16.5	12 x D	1W (1160)	116	1	500
7 Way	19.4	12 x D	1W (1590)	159	1	500
19 Way	28.8	12 x D	1W (3230)	323	1	1000

Blown Fibre Tubes (Direct Bury Cable)

The direct bury cable is a heavier construction than the direct install. This cable type lies flatter in trenches, has increased crush rating and has more resistance to localised bending.

The assembly of 5mm tubes is surrounded by an aluminium moisture barrier and two polyethelene sheath layers for improved physical robustness.



Features

- Rapid, dedicated customer connections using proven mechanical protection of HDPE (High Density Polyethylene)
- Low friction internal coating for maximum fibre blowing distance
- Each tube accommodates one blown fibre unit (up to 12 fibres in a unit)
- External tube cables available in 2, 4, 7 and 12 way assemblies
- Cable construction – direct bury with aluminium moisture barrier
- 5mm tube construction

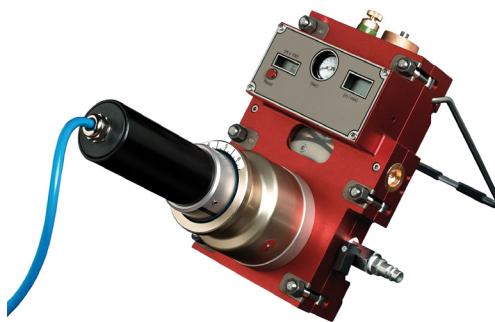
Ordering Information

Description							Catalogue Number
Assembly Type	Nominal O.D. (mm)	Min. Bend Radius	Max. Tensile Strength (N)	Nominal Weight (g/m)	Crush Rating (kN)	Metres	
2 Way	13.2 x 18.2	12 x D	1W (1420)	142	2	500	7032 1 400-49
4 Way	22.3	12 x D	1W (2040)	204	2	500	7032 1 400-50
7 Way	23.3	12 x D	1W (2780)	278	2	500	7032 1 400-51
12 Way	29.5	12 x D	1W (4790)	479	2	1000	7032 1 401-18

Blowing Head

The Blowing Head is designed for the installation of Enhanced Performance Fibre Units (EPFU) in tubes by the push-pull method. Here, the cable is pushed by a system of drive and pressure rollers and pulled by a shuttle attached at the cable head.

The installation speed, which can be controlled by the pushing system, is limited to 40m/min. The maximum installation length can be influenced by the tube path geometry.



Ordering Information

Description	Catalogue Number
Blown Fibre Blowing Head 2A (MkII)	7032 1 400-53

Technical Data

Maximum fibre size	12 fibres
Range of blown tube diameters	3-12 mm
Input drive voltage	24 VDC
Pushing force	0-25 N
Pressure exerted on fibre	20-100 N
Fibre installation rate	0-40 m/min
Rated pressure intake	2-10 bar
Rated airflow (3-6mm tubes) (8-12mm tubes)	Approx. 200 ltrs/min Approx. 500 ltrs/min
Dimensions l x w x h	240 x 150 x 190 (mm)
Weight	5.5 kg

Each blowing head is supplied with:

- A case for the apparatus, tools, adaptors and consumption items (joints, lubricant, etc.)
- One tube adaptor
- One cable adaptor
- Air connector 1/4" and stop valve
- One speed and distance counter
- One manual for operation and maintenance
- One list of spare parts
- One spring balance for calibrating the max pulling/pushing force

Blown Fibre Electric Compressor

The Blown Fibre Compressors are designed to deliver clean dry air for installing optical fibre using the blown fibre technique.

Both models (240v & 110v) feature quiet running, electrically driven rotary vane compressor units. These produce 100 ltrs/min of pulse free treated compressed air at a working pressure of 10 bar. Together with their portability this makes them the ideal source of air for internal building optical fibre installations.

An air cooled aftercooler, reduces compressed air temperature to within 2°C of ambient and a 3-stage filtration system provides technically oil-free air.

These units are available with a 24VDC outlet socket for supplying the blowing head.



Ordering Information

Description	Catalogue Number
Blown Fibre Electric Compressor (110V)	7032 1 405-00
Blown Fibre Electric Compressor (240V)	7032 1 405-01

Model	Length (mm)	Width (mm)	Height (mm)	Weight (kg)	Output (ltrs/min)	Pressure (bar)	Noise	Voltage Level
240V	900	450	700	63	100	10	60dB(A) at 1m	240v-1ph-50Hz
110V	900	450	700	63	100	10	60dB(A) at 1m	110v-1ph-50Hz

Blown Fibre Petrol Compressor

The blown fibre compressor is a portable, petrol engine driven rotary vane compressor unit. Producing 120 ltrs/min of pulse free treated compressed air at a working pressure of 10 bar, it provides the ideal source for field installation of fibre optic cable.

The unit incorporates a 12VDC air cooled aftercooler reducing the compressed air temperature to within 2°C of ambient. A 3-stage filtration system provides technically oil-free air.

The unit is available with a 24VDC-outlet socket for supplying the blowing head.



Ordering Information

Description	Catalogue Number
Blown Fibre Petrol Compressor	7032 1 400-54

Length (mm)	Width (mm)	Height (mm)	Output (ltrs/min)	Pressure (bar)	Weight (kg)
900	500	750	200	10	85

TrueNet® Blown Fibre Gas Seal Unit

The Gas Seal Unit is used in business or residential premises. This is a wall mounted unit that is positioned internally at the cable entry point. Incoming external tubing is converted to internal distribution tubing using gas sealing connectors. These connectors are used to seal both populated (with blown fibre unit) and unpopulated tubing. The gas seal unit is used for internally fed cable or with a customer lead-in for cables entering through the fabric of the wall.



Features

- Compact, low profile, wall mounted unit used in business or residential premises
- Removable cover for easy access
- Unit manufactured from fire resistant material to UL94-V0
- Kit supplied with components to mount the unit to a wall and secure external cable
- Gas sealing connectors used to provide connection of external and internal tubing. Connectors provide gas tight seal for populated (with blown fibre unit) and unpopulated tubes. Gas seal connectors are supplied separately
- Gas tight sealing caps used to terminate unused external cable tubes. Gas sealing caps are supplied separately
- Accommodates up to one 12 tube external blown fibre cable and internal blown fibre cables, in any combination up to a 12 tube cable
- For internally fed cables, a quick set resin (supplied) is used to seal the cable interstices from the ingress of water or gas
- For external cables fed via the wall fabric, an interface to an internal customer lead-in is provided
- Remote toning point is provided for connection to metallic moisture barrier of the external cable

Ordering Information

Description	Catalogue Number
Blown Fibre Gas Seal Unit	7032 1 401-19

Kit shipped with:

- Base and cover
- Wall fixings
- Toning adaptor
- Sealing resin

TrueNet® Blown Fibre Gas Seal Unit

Technical Data

Maximum capacity

External cable	One 12 tube cable
Maximum cable diameter	25mm
Dimensions (mm)	(w) 96 x (d) 60 x (h) 210
Operating temperature	-20°C to + 50°C (5 to 95% relative humidity)
Material	FR ABS
Colour	Light grey
Flammability rating	UL94-V0

Testing

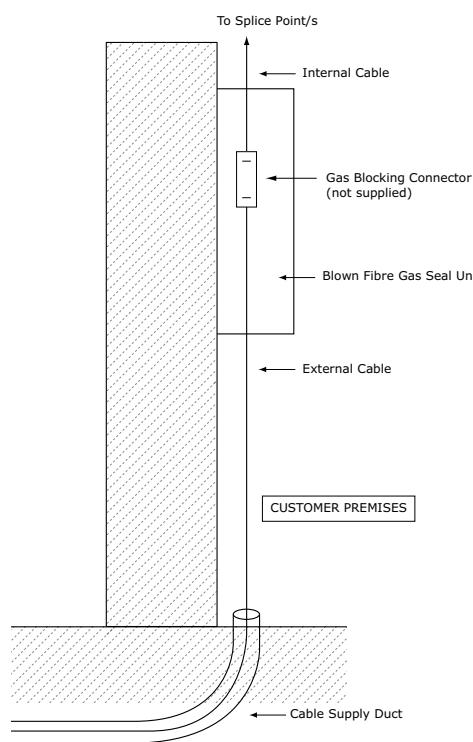
Dry heat	BS EN 60068-2-2 Test Bb
Damp heat	IEC 68-2-3
Change of temperature	IEC 68-2-14

Specifications

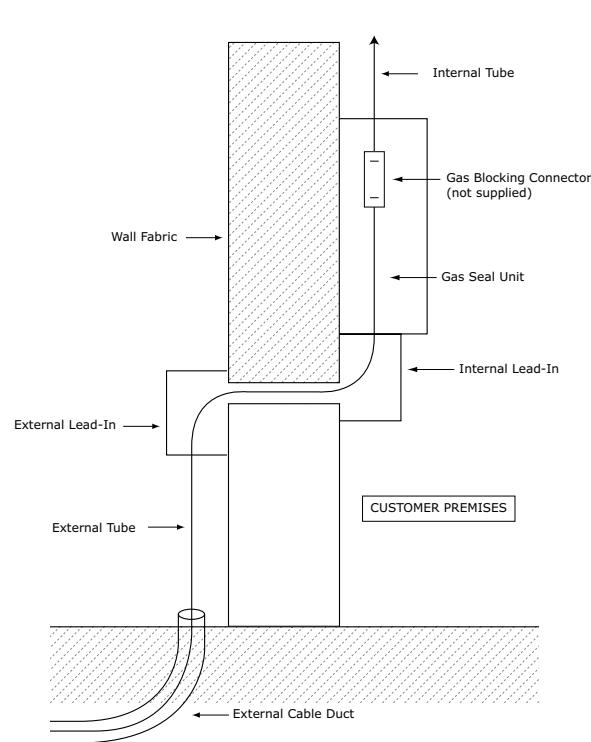
Packed Weight (kg):	0.7
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Application Information

EXTERNAL CABLE FEED



EXTERNAL CABLE FEED



10/06 • 102588BE TrueNet® Structured Cabling

The Gas Seal Unit is supplied with wall fixings, wall fixing template, toning connector and sealing resin
NOTE: Gas Seal Connectors and Tube Sealing Caps are not supplied

TrueNet® Blown Fibre Customer Lead-in Units

The Customer Lead-in Unit enables external cable to be passed through the building fabric from an outside wall and is used in business or residential premises. The Customer Lead-in comprises two separate units mounted either side of the wall and connected by a length of conduit.

This product can be used with blown fibre tubing or conventional cable.



Features

- Compact internal and external mounted units used in business or residential premises
- Removable cover for easy access
- External unit manufactured from UV resistant material. Internal unit manufactured from fire resistant material to UL94-V0
- Kit supplied with all components necessary to feed external cable elements into the customer premises from an external wall face
- Elements are protected through the cavity using a 32mm diameter conduit which interfaces with the internal and external Customer Lead-in units
- The external unit is sealed using a quick set resin. This ensures the external cable interstices are sealed against the ingress of water or gas into the customer premises
- A remote toning point is provided within the external unit for connection to the metallic moisture barrier of the external cable
- All cable elements are positively managed to 50mm minimum bend radius
- Up to 7 x 5mm tubes can be accommodated
- Internal unit interfaces with a Blown Fibre Gas Seal Unit

Ordering Information

Description	Catalogue Number
Blown Fibre Customer Lead-in Units	7032 1 400-85

The Customer Lead-in consists of one internal unit and one external unit and is supplied with wall fixings, fixing templates, conduit, sealing resin and a toning connector.

TrueNet® Blown Fibre Customer Lead-in Units

Technical Data

Maximum capacity

Maximum cable diameter (mm)	30
Required space envelope (mm)	(w) 80 x (d) 60 x (h) 140
Operating temperature	-20°C to + 50°C (5 to 95% relative humidity)
Bend radius (mm)	50
Material	FR ABS
Flammability rating	UL94-V0

Colour

External unit	Dark grey
Internal unit	Light grey

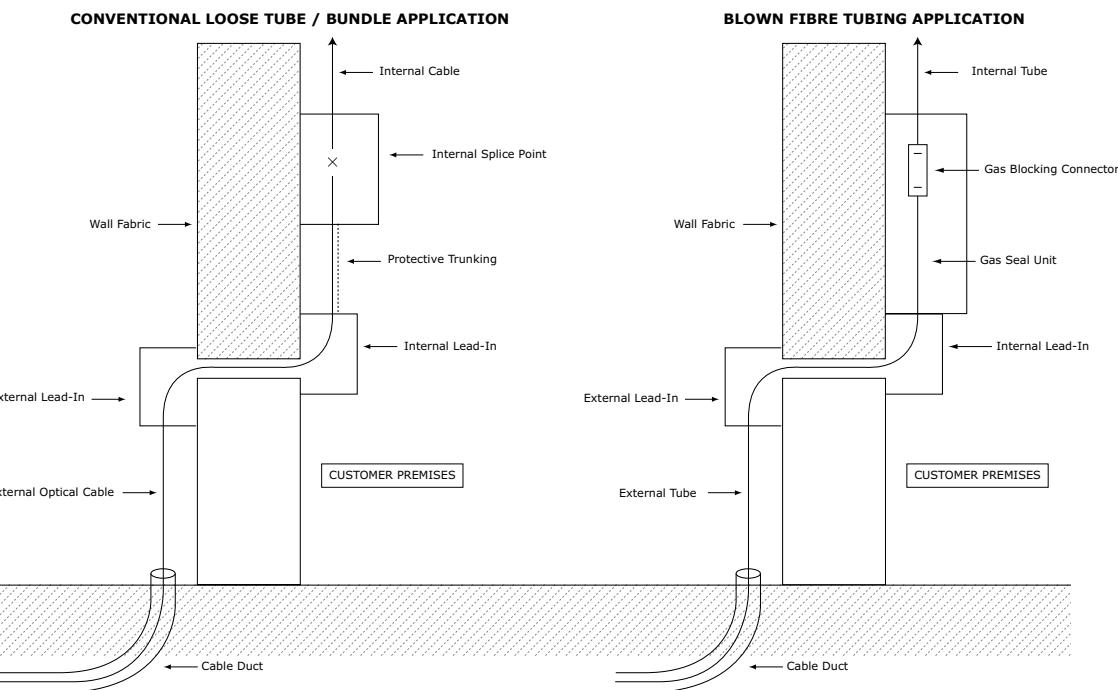
Testing

Dry heat	BS EN 60068-2-2 Test Bb
Damp heat	IEC 68-2-3
Change of temperature	IEC 68-2-14

Specifications

Packing Dimensions (mm):	(w) 500 x (d) 150 x (h) 95
Packed Weight (kg):	1.04
Net weight (kg):	0.96

Application Information



TrueNet® Internal Tube Distribution Unit

The Internal Tube Distribution Unit (Internal TDU) has been designed to allow maximum flexibility within building applications. The Internal TDU accepts a range of indoor tube assemblies up to 19 tube capacity. The units allow individual tube breakout, re-routing or gas / water sealing. The tubes are positively managed to prevent excessive tube bending.



Features

- Reconfigurable internal unit to house blown fibre tube connections
- Suitable for both internal to internal connections as well as external to internal connections (with the use of gas seal tube connectors)
- Accepts up to a 19 way duct at each entry point
- Up to 4 ports, reconfigurable dependent upon the application
- Can be used as:
 - a straight through internal connection point
 - an internal branching point
 - an external to internal gas sealing unit
- Compact and simple to install
- Tubes can be positively managed inside the unit so as not to exceed minimum bend radius
- Glands are included to ensure an effective fit of units routed through the manifolds

Ordering Information

Description	Catalogue Number
Internal Tube Distribution Unit	7032 1 401-50

Kit shipped with:

- Base and cover
- Wall fixings
- Toning adaptor
- Sealing resin

TrueNet® Internal Distribution Unit

Technical Data

Kit includes back plate, cover, bend radius managers (4), manifolds (8 halves), manifold glands (4), blanking plates (3), screws (4) and a label insert.

Complete installation instructions are provided with each unit.

All components except screws, inserts and cable glands are manufactured from ABS, UL94, V0.

Inserts manufactured from brass, lid screws and earthing point stand-off manufactured from zinc plated steel.

Cable glands are manufactured from flame retardant Multibase G75A 11 FR Z0481 and have circular cut out grooves to make fitting of tube bundles – up to 19 way rated UL94 V0 at 1.6mm.

All plastic parts to Pantone Cool 3C (equivalent to BT Grey – 3P) glands – grey.

Specifications

The unit has the following overall dimensions: 520 x 280 x 70mm

Individual external sizes as follows –

Box:

Length	320 mm
Width	180 mm
Depth	70 mm

Manifolds:

Length	105mm
Width	variable – max 64mm, min 44mm
Depth	variable – max 64mm, min 44mm

Tube Connector

Used for simple push fit connection of 5mm to 5mm blown fibre tubing. Can be used in external plant and with internal tubing of customer premises plant where gas sealing is not required.

Ordering Information

Description	Catalogue Number
Blown Fibre Tube Connector	7032 1 400-76

End Cap

Used for terminating unused blown fibre tubing within external plant.

Ordering Information

Description	Catalogue Number
Blown Fibre End Cap	7032 1 400-72

Water Blocking Connector

Used for water blocking blown fibre tubing entering underground external plant. A simple push fit device provides a water tight seal for tubes (unpopulated) and tubes with installed blown fibre units (populated). For populated tubing this device is fitted after fibre units have been installed.

Ordering Information

Description	Catalogue Number
Blown Fibre Water Blocking Connector	7032 1 400-77

Gas Seal Connector

Used for gas sealing blown fibre tubing entering a customers premises. The connector is used with customer premise plant and provides the interface between external and internal tubing. The connector simply push fits over the tube providing a gas tight seal for tubes (unpopulated) and tubes with installed fibre (populated). The device allows fibre to be 'blown through' into the customer premises. A sealing device is activated externally to seal the tube/unit.

Ordering Information

Description	Catalogue Number
Blown Fibre Gas Seal Connector	7032 1 222-00

Tube Sealing Cap

Used for sealing tubing entering a customer premises. This cap is used with customer premises plant and provides a gas tight seal to unpopulated tubes.

Ordering Information

Description	Catalogue Number
Blown Fibre Tube Sealing Cap	7032 1 223-00

Reducer Connector

Used for simple push fit connection of different sized blown fibre tubes, e.g. 8mm to 5mm. Can be used in external plant and with internal blown fibre tubing of customer premises plant where gas sealing is not required.

Ordering Information

Description	Catalogue Number
Blown Fibre Reducer Connector	7032 1 400-73

Valve and Moisture Trap

Used for controlling the flow of compressed air to the blowing head to enable safe installation of the fibre into the blown fibre tube.

Ordering Information

Description	Catalogue Number
Blown Fibre Valve and Moisture Trap	7032 1 501-00

Pan Guide

Located on top of the EPFU (Enhanced Performance Fibre Unit) pan during installation, it is used to guide the fibre from the pan to the blowing head.

Ordering Information

Description	Catalogue Number
Blown Fibre Pan Guide	7032 1 503-00

Flow Meter Kit

Contains a number of connectors that monitor and control the flow of compressed air through a tube link.

Ordering Information

Description	Catalogue Number
Blown Fibre Flow Meter Kit	7032 1 502-00

Tube Integrity and Length Tester (TILT)

The Tube Integrity and Length Tester is used to ensure that there are no air leaks in a blow length before installation (Tube and Connector). The full section length can then be measured to ensure an adequate length of fibre unit is available to blow.

Ordering Information

Description	Catalogue Number
Blown Fibre Tube Integrity and Length Tester	7032 1 227-00

Blowing Beads

A blowing bead is fixed to the end of the blown fibre unit before blowing commences. The bead helps the guidance of the blown fibre unit through the blown fibre tube particularly at bends. The beads also minimise the risk of snagging at connector locations.

Ordering Information

Description	Catalogue Number
Blown Fibre Blowing Beads	7032 1 400-58

Blowing Head Seals

For use with Blowing Head when deploying 8 or 12 Blown Fibre Units

Ordering Information

Description	Catalogue Number
Blown Fibre Blowing Head Seals	7032 1 508-00

Close Down Assembly

These assemblies, comprising a piece of tube with a connector at either end, are used to protect the area between two lengths of tube following a centre blow.

Ordering Information

Description	Catalogue Number
Blown Fibre Close Down Assembly	7032 1 228-00



Campus & Backbone CopperTen™

Category 7 4PR S/FTP Horizontal Cable.....	3.52
Augmented Category 6 4PR LSZH UTP Horizontal Cable ...	3.54

Campus & Backbone

CopperTen™ Category 7 Cable

CopperTen™ Category 7 4PR S/FTP Horizontal Cable

The ADC KRONE S/FTP 600/AWG23 4PR cable is designed for applications up to 600 MHz and its connection properties exceed Category 7 specifications ISO/IEC 11801 (2002) and EN 50173-1 (2002).

Every pair is separately shielded – pairs in metal foil (PIMF). The twisted pairs are covered with a braided screen (S/FTP) which guarantees outstanding shielding properties.



Features

- Performance exceeding Category 7 specifications up to 600 MHz
- Shielding prevents alien crosstalk
- Guaranteed channel capacity that is equal to or greater than the capacity identified by the IEEE as the minimum requirement for operation of 10 Gigabit Ethernet
- Maximises productivity levels with 10 times the data throughput of Category 6
- True future proofing for tomorrow's network applications
- Covered by the TrueNet System Warranty

Ordering Information

Description	Catalogue Number
Category 7 Horizontal Cable S/FTP, 1000m Reel, Orange	7053 3 362-55
Category 7 Horizontal Cable S/FTP Duplex, 500m Reel, Orange	7053 3 762-54

Other cable types and colours are available upon request.

CopperTen™ Category 7 4PR S/FTP Horizontal Cable

Technical data

Copper conductor	AWG 23
Fire load	0.57MJ/m
Halogen-free	Yes
Maximum tensile strength	145N
Outer diameter	7.4mm
Weight	58kg/km

Electrical Data

DC resistance at 20°C (max)	7.3 Ω/100m
DC resistance unbalanced (max)	1%
Insulation resistance	≥ 5000 MΩ x km
Input impedance Z_o at 0.064 MHz	125 Ω ± 20%
Input impedance Z_o at 1 to 100 MHz	100 Ω ± 15%
Input impedance Z_o at 100 to 600 MHz	100 Ω ± 22%
Transfer impedance	≤ 10 mΩ per metre at 10 MHz
Longitudinal conversion loss dB/Ref = 1000 m	≥ 46 dB at 64 kHz
Longitudinal conversion loss dB/Ref = 100 m	≥ 40 dB at 1 MHz
Longitudinal conversion loss dB/Ref = 100 m	≥ 20 dB at 100 MHz
Mutual capacitance	43 pF/m
Capacitance unbalance to ground	1000 pF/km
Nominal velocity of propagation	0.79%
Propagation delay at ≥ 10 MHz	4.2 ns/m
Worst case cable skew	4 ns/100m

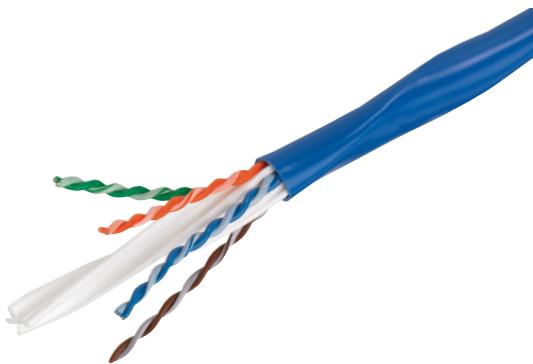
Mechanical Characteristics

Cable insulation	LSZH
Insulation material	FRNC
Operating temperature	-20 to +60°C
Minimum bend radius	
– for one bend	40 mm (over flat side)
– during installation	60 mm (over flat side)

CopperTen™ Category 6a 4PR LSZH UTP Horizontal Cable

TrueNet® CopperTen™ cable utilises patented designs and manufacturing processes that enable the product to overcome insertion loss and alien crosstalk.

The most noticeable difference when compared to Gigabit cables is the star filler which is elliptical. Not only does the filler maintain the distance between pairs within the cable, but also with the pairs in adjacent cables. The cable ellipse rotates along its length creating a larger air footprint. The distance between all pairs is now maintained removing alien crosstalk.



Features

- Supports 10Gigabit Ethernet to a full 100m up to 500MHz
- Exceeds the requirements of IEEE 802.3an (10GBASE-T) and channel requirements ISO/IEC 11801:2002 amendment channel
- Patented technology to minimise the effect of alien crosstalk and insertion loss
- Maximises productivity levels with 10 times the data throughput of Category 6
- True future proofing for tomorrow's network applications
- Covered by the TrueNet System Warranty

Ordering Information

Description	Catalogue Number
Cable Horizontal CopperTen LSZH, UTP 305m Reel, Blue	10G-A6TZ1-BLM2

Other cable types and colours are available upon request.

Campus & Backbone

Augmented Category 6 Horizontal Cable

CopperTen™ Category 6a 4PR LSZH UTP Horizontal Cable

Electrical Data

DC resistance at 20°C (max)	9.38Ω / 100m
DC resistance unbalanced (max)	2%
Mutual capacitance at 20°C (max)	5.6nF / 100m
Operating voltage (max)	300 V DC
Worse case cable skew	40 ns / 100m
Nominal velocity of propagation	67%

Construction

Conductor	23 AWG solid bare copper
Insulation	100% polyolefin
Separator	100% polyolefin
Jacket	Low Smoke Zero Halogen
Nominal outside diameter	7.62mm – 6.5mm x 8.4mm

Environmental

Transport and storage	-20° to 75°C
Installation	4° to 50°C
Operation	-20° to 75°C

Compliances

Flammability	IEC 60332-1
Smoke density	IEC 61034
Acid gas	IEC 60754-1
pH	IEC 60754-2
Fire load	828 KJ/m (.23 kWh/m)
Augmented Category 6 horizontal cable requirements	TIA/EIA 568-B.2-10 (draft)
Category 6A horizontal cable requirements	IEC 61156 series (draft) [ref. ISO/IEC 11801]
Channel testing	Latest ISO/IEC 11801:2002 Amendment/channel requirements



Data Centre & Communications Room

19" Fibre Panels	4.03
Fibre Connectors.....	4.11
Fibre Frame Solutions.....	4.19
FiberGuide®	4.33
Augmented Category 6	4.51
Category 6	4.57
Category 5e.....	4.65
Voice Solutions	4.77
Physical Layer Management.....	4.79
Power-Over-Ethernet.....	4.91
Accessories	4.97





Data Centre & Communications Room 19" Fibre Panel Solutions

Fibre Distribution Unit (FDU)	4.04
Fibre Optic 24 Port Metal Split Patch Panel	4.06
Fibre Optic 1U Plastic Patch Panel	4.08

Data Centre & Communications Room

Fibre Patch Panels

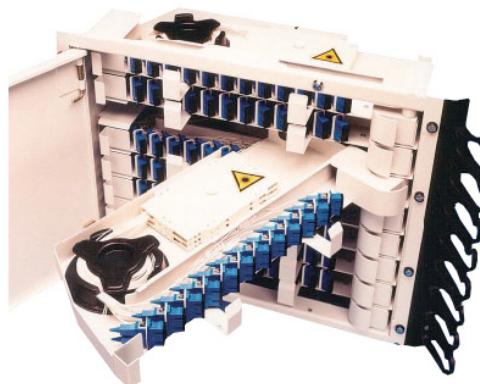
TrueNet® Fibre Distribution Unit

The ADC KRONE TrueNet Fibre Distribution Unit (FDU) is suited for use as an Enterprise network entry point to protect the most sensitive networks.

The trays pivot out from the left hand side of the frame, providing easy access to a splicing area, whilst controlling minimal movement of the patch cords and the incoming cable.

Each FDU is supplied with a lockable external door to prevent accidental intrusion into the patching bay area. Jumper rings are fixed to the side of the FDU to offer primary support to patchcords entering the panel.

Each adaptor position is angled for enhanced bend radius management of pig tails and patch cords, and added laser eye safety.



Features

- Modular design
- Available in 1 or 6 tray units
- Easily accessible terminations
- SC connector types
- Angled adapter plates provide enhanced bend radius management for both pigtails and patchcords
- Quicker to fit than individual 1U panels
- Spool provided for excess pigtail length storage
- Lockable door for restricted access
- Vertical jumper rings

Ordering Information

Description	Catalogue Number
TrueNet FDU, 1 Tray, With SC Adaptors and 24 OS1 Pigtailed	7032 1 134-00
TrueNet FDU, 1 Tray, With SC Adaptors Only	7032 1 134-02
TrueNet FDU, 1 Tray, With SC Adaptors and 144 OM1 Pigtailed	7032 1 134-07
TrueNet FDU, 6 Tray, With SC Adaptors and 144 OS1 Pigtailed	7032 1 135-00

Data Centre & Communications Room

Fibre Patch Panels

TrueNet® Fibre Distribution Unit

Product Details

	1 tray	6 tray
Dimensions (mm) H/W/D	1U/482.6/240	7U/482.6/210
Typical weight (Metalwork only)	2.05 kg	12.2 kg
Materials	Zintec	Zintec
Paint finish/ texture	Light grey epoxy polyester powder coat – NCS 1502Y. Fine texture	

Connector Specifications

	SC Duplex
Insertion loss	< 0.5dB typ. 0.2 dB
Return Loss	Multimode PC polishing > 40 dB Singlemode UPC polishing > 50 dB
Repeated matings	1000 min.
Tensile strength	100 N (cable)

Data Centre & Communications Room

Fibre Patch Panels

TrueNet® 24 Port Metal Split Patch Panel

The TrueNet 24 Port Metal Split Patch Panel from ADC KRONE is a modular patch panel offering the versatility to select differing modes of connectivity in the same 1U housing. The unique design brings the benefit of minimal down time and disturbance to neighbouring Optical LAN's through the split panel approach.

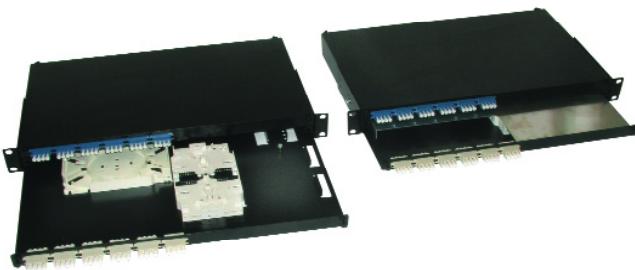
For many years it has been recognised that on-site splicing can cause faults on adjacent fibres. To minimise this, fibre management protocol demands less fibre splices per location so reducing the opportunity for upgrade derived installation faults.

The 7033 1 015-XX family of Split Patch Panels has been designed with this in mind whilst still delivering a high level of port density per single 'U' spacing.

The versatile connectivity selection (LC and MT-RJ), allows interfacing to both legacy 1GigE and new 10GigE networks using small form factor connectors. A unique Split Tray design reduces disturbance to neighbouring optical channels by reducing the number of parallel splice points in a 1U bay. Internal cable management protects splices and pigtailed from lateral damage whilst maintaining the bend radius for optimal data packet throughput.

An 'Anti Tamper' lid is screwed to each tray preventing accidental intrusion into the splice bay area by operators or technicians.

Forms the basic design for ADC KRONE's Intelligent Patching solution, so offers a later upgrade path with minimal network re-design.



Features

- Per port labelling
- Reinforced stainless steel casing
- Fibre connectivity:
 - 24 x MT-RJ, or
 - 24 x LC – Multimode or single mode
- Anti-tamper lid screwed to each tray
- 2 discrete trays (2x12 outlets)
- Internal cable management
- Covered by the TrueNet System Warranty

Applications:

- Multi-dwelling units (MDU's)
- Campus LAN
- Optical cross connects

Ordering Information

Description	Catalogue Number
Split Patch Panel, 2 Trays MT-RJ	7033 1 015-00
Split Patch Panel, 2 Trays LC Multimode	7033 1 015-02
Split Patch Panel, 2 Trays LC Singlemode	7033 1 015-01

Data Centre & Communications Room

Fibre Patch Panels

24 Port Metal Split Patch Panel

Specifications

Width:	19"
Depth:	270mm
Height:	1U
Weight:	3.6Kg
Materials:	Zintec – powder coated black RAL 9011
Number of trays:	2 discrete (1U height)
Capacity:	48 fibre max (LC/MT-RJ)
Connector system:	LC/MT-RJ
Cable management:	Internal

Connector Specification

Connector	Characteristic	Singlemode	Multimode	Operating Temperature	Storage Temperature
LC	Sleeve Material	Ceramic	Phosphor Bronze	-40 ~ +75°C	-55 ~ +85°C
	Typical Insertion Loss, dB	0.2	0.3		
MT-RJ	Typical Insertion Loss, dB	0.2	0.2		

Environmental Standards

- EN 6008-2-2	- IEC 68-2-27	- IEC 68-2-6
- IEC 68-2-14	- IEC 68-2-3	- ISO/IEC 11801:2002

Data Centre & Communications Room

Fibre Patch Panels

TrueNet® Fibre Optic 1U Plastic Patch Panel

The TrueNet® Fibre Optic 1U Plastic Patch Panel from ADC KRONE is an integral part of the TrueNet system, providing a versatile and integrated approach to the management of optical patching. Constructed from a PC-ABS compound the panel is both lightweight and robust enough to be used as a substitute for metal solutions.



As modern businesses place more emphasis on their IT infrastructure to deliver mission critical objectives, the demand for bandwidth in the campus and the backbone has intensified. Already successfully deployed in LANs across the globe the Plastic Patch Panel supports many different types of connectivity, including the industry standard LC and SC for 10 Gigabit Ethernet (10GigE) transmission.

Available loaded with Multimode or Singlemode pigtails, splice accessories and adaptors, the solution provides an optical channel that is guaranteed to be compliant with the ISO11801 International Standard for Structured Cabling.

Features

- Available as a complete build with pigtails and splicing accessories:
 - Ensures component compliant product is used in the channel
 - One part number for complete product, simplifying the ordering process
- Available with multiple adaptor types for interfacing between old and new infrastructure builds: MT-RJ, SC, ST, and LC
- 1U high sliding panel for ease of access and standard deployment into 19" racks
- A PC-ABS construction means that the tray is both lightweight whilst retaining mechanical strength
- Internal cable management protects splices and pigtails from lateral damage whilst maintaining the bend radius for optimal data packet throughput
- UL94 V-0 flammability rating, allows usage within buildings
- Easily recessed to increase clearance between the adaptors and cabinet doors preventing patch cord damage
- 4 rear access points for standard structured cabling or blown fibre tubes
- Black or grey construction can be used to visually identify an optical network in a fully loaded rack
- Covered by the TrueNet System Warranty

Data Centre & Communications Room

Fibre Patch Panels

TrueNet® Fibre Optic 1U Plastic Patch Panel

Ordering Information

Description	Catalogue No.*
Plastic Patch Panel – loaded with adaptors only	
Fibre Patch Panel – 04/08/12/24 Port MT-RJ GY	7033 1 076-xx
Fibre Patch Panel – 04/08/12/24 Port SC Duplex GY	7033 1 080-xx
Fibre Patch Panel – 04/08/12/24 Port ST GY	7033 1 082-xx
Fibre Patch Panel – 08/24 Port LC/UPC GY	7033 1 084-xx
Fibre Patch Panel – 04/08/12/24 Port SM SC Duplex GY	7033 1 101-xx
Fibre Patch Panel – 04/08/12/24 Port LC/mm GY	7033 1 103-xx
Fibre Patch Panel – 04/08/12/24 Port – MT-RJ BK	7033 1 176-xx
Fibre Patch Panel – 04/08/12/24 Port – SC Duplex BK	7033 1 180-xx
Fibre Patch Panel – 04/08/12/24 Port – ST BK	7033 1 182-xx
Plastic Patch Panel – equipped with pigtailed, adaptors and crimp splice holders	
Fibre Patch Panel – 12/24 Port SC OM1 GY CRMP	7033 1 274-xx
Fibre Patch Panel – 24/48 Port LC OM1 GY CRMP	7033 1 275-xx
Fibre Patch Panel – 12/24 Port SC OM1 BK CRMP	7033 1 276-xx
Fibre Patch Panel – 24/48 Port LC OM1 BK CRMP	7033 1 277-xx
Fibre Patch Panel – 12/24 Port SC OS1 GY CRMP	7033 1 278-xx
Fibre Patch Panel – 24/48 Port LC OS1 GY CRMP	7033 1 279-xx
Fibre Patch Panel – 12/24 Port SC OM3 GY CRMP	7033 1 270-xx
Fibre Patch Panel – 24/48 Port LC OM3 GY CRMP	7033 1 271-xx
Fibre Patch Panel – 12/24 Port SC OM3 BK CRMP	7033 1 272-xx
Fibre Patch Panel – 24/48 Port LC OM3 BK CRMP	7033 1 273-xx
Fibre Patch Panel – 12/24 Port SC OM2 GY CRMP	7033 1 254-xx
Fibre Patch Panel – 24/48 Port LC OM2 GY CRMP	7033 1 256-xx
Fibre Patch Panel – 12/24 Port SC OM2 BK CRMP	7033 1 255-xx
Fibre Patch Panel – 24/48 Port LC OM2 BK CRMP	7033 1 257-xx
Plastic Patch Panel – equipped with pigtailed, adaptors, and heat shrink splice holders	
Fibre Patch Panel – 12/24 Port SC OM3 GY H/S	7033 1 263-xx
Fibre Patch Panel – 12/24 Port SC OM3 BK H/S	7033 1 262-xx
Fibre Patch Panel – 24/48 Port LC OM3 GY H/S	7033 1 265-xx
Fibre Patch Panel – 24/48 Port LC OM3 BK H/S	7033 1 264-xx
Fibre Patch Panel – 12/24 Port SC OM1 GY H/S	7033 1 267-xx
Fibre Patch Panel – 12/24 Port SC OM1 BK H/S	7033 1 266-xx
Fibre Patch Panel – 24/48 Port LC OM1 GY H/S	7033 1 269-xx
Fibre Patch Panel – 24/48 Port LC OM1 BK H/S	7033 1 268-xx
Fibre Patch Panel – 12/24 Port SC OS1 GY H/S	7033 1 259-xx
Fibre Patch Panel – 12/24 Port SC OS1 BK H/S	7033 1 258-xx
Fibre Patch Panel – 24/48 Port LC OS1 GY H/S	7033 1 261-xx
Fibre Patch Panel – 24/48 Port LC OS1 BK H/S	7033 1 260-xx
Fibre Patch Panel – 12/24 Port SC OM2 GY H/S	7033 1 250-xx
Fibre Patch Panel – 12/24 Port SC OM2 BK H/S	7033 1 251-xx
Fibre Patch Panel – 24/48 Port LC OM2 GY H/S	7033 1 252-xx
Fibre Patch Panel – 24/48 Port LC OM2 BK H/S	7033 1 253-xx

*please substitute xx with the number of ports required

10 / 06 • 102588BE TrueNet® Structured Cabling

Data Centre & Communications Room

Fibre Patch Panels

TrueNet® Fibre Optic 1U Plastic Patch Panel

Applications

- Campus links
- Backbones
- Secondary communication room through coupling
- Primary communication room cross patching
- Data Centres
- Blown fibre networks

Specifications

Optical performance*	OM1, OM2, OM3, and OS1 in accordance with ISO11801.
Optical core sizes*	OM1 62.5um, OM2 50µm, OM3 50µm, OS1 9µm.
Pigtail colours*	OM1 grey/blue** OM2 orange OM3 violet OS1 yellow
Adaptor sleeve construction	Multimode phosphur bronze, casing beige Singlemode ceramic, casing blue
Pigtail sheathing	PVC
Pigtail length	1m
Fire rating	UL94 V-0
Material composition***	PC-ABS
Splice housing	40mm heat shrink or mechanical splice joint
Environmental standards:	EN6008-2-2 IEC 68-2-14 IEC 68-2-6 IEC 68-2-27 IEC 68-2-3
Dimensions:	19" (width) x 1U (height) x 270mm (depth)
Colours:	Black/grey
Weight***	1.14Kg

*Refers to panels ordered as 'pre-loaded' only

**Semi tight buffered pigtauls only

***Tray construction only, without pigtauls, adaptors and splicing accessories



Data Centre & Communications Room Fibre Connectors

SC Connector	4.12
MT-RJ Connector	4.14
LC Connector	4.16

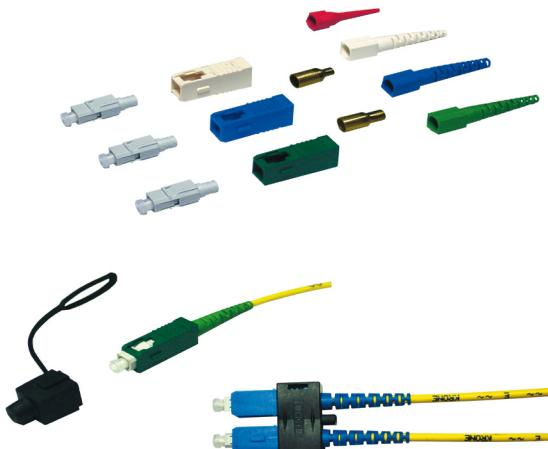
Data Centre & Communications Room

Fibre Connectors

SC Connector Family – for Singlemode and Multimode Fibres

The SC connector is a versatile, proven termination component for both simplex and duplex systems.

- Easy assembly, with few parts
- The dust protection cover attaches to the cable by a loop, assuring it will not get lost
- ADC KRONE's SC duplex clip enables two simplex connectors to be combined to form a duplex connector, even after the simplex connectors have been assembled (the clip is ordered separately)
- Both simplex and duplex patch cords only require one type of connector kit, reducing inventory and storage costs



Ordering Information

Description	Catalogue Number
SC Connector must be ordered in quantities divisible by 100 Singlemode, PC/UPC, blue housing Singlemode, APC8°/APC9°, green housing Multimode, beige housing	6824 1 002-00 6824 1 001-00 6824 1 003-00
SC Crimp Set must be ordered in quantities divisible by 100	
3.0mm Cable Blue boot Green boot Beige boot Red boot Black boot	6824 1 100-00 6824 1 100-01 6824 1 100-02 6824 1 100-03 6824 1 100-10
2.4mm Cable Blue boot Green boot Beige boot Red boot Black boot	6824 1 101-00 6824 1 101-01 6824 1 101-02 6824 1 101-03 6824 1 101-10
2.0mm Cable Blue boot Green boot Beige boot Red boot Black boot	6824 1 102-00 6824 1 102-01 6824 1 102-02 6824 1 102-03 6824 1 102-10
0.9mm Cable Blue boot Green boot Beige boot Red boot Black boot	6824 1 103-00 6824 1 103-01 6824 1 103-02 6824 1 103-03 6824 1 103-10
Accessories SC Duplex Clip SC/LC Tuning Tool Dust Protection Cover must be ordered in quantities divisible by 100	6824 2 220-00 7048 1 050-00 6824 3 900-00

Data Centre & Communications Room

Fibre Connectors

SC Connector Family – for Singlemode and Multimode Fibres

Specifications

	Singlemode UPC	Singlemode APC	Multimode
Standard: Mating Face Connector interface according to IEC 61754-4	•	•	•
Optical, Mechanical and Environmental Characteristics IEC 61753-2-1 IEC 61753-1-1 CECC 86265-802/806 CECC 86265-804/805 CECC 86265-801/803 TS 0161/96 (Deutsche Telekom AG) Telcordia GR-326-CORE	•	• • ¹ • ² • ³	•
Attenuation Against reference connector, IEC 61300-3-4 Random mating, IEC 61300-3-34	Typical ≤ 0.12 dB Maximum ≤ 0.30 dB Typical ≤ 0.15 dB Maximum ≤ 0.35 dB	Typical ≤ 0.25 dB Maximum ≤ 0.5 dB (95%)	
Ferrules Hole diameter Shape of ferrule face Mechanical and environmental stability Mating durability Cable retention Operating temperature range	126 µm predomed	125 µm conical, flat	126 µm predomed

¹ SC 8°APC untuned/tuned; ² SC 9°APC untuned/tuned; ³ SC 9°APC tuned

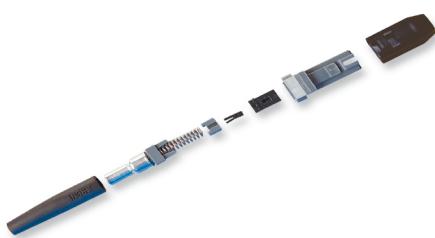
Note: Field termination of connectors is not covered under the TrueNet Warranty programme.

Data Centre & Communications Room

Fibre Connectors

TrueNet® MT-RJ Connector Kits – for Singlemode and Multimode Fibres

The MT-RJ Fibre Optic connector was one of the first Small Form Factor (SFF) connectors released to the market place as an enabler of FTTD applications. It offers duplex presentation of fibre cores at the end face for transmit and receive channels, in an RJ45 footprint, removing the need for duplexing clips in traditional patch cords. Perfectly suited for multimode transmission data rates upto 1Gb/s, the MT-RJ can also be deployed in singlemode applications.



The MT-RJ connector kit is suited for the manufacture of fibre optic patch cords and pigtailed in a factory environment.

Features

- Complete kit for connectorisation of buffered fibre (0.65mm) and fibre cable (1.6mm and 3.0mm)
- Kit volumes for OEM manufacturing
- Suitable for singlemode or multimode products.

Ordering Information

Description	Catalogue Number
Connector Kits (must be ordered in quantities divisible by 1000)	
MT-RJ multimode connector kit, female (without guide pins)	7023 1 043-00
MT-RJ singlemode connector kit, female (without guide pins)	7023 1 047-00
Guide Pins (must be ordered in quantities divisible by 1000)	
Guide pins for MT-RJ multimode connectors, male	7023 1 048-00
Guide pins for MT-RJ singlemode connectors, male	7023 1 049-00
Additional Accessories	
MT-RJ crimp tool	7057 1 400-01
MT-RJ boots for buffered fibres (0.65mm) (must be ordered in quantities divisible by 1000)	7023 3 043-00

Each connector kit includes:

- 1 connector housing (polycarbonate, RAL 7031, grey)
- 1 ferrule (polymer)
- 1 spring
- 1 spring holder
- 1 crimp sleeve (tin-plated copper: only for use with cables)
- 1 boot (elastomer) black, for cable from 1.6mm to 3.0mm
- 1 dust cover

NOTE: To assemble male connector types, guide pins are required and must be ordered separately. To assemble the connector kit to buffered fibre, we recommend the use of a boot for buffered fibres (ordered separately).

Data Centre & Communications Room

Fibre Connectors

MT-RJ Connector Kits – for Singlemode and Multimode Fibres

Specifications

	MT-RJ Singlemode	MT-RJ Multimode
Standard: Mating face IEC 61754-18	•	•
Standard optical, mechanical and environmental characteristics EN 50377-9-1 IEN 50377-9-2 TIA/EIA 568-A and 568-B.3 EN 50173 ISO/IEC 11801 IEEE 802.5	• • • • •	• • • •
Insertion loss Random mating (IEC 61300-3-34):	• maximum: 0.70dB • typical: 0.35dB	• maximum: 0.50dB (95%) • typical: 0.35 dB
Mechanical and environmental stability Mating durability: Cable retention: Operating temperature range:	minimum: 500 cycles 50 N -40° to +75°C (dependent upon cable type)	

Note: Field termination of connectors is not covered under the TrueNet Warranty programme.

Data Centre & Communications Room

Fibre Connectors

LC Connector Family

The LC connector represents a new generation in fibre optic termination technology. A small form-factor (SFF) connector, the LC connector features a ferrule diameter only half that of traditional connectors. This smaller size allows a much higher density to be achieved in both active and passive communication equipment.

The ADC KRONE LC connector combines the advantage of high connection density with ease of handling and quick installation.

The connector is available in both simplex and duplex form. The duplex variant has the same dimensions as an SC simplex plug.

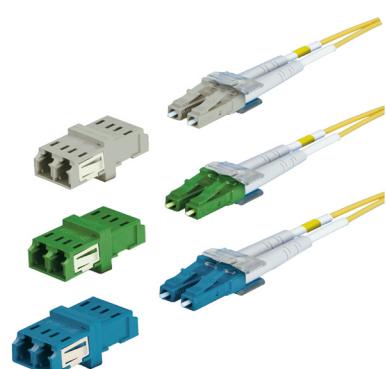
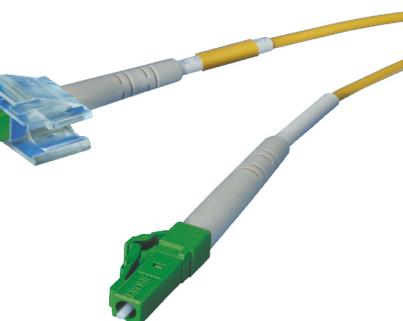
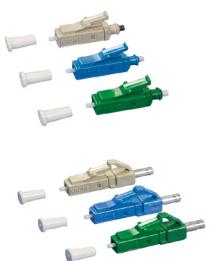
Features

- For industrial manufacture of singlemode and multimode cable assemblies
- Low number of components makes assembly easy
- Simple and quick polishing and assembly process
- Only one kit type is necessary for both simplex and duplex patch cords, which results in lower inventory costs
- ADC KRONE's LC duplex clip enables two simplex connectors to be put together to form one duplex connector, even after the simplex connectors have been assembled (the clip is ordered separately)
- The ferrule can be adjusted (or tuned)

Applications

LC connectors are used in telecommunication networks, Local Area Networks (LANs) and in-house cabling systems. They connect elements for transmission technology (in accordance with international standards) but are also increasingly used for patching and jumpering in distribution equipment.

LC connector sets for buffered fibre and cable



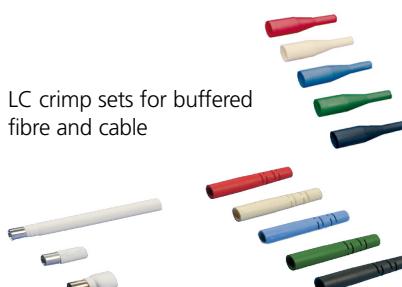
LC/MM, LC/APC, LC/UPC



Size comparison LC duplex with SC simplex



Duplex clip



LC crimp sets for buffered fibre and cable

Data Centre & Communications Room

Fibre Connectors

LC Connector Family – for Singlemode and Multimode Fibres

Ordering Information

Description	Weight/Pack	Catalogue Number
LC Connector Kit (must be ordered in quantities divisible by 100) Singlemode, for 1.6 to 3.0mm cable PC/UPC, blue housing APC, green housing Singlemode, for buffered fibre (0.9mm) PC/UPC, blue housing APC, green housing Multimode, for 1.6 to 3.0mm cable, beige housing Multimode, for buffered fibre (0.9mm), beige housing	0.082kg 0.082kg 0.070kg 0.070kg 0.082kg 0.070kg	7048 1 011-00 7048 1 014-00 7048 1 013-00 7048 1 016-00 7048 1 017-00 7048 1 018-00
LC Crimp Set (must be ordered in quantities divisible by 100) 3.0mm cable Blue boot Green boot Beige boot Red boot Black boot	0.067kg 0.067kg 0.067kg 0.067kg 0.067kg	7048 1 100-00 7048 1 100-01 7048 1 100-02 7048 1 100-03 7048 1 100-10
2.4mm cable Blue boot Green boot Beige boot Red boot Black boot	0.067kg 0.067kg 0.067kg 0.067kg 0.067kg	7048 1 101-00 7048 1 101-01 7048 1 101-02 7048 1 101-03 7048 1 101-10
2.00mm cable Blue boot Green boot Beige boot Red boot Black boot	0.067kg 0.067kg 0.067kg 0.067kg 0.067kg	7048 1 102-00 7048 1 102-01 7048 1 102-02 7048 1 102-03 7048 1 102-10
0.9mm buffered fibre Blue boot Green boot Beige boot Red boot Black boot	0.020kg 0.020kg 0.020kg 0.020kg 0.020kg	7048 1 103-00 7048 1 103-01 7048 1 103-02 7048 1 103-03 7048 1 103-10
LC Multimode Connector & 0.9mm Buffered Fibre Crimp Set (beige) available in single units		7023 1 073-00
LC Duplex Clip (only delivered when connector kit is also ordered; must be ordered in quantities divisible by 50)		7048 2 050-00
Mounting Instructions (only delivered with higher quantities; a PDF version of the instructions is available on www.adckrone.com)		7048 3 045-00
LC Crimping Tool for cable kits		7048 1 051-00
SC/LC Tuning Tool For post-assembly adjustment of ferrule		7048 1 050-00
LC Offset Cord For adjustment of singlemode fibre core; fitted with FC APC connector on side for measurement equipment		7048 1 065-00
LC UPC Master Cord For measuring insertion and return loss; fitted with FC APC connector on side for measurement equipment		7048 1 052-00

Each connector kit includes:

1 connector housing of plastic, pre-assembled with ferrule (ceramic outer diameter: 1.25 mm) with flange (PBT), spring and dust cover

Each crimp set includes:

1 boot (for buffered fibre or cable)
1 crimp sleeve with heat-shrink tubing (only for cable)

Data Centre & Communications Room

Fibre Connectors

LC Connector Family

Specifications

	Singlemode UPC	Singlemode	APC Multimode
LC/UPC LC/APC LC/MM Standards: Mating face IEC 61754-20 colour: blue green beige	•	•	•
Standards for optical, mechanical and environmental characteristics IEC 61753-2-1 IEC 61753-1-1 EN 50377-7-1 EN 50377-7-3 EN 50377-7-2/4 Telcordia GR-326-CORE	• • • •	• • •	• •
Insertion loss Against master connector (IEC 61300-3-4) Random mating (IEC 61300-3-34)	Typical ≤0.12dB Maximum ≤0.30dB Typical ≤0.15dB Maximum ≤0.35dB		Typical ≤0.25dB Maximum ≤0.50dB (95%)
Ferrules Hole diameter Shape of ferrule tip Mechanical and environmental stability Mating durability: Cable retention: Operating temperature range:	126 µm Conical, flat Minimum 1,000 cycles 100 N -40° to +85°C (can be limited by cable)	126 µm Conical, flat	127 µm Conical, flat

Note: Field termination of connectors is not covered under the TrueNet Warranty programme.



Data Centre & Communications Room Fibre Frame Solutions

Next Generation Frames	4.20
OMX600.....	4.31

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Next Generation Frame – Introduction

Frames

ADC KRONE developed its innovative Next Generation Frame (NGF) for high-fibre count applications. At 2,304 terminations in a single frame, its unique, user-friendly design and superior cable management provide enterprise customers with an optimum solution to handle applications with high fibre counts such as data centres. Traditionally offered in white, the NGF now comes in black.

ADC KRONE's Next Generation Frame product line is designed to fit a variety of termination, splice, and storage applications. The frame is designed with an emphasis on superior cable management and ease of use, including features such as ample trough space for cable and jumpers, easy access to connectors, and storage for jumpers. The frame sections are shipped from the factory fully equipped with all cable management hardware including a built-in jumper storage panel.

Fibre Termination Blocks (FTB)

Fibre Termination Blocks (FTBs) are available with SC adaptors in block configurations of 96 and 144 positions, and with LC adaptors in 144 and 192 positions. FTBs utilise sliding adaptor packs to gain easy access to both the front and rear connectors. There is also a block configuration available to accommodate Mini Value-Added Modules (Mini-VAMs) for applications requiring splitters or WDMs (Wave Division Multiplexing). FTBs can be ordered with adaptors only or with factory terminated IFC (Intrafacility Cable) or outside plant cable.

Fibre Combination Blocks (FCB)

Fibre Combination Blocks (FCBs) provide termination and on-frame splicing capabilities, all in one block. They are available with SC adaptors in block configurations of 96 or 144 positions, or with LC adaptors in 144 or 192 positions.



Features and Benefits

Ample Trough Space

Reduces jumper pile-up and congestion

- Reduces maintenance time due to easy removal and tracing of jumpers
- Minimises risk of microbends or damage to fibre

Built-in Jumper Storage Panel

Minimises number of required jumper lengths

Maintains fibre bend radius

Simplifies frame installation

- Saves money by reducing the number of different jumper lengths that have to be kept in inventory
- Minimises risk of microbends or damage to fibre

Enclosed system ensures easy cable access without fibre cross-over points

Sliding Adaptor Packs

Promotes high density

Provides easy access to connectors

- Saves valuable floor space

- Reduces time required for operations and maintenance

Intelligent Cable Routing System

No fibre cross-over points

Multiple vertical troughways

- Reduces maintenance time due to easier removal and tracing of jumpers
- minimises fibre "weaving"

Bend Radius Protection at Every Turn

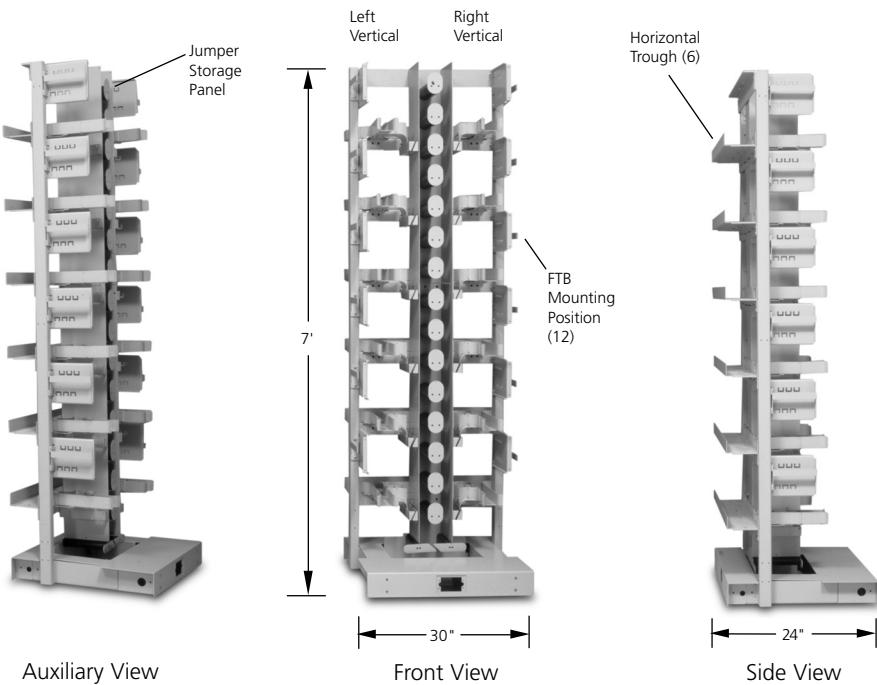
NGF provides complete bend radius at every turn to ensure network performance and reliability

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Fibre Main Distributing Frame (FMDF)

The FMDF is the cornerstone of the NGF product line. This innovative frame has six 5-inch horizontal troughs for a total of 30 inches of horizontal trough space. This abundant trough space minimises fibre pile up and congestion leading to easier jumper traceability and removal. The frame has twelve Fibre Termination Block (FTB) mounting positions equally divided between vertical columns on the left and right sides of the frame as shown in the figure below. The frame is available in 30-inch wide version painted textured black. The 30-inch wide frame provides additional vertical trough space for the highest termination density applications. The built-in jumper storage panel will store up to 3.5 metres (12 feet) of jumper slack.

TrueNet® Structured Cabling



Ordering Information

Description	Dimensions (HxWxD)	Maximum Termination Capacity	Catalogue Number
30" FMDF frame section Colour: Black	7' x 30" x 24" (2.14m x 76.2cm x 61cm)	1728 (SC)/2304 (LC)	NGFB-MDF7A100-30

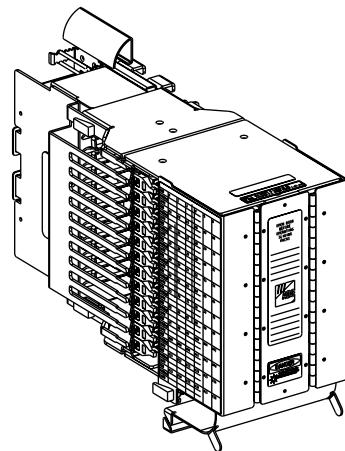
Each frame section includes heavy duty floor anchor bolts for concrete floor applications.

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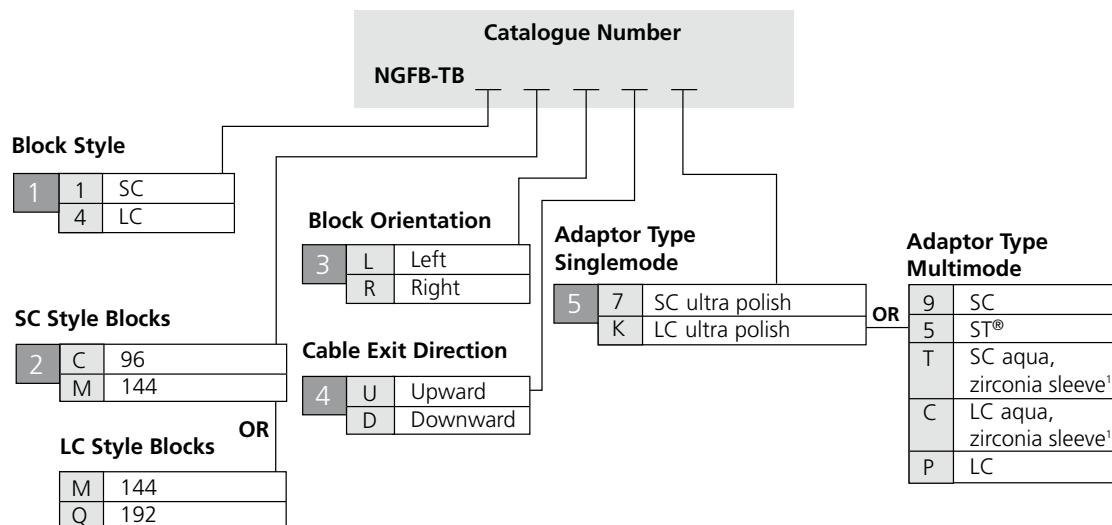
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Fibre Termination Blocks (FTB) – Unterminated (Adaptor Only)

FTBs without fibre can be ordered fully loaded with adaptors. Before ordering, determine the block orientation and cable exit direction. Unterminated FTBs may be ordered with a "left" orientation (mounts on the left side of the frame) or a "right" orientation (mounts on the right side of the frame). The cable exit direction will be either "upward" (cables terminated to the rear side of the block exit up toward the top of the frame) or "downward" (cables terminated to the rear side of the block exit down toward the bottom of the frame). All blocks with adaptors only are configured to terminate single or dual jumpers on the rear of the block. If a multifibre breakout style cable (i.e. Outside Plant/Intrafacility Cable) is to be terminated to the rear of the block, a separate clamping kit and replacement rear storage area kit is required (see next page). FTBs can not be ordered with a combination of singlemode and multimode adaptors. If this combination is desired, ADC KRONE recommends purchasing a fully loaded adaptor only termination block, and separate sliding adaptor packs to customise the block on-site.



144 Position Right Upward FTB Shown



¹When deploying Laser Optimised Fibre, ADC KRONE automatically includes colour coded high quality adapters with zirconia alignment sleeves with its factory terminated blocks to maximise lifetime performance of the system. ADC KRONE recommends the same practice for customers terminating their fibre in the field.

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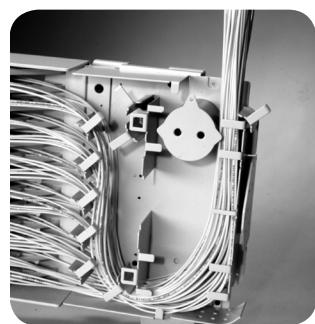
Fibre Termination Blocks (FTB)

Configuration Information

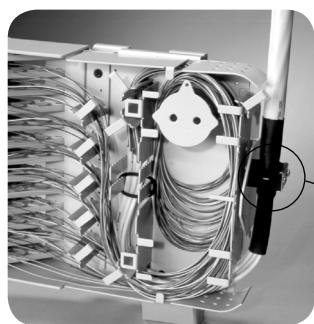
Definition of Variables	
1	Block Style General adaptor type required in the FTB
2	Block Configuration Maximum number of terminations that the FTB will accommodate when fully loaded
3	Block Orientation Vertical column of the frame the FTB is to be mounted on
4	Cable Exit Direction Direction the equipment jumpers or Outside Plant cable will exit from the FTB
5	Adaptor Type Specific adaptor type required in the FTB

Cable Clamping/Block Conversion Kits

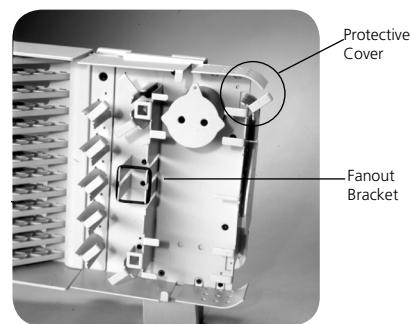
Adaptor-only blocks are configured to accommodate single fibre jumpers or multifibre breakout cables. If loading a preterminated intrafacility (IFC) cable or a preterminated Outside Plant (OSP) cable is desired, additional hardware will be required. Block conversion kits are available to convert adaptor only blocks to blocks that will accept preterminated IFC or OSP style cables. The conversion kits contain the cable management hardware, brackets and cable clamps required to convert the block. The kit required will depend on the block style originally purchased.



72 Position Block Loaded with Jumpers



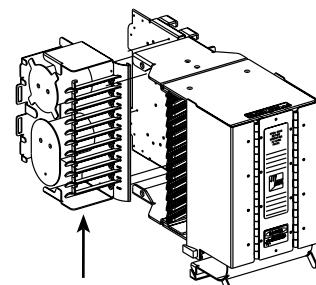
72 Position Block Loaded with Multifibre Breakout Cable



72 Position Block with Clamping Kit

Ordering Information

Description	Catalogue Number
Block style originally purchased	
96 or 144 position left up blocks	NGFB-ACCRCMSLU
96 or 144 position right up blocks	NGFB-ACCRCMSRU
96 or 144 position left down blocks	NGFB-ACCRCMSLD
96 or 144 position right down blocks	NGFB-ACCRCMSRD



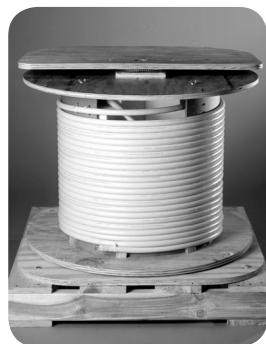
Rear Cable Management Tray
for 144 Block Conversion Kit

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Fibre Termination Blocks (FTB) – Preterminated

Configuration Information

Preterminated FTBs are available with either indoor or outdoor rated cable in ribbon or stranded configurations. All blocks are 100% factory tested to guarantee continuity and reliable connections. Preterminated FTBs make installation quick and easy, reducing labour costs. Before ordering, determine the block orientation and cable exit direction. Preterminated FTBs may be ordered with a "left" orientation (mounts on the left side of the frame) or a "right" orientation (mounts on the right side of the frame). The cable exit direction will be either "upward" (cables terminated to the rear side of the block exit up toward the top of the frame) or "downward" (cables terminated to the rear side of the block exit down toward the bottom of the frame).



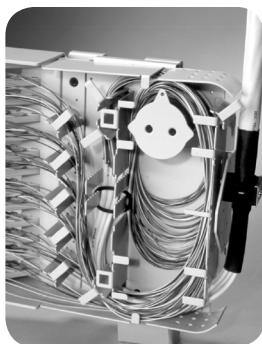
Preterminated fibre termination blocks arrive from the factory with either IFC or OSP cables



Fibre cable easily uncoils during installation



Fibre termination block ships inside the drum



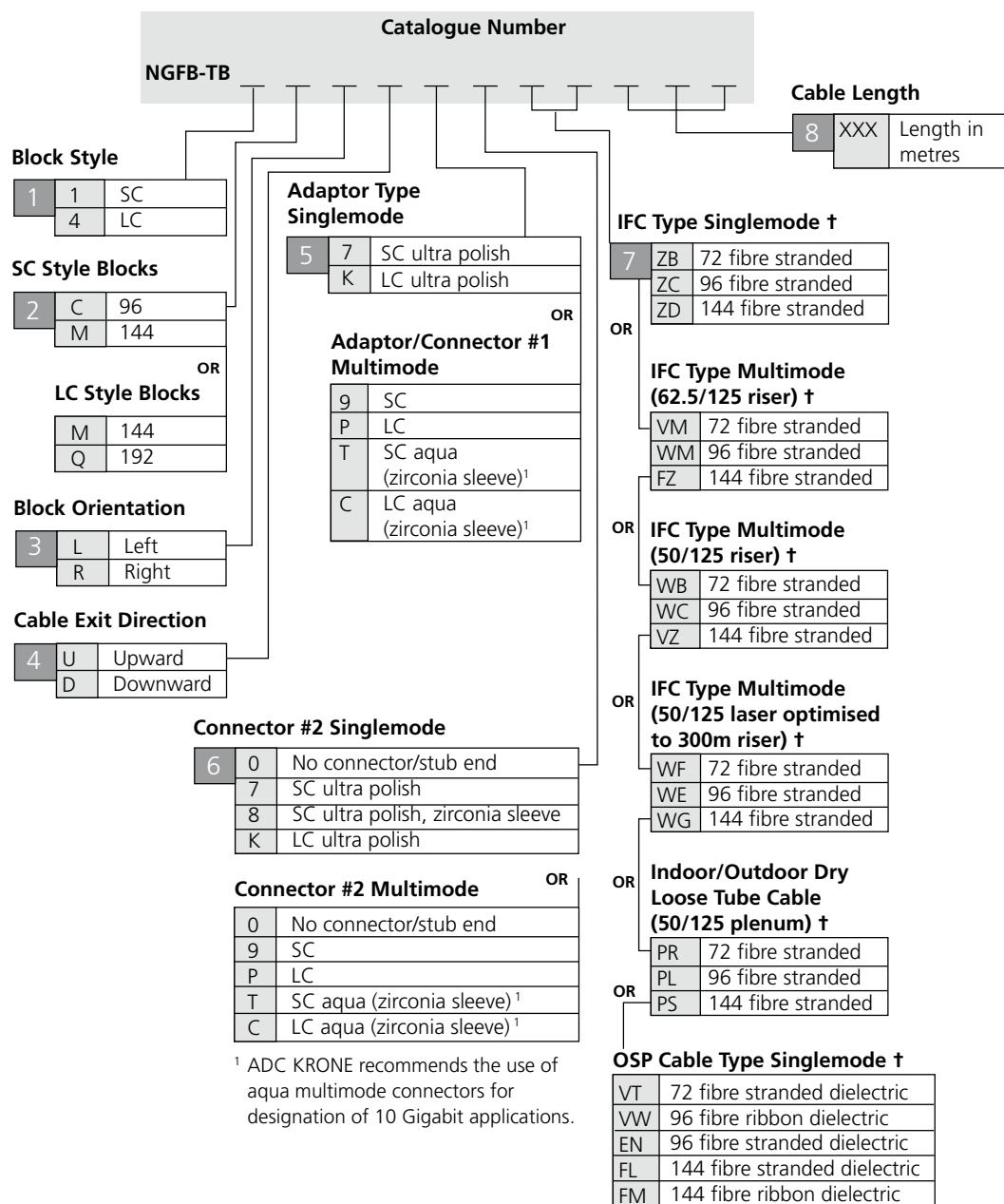
IFC cables loaded into FTB

Definition of Variables	
1	Block Style General adaptor type required in the FTB
2	Block Configuration Maximum number of terminations that the FTB will accommodate when fully loaded
3	Block Orientation Vertical column of the frame the FTB is to be mounted on
4	Cable Exit Direction Direction the equipment jumpers or OSP cable will exit from the FTB
5	Adaptor/Connector #1 Specific adaptor/connector type required in the FTB. Refers to the adaptor/connector type at the FTB
6	Connector #2 Specific connector type required at the cable end opposite the FTB
7	Cable Type Type of cable to be terminated to the FTB
8	Cable Length Required length of the cable terminated to the FTB

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Fibre Termination Blocks (FTB) – Preterminated FTBs

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¹ ADC KRONE recommends the use of aqua multimode connectors for designation of 10 Gigabit applications.

† Other cable types are available upon request.
Please contact your ADC KRONE representative.

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Next Generation Frame – Fibre Combination Blocks (FCB)

Configuration Information

Fibre Combination Blocks provide a place to terminate pigtails and splice IFC/OSP cables on the frame. The blocks are available with SC adaptors in block configurations of 96 or 144 position or with LC adaptors in configurations of 144 or 192 positions. The block is available with factory wired pigtails for easy installation. Splice trays are shipped with the block if ordered with pigtails; otherwise trays must be ordered separately. The block is shipped with a cable clamp for OSP/IFC. The FCB occupies two mounting positions on a frame section. Before ordering, determine the block orientation. FCBs may be ordered with a "left" orientation (mounts on the left side of the frame) or a "right" orientation (mounts on the right side of the frame).

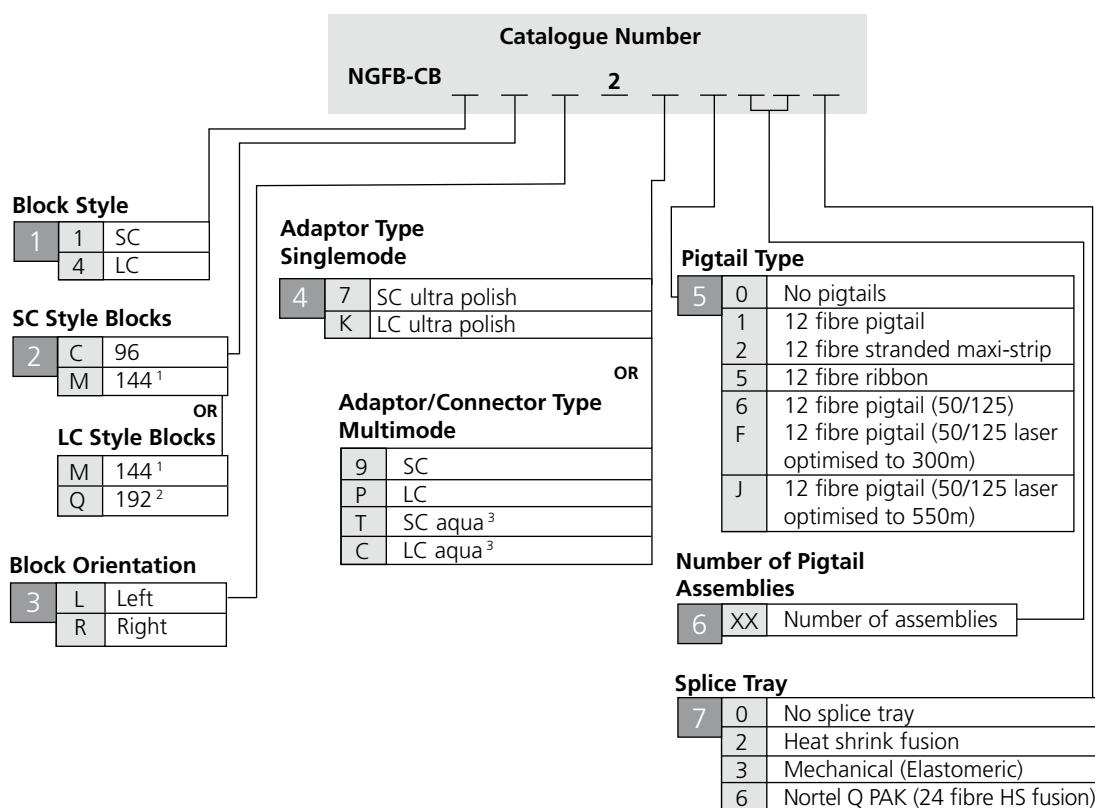


Ordering information follows on next page.

Definition of Variables	
1	Block Style General adaptor type required in the FCB
2	Block Configuration Maximum number of terminations that the FCB will accommodate when fully loaded
3	Block Orientation Vertical column of the frame the FCB is to be mounted on
4	Adaptor/Connector Type Specific adaptor/connector type required in the FCB
5	Pigtail Type Type of pigtail required
6	Number of Pigtail Assemblies Number of pigtails to be preinstalled in the FCB
7	Splice Chip Type of splice chip required for splice trays

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Next Generation Frame – Fibre Combination Blocks (FCB)



¹ 144 termination block requires the use of either:

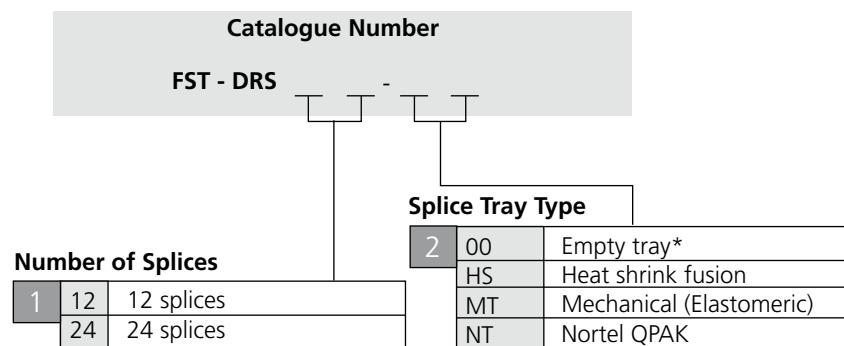
Mechanical (elastomeric) splice tray when using mass fusion ribbon splicing or
Nortel QPAK splice tray when using single fibre heat shrink fusion splicing.

² 192 termination block requires use of ribbon splicing or the Mechanical (elastomeric) splice tray. 192 termination block not available for stranded fibre splicing.

³ ADC KRONE recommends the use of aqua multimode connectors for designation of 10 Gigabit applications.

Splice Trays For Fibre Combination Block

For use when splice trays are not included with block at time of order.



*Maximum size of chip allowed in empty tray: 3" H x 2.5" W x 3.6" L

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Next Generation Frame – Sliding Adaptor Packs

Sliding adaptor packs house groups of fibre optic adaptors and are mounted in Fibre Termination Blocks to provide easy access to connectors. Sliding Adaptor Packs are available with SC and LC adaptors. The adaptors come in packs of two, four, six and eight depending on the adaptor type and the desired termination density. See table below for configuration guidelines.

*Sliding Adaptor Pack Configuration Guidelines

Block Configuration	Adaptor Type	Adaptor Pack Configuration	Adaptor Pack Option
96 Position	SC	2 Pack/6 Pack	F (shown below)
96 Position	SC	4 Pack/4 Pack	J (not shown below)
144 Position (block code 'M')	SC, LC	6 Pack/6 Pack	K (not shown below)
192 Position (block code 'Q')	LC	4 Pack/4 Pack	J (not shown below)



Option F
(E-2000 shown)

Catalogue Number
NGF- SAP 0 00

Adaptor Type Singlemode

5	7	SC ultra polish
	K	LC ultra polish

Adaptor Pack Option*

F	2 pack/6 pack
J	4 pack/4 pack
K	6 pack/6 pack (all block code "M" blocks)

Adaptor Type Multimode OR

9	SC
P	LC (144 and 192 only)
T	Aqua SC (zirconia sleeve) ¹
C	Aqua LC (zirconia sleeve) ¹

¹ ADC KRONE recommends the use of aqua multimode connectors for designation of 10 Gigabit applications.

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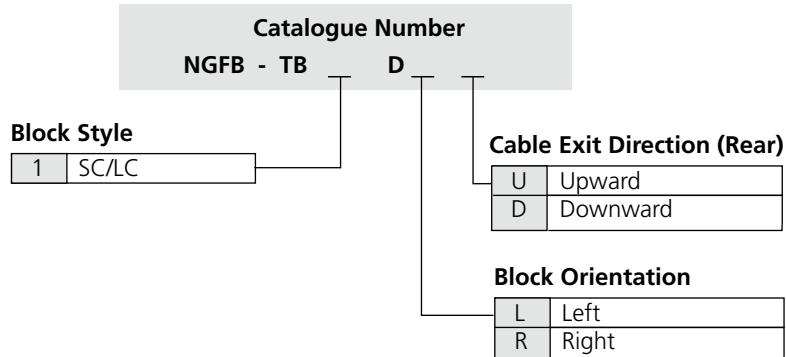
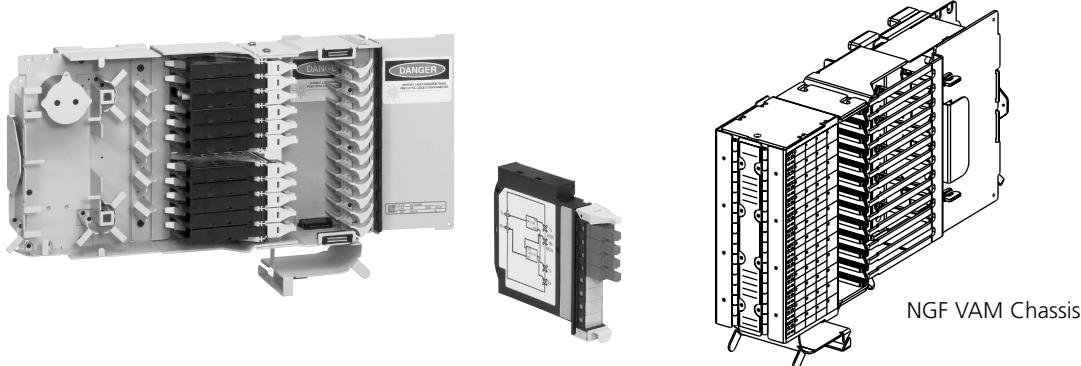
Next Generation Frame – Value-Added Module System

ADC KRONE's Next Generation Frame (NGF) Value-Added Modules are designed to support emerging circuit requirements. This high-density fibre frame solution provides unlimited expansion while optimising fibre cable management. The NGF system uses Mini Value-Added Modules to incorporate optical splitters for circuit monitoring and video distribution. Mini Value-Added Modules (Mini-VAM) can also be configured with wavelength division multiplexing capabilities to increase transmission capacity over existing fibre lines. Various input and output interface options are available.

The NGF VAM chassis is interchangeable with termination, splice, and storage modules. Each chassis accommodates up to twelve Mini-VAM modules.

Features:

- **Enclosed plug-in modules**
Optical components are protected from physical and environmental damage
- **Flexible platform**
Modules can be created for new applications quickly and easily to meet customer requirements
- **Monitor and/or test**
Enables providers to troubleshoot networks without forcing disruption of service
- **Custom configurations**
Custom splitter configurations available upon request



Please contact ADC KRONE for VAM ordering information.

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Next Generation Frame – Accessories

Cable Clamp Kits

Cable clamp kits are available for securing Intrafacility Cable (IFC)/Outside Plant (OSP) cable or equipment Fibre optic Terminal (FOT) jumpers on the rear of the FTB. Each FTB has three cable clamp mounting positions.

Ordering Information

Description	Catalogue Number
Cable clamp kit for FOT patch cords (included with fibre termination blocks loaded with adaptors only)	NGF-ACCCLMP04
Cable clamp kit for IFC/OSP cables, dielectric cable without grounding hardware (included with fibre termination blocks with IFC)	NGF-ACCCLMP08

Rack Extenders

Rack extenders are used to extend the height of a 7' (2.14m) rack to the appropriate ceiling height so that it can be secured overhead.

Ordering Information

Description	Catalogue Number
Rack extender	30" Wide Frames
12" (30.48cm)	NGFB-ACCEXT12-30
24" (60.96cm)	NGFB-ACCEXT24-30
54" (137.16cm)	NGFB-ACCEXT54-30

Isolation Pad

The isolation pads are placed between the base of the rack and the ground. They serve as a template to locate screwing holes to fix the rack and they isolate the rack from the ground.

Ordering Information

Description	Catalogue Number
All 30" wide FMDF and equipment bays	NGF-ACCISOP30X24
All 30" wide Zone 4 FMDF and equipment bays	NGF-ACCISOP30X24Z4
All 30" wide front facing FMDF and equipment bays	NGF-ACCISOP30X19

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OMX High Density System

OMX High Density System

ADC KRONE's OMX600™ optical distribution frame is a high density, modular, front access optical distribution frame. It terminates and splices up to 576 fibres in a compact 600mm x 300mm footprint. Patented angled adaptor/retainers and cable management design protect cables and connectors while ensuring correct bend radius. The modular frame can be configured to include enhanced signal management functions such as splitters, couplers, and wavelength division multiplexers.

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High-Density

As the number of installed fibres grows, and the amount of available floor space diminishes, data centre operators and service providers need a frame that handles large amounts of fibre and conserves space.

The OMX 600 can terminate and splice up to 576 fibres in a 600mm x 300mm footprint.

600mm Footprint

The OMX 600 frame is 600mm wide and 300mm deep. Two frames can be mounted back-to-back to fill one 600mm x 600mm floor tile. The frame can also be mounted against a wall.

Modular Design

The OMX 600 is a modular system that allows data centre operators and service providers to utilise one system for various optical distribution frame applications, depending on their needs and the needs of their customers.

Total Front-Access Frame

The OMX 600 can be installed back-to-back or against a wall to save valuable office floor space. Technicians have complete access to all fibre terminations and splices from the front of the frame.

Superior Cable Management

The total front-access OMX 600 fibre frame protects cables and connectors through use of ADC KRONE's patented angled adaptors/retainers and bend radius protecting design.

For further information and configuration support, please contact your local sales representative.



KRONE



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FiberGuide®

Introduction.....	4.34
Features and Benefits.....	4.35
FiberGuide® Fibre Management System	4.36
Plenum FiberGuide® System.....	4.44

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FiberGuide® – Introduction

The Industry's Most Comprehensive Optical Raceway System

ADC KRONE's FiberGuide® Fibre Management System offers the greatest breadth of optical raceway products in the industry. In response to customer requirements, ADC KRONE continues to innovate and improve FiberGuide, adding greater flexibility and driving down installation time to ensure a smooth deployment.

FiberGuide is a raceway system designed to protect and route fibre optic patch cords, multi-fibre cable assemblies and intrafacility fibre cable (IFC) to and from fibre splice enclosures, fibre distribution frames and fibre optic terminal devices. FiberGuide ensures a two-inch minimum bend radius is maintained throughout the system. And new tool-less, SnapFit™ junctions, cover options and Plenum Express Exit™ drops significantly reduce the amount of time required for installation.

The FiberGuide system is a complete set of products designed and manufactured to ensure total off-frame protection and ease of use. Basic components include horizontal and vertical straight sections, horizontal and vertical elbows, downspouts, junctions and numerous support hardware and flex-tube kits.

System Description

Straight sections: U-shaped troughs that provide a protective pathway for optical fibres. Straight sections are usually installed horizontally but may also be installed vertically when a system is mounted on multiple levels. Straight sections are six feet in length, and covers are also available. The covers snap into place but can be easily removed for fibre installation.

Express Exits™: Express Exit system allows jumpers to be routed in and out of the system with ease. Express Exits are secured to the sidewall of a FiberGuide straight section where needed.

Fittings: Elbows, tees, crosses, trumpet flares and conversions. The fittings are used for changing direction, converting from one size system to another, adding branch segments and routing the fibres in and out of the system. Like the straight sections, snap-on covers are also available for the fittings.

Junction kits: Used for aligning and connecting straight sections and fittings. Two components are joined by inserting them into a junction and pushing them together.

Support kits: Used to support the FiberGuide system. The short, long, span and diagonal bracket kits are used for supporting straight sections from round or square tubing.

Flexible tubing: Used in FiberGuide systems when the exact layout of the equipment drop locations is unknown or when frequent equipment relocations are expected. The flexible tubing is two inches in diameter and attaches to the end of a straight section with an adaptor. When the equipment configuration is known, the flexible tubing is routed to the exact drop location. Other flexible tubing components include splicing couplers, finishing couplers, mounting straps and additional lengths of tubing.

Both patch cords and IFC cables may be installed in the FiberGuide System. The required two inch bend radius for patch cords is maintained at all points within the system. IFC cables require the use of tie-down brackets to maintain the required cable bend radius specified by the cable manufacturer at the various fittings. Available in a variety of sizes:



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FiberGuide® – Features and Benefits

Available in a variety of sizes:



2x2 — Ideal for smaller installations or for vertical routing of a maximum of four hundred 2mm fibre optic patch cords. All 2x2 FiberGuide products are shipped with covers.



2x6 — Designed for height-restricted environments, this robust system provides the same support and system flexibility of the traditional 4-inch high system while saving 2 inches of overhead space. It features a maximum capacity of 1,200, 2mm patch cords.



4x4 — Features the maximum capacity to support 1,600, 2mm patch cords. It has been engineered to allow straight sections to be self-supporting over a span of up to 6 feet (1.83m).



4x6 — Features the same benefits of the 4-inch system and a maximum trough capacity of 2,400, 2mm patch cords.



4x12 — The largest system in the FiberGuide family, this 12-inch wide trough has a maximum capacity to support nearly 5,000, 2mm patch cords. Perfect for runs over fibre frame lineups and perimeter routes.

Features and Benefits

Speed of Installation

FiberGuide® systems feature a variety of products that allow for quick and easy installation. Express Exit™ drops as well as tool-less products including Snap-Fit™ junctions, snap-on covers and new hinged cover options save valuable time for installers.

Speed of Deployment

The Express Exit system enables new drops to be added or removed quickly and easily. A drop can be added into a fully loaded raceway in seconds—without cutting.

Raceway Flexibility

FiberGuide features 38 support structures, over 75 fittings, multiple drop options and several other components to suit any application you create.

Fibre Protection

ADC KRONE's broadband expertise translates into maximum protection for your network. Two inch minimum bend radius is maintained throughout the system regardless of the raceway size.

Strength and Durability

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FiberGuide® Fibre Management System

Patch Cord Densities

Recommended capacity takes into consideration random jumper placement into the FiberGuide® system. Maximum density refers to the maximum number of fibre jumpers in a given cross-section of a FiberGuide installation.

ADC KRONE Recommended Density

	1.7mm Patch Cords	2.0mm Patch Cords	3.0mm Patch Cords
Recommended Patch Cord Density (per inch ²)	120	90	40

	2x2 FiberGuide System	2x6 FiberGuide System	4x4 FiberGuide System	4x6 FiberGuide System	4x12 FiberGuide System										
Trough Pileup	1.7 mm 2.0 mm 3.0 mm														
2-inch	480	360	160	1440	1080	480	960	720	320	1440	1080	480	2880	2160	960
3-inch	-	-	-	-	-	-	1440	1080	480	2160	1620	720	4320	3240	1440
4-inch	-	-	-	-	-	-	1920	1440	640	2880	2160	960	5760	4320	1920

Maximum Density

	1.7mm Patch Cords	2.0mm Patch Cords	3.0mm Patch Cords
Maximum Patch Cord Density (per inch ²)	142	102	44

	2x2 FiberGuide System	2x6 FiberGuide System	4x4 FiberGuide System	4x6 FiberGuide System	4x12 FiberGuide System										
Trough Pileup	1.7 mm 2.0 mm 3.0 mm														
2-inch	568	408	176	1704	1224	528	1136	816	352	1704	1224	528	3408	2448	1056
3-inch	-	-	-	-	-	-	1704	1224	528	2556	1836	792	5112	3672	1584
4-inch	-	-	-	-	-	-	2272	1632	704	3408	2448	1056	6816	4896	2112

TracerLight™ Patch Cords—65 Patch Cords per inch²

	2x2 FiberGuide System	2x6 FiberGuide System	4x4 FiberGuide System	4x6 FiberGuide System	4x12 FiberGuide System
Trough Pileup	260	780	520	780	1560
2-inch	-	-	780	1170	2340
3-inch	-	-	1040	1560	3120

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FiberGuide® Fibre Management System

Express Exits™ Units (For use with 2x6, 4x4, 4x6 and 4x12 systems)

Ordering Information

Description	Catalogue Number
2-inch Express Exit Unit	FGS-MEXP-A/B/F
4-inch Express Exit base with base cover	FGS-MEXP-E-A/B/F
4-inch Express Exit rear cover kit	FGS-MEXC-E-A/B/F
Rear cover, 4-inch Express Exit—4x4 system	FGS-MEXC-E-A
Rear cover, 4-inch Express Exit—4x6 system	FGS-MEXC-E-B
Rear cover, 4-inch Express Exit—4x12 system	FGS-MEXC-E-F
Low profile Express Exit	FGS-MEXP-LP-A/B/F



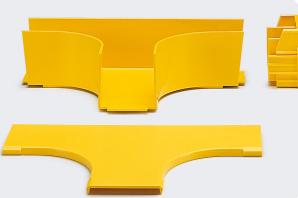
Express Exits



2x2 Fittings and Junctions

Ordering Information

Description	Catalogue Number
2x2 horizontal cross with cover	FGS-MHXP-C
2x2 horizontal tee with cover	FGS-MHTA-C
2x2 45° horizontal elbow with cover	FGS-MH4A-C
2x2 90° horizontal elbow with cover	FGS-MH9A-C
2x2 to 4-inch straight adaptor with cover	FGS-MDSA-AC
2x2 end cap kit (includes junction)	FGS-HMEC-C
2x2 45° up elbow with cover	FGS-MU4A-C
2x2 45° down elbow with cover	FGS-MD4A-C
2x2 90° up elbow with cover	FGS-MU9A-C
2x2 90° down elbow with cover	FGS-MD9A-C
2x2 junction	FGS-MJWR-C



FGS-MHTA-C

2x2 Straight Section

Ordering Information

Description	Catalogue Number
6-foot horizontal straight with cover	FGS-MSHA-C



FGS-MSHA-C

2x2 Downspout Options

Ordering Information

Description	Catalogue Number
2x2 standard downspout with cover	FGS-MSDS-C
2x2 extended downspout with cover	FGS-MDSP-C
2x2 flex tube attachment with 5-foot length 2-inch flex tube and 2x2 junction	FGS-MEX1-C-5F
2x2 extended downspout kit with 2-foot length 2-inch flex tube and cover	FGS-KDH2-C
Dual 7/8-inch flex tube attachment with (2) 5-foot lengths flex tube and 2x2 junction Kit of 10 7/8-inch flex tube clamps	FGS-KT03-C FGS-HSHC-10



FGS-MSDS-C

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FiberGuide® Fibre Management System

2x2 Direct Support Kits

Ordering Information

Description	Catalogue Number
2x2 ladder rack support kit	FGS-HLR2-C
2x2 bay top short L bracket kit	FGS-BTBS-C
2x2 bay top long L bracket kit	FGS-BTBL-C
2x2 digital cableway support kit	FGS-HDCB-C
2x2 underfloor support kit	FGS-HUFB-C



FGS-HLR2-C

2x2 Track Support Kits

Ordering Information

Description	Catalogue Number
Aluminium track support (6-feet)	FGS-HASK-C
New threaded rod kit (5/8 -inch)	FGS-HTR2-5/8
New threaded rod kit (1/2 -inch)	FGS-HTR2-1/2
Track connecting bar kit	FGS-HAEJ-C
Ladder rack bracket kit (5/8 -inch)	FGS-HLDR-5/8
Threaded rod 12" long	FGS-HTHR-5/8-12
Dual threaded rod bracket kit	FGS-HTUB-2-AB



FGS-HASK-C

2x6 Fittings

Ordering Information

Description	Catalogue Number
2x6 to 2x2 downspout	FGS-MDSP-G
2x6 horizontal T	FGS-MHRT-G
2x6 horizontal cross	FGS-MHXP-G
2x6 90° horizontal elbow	FGS-MH9E-G
2x6 90° down elbow	FGS-MD9E-G
2x6 45° horizontal elbow	FGS-MH4E-G
2x6 45° up elbow with cover	FGS-MU4E-G
2x6 45° down elbow	FGS-MD4E-G
2x6 to 4x4 adaptor	FGS-MDSA-GA
2x6 to 4x6 adaptor	FGS-MDSA-GB
2x6 trumpet flare	FGS-MTRM-G
2x6 end cap	FGS-HMEC-G
2x6 Express Exit	FGS-MEXP-LP-G



FGS-MSHS-G

2x6 Straight Section

Ordering Information

Description	Catalogue Number
2x6 horizontal straight section (6-feet)	FGS-MSHS-G
2x6 horizontal straight section snap-on cover (6-feet)	FGS-MSSC-B/G
2x6 horizontal straight section hinged cover	FGS-MSNC-B/G

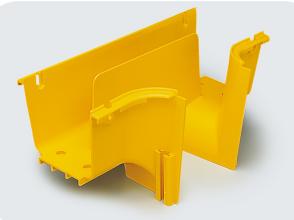
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FiberGuide® Fibre Management System

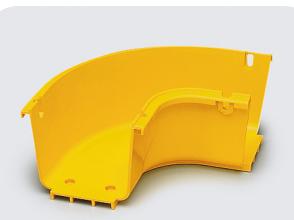
4x4 Fittings and Junctions

Ordering Information

Description	Catalogue Number
4x4 downspout	FGS-MDSP-A
4x4 and 4x6 downspout cover	FGS-MCDS-AB
4x4 extended downspout	FGS-MDSP-EX-A
4x4 and 4x6 extended downspout cover	FGS-MCDS-EX-AB
4x4 horizontal T	FGS-MHRT-A
4x4 horizontal T cover	FGS-SHRT-A
4x4 horizontal cross	FGS-MHXP-A
4x4 horizontal cross cover	FGS-SHXP-A
4x4 90° horizontal elbow	FGS-MH9E-A
4x4 90° horizontal elbow cover	FGS-SH9E-A
4x4 45° horizontal elbow	FGS-MH4E-A
4x4 45° horizontal elbow cover	FGS-SH4E-A
4x4 90° up elbow with cover	FGS-MU9E-A
4x4 90° down elbow	FGS-MD9E-A
4x4 90° down elbow cover	FGS-SD9E-A
4x4 45° up elbow with cover	FGS-MU4E-A
4x4 45° down elbow	FGS-MD4E-A
4x4 45° down elbow cover	FGS-SD4E-A
4x4 to 4x6 straight adaptor	FGS-MDSA-AB
4x4 to 4x6 straight adaptor cover	FGS-SDSA-AB
4x4 end cap	FGS-HMEC-A
4x4 snap-fit junction	FGS-MFAW-A
4x4 cut-in T	FGS-MHIS-A
Cut-in T fixture	FGS-MHIS-JIG-A/B/F
4x4 IFC tie bracket	FGS-HIFC-A



FGS-MDSP-A



FGS-MH9E-A



FGS-MFAW-A

4x4 Straight Section

Ordering Information

Description	Catalogue Number
6-foot horizontal straight section	FGS-MSHS-A
6-foot horizontal straight section hinged cover	FGS-MSHC-A
4x4 expandable straight section	FGS-MVAR-A
6-foot horizontal straight section snap-on cover	FGS-MSSC-A



FGS-MSHS-A

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FiberGuide® Fibre Management System

4x4 and 4x6 Downspout Options

Ordering Information

Description	Catalogue Number
4x4 downspout junction kit	FGS-MJWR-A
2x2 flex tube attachment with 5-foot length 2-inch flex tube and 2x2 junction	FGS-MEX1-C-5F
4x4/4x6 downspout insert (adapts to 2x2 system)	FGS-HDSI-AB
4x4 trumpet flare kit	FGS-MTRM-A
4-inch square to 2-inch round adaptor with 5-feet flex tubing	FGS-ASRI-5F
4-inch square to 2-inch round adaptor with 10-feet flex tubing	FGS-ASRI-10F
4-inch square to 2-inch round adaptor with 15-feet flex tubing	FGS-ASRI-15F
4x4 single flex tube attachment with (1) 5-foot length 2-inch flex tubing	FGS-KT03-A1
4x4 dual flex tube attachment with (2) 5-foot lengths 2-inch flex tubing	FGS-KT03-A



FGS-MDSP-EX-A

2x6, 4x4 and 4x6 Support Kits

Ordering Information

Description	Catalogue Number
New threaded rod bracket (5/8 -inch)	FGS-HNTR-5/8
New threaded rod bracket (1/2 -inch)	FGS-HNTR-1/2
Modified new threaded rod bracket (5/8 -inch)	FGS-HNTR-5/8-A
Existing threaded rod bracket (5/8 -inch)	FGS-HETR-5/8
Existing threaded rod bracket (1/2 -inch)	FGS-HETR-1/2
Modified existing threaded rod bracket (5/8 -inch)	FGS-HETR-5/8-A
Centre support bracket (5/8 -inch)	FGS-HTUB-5/8
Centre support bracket (1/2 -inch)	FGS-HTUB-1/2
L bay support bracket	FGS-HLBK
Digital cableway bracket kit (12-inch)	FGS-HCBL-12
Digital cableway bracket kit (15-inch)	FGS-HCBL-15
Top support C-bracket	FGS-HNTS-5/8
Top support low profile C-bracket	FGS-HNTS-5/8-LP
Ladder rack centre support bracket kit	FGS-HNLR-AB
Threaded rod, 5/8 -11x12-inch	FGS-HTHR-5/8-12
Threaded rod, 5/8 -11x30-inch	FGS-HTHR-5/8-30
Threaded rod, 5/8 -11x72-inch	FGS-HTHR-5/8-72
Auxiliary framing clip kit 5/8 -11 thread	FGS-HFCK-5/8
Auxiliary framing clip kit 1/2 -11 thread	FGS-HFCK-1/2
Adjacent angle support bracket 5/8 -11/36-inch	FGS-HASB-5/8-36
Adjacent angle support bracket 5/8 -11/48-inch	FGS-HASB-5/8-48
Adjacent angle support bracket 1/2 -13/36-inch	FGS-HASB-1/2-36
Adjacent angle support bracket 1/2 -13/48-inch	FGS-HASB-1/2-48
Ladder rack bracket kit (5/8 -inch)	FGS-HLDR-5/8
Unistrut nut kit (5/8 -inch)	FGS-HDGR



FGS-HNTR-XX

Data Centre & Communications Room

FiberGuide® Fibre Management System

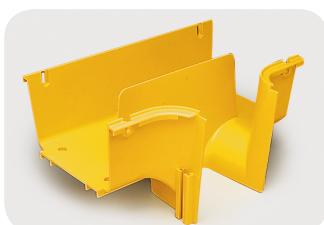
TrueNet® Structured Cabling

4x6 Fittings and Junctions

Ordering Information

Description	Catalogue Number
4x6 downspout	FGS-MDSP-B
4x4/4x6 downspout cover	FGS-MCDS-AB
4x6 extended downspout	FGS-MDSP-EX-B
4x4/4x6 extended downspout cover	FGS-MCDS-EX-AB**
4x6 horizontal T	FGS-MHRT-B
4x6 horizontal T cover	FGS-SHRT-B
4x6 horizontal cross	FGS-MHXP-B
4x6 horizontal cross cover	FGS-SHXP-B
4x6 90° horizontal elbow	FGS-MH9E-B
4x6 90° horizontal elbow cover	FGS-SH9E-B
4x6 45° horizontal elbow	FGS-MH4E-B
4x6 45° horizontal elbow cover	FGS-SH4E-B
4x6 45° up elbow with cover	FGS-MU4E-B
4x6 45° down elbow	FGS-MD4E-B
4x6 45° down elbow cover	FGS-SD4E-B
4x6 90° down elbow	FGS-MD9E-B
4x6 90° down elbow cover	FGS-SD9E-B
4x6 90° up elbow with cover	FGS-MU9E-B
4x6 cut-in T	FGS-MHIS-B
Cut-in T fixture	FGS-MHIS-JIG-A/B/F
4x6 trumpet flare kit	FGS-MTRM-B
4x6 end cap	FGS-HMEC-B
4x6 snap-fit junction	FGS-MFAW-B
4x6 IFC tie bracket	FGS-HIFC-B

** Dual downspout requires 2 covers



FGS-MDSP-B



FGS-MFAW-B



FGS-MU9E-B

4x6 Straight Section

Ordering Information

Description	Catalogue Number
6-foot horizontal straight section	FGS-MSHS-B
6-foot horizontal straight section hinged cover	FGS-MSHC-B
4x6 expandable straight section	FGS-MVAR-B
6-foot horizontal straight section snap-on cover	FGS-MSSC-B/G



FGS-MSHS-B

Data Centre & Communications Room

FiberGuide® Fibre Management System

4x12 Fittings

Ordering Information

Description	Catalogue Number
4x12 horizontal T	FGS-MHRT-F
4x12 to 4x6 horizontal T	FGS-MHRT-F/B
4x12 horizontal cross	FGS-MHXP-F
4x12 to 4x6 horizontal cross	FGS-MHXP-B/F
4x12 to 4x6 adaptor	FGS-MDSA-FB
4x12 90° horizontal elbow	FGS-MH9E-F
4x12 45° horizontal elbow	FGS-MH4E-F
4x12 end cap	FGS-HMEC-F
4x12 cut-in T	FGS-MHIS-F
Cut-in T fixture	FGS-MHIS-JIG-A/B/F
4x12 45° up elbow with cover	FGS-MU4E-F
4x12 45° down elbow	FGS-MD4E-F
4x12 90° down elbow	FGS-MD9E-F
4x12 trumpet flare kit	FGS-MTRM-F
4x12 downspout with 4x6 exit	FGS-MDSP-F
4x12 downspout with rear T	FGS-MDRT-F
4x12 to dual 4x6 adaptor	FGS-MDSA-F2B
4x12 IFC tie bracket	FGS-HIFC-F



FGS-MH9E-F

Covers are available
for 4x12 fittings.
Please contact ADC KRONE
or visit www.adckrone.com

4x12 Straight Section

Ordering Information

Description	Catalogue Number
6-foot horizontal straight section	FGS-MSHS-F
4x12 expandable straight section	FGS-MVAR-F
6-foot snap-on cover	FGS-MSSC-F



FGS-MSHS-F

4x12 Junction

Ordering Information

Description	Catalogue Number
4x12 snap-fit junction	FGS-MFAW-F



FGS-MFAW-F

4x12 System Support Kits

Ordering Information

Description	Catalogue Number
New threaded rod bracket (5/8 -inch)	FGS-HNTR-F-5/8
Existing threaded rod bracket (5/8 -inch)	FGS-HETR-F-5/8
Top support threaded rod bracket kit	FGS-HNTS-F-5/8
Top support low profile threaded rod bracket kit	FGS-HNTS-F-5/8-LP
Trapeze bracket kit	FGS-HNTP-F-5/8
Ladder rack centre support bracket kit	FGS-HNLR-F

Data Centre & Communications Room

FiberGuide® Fibre Management System

Vertical Duct Systems

Ordering Information

Description	Catalogue Number
2x2 vertical slotted duct kit, 6-feet	FGS-KTW1-C
2x2 vertical 1.5-inch slotted duct kit, 6-feet	FGS-KTW1-CA
2x2 vertical solid duct	FGS-KTW4-C
1x2 vertical duct kit	FGS-KTW1-E
1x2 solid vertical duct kit	FGS-KTW4-E
2x2 vertical to 1x2 vertical adaptor bracket	FGS-ACC063
2x2 vertical slotted duct, 6-feet	FGS-MSHS-C
2x2 vertical 1.5-inch slotted duct, 6-feet	FGS-MSHS-CA
Cover for 2x2 vertical duct, 6-feet	FGS-MSHC-C
2x2 vertical duct mounting bracket	FGS-HWMB-D
4x4 vertical duct kit	FGS-KTW2-D
4x4 vertical adaptor junction kit	FGS-MJWR-D
4x4 vertical slotted duct, 6-feet	FGS-MSHS-D
Cover for 4x4 vertical duct, 6-feet	FGS-MSHC-D
4x4 vertical duct mounting bracket	FGS-HWMB-D



FGS-KTW2-D

1 0 / 0 6 • 1 0 2 5 8 8 B E TrueNet® Structured Cabling

Accessories

Ordering Information

Description	Catalogue Number
Flex Tubing	
2-inch outer diameter slotted flex tube, 5-feet	FGS-MIDY-5F
2-inch outer diameter slotted flex tube, 10-feet	FGS-MIDY-10F
2-inch outer diameter slotted flex tube, 15-feet	FGS-MIDY-15F
1-inch outer diameter slotted flex tube, 100-feet	FGS-MLDY-100F
1-inch outer diameter slotted flex tube, 150-feet	FGS-MLDY-150F
1-inch outer diameter slotted flex tube, 200-feet	FGS-MLDY-200F
1-inch outer diameter slotted flex tube, 250-feet	FGS-MLDY-250F
7/8 -inch outer diameter slotted flex tube, 5-feet	FGS-MFTY-5F
7/8 -inch outer diameter slotted flex tube, 10-feet	FGS-MFTY-10F
7/8 -inch outer diameter slotted flex tube, 15-feet	FGS-MFTY-15F
7/8 -inch outer diameter slotted flex tube, 200-feet	FGS-MFTY-200F
Accessories	
Hinge kit for 4x4 and 4x6 covers (kit of 1)	FGS-HHGK
Self-closing hinge (kit of 3)	FGS-HVHG
Retainer rings (kit of 10)	FGS-HFRR-10
Trough cover clip kit	FGS-KTO9
Mitre box and saw	FGS-MKIT-ABF
Quick knobs (10)	FGS-KQKB
Quick knobs (100)	FGS-HQKK
Flex tube clamps (kit of 10)	FGS-HHEC-10



FGS-MIDY

Data Centre & Communications Room

Plenum FiberGuide® System

System Description

ADC KRONE's Plenum FiberGuide® System is a fibre cable raceway system that protects optical fibres, routed beneath raised computer room floors and above suspended ceilings. These physical areas, used to transport environment air, are typically categorised as plenum air spaces by local or national electrical regulations. In general, materials used in these spaces must be non-flammable and must not emit appreciable amounts of smoke or toxic gases when exposed to heat or flame.

Made from sturdy aluminium, ADC KRONE's Plenum FiberGuide System protects optical fibres by physically separating them from copper communications cable, power cable, ground cables, heating/ventilating ducts, water pipes and many other obstructions commonly encountered in plenum air spaces.

New Plenum FiberGuide Express Exits™ allow jumpers to be permanently or temporarily routed to the fibre optic terminal (FOT) equipment or fibre frames. No cutting is required because knockout sections can be punched out as necessary.

As seen in **Figure 1**, the Plenum FiberGuide System can be used above a dropped ceiling as well as below a raised computer floor.

Figure 2 details a layout below a computer floor. This illustration shows a plenum FiberGuide System featuring new Express Exits.

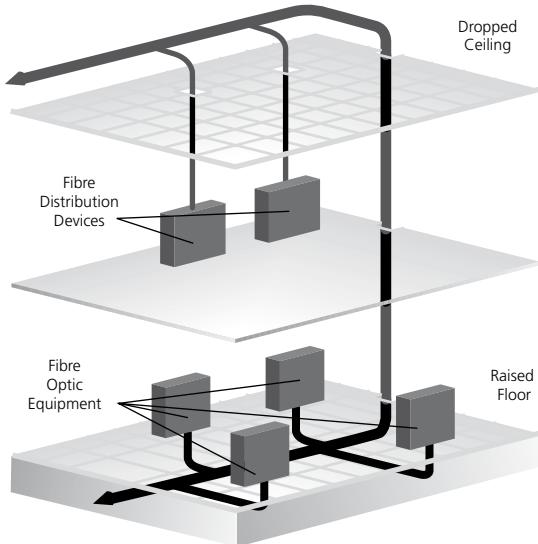


Figure 1



Figure 2

All plenum components, including mounting hardware for mounting the FiberGuide to the raised floor struts, are available in the Plenum FiberGuide product line.

Data Centre & Communications Room

Plenum FiberGuide® System

System Description

Straight sections: U-shaped troughs that provide a protective pathway for optical fibres. Straight sections are usually installed horizontally but may also be installed vertically when a system is mounted on multiple levels. Straight sections are six feet in length, and covers are also available. The covers snap into place but can be easily removed for fibre installation.

New Express Exits™: The Plenum FiberGuide® Express Exit system allows jumpers to be routed in and out of the system with ease. Express Exits are secured to the sidewall of a FiberGuide straight section where needed. No cutting is required because knockout sections allow for quick and easy deployment.

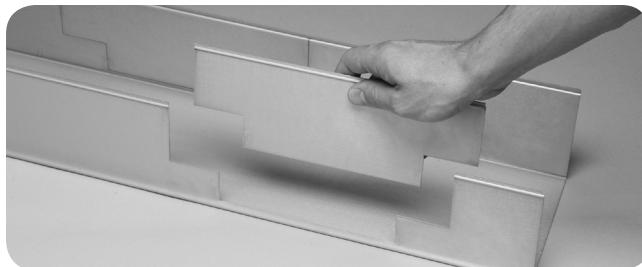
Fittings: Elbows, tees, crosses, trumpet flares and conversions. The fittings are used for changing direction, converting from one size system to another, adding branch segments and routing the fibres in and out of the system. Like the straight sections, snap-on covers are also available for the fittings.

Junction kits: Used for aligning and connecting straight sections and fittings. Two components are joined by inserting them into a junction and pushing them together.

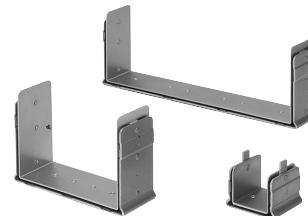
Support kits: Used to support the FiberGuide system. The short, long, span and diagonal bracket kits are used for supporting straight sections from round or square tubing.

Flexible tubing: Used in Plenum FiberGuide systems when the exact layout of the equipment drop locations is unknown or when frequent equipment relocations are expected. The flexible tubing is two inches in diameter and attaches to the end of a straight section with an adaptor. When the equipment configuration is known, the flexible tubing is routed to the exact drop location. Other flexible tubing components include splicing couplers, finishing couplers, mounting straps and additional lengths of tubing.

Both patch cords and IFC cables may be installed in the Plenum FiberGuide System. The required two inch bend radius for patch cords is maintained at all points within the system. IFC cables require the use of tie-down brackets to maintain the required cable bend radius specified by the cable manufacturer at the various fittings.



4x6 Horizontal Straight Section with Express Exit Cutouts



2x2, 4x6, and 4x12 Junction Kits



2x2 Horizontal Straight Section



4x6 Horizontal Straight Section



4x12 Horizontal Straight Section

Data Centre & Communications Room

Plenum FiberGuide® System

Patch Cord Densities

Recommended capacity takes into consideration random jumper placement into the FiberGuide® system. Trough capacity refers to the maximum number of fibre jumpers in a given cross-section of a FiberGuide installation.

Recommended Density

	Single Patch Cords		
	1.7mm	2.0mm	3.0mm
Recommended Patch Cord Density (per inch ²)	120	90	40

Trough Pile-up	2x2 FiberGuide System			4x6 FiberGuide System			4x12 FiberGuide System		
	1.7mm	2.0mm	3.0mm	1.7mm	2.0mm	3.0mm	1.7mm	2.0mm	3.0mm
2-inch	480	360	160	1440	1080	480	2880	2160	960
3-inch	-	-	-	-	1620	720	4320	3240	1440
4-inch	-	-	-	-	2160	960	5760	4320	1920

Using Lab Manual Set-ups
Pile-up beyond 2 inches is not recommended

Maximum Density

	1.7mm Patch Cords	2.0mm Patch Cords	3.0mm Patch Cords
Maximum Patch Cord Density (per inch ²)	142	102	44

Trough Pile-up	2x2 FiberGuide System			4x6 FiberGuide System			4x12 FiberGuide System		
	1.7mm	2.0mm	3.0mm	1.7mm	2.0mm	3.0mm	1.7mm	2.0mm	3.0mm
2-inch	568	408	176	1704	1224	528	3408	2448	1056
3-inch	-	-	-	2556	1836	792	5112	3672	1584
4-inch	-	-	-	3408	2448	1056	6862	4896	2112

Using GR-449-CORE Bellcore Formula

Data Centre & Communications Room

Plenum FiberGuide® System

2x2 System (2" H x 2" W)

The 2x2 Plenum FiberGuide® system interfaces with ADC KRONE's standard 2x2 FiberGuide System and requires no special conversion piece.

Ordering Information

Description	Catalogue Number		
	Fitting	Snap-on Cover	Number of Junctions
Straight section 2x2 straight section—length: 6'	PFGF-PSHS-C	PFGC-PSHS-C	—
Fittings			
2x2 horizontal T	PFGF-PHRT-C	PFGC-PHRT-C	3
2x2 horizontal cross	PFGF-PHXP-C	PFGC-PHXP-C	4
2x2 90° horizontal elbow	PFGF-PH9E-C	PFGC-PH9E-C	2
2x2 45° horizontal elbow	PFGF-PH4E-C	PFGC-PH4E-C	2
2x2 90° up elbow	PFGF-PUPE-C	PFGC-PUPE-C	2
2x2 90° down elbow	PFGF-PDNE-C	PFGC-PDNE-C	2
2x2 45° up elbow	PFGF-PU4E-C	PFGC-PU4E-C	2
2x2 45° down elbow	PFGF-PD4E-C	PFGC-PD4E-C	2
Trumpet flares			
2x2 trumpet flare—3 sided	PFGF-PTRM-C	—	—
2x2 trumpet flare—4 sided	PFGF-PFPT-C	—	—
Conversions			
2x2 Plenum to 4x6 Plenum conversion	PFGF-PDSA-C/B	PFGC-PDSA-C/B	(1) 2x2 (1) 4x6
2x2 Plenum to 4x12 Plenum conversion	PFGF-PDSA-C/F	PFGC-PDSA-C/F	(1) 2x2 (1) 4x12
Junctions			
2x2 junction	PFGF-PJWR-C	—	—
2x2 end cap—Includes 2x2 junction	PFGF-PMEC-C	—	—

Data Centre & Communications Room

Plenum FiberGuide® System

4x6 System (4" H x 6" W)

Ordering Information

Description	Catalogue Number		
	Fitting	Snap-on Cover	Number of Junctions
Straight section 4x6 straight section—6' long	PFGF-PSHS-B	PFGC-PSHS-B	—
Fittings			
4x6 horizontal T	PFGF-PHRT-B	PFGC-PHRT-B	3
4x6 horizontal cross	PFGF-PHXP-B	PFGC-PHXP-B	4
4x6 90° horizontal elbow	PFGF-PH9E-B	PFGC-PH9E-B	2
4x6 45° horizontal elbow	PFGF-PH4E-B	PFGC-PH4E-B	2
4x6 90° up elbow	PFGF-PUPE-B	PFGC-PUPE-B	2
4x6 90° down elbow	PFGF-PDNE-B	PFGC-PDNE-B	2
4x6 45° up elbow	PFGF-PU4E-B	PFGC-PU4E-B	2
4x6 45° down elbow	PFGF-PD4E-B	PFGC-PD4E-B	2
Trumpet flares			
4x6 trumpet flare—3 sided	PFGF-PTRM-B	—	—
4x6 trumpet flare—4 sided	PFGF-PFPT-B	—	—
Conversions			
4x6 Plenum to 4x6 standard conversion * One 4x6 Plenum junction kit required; 4x6 standard junction is not required	PFGF-PPSC-B	—	1*
4x6 Plenum to 12" Plenum conversion	PFGF-PDSA-B/F	PFGC-PDSA-B/F	(1) 4x6, (1) 4x12
Junctions			
4x6 junction	PFGF-PJWR-B	—	—
4x6 end cap—includes 4x6 junction	PFGF-PMEC-B	—	—

Data Centre & Communications Room

Plenum FiberGuide® System

4x12 System (4" H x 12" W)

Ordering Information

Description	Catalogue Number		
	Fitting	Snap-on Cover	Number of Junctions
Straight section 4x12 straight section—6' long	PFGF-PSHS-F	PFGC-PSHS-F	—
Fittings			
4x12 horizontal T	PFGF-PHRT-F	PFGC-PHRT-F	3
4x12 horizontal cross	PFGF-PHXP-F	PFGC-PHXP-F	4
4x12/4x6 horizontal T	PFGF-PHRT-F/B	PFGC-PHRT-F/B	(2) 4x12, (1) 4x6
4x12 90° horizontal elbow	PFGF-PH9E-F	PFGC-PH9E-F	2
4x12 45° horizontal elbow	PFGF-PH4E-F	PFGC-PH4E-F	2
4x12 90° up elbow	PFGF-PUPE-F	PFGC-PUPE-F	2
4x12 90° down elbow	PFGF-PDNE-F	PFGC-PDNE-F	2
4x12 45° up elbow	PFGF-PU4E-F	PFGC-PU4E-F	2
4x12 45° down elbow	PFGF-PD4E-F	PFGC-PD4E-F	2
Trumpet flares			
4x12 trumpet flare—3 sided	PFGF-PTRM-F	—	—
4x12 trumpet flare—4 sided	PFGF-PFPT-F	—	—
Junctions			
4x12 junction	PFGF-PJWR-F	—	—
4x12 end cap—includes 4x12 junction	PFGF-PMEC-F	—	—

Accessories (Support Bracket Kits)

Ordering Information

Description	Catalogue Number
Short bracket kit for use with 2x2 and 4x6 sizes; 8.21" overall length	PFGF-SSPT-C/B
Short bracket kit with square U-bolt for easy access mounting	PFGF-EASSPT-C/B
Long bracket kit for use with 2x2, 4x6, and 4x12 sizes; 18.84" overall length	PFGF-LSPT-C/B/F
Long bracket kit with square U-bolt for easy access mounting	PFGF-EALSPT-C/B/F
Span bracket kit for use with 2x2, 4x6, and 4x12 sizes; spans 24" centre to centre floor struts	PFGF-ESPT-C/B/F
Span bracket kit with square U-bolt for easy access mounting	PFGF-EAESPT-C/B/F
Diagonal span bracket kit for use with 2x2, 4x6, and 4x12 sizes; spans diagonally up to 34" between struts	PFGF-DSPT-C/B/F
Diagonal span bracket kit with square U-bolt for easy access mounting	PFGF-EADSPT-C/B/F

All support bracket kits fit round support pedestals sizes 0.5" to 1.125".

Data Centre & Communications Room

Plenum FiberGuide® System

Accessories (Flexible Tubing)

Ordering Information

Description	Catalogue Number
One hose adaptor , with 5' (1.53m) hoses and finishing couplers	PFGF-KT03-C
Two hose adaptor , with 5' (1.53m) hoses and finishing couplers	PFGF-KT03-B
Extension tube , 5' (1.53m) long with splice coupler	PFGF-HEXT
Finishing coupler	PFGF-HFIN
Mounting strap	PFGF-HMST
Splicing coupler	PFGF-HSPL
Flexible tubing , 2" (5.08cm) inner diameter (X = length in feet: 5, 15, 35, 75, 110, 150)	PFGF-MIDY-XFI
Tie down bracket for intrafacility cable (IFC)	PFGF-PIFC

TrueNet® Structured Cabling

10/06 • 102588BE



Data Centre & Communications Room Augmented Category 6

Patch Panels	4.52
Patch Cords	4.54

Data Centre & Communications Room

Augmented Category 6 Patch Panels

TrueNet® CopperTen™ Modular Patch Panel

The CopperTen unshielded (UTP) patch panel is a core component of the CopperTen solution.

As with all products that make up the CopperTen solution, it was critical the insertion loss and alien crosstalk issues prevalent at high frequencies were addressed.

This involved electrical changes to the jack and introduction of a carbon cap alongside the use of a plastic 19" 1U housing to deliver the full 24 ports.

The standard CopperTen patch panel has t-bar cable-tie points found on traditional style patch panels. It also has the added option of an innovative cable management system that clips into the panel and grips the cable, which allows for fast installation and protection.



Features

- Supports 10 Gigabit Ethernet over unshielded copper to a full 100m up to 500MHz
- Exceeds the requirements of IEEE 802.3an (10GBASE-T) and channel requirements of ISO/IEC 11801:2002 amendment
- 19" 1U design incorporating 24 CopperTen UTP modular jacks
- Innovative and integrated cable management system allows for swift installation and cable protection
- Maximises productivity levels with 10 times the data throughput of Category 6
- True future proofing for tomorrow's network applications
- Covered by TrueNet System Warranty

Ordering Information

Description	Catalogue Number
Patch Panel, CopperTen Modular UTP 24 ports	6527 1 743-00
Clip & Grip Cable Management (Pack of 4)	7022 3 153-00

For termination tools and accessories please refer to page 4.102

Data Centre & Communications Room

Augmented Category 6 Patch Panels

TrueNet® CopperTen™ Modular Patch Panel

Technical Specification

Electrical Data

Insulation resistance at +60°C and 93% relative humidity (R.H.)	≥ 1GΩ
Dielectric strength	Contact / contact ≥ 1.0kV DC Contact / shield ≥ 1.0kV DC
Current carrying capacity	≥ 1A
Typical plug / jack contact resistance	≤ 20mΩ
Typical IDC contact resistance	≤ 5mΩ
Conductor terminations of LSA-PLUS® contacts	≥ 200
Conductor diameter	0.5-0.65mm (AWG 24-22)
Insulation diameter	0.7-1.6mm

Mechanical Data

Plug / jack mating cycles	≥ 750 (IEC/EN 60603-7)
Plug / jack insertion / withdrawl force	≤ 20N (IEC/EN 60603-7)
Operating temperature range	-10°C to +60°C
Operating humidity range	≤ 95% R.H. non condensing
Dimensions	483mm x 44mm x 142mm

Testing Requirements

Connection technology	ISO/IEC 11801:2002 ANSI/TIA/EIA-568-B.2-1 EN 50173-1:2002
Channel testing	Latest ISO/IEC 11801:2002 Amendment/channel requirements

Data Centre & Communications Room

Augmented Category 6 – Patch Cords

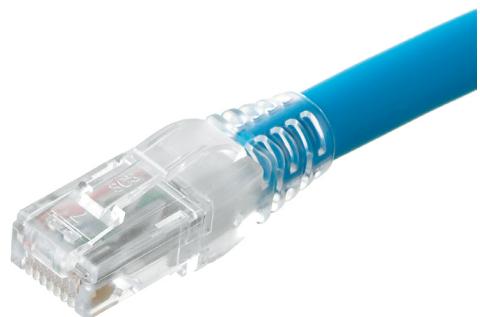
TrueNet® CopperTen™ Patch Cords

The CopperTen Unshielded (UTP) Patch Cord is used at the work area or in the Data Centre/communications room.

The patch cord is designed to reduce insertion loss and alien crosstalk measurements that are prevalent at the high frequencies associated with 10 Gigabit Ethernet.

The high performance plug is designed with an integrated strain relief boot that prevents the cable from moving at the termination point when the cable is flexed. The strain relief boot also ensures that the correct bend radius is maintained.

The copper conductors held within the cable pairs are stranded for superior flexibility.



Features

- Supports 10 Gigabit Ethernet over unshielded copper to a full 100m up to 500MHz
- Exceeds the requirements of IEEE 802.3an (10GBASE-T) and channel requirements of ISO/IEC 11801:2002 amendment/channel requirements
- Superior cable flexibility from stranded cores
- Boot maintains correct bend radius to ensure maximum performance
- Maximises productivity levels with 10 times the data throughput of Category 6
- True future proofing for tomorrow's network applications
- Covered by TrueNet System Warranty

Ordering Information

Description	Description	Catalogue Number
Augmented Category 6 Patch Cord RJ45 plug to RJ45 plug, T568B		
	Blue LSZH UTP 1.0m	6645-2-827-04
	Blue LSZH UTP 2.0m	6645-2-827-07
	Blue LSZH UTP 3.0m	6645-2-827-10
	Blue LSZH UTP 5.0m	6645-2-827-15
	Blue LSZH UTP 7.5m	6645-2-827-25
	Blue LSZH UTP 10m	6645-2-827-33

Contact ADC KRONE for additional cable colours and lengths.

Data Centre & Communications Room

Augmented Category 6 – Patch Cords

TrueNet® CopperTen™ Patch Cords

Technical Specifications

Mechanical Data

Operating temperature range:	-20°C to 75°C
RJ45 plug interface according to:	IEC 60603-7
Conductor:	24 AWG 7x32 stranded tinned copper
Jacket:	LSZH (EN 60754-1 & -2)
Nominal outer diameter:	7.7mm

Compliances

Safety rating:	IEC/EN 60950
Flammability rating:	LVD compliant IEC 60332-1

Testing Requirements

Connection technology	ISO/IEC 11801:2002 ANSI/TIA/EIA-568-B.2-1 EN 50173-1:2002
Channel testing	Latest ISO/IEC 11801:2002 Amendment/channel requirements



Data Centre & Communications Room

Category 6

Patch Panels	4.58
Termination Blocks.....	4.60
Patch Cords.....	4.61

Data Centre & Communications Room

Category 6 – Patch Panels

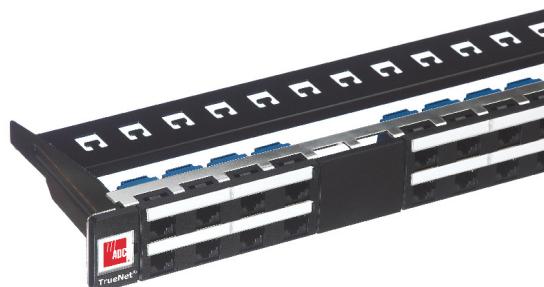
TrueNet® Modular KM8® Patch Panels

TrueNet® Category 6 modular patch panels from ADC KRONE offer high performance and a range of installation options.

The modular Category 6 panel utilises the high performing KM8® keystone jack.

Modular panels offer complete flexibility within the communications room and with the KM8 panel flexibility is further enhanced by the 1U 16, 24 and high density 32 port formats (shielded or unshielded).

TrueNet Category 6 patch panels are compliant with the Category 6 standard at a component level and come complete with third party certification.



Test Specification

Exceeds specifications according to ISO/IEC 11801:2002, EN 50173-1:2002 and TIA/EIA 568-B

Features

- Performance exceeding Category 6 specifications up to 250MHz
- KM8 modular panels offer complete flexibility and high port density
- Expansive cable management, full fixing kit, and twin level labelling
- Fully interoperable and backwards compatible
- Third party certification at a component level
- Maximum throughput, reliability and performance in your IT network
- Flexibility to suit installation requirements
- Covered by the TrueNet System Warranty

Ordering Information

Description	Catalogue Number
Patch Panel, Category 6 KM8 UTP 16 ports	7022 1 056-16
Patch Panel, Category 6 KM8 UTP 24 ports	7022 1 056-24
Patch Panel, Category 6 KM8 UTP 32 ports	7022 1 056-32
Patch Panel, Category 6 KM8 STP 16 ports	7022 1 055-16
Patch Panel, Category 6 KM8 STP 24 ports	7022 1 055-24
Patch Panel, Category 6 KM8 STP 32 ports	7022 1 055-32
Patch Panel, Category 6 KM8 16 ports (unloaded panels)	7022 2 155-16
Patch Panel, Category 6 KM8 24 ports (unloaded panels)	7022 2 155-24
Patch Panel, Category 6 KM8 32 ports (unloaded panels)	7022 2 155-32

For termination tools and accessories please refer to page 4.102
 For KM8 jacks please refer to the Work Area section, page 6.24

Data Centre & Communications Room

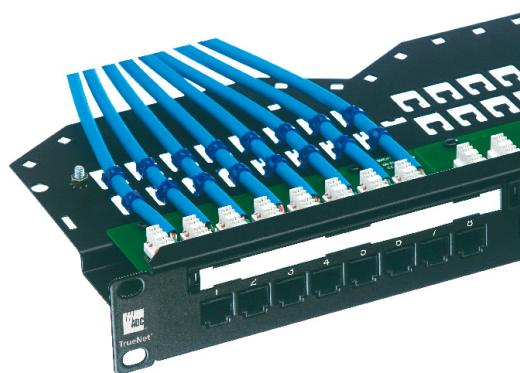
Category 6 – Patch Panels

TrueNet® PCB Patch Panel

The TrueNet® Category 6 PCB patch panel from ADC KRONE delivers high performance and is designed for rapid installation.

The 1U horizontal PCB patch panel, in UTP 24 port format, delivers fast, gas tight, reliable terminations via LSA-PLUS® contacts every time. The layout and design of the PCB significantly reduces deployment time and installation costs whilst ensuring optimum Category 6 performance.

TrueNet Category 6 patch panels are compliant with the Category 6 standard at a component level and come complete with third party certification.



Features

- Performance exceeding Category 6 specifications up to 250MHz
- Expansive cable management, full fixing kit, IDC dust protection and labelling facilities
- Fully interoperable and backwards compatible
- Third party certification at a component level
- Maximum throughput, reliability and performance in your IT network
- PCB layout and design significantly reduces deployment time
- Covered by the TrueNet System Warranty

Test Specification

ISO/IEC 11801:2002, EN 50173-1:2002 and TIA/EIA 568-B

Ordering Information

Description	Catalogue Number
Patch Panel, Category 6 PCB UTP 24 ports	6527 1 660-24

For termination tools and accessories please refer to page 4.102

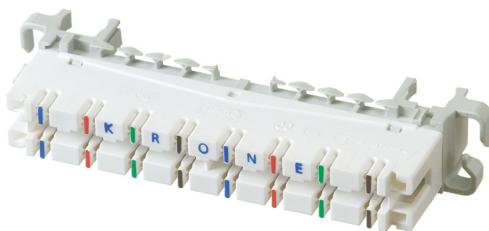
Data Centre & Communications Room

Category 6 – Termination Blocks

HighBand Ultim8™ Termination Blocks

Features

- Performance exceeds TIA/EIA Category 6
- Designed to support Gigabit Ethernet transmission speeds
- A test port provides “look-both-ways” testing capability without the removal of any wires; also allows simple circuit monitoring through use of a test cord
- Provide unique patch-by-exception functionality



Ordering Information

Description	Dimensions (HxWxD)	Catalogue Number
Ultim8™ block Quantity:1		
8-pair: colour-coding for station pairs printed on face of block. Includes wire guides and jumper rings.	22.5mm x 124mm x 41.4mm	6468 5 060-06

Accessories

Accessories include a label holder for circuit identification, and disconnection plugs for rapid disconnection of installed circuits.

Ordering Information

Description	Pack Qty	Catalogue Number
1 Pair Test Plug Set	1	6451 2 055-00
Label Holder	10	6462 2 096-00
1 Pair Disconnection Plug	50	6462 2 097-00

For HighBand® frames please refer to page 4.101

Data Centre & Communications Room

Category 6 – Patch Cords

TrueNet® Solid Core Patch Cords

For use in data centres and communications rooms to enable 'hard-wired' connections between patch panels and active networking equipment.

Wired to T568-B and complete with terminated plugs at both ends, patch cords are 100% tested and warranted.

Test Specification

Exceeds specifications according to ISO/IEC 11801:2002, EN 50173-1:2002 and TIA/EIA 568-B

Fire rating IEC 60332-1



Features

- Performance exceeding Category 6 specifications up to 250MHz
- Wired to T568-B
- Complete with integrated strain relief to protect terminations within the plug
- Fully interoperable and backwards compatible
- Maximum throughput, reliability and performance in your IT network
- Covered by the TrueNet System Warranty

Ordering Information

Description	Description	Catalogue Number
Patch Cord, Solid Core, Category 6 RJ45 plug to RJ45 plug, T568B		
	Orange LSZH UTP 20m	6529 1 225-20
	Orange LSZH UTP 30m	6529 1 225-30
	Orange LSZH UTP 40m	6529 1 225-40
	Orange LSZH UTP 50m	6529 1 225-50

Contact ADC KRONE for additional cable lengths.

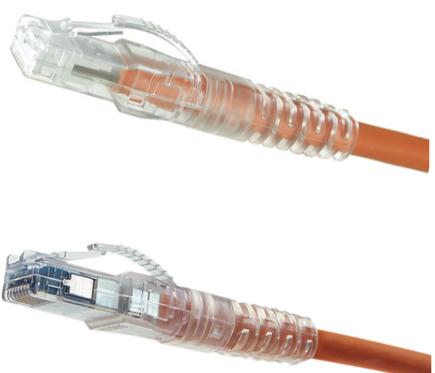
Data Centre & Communications Room

Category 6 – Patch Cords

Category 6 KM8® UTP and S/FTP Patch Cord

TrueNet® Category 6 KM8® patch cords from ADC KRONE offer high performance and flexibility.

Impedance matched for use in TrueNet structured cabling systems, the KM8 patch cord exceeds all performance requirements for Category 6. The plug is designed with an integrated strain relief boot that prevents the cable from moving at the termination point when the cable is flexed, safeguarding circuit integrity and guaranteeing maximum performance. The strain relief boot also ensures that the correct bend radius is maintained throughout the network.



Features

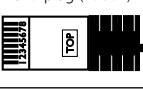
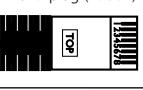
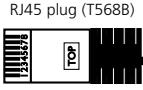
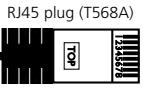
- Performance exceeding Category 6 specifications up to 250MHz
- Range of sheath and length variants
- Fully interoperable and backwards compatible
- Maximum throughput, reliability and performance in your IT network
- Superior cable flexibility from stranded cores
- Boot maintains correct bend radius to ensure maximum performance
- Third party certification to offer complete peace of mind and guarantee quality
- Covered by the TrueNet System Warranty

Test Specification

Exceeds specifications according to ISO/IEC 11801:2002, EN 50173-1:2002 and TIA/EIA 568-B

Fire rating IEC 60332-1 (UTP), IEC 60332-3 (S/FTP)

Ordering Information

Description	Cable Colour/Type [†]	Catalogue Number*
Category 6 KM8 Patch Cord RJ45 plug to RJ45 plug, T568B RJ45 plug (T568B)  RJ45 plug (T568B) 	Blue LSZH UTP/S-FTP [†] Red LSZH UTP/S-FTP [†] Yellow LSZH UTP/S-FTP [†] Green LSZH UTP/S-FTP [†] Orange LSZH UTP/S-FTP [†] Grey LSZH UTP/S-FTP [†]	6830 2 8Y1-XX 6830 2 8Y2-XX 6830 2 8Y3-XX 6830 2 8Y4-XX 6830 2 8Y5-XX 6830 2 8Y7-XX
Category 6 KM8 Patch Cord RJ45 plug to RJ45 plug, crossover wired RJ45 plug (T568B)  RJ45 plug (T568A) 	Blue LSZH UTP/S-FTP Red LSZH UTP/S-FTP Yellow LSZH UTP/S-FTP Green LSZH UTP/S-FTP Orange LSZH UTP/S-FTP Grey LSZH UTP/S-FTP	6830 2 911-XX 6830 2 912-XX 6830 2 913-XX 6830 2 914-XX 6830 2 915-XX 6830 2 917-XX

[†]For UTP Cable Y = 2, for S/FTP Cable Y = 6.

*Replace XX with:

04 = 1m 10 = 3m 25 = 7.5m
07 = 2m 15 = 5m 33 = 10m

Contact ADC KRONE for additional cable colours and lengths.

Data Centre & Communications Room

Category 6 – Patch Cords

Patch Cords for HighBand Ultim8™ Blocks

These patch cords allow direct patching capability between Ultim8 blocks or patching from an Ultim8 block to an active device or an RJ45 patch panel.



Test Specification

Exceeds specifications according to ISO/IEC 11801:2002, EN 50173-1:2002 and TIA/EIA 568-B

Fire rating IEC 60332-1

Ordering Information

Description	Cable Colour	Catalogue Number*
Ultim8 plug to Ultim8 plug, wired straight through; wired top (cable) side only Quantity: 1	White	TP6TH-WTXX
Pair No.	Blue	TP6TH-BLXX
Pair 4	Red	TP6TH-RDXX
Pair 3	Green	TP6TH-GNXX
Pair 2	Yellow	TP6TH-YLXX
Pair 1	Grey	TP6TH-GYXX
Ultim8 plug to RJ45 plug, T568A Quantity: 1	White	TP6TB0WTXX
RJ45 Plug Pin # Pair No.	Blue	TP6TB0BLXX
8 Pair 4	Red	TP6TB0RDXX
7 Pair 3	Green	TP6TB0GNXX
2 Pair 2	Yellow	TP6TB0YLXX
1 Pair 1	Grey	TP6TB0GYXX
Ultim8 plug to RJ45 plug, T568B Quantity: 1	White	TP6TB-WTXX
RJ45 Plug Pin # Pair No.	Blue	TP6TB-BLXX
8 Pair 4	Red	TP6TB-RDXX
7 Pair 3	Green	TP6TB-GNXX
6 Pair 2	Yellow	TP6TB-YLXX
3 Pair 1	Grey	TP6TB-GYXX

* Replace XX with:

04 = 1m

07 = 2m

10 = 3m

15 = 5m

25 = 7.5m

33 = 10m

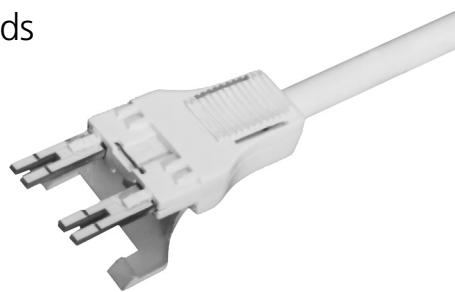
Contact ADC KRONE for additional cable colours and lengths.

Data Centre & Communications Room

Category 6 – Patch Cords

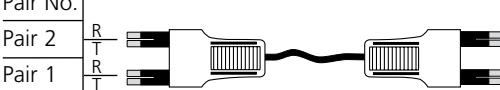
HighBand Ultim8™ 1 and 2 Pair Patch Cords

These patch cords provide direct patching capability using standard straight-through wiring. Ultim8 block plugs are keyed for proper insertion and have a latching mechanism to keep them secure. These patch cords are recommended for 10BASE-T/Token Ring or voice installations using Ultim8 blocks.



Ultim8™ 2-pair patch cord

Ordering Information

Description	Catalogue Number*
Ultim8 plug to Ultim8 plug, 1-pair, wired top (cable) side only, white cable Quantity: 1 	6648 2 000-XX
Ultim8 plug to Ultim8 plug, 2-pair, wired top (cable) side only, white cable Quantity: 1 	6648 2 005-XX

*Replace XX with:

- 04 = 1m
- 07 = 2m
- 10 = 3m
- 15 = 5m
- 25 = 7.5m
- 33 = 10m

Data Centre & Communications Room

Category 5e



Patch Panels	4.66
Termination Blocks.....	4.70
Patch Cords.....	4.72

Data Centre & Communications Room

Category 5e – Patch Panels

TrueNet® PCB Patch Panel UTP and S/FTP

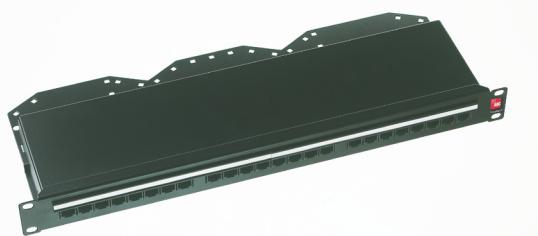
High density 19" PCB patch panels complete with rear cover, instruction sheet and fixing kit.

Dimensions

1U high, 19" wide, 175mm deep
1.5U high, 19" wide, 175mm deep

Test Specification

Exceeds specifications according to
ISO/IEC 11801:2002, EN 50173-1:2002
and TIA/EIA 568-B



Features

- Performance exceeding Category 5e specifications up to 100MHz
- Swift terminations onto LSA-PLUS® IDC blocks
- Complete with IDC dust protection and fixing kit
- Fishtail design to vary cable management to suit installation requirement
- Available as 1U 16 port S/FTP; 1U 24 port UTP and STP; and 1.5U 48 port UTP and STP
- Covered by the TrueNet System Warranty

Ordering Information

Description	Catalogue Number
Patch Panel, Category 5e PCB 24 Port UTP	6527 1 607-24
Patch Panel, Category 5e PCB 48 Port UTP	6527 1 630-00
Patch Panel, Category 5e PCB 16 Port S/FTP	7022 1 015-16
Patch Panel, Category 5e PCB 24 Port S/FTP	7022 1 015-24
Patch Panel, Category 5e PCB 48 Port S/FTP	6527 1 632-00

Data Centre & Communications Room

Category 5e – Patch Panels

TrueNet® Modular HK Patch Panels UTP and S/FTP

High density 19" 1U modular patch panels utilising the high performing keystone punch down HK jack.



Dimensions

1.5U high, 19" wide, 154mm deep

Test Specification

Exceeds specifications according to ISO/IEC 11801:2002, EN 50173-1:2002 and TIA/EIA 568-B



Features

- Performance exceeding Category 5e specifications up to 100MHz
- Available in 1U 16, 24 and high density 32 port variants
- RJ45 HK jacks with LSA-PLUS connection technology
- Complete with fixings
- Available in UTP and S/FTP formats
- Covered by the TrueNet System Warranty

Ordering Information

Description	Catalogue Number
Patch Panel, Category 5e HK 16 Port UTP	6690 1 402-16
Patch Panel, Category 5e HK 24 Port UTP	6690 1 402-24
Patch Panel, Category 5e HK 32 Port UTP	6690 1 402-32
Patch Panel, Category 5e HK 16 Port S/FTP	6690 1 412-16
Patch Panel, Category 5e HK 24 Port S/FTP	6690 1 412-24
Patch Panel, Category 5e HK 32 Port S/FTP	6690 1 412-32
Patch Panel, Unloaded HK/KM8 16 Port	7022 2 150-16
Patch Panel, Unloaded HK/KM8 24 Port	7022 2 150-24
Patch Panel, Unloaded HK/KM8 32 Port	7022 2 150-32

For termination tools and accessories please refer to page 4.102

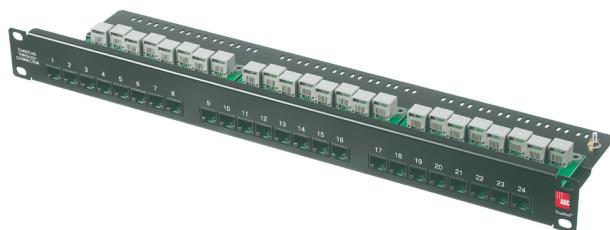
For HK jacks please refer to the Work Area section, page 6.36

Data Centre & Communications Room

Category 5e – Patch Panels

TrueNet® Through Coupler Patch Panel UTP and S/FTP

19" 1U 24 way patch panel, featuring RJ45 jacks on both front and rear. Colour coded label strips and fixings included.



Dimensions

1.5U high, 19" wide, 128mm deep

Test Specification

Exceeds specifications according to ISO/IEC 11801:2002, EN 50173-1:2002 and TIA/EIA 568-B

Features

- Performance exceeding Category 5e specifications up to 100MHz
- Convenient connection field for data applications
- Covered by the TrueNet System Warranty

Ordering Information

Description	Catalogue Number
Patch Panel, Through Coupler 24 Port UTP	6527 1 623-24
Patch Panel, Through Coupler 24 Port S/FTP	ADCPP24RJ5E-S

Data Centre & Communications Room

Category 5e – Patch Panels

TrueNet® LN Patch Panel

19" 1U 16 way unshielded patch panel with fitted jacks. Integral cable management and reusable label holders. Supplied complete with fixings.



Dimensions

1.5U high, 19" wide, 101mm deep

Test Specification

Exceeds specifications according to ISO/IEC 11801:2002, EN 50173-1:2002 and TIA/EIA 568-B

Features

- Performance exceeding Category 5e specifications up to 100MHz
- Modular design enabling rapid installation
- Covered by the TrueNet System Warranty

Ordering Information

Description	Catalogue Number
Patch Panel, Category 5e Modular LN 16 Port UTP	6533 1 710-16

Data Centre & Communications Room

Category 5e – Termination Blocks

HighBand® 8 Block

High performance cross connection system enabling the user to both jumper and patch on the same module.



Features

- HighBand® 8 blocks meet TIA/EIA/ISO Category 5e component specifications, resulting in increased throughput for DSL and other broadband applications
- Terminate two 4 pair UTP cables in one block
- HighBand 8 blocks are familiar to Series 2 (237A) users and installers, eliminating training
- Test port provides “look-both-ways” testing capability without the removal of any wires, as well as simple monitoring of a circuit using ADC KRONE test cords
- Pre-terminated blocks reduce installation time
- Complete patching and cross-connect options provide the versatility required for easy changes or testing minimising any network downtime
- Labeling options allow for comprehensive identification
- Identical dimensions to 10 pair LSA-PLUS® Series 2 modules, allowing for normal mounting hardware to be used (e.g. back mount frame or Profil®)
- Covered by the TrueNet System Warranty

Test Specification

Exceeds specifications according to ISO/IEC 11801:2002, EN 50173-1:2002 and TIA/EIA 568-B

Ordering Information

Description	Catalogue Number
HighBand 8 pair module complete with jumper rings (pack of 10)	6468 5 060-00
HighBand 8 pair module without jumper rings (pack of 10)	6468 5 060-20

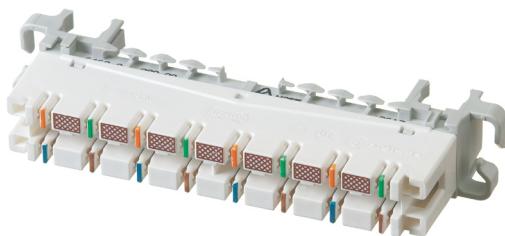
For dedicated frames please refer to page 4.101

Data Centre & Communications Room

Category 5e – Termination Blocks

HighBand® 16 Block

High performance cross connection system for use where high density patching is required.



Features

- HighBand® 16 blocks meet TIA/EIA/ISO Category 5e component specifications, resulting in increased throughput for DSL and other broadband applications
- Terminates four 4 pair UTP cables in one block
- Test port provides “look-both-ways” testing capability without the removal of any wires, as well as simple monitoring of a circuit using ADC KRONE test cords
- Preterminated blocks reduce installation time
- Complete patching and cross-connect options provide the versatility required for easy changes or testing minimising any network downtime
- Identical dimensions to 10 pair LSA-PLUS® Series 2 modules, allowing for normal mounting hardware to be used (e.g. back mount frame or Profil®)

Test Specification

Exceeds specifications according to ISO/IEC 11801:2002, EN 50173-1:2002 and TIA/EIA 568-B

Ordering Information

Description	Catalogue Number
HighBand 16 Pair Module – complete with jumper rings (pack of 10)	6468 5 080-00
HighBand 16 Pair Module – without jumper rings (pack of 10)	6468 5 080-20

For dedicated frames please refer to page 4.101
 For test plugs please refer to page 4.60

Data Centre & Communications Room

Category 5e – Patch Cords

Category 5e FTP and S/FTP Patch Cords

TrueNet® Category 5e patch cords with strain relief available in standard T568B configuration, LSZH and PVC.



Features

- Performance exceeding Category 5e specifications up to 100MHz
- Range of sheath and length variants
- Fully interoperable and backwards compatible
- Superior cable flexibility from stranded cores
- Boot maintains correct bend radius to ensure maximum performance
- Flammability rating for PVC and LSZH cords: IEC 60332-1
- Covered by the TrueNet System Warranty

Test Specification

Exceeds specifications according to ISO/IEC 11801:2002, EN 50173-1:2002 and TIA/EIA 568-B

Fire rating IEC 60332-1

Ordering Information

Description	Description	Catalogue Number*
Category 5e Patch Cord RJ45 plug to RJ45 plug, T568B	FTP PVC Grey	7063 2 537-XX
	FTP LSZH Grey	7063 2 547-XX
	S/FTP PVC Grey	7063 2 557-XX
	S/FTP LSZH Grey	7063 2 567-XX

*Replace XX with:

04 = 1m 10 = 3m
07 = 2m 15 = 5m

Contact ADC KRONE for additional cable colours and lengths.

Data Centre & Communications Room

Category 5e – Patch Cords

Category 5e Overmoulded UTP Patch Cords

TrueNet® Category 5e overmoulded patch cords with integrated strain relief available in standard T568B and crossover configurations, LSZH and PVC.

Before ordering patch cords, check the transmit and receive orientation of the hub and network interface card. Some manufacturers require a crossover of transmit and receive pairs; others have either the hub port or NIC card reversed in advance. Some can switch between the two.



Features

- Performance exceeding Category 5e specifications up to 100MHz
- Range of sheath and length variants
- Fully interoperable and backwards compatible
- Third party certification at a component level
- Superior cable flexibility from stranded cores
- Boot maintains correct bend radius to ensure maximum performance
- Flammability rating for PVC and LSZH cords: IEC 60332-1
- Covered by the TrueNet System Warranty

Test Specification

Exceeds specifications according to ISO/IEC 11801:2002, EN 50173-1:2002 and TIA/EIA 568-B

Fire rating IEC 60332-1

Ordering Information

Description	Cable Colour	Catalogue Number*
Category 5e Overmoulded Patch Cord RJ45 plug to RJ45 plug, T568B RJ45 plug (T568B)  RJ45 plug (T568B)	Blue UTP Red UTP Yellow UTP Green UTP Orange UTP Grey UTP	7063 2 6X1-YY 7063 2 6X2-YY 7063 2 6X3-YY 7063 2 6X4-YY 7063 2 6X5-YY 7063 2 6X7-YY
Category 5e Overmoulded Patch Cord RJ45 plug to RJ45 plug, crossover wired RJ45 plug (T568B)  RJ45 plug (T568A)	Blue UTP Red UTP Yellow UTP Green UTP Orange UTP Grey UTP	7063 2 6X1-YY 7063 2 6X2-YY 7063 2 6X3-YY 7063 2 6X4-YY 7063 2 6X5-YY 7063 2 6X7-YY

*Replace X in T568B with:

1 = PVC 2 = LSZH

Replace X in crossover with:

7 = PVC 8 = LSZH

Replace YY with:

04 = 1m 10 = 3m 25 = 7.5m

07 = 2m 15 = 5m 33 = 10m

Contact ADC KRONE for additional cable colours and lengths.

Data Centre & Communications Room

Category 5e – Patch Cords

Category 5e Unbooted UTP Patch Cords

TrueNet® Category 5e unbooted patch cords available in standard T568B and crossover configurations, LSZH and PVC.

Before ordering patch cords, check the transmit and receive orientation of the hub and network interface card. Some manufacturers require a crossover of transmit and receive pairs; others have either the hub port or NIC card reversed in advance. Some can switch between the two.



Features

- Performance exceeding Category 5e specifications up to 100MHz
- Range of sheath and length variants
- Fully interoperable and backwards compatible
- Third party certification at a component level
- Superior cable flexibility from stranded cores
- Flammability rating for PVC and LSZH cords: IEC 60332-1
- Covered by the TrueNet System Warranty

Test Specification

Exceeds specifications according to ISO/IEC 11801:2002, EN 50173-1:2002 and TIA/EIA 568-B

Fire rating IEC 60332-1

Ordering Information

Description	Cable Colour*	Catalogue Number*
Category 5e Unbooted Patch Cord RJ45 plug to RJ45 plug, T568B RJ45 plug (T568B)  RJ45 plug (T568B)	Blue PVC UTP Red PVC UTP Yellow PVC UTP Green PVC UTP Orange LSZH UTP Grey PVC UTP	5718 2 611-YY 5718 2 612-YY 5718 2 613-YY 5718 2 614-YY 5718 2 625-YY 5718 2 617-YY
Category 5e Unbooted Patch Cord RJ45 plug to RJ45 plug, crossover wired RJ45 plug (T568B)  RJ45 plug (T568A)	Blue PVC UTP Red PVC UTP Yellow PVC UTP Green PVC UTP Orange LSZH UTP Grey PVC UTP	5718 2 631-YY 5718 2 632-YY 5718 2 633-YY 5718 2 634-YY 5718 2 645-YY 5718 2 637-YY

*Note: LSZH only available in orange

* Replace YY with:

04 = 1m 10 = 3m 25 = 7.5m
07 = 2m 15 = 5m 33 = 10m

Contact ADC KRONE for additional cable colours and lengths.

Data Centre & Communications Room

Category 5e – Patch Cords

TrueNet® Solid Core Patch Cords

For use in data centres and communications rooms to enable 'hard-wired' connections between patch panels and active networking equipment.

Wired to T568-B and complete with terminated plugs at both ends, patch cords are 100% tested and warranted to exceed specification requirements.

Test Specification

Exceeds specifications according to ISO/IEC 11801:2002, EN 50173-1:2002 and TIA/EIA 568-B

Fire rating is IEC 60332-1



Features

- Performance exceeding Category 5e specifications up to 100MHz
- Wired to T568-B
- Complete with integrated strain relief to protect terminations within the plug
- Fully interoperable and backwards compatible
- Covered by the TrueNet System Warranty



Ordering Information

Description	Catalogue Number
Patch Cord, Solid Core, Category 5e UTP LSZH, 20m, Orange	6529 1 205-20
Patch Cord, Solid Core, Category 5e UTP LSZH, 30m, Orange	6529 1 205-30
Patch Cord, Solid Core, Category 5e UTP LSZH, 40m, Orange	6529 1 205-40
Patch Cord, Solid Core, Category 5e UTP LSZH, 50m, Orange	6529 1 205-50



KRONE



Data Centre & Communications Room Voice Solutions

Patch Panels 4.78

(for other Voice Solutions see the Complementary Solutions
section of this catalogue)

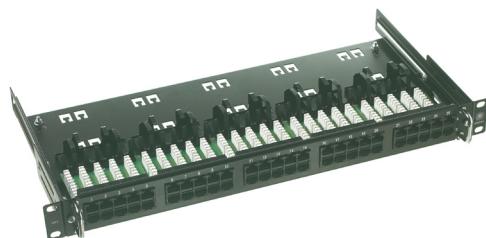
Data Centre & Communications Room

Voice Solutions – Patch Panels

1U Voice Patch Panel

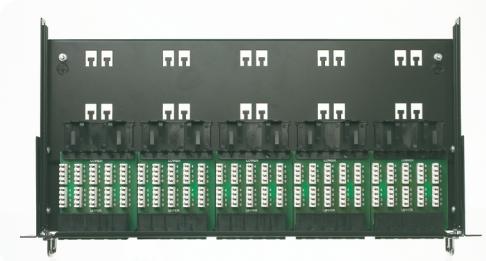
The 1U Voice Patch Panel range from ADC KRONE comprises two versions for use with the multi-pair voice cables – the 25 port RJ45 version or the higher density 50 port RJ45 version.

These products are an ideal way to integrate PBX or other voice circuits into a standard structured cabling system.



Features

- Available in 25 and 50 port variants, both 1U 19"
- Designed specifically to integrate voice circuits into standard structured cabling systems
- Expansive cable management for maximum cable protection
- Innovative sliding panel mechanism for improved ease of installation
- 2 pair 258A voice wiring configuration



Ordering Information

Description	Catalogue Number
Unshielded Patch Panels	
25 Port Voice Panel	7022 4 001-25
50 Port Voice Panel	7022 4 001-50

For RJ-K converters (PABX master, full master and secondary) please refer to page 6.56

For 1U plastic ring jumper bars please refer to page 4.102

Data Centre & Communications Room Physical Layer Management



Introduction	4.81
Patch Panels	4.82
Active Scanning Hardware	4.86
Software	4.88



1 0 / 0 6 • 1 0 2 5 8 8 B E TrueNet® Structured Cabling

Data Centre & Communications Room
Physical Layer Management

Data Centre & Communications Room

PLM – Introduction

TrueNet® Physical Layer Management



TrueNet® PLM combines our leading connectivity technology with Intelligent Physical Layer Management providing complete end-to-end, real time control and management of Enterprise Copper and Fibre Networks.

Bringing Layer 1, the physical layer of the network up to the same standard of real-time management as the active equipment in layers 2 and 3. TrueNet PLM monitors the location and connectivity of every copper circuit, fibre circuit and every connected Ethernet device – from server to security camera – throughout an entire enterprise.

Single site or multi site, TrueNet PLM is specifically designed to bring physical networks out of the shadows and under professional management control. It integrates with network management (NMC) and network operations (NOC) centre software for full control.

A complete PLM solution comprises bespoke TrueNet PLM Patch Panels and Patch Cords, linked together with Active Scanning Hardware. Users access the system via a web-based software application located on a single server. The software integrates all the gathered network information from the panels, cords and scanning hardware enabling real time monitoring and control of the complete Enterprise Network.

Supplied through ADC KRONE'S fully trained and approved system integrators the TrueNet PLM system comes with the TrueNet System Warranty, featuring an additional zero-bit-error warranty offering you complete peace of mind.

Features

- Location based automated service provisioning and deployment
- Real time asset tracking and reporting
- Event monitoring, vulnerability assessments and reporting in-line with legislative requirements
- Complete physical layer monitoring
- Error free, centrally managed moves, adds and changes
- 100% asset utilisation, scans and reclaims available capacity on or off site
- Detection and alerts to any authorised or unauthorised event across the network
- Connection based security across the entire physical layer

Data Centre & Communications Room

PLM – Patch Panels

TrueNet® PLM 24 Port LC-LC Duplex Metal Split Patch Panel

The TrueNet PLM 24 Port LC-LC Duplex Metal Split Patch Panel from ADC KRONE combines our leading connectivity technology with Intelligent Physical Layer Management providing a 'best in class' solution.

The panel, incorporates a unique LED indication and port labelling system not to be found on any other product on the market. In addition the split-level design minimises disturbance to neighbouring optical LANs, reducing the risk of faults on adjacent fibres when upgrading installations, whilst still delivering a high port density per 'U' spacing.



Features

- Fully warranted integrated solution
- Unique LED indicators with clear port labelling
- 24 LC Duplex connectors – singlemode or multimode
- 2 discrete trays (2 x 12) with locking screws
- Anti-tamper lid screwed to each tray
- Internal cable management
- Requires special purpose TrueNet PLM fibre patch cord
- Rapid / fault free moves, adds and changes
- Internal cable management protects splices and pigtails from lateral damage whilst maintaining the bend radius for optimal data performance
- Anti-tamper lid prevents accidental intrusion into the splice bay area by operators or technicians
- Covered by the TrueNet System Warranty

Ordering Information

Description	Catalogue Number
PLM Fibre Split Patch Panel – LC Multimode	7033 1 016-00
PLM Fibre Split Patch Panel – LC Singlemode	7033 1 016-01
PLM Patch cord LC-LC Duplex OM3 50/125 1m	7078 6 110-10
PLM Patch cord LC-LC Duplex OM3 50/125 2m	7078 6 110-20
PLM Patch cord LC-LC Duplex OM3 50/125 3m	7078 6 110-30
PLM Patch cord LC-LC Duplex OM3 50/125 5m	7078 6 110-50
PLM Patch cord LC-LC Duplex OS1 9/125 1m	7078 1 150-10
PLM Patch cord LC-LC Duplex OS1 9/125 2m	7078 1 150-20
PLM Patch cord LC-LC Duplex OS1 9/125 3m	7078 1 150-30
PLM Patch cord LC-LC Duplex OS1 9/125 5m	7078 1 150-50

Data Centre & Communications Room

PLM – Patch Panels

TrueNet® PLM 24 Port LC-LC Duplex Metal Split Patch Panel

Specifications

Panel Specification

Panel rack mounting	1U 19" (IEC 60297)
Panel dimensions (mm)	44 x 483 x 282 deep
Product weight	3.7Kg
Materials	Zintec – powder coated black RAL 9011
Number of trays	2 discrete (1U total height)
Capacity	48 fibres max (LC)
Connector system	LC
Cable management	Internal
Signal voltage	5V dc
Signal current	2 mA max (EN60950:2000)

Connector Specification

Sleeve material	Singlemode – ceramic
	Multimode – phosphor bronze
Typical insertion loss, dB	Singlemode – 0.2
	Multimode – 0.3

Environmental

Operating temperature range	-10°C - +60°C
Operating humidity range	≤ 95% relative humidity non condensing
Standards	EN 6008-2-2
	IEC 68-2-27
	IEC 68-2-6
	IEC 68-2-14
	IEC 68-2-3
	ISO/IEC 11801:2002

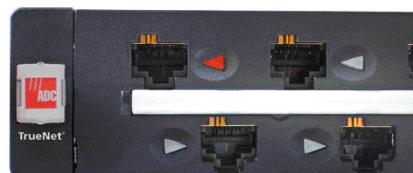
Data Centre & Communications Room

PLM – Patch Panels

TrueNet® PLM UTP and S/FTP Category 6 Patch Panel

The TrueNet® PLM 24 Port Category 6 Patch Panel from ADC KRONE combines our leading connectivity technology with Intelligent Physical Layer Management providing a 'best in class' solution.

The panel incorporates a unique LED indication and port labelling system not to be found on any other product on the market.



Features

- Unique LED indicators
- Clear port labelling
- Incorporates the fully component compliant Category 6 KM8 jack
- Fully warranted integrated solution
- Requires special purpose TrueNet® PLM patch cord
- Ease of installation through patented cable management features
- Rapid / fault free adds moves and changes
- Showcase standard communications room appearance
- Covered by the TrueNet System Warranty

Ordering Information

Description	Catalogue Number
Patch Panel, PLM Category 6 KM8, 24 Ports UTP	6527 1 728-00
Patch Panel, PLM Category 6 KM8, 24 Ports S/FTP	6527 1 728-01
Booted Patch Cord, PLM Category 6 KM8, LSZH Blue UTP	5719 2 821-XX
Booted Patch Cord, PLM Category 6 KM8, LSZH Red UTP	5719 2 822-XX
Booted Patch Cord, PLM Category 6 KM8, LSZH Green UTP	5719 2 824-XX
Booted Patch Cord, PLM Category 6 KM8, LSZH Orange UTP	5719 2 825-XX
Booted Patch Cord, PLM Category 6 KM8, PVC White UTP	5719 2 830-XX
Booted Patch Cord, PLM Category 6 KM8, PVC Blue UTP	5719 2 831-XX
Booted Patch Cord, PLM Category 6 KM8, LSZH Grey S/FTP	5719 2 887-XX

*Replace XX with:

04 = 1.5m

07 = 2m

10 = 3m

15 = 5m

Data Centre & Communications Room

PLM – Patch Panels

TrueNet® PLM UTP and S/FTP Category 6 Patch Panel

Specifications (Patch Panels)

Mechanical

Panel rack mounting	1U 19" (IEC 60297)
Panel dimensions (mm)	44 x 483 x 120 deep
Plug / jack mating cycles	≥ 750 (IEC / EN 60603-7 Series)
Plug / jack insertion / withdrawal force	≤ 20N (UTP), 30N (STP) (IEC / EN 60603-7 Series)
Product weight	0.9Kg including jacks (UTP), 2.2kg (S/FTP)

Electrical

Jack	Category 6
Insulation resistance	≥500MΩ
Dielectric strength	Contact / contact 1.0kV
Current carrying capacity	≥1A / contact
Typical plug / jack resistance	≥20mΩ
Conductor terminations of LSA-PLUS® contacts	≥30
Conductor diameter	0.5-0.65mm (AWG 24-22)
Insulation diameter	0.7-1.4mm

Panel

Signal voltage	5V dc
Signal current	2 mA max (EN60950:2000)
Testing requirements of connection technology according to ISO/IEC 11801 2nd edition	ANSI/TIA-568-B.2.1 and EN 50173-1:2002

Environmental and Safety

Operating temperature range	-10° to +60°C
Operating humidity range	≤ 95% relative humidity non condensing

Data Centre & Communications Room

PLM – Active Hardware

TrueNet® PLM Solution – Active Hardware

The TrueNet PLM active hardware is configured in a hierarchical layout and is the interface between the PLM Patch Panels, providing the management software with all relevant data to scan connectivity changes within the physical layer.

The TrueNet® PLM Master is always at the apex of the hierarchy, connecting with Expanders and Scanners. In addition the Master also includes the SNMP agent to gather data on all IP devices connected to the network.

Rack Indicators and Indicator Controllers are used to identify racks in larger communication rooms, to assist with the work order process or any other maintenance operations.



Features

- Location based service provisioning and deployment
- Real time asset tracking and reporting
- Event monitoring, vulnerability assessments and reporting in-line with legislative requirements
- Complete physical layer monitoring
- Error free, centrally managed moves, adds and changes
- 100% asset utilisation, scan and reclaim available capacity on or off site
- Detection and alerts to any authorised or unauthorised event across the network
- Connection based security across the entire physical layer

Ordering Information

Description	Catalogue number
PLM Scanner	6527 1 730-00
PLM Master 4 Ports	6527 1 733-00
PLM Master Expander	6527 1 732-00
PLM Expander	6527 1 734-00
PLM Indicator Controller	6527 1 735-00
PLM Control Pad	6527 1 736-00
PLM Mini Scanner	6527 1 739-00
PLM Network Scanner	6527 1 741-00
PLM Rack Indicator	6527 1 737-00
PLM Scanner Attachment Cord Cu	6527 1 750-XX*
PLM Scanner Attachment Cord FO	6527 1 751-XX*

*Replace XX with: 51 = 1.5m, 52 = 2.5m, 06 = 6m, 12 = 12m

Data Centre & Communications Room

PLM – Active Hardware

TrueNet® PLM Solution – Active Hardware

Specifications (Excludes 6527 1 736-00)

Panel rack mounting	1U 19" (IEC 60297)
Panel dimensions (mm)	44 x 483 x 160 deep
Product weight	2.0Kg / 4.4lb

Interfaces

Up/down links	Standard RS-485, Full – duplex connector shielded RJ-45 socket Data rate up to 115.2 Kbps
Serial	RS-232 Connector 9-pin D-type male Data rate up to 115.2 Kbps Protocol UART, start bit 1, Stop bit 1, nonparity
100BASE-Tx	RJ-45 socket, Ethernet IEEE 802.3, 100BASE-Tx/10BASE-T, 100/10 Mbps industry standard for connection to local area network
Control pad	Connector RJ-45 socket, 8 pins
Patch panel connections	Connectors 6 or 12 headers, 26-pin

LED Indicators (where used)

PWR	On when scanner is powered
CPU	Blinking to indicate master heartbeat
DOWN LINKYELLOW	On during transmission of each of the DOWN LINK ports
DOWN LINKGREEN	On during reception of each of the DOWN LINK ports
100BASE-Tx – Rx	On during reception from local area network
100BASE-Tx – Tx	On during transmission to local area network
100BASE-Tx LINK	On when link is active

Environmental & Safety

Operating temperature range	0°C - +50°C
Operating humidity range	≤ 90% relative humidity non condensing
Safety	UL 60950, EN 60950
EMC	EN 55022, FCC part 15 Class A, EN 55024
Power	100 – 240 VAC, 47 – 63Hz, 30W maximum

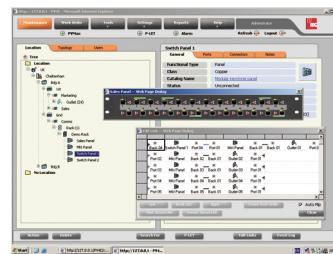
Data Centre & Communications Room

PLM – Software

TrueNet® PLM Solution – Software

The PLM Software forms the user interface and is accessed by System Administrators and Network Technicians via the web. The system automatically provides complete link information in a graphical format, providing full end-to-end visibility, automatically updating in real time as changes occur.

TrueNet PLM drastically speeds up and simplifies daily network provisioning, maintenance and security providing Network Managers with full visibility and control of the network and its assets.



Features

- Automatic discovery of any IP device on the network
- Accurate monitoring and logging of any connectivity based event across multiple sites
- Highly customisable events and alarms with the ability to specify who receives alerts for different events
- Includes a work order tool for scheduling moves, adds and changes using a streamlined process
- Immediate identification of physical layer related failures results in reduced downtime and repair times
- Identifies unused network assets ensuring 100% utilisation
- Continual monitoring for illegal connections, disconnections or tampering for increased network security
- Remote maintenance and troubleshooting saves time and costs
- Powerful reporting tools give asset tracking and event log monitoring information for legislation such as Sarbanes Oxley, ISO/EN 20000 etc.
- Optional modules available to integrate PLM into other applications (OpenView, Tivoli etc.)
- Optional CAD module generates full 2D architectural views of the geographical location of each asset in the entire network

Ordering Information

Description	Catalogue Number
Basic Software	
PLM Management Software – 1,000 ports	6527 1 752-01
PLM Management Software – 2,000 ports	6527 1 752-02
PLM Management Software – 5,000 ports	6527 1 752-05
PLM Management Software – 10,000 ports	6527 1 752-10
PLM Management Software – 20,000 ports	6527 1 752-20
PLM Management Software – 30,000 ports	6527 1 752-30
Additional Modules	
PBX Module	6527 1 753-00
CAD Module (Without MapGuide)*	6527 1 754-00
CA Unicenter Module	6527 1 755-00
HP OpenView NNM Module	6527 1 756-00
Additional Licenses (xx – no of licenses in '000s)	6527 1 757-xx

*CAD module requires Autodesk MapGuide®

Data Centre & Communications Room

PLM – Software

TrueNet® PLM Solution – Software

Specifications

TrueNet PLM software must be installed on a machine that serves as a dedicated server. The following are the minimum hardware and software requirements for the PLM Server and Client PC's:

Server Requirements

Minimum Hardware:

Pentium processor running at least 800 MHz
1000MB+ RAM
20 GB hard disk space

Recommended Hardware:

Dual Pentium 4 processor running at 2600 MHz
1024MB RAM (or more)
40GB+ hard disk space

Software:

Windows 2000 family (Windows 2003 server family recommended)
(Microsoft Internet Explorer 6 recommended)
Microsoft SQL 2000 (standard/Enterprise edition recommended)
IIS 5 (or higher)
MSMQ – Microsoft message queuing system

Client Minimum Requirements – Software:

Any Microsoft based system (Win 95, 98, ME, NT, 2000, XP etc.)
Microsoft Internet Explorer 5.5 with service pack 1 (with signed ActiveX & cookie support)





Data Centre & Communications Room Power-over-Ethernet Solutions

Midspan Power-over-Ethernet Controller.....	4.92
Four-Port Midspan Power-over-Ethernet Unit	4.94

Data Centre & Communications Room

PoE – TrueNet® Midspan Power-over-Ethernet Controller

The TrueNet® Midspan Power-over-Ethernet (PoE) controller from ADC KRONE, provides a flexible way to power IP telephony and other applications over a local area network. The IEEE 802.3af compliant power source ensures reliability of service for any number of Ethernet devices such as VoIP telephones, wireless access points and security cameras. The TrueNet Midspan PoE controller eliminates the need for installation of local power at the device, saving time and money.

ADC KRONE's patent-pending design also offers a modular SNMP slot and dual power supply slot that allow for easy future upgrades. For example, a non-SNMP enabled chassis can easily be upgraded by inserting the SNMP card at a later date, deferring up-front costs. Additionally, a single power supply chassis can be upgraded to dual redundancy at a future date should the circuits become critical. These upgrades can be performed without ever interrupting the data or power.



Application and Benefits

- Utilises existing infrastructure
 - Same cables and RJ45 connectors
- Offers less expensive, faster, simpler way to set up remote network devices
 - Wi-Fi access points, IP security cameras and VoIP phones
- Provides easier remote access and management
 - Monitor the entire network and operation of individual devices
 - Remotely turn off or reboot network devices
- Ensures greater safety
 - 48V, 15.4W, 400mA
 - 1500Vrms port isolation

Features

- Supports 10/100/1000 BASE-T
- Dual compatibility with IEEE 802.3af and earlier Cisco devices
- Detects device presence and transmits appropriate power, achieving dual compliance to IEEE 802.af and Cisco's legacy in-line powering standards
- Delivers up to 15.4 watts of power on all ports; redundant power available
- Modular SNMP and power supplies
- Up to five panels can be daisy-chained and controlled via one CPU card and a single IP address

Ordering Information

Description – Gigabit Ethernet	Catalogue Number*
Dual Compliance (802.3af and Legacy Cisco) 10/100/1000BASE-T	
24/8-port midspan controller	PWR-XXACS-GE-E
24/8-port midspan controller, with N+1 redundant power	PWR-XXAC2S-GE-E
Dual Compliance (802.3af and Legacy Cisco) 10/100BASE-T	
24/16/8-port midspan controller	PWR-XXACS-E
24/16-port midspan controller, with N+1 redundant power	PWR-XXAC2S-E
Accessories	
SNMP module (Mounts in all chassis)	PWR-M
Redundant power supply (Mounts in all chassis)	PWR-PS
UK Power Cord	DGVI-100000CRD
Central Europe Power Cord	DGVI-200000CRD

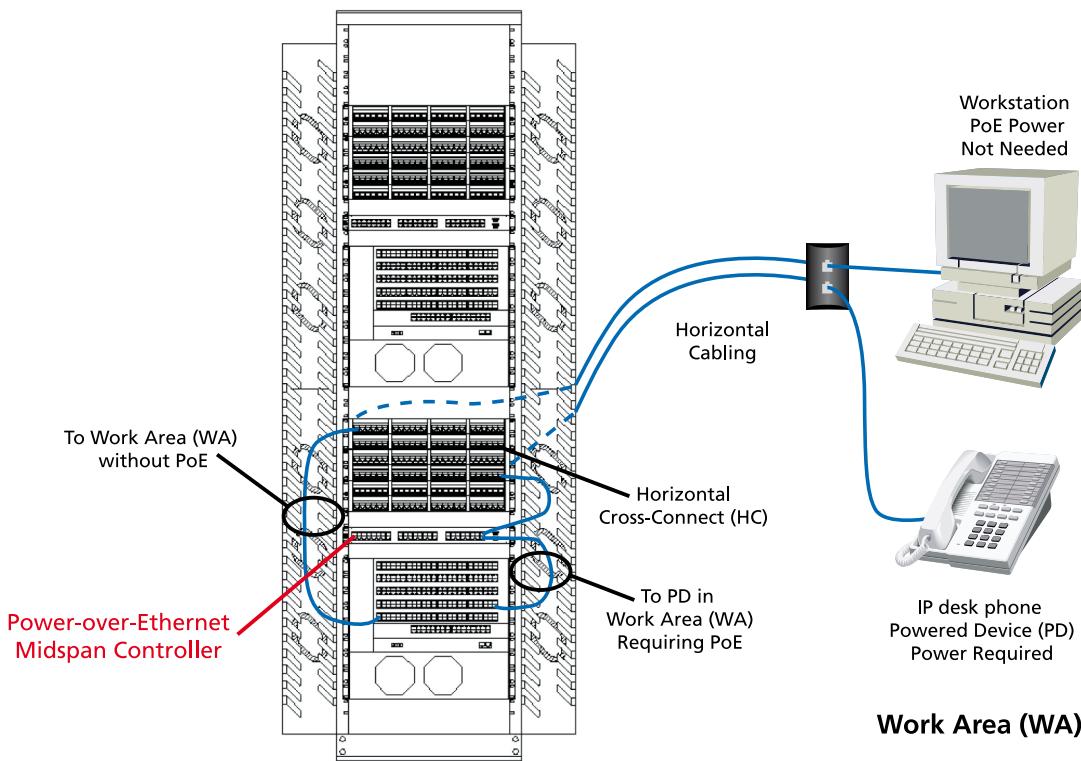
*Replace XX with: 08 = 8 port, 16 = 16 port, 24 = 24 port

Note: All chassis accept the ADC KRONE modular SNMP module and redundant power supplies. Specify cord type when ordering.

Data Centre & Communications Room

PoE – TrueNet® Midspan Power-over-Ethernet Controller

Applications



Ethernet Distribution Frame In Telecommunications Room (TR)

Specifications

Mechanical

Ethernet interface:
Ethernet plus power interface:
Dimensions:
Weight (single power supply):
Weight (dual power supply):
Rack mounting:

24, 16, or 8 RJ45s
24, 16, or 8 RJ45s
1.75" x 17.3" x 15.97" (44.4mm x 436mm x 300mm)
13.34lbs. (6.05Kg)
16.75lbs. (7.60Kg)
19" or 23", EIA or WECO

Electrical

Power input voltage:
Power input frequency:
Power-over-Ethernet:

100 to 250VAC
50 to 60Hz
IEEE 802.3af and Legacy Cisco in-line: 15.4 Watts maximum output

Powering pins:
Total available power:
LED indicators:

on all ports
+48VDC output on pins 4,5 and 7,8
400 Watts
RJ45 ports—green = power and Ethernet, yellow = 802.3af
device detected, but not powered
Power LED—green = power OK, red = fan failure or overtemp
10/100/1000BASE-T (Active signal pins 1,2 and 3,6)
Category 5e and 6

Ethernet input/output:
Channel performance:

10/100/1000BASE-T (Active signal pins 1,2 and 3,6)
Category 5e and 6

Environmental and Safety

Safety compliance:
Emissions:
Operating temperature:
Storage temperature:

UL, cUL, CE, EN 60950
FCC Class A, EN 55022 (CISPR22)
0 to 40°C (32° to 104°F)
-20°C to 70°C (-4° to 158°F)

Data Centre & Communications Room

PoE – TrueNet® Four-Port Midspan Power-over-Ethernet Unit

The TrueNet midspan Power-over-Ethernet four-port device is optimal for low density Power-over-Ethernet installations, such as 802.11x wireless access points or IP security cameras. The TrueNet midspan PoE device delivers compliant power to up to four devices, eliminating the need to upgrade existing Ethernet switches or provide potentially unreliable local AC power to each device separately. The compact design can be mounted to a shelf, rack or wall with an optional mount bracket.

As with ADC KRONE's rack mount midspan PoE solutions, the four-port unit features dual compliance to both IEEE 802.3af and the pre-standard Cisco in-line powering, allowing this device to power a wide range of solutions from all major manufacturers. Additional features include redundant power capabilities permitting two separate power supplies to be routed into the devices ensuring reliable operation. The rugged extruded aluminium design protects the internal electronics providing years of reliable service.



Features

- Supports 10/100/1000BASE-T
- Dual compliance to 802.3af and pre-standard in-line powering
- Redundant power supply capability
- Ability to deliver full 15.4 watts of power on all ports simultaneously
- Optional wall or rack mount bracket
- Compact, rugged, yet elegant design
- Aluminum extruded design for uncompromised reliability while still remaining lightweight

Application and Benefits

- Four-port design is optimal for small device count situations such as Wi-Fi deployments, SoHo, etc.
- Eliminates installation issues with IEEE 802.3af compliant powered devices and all pre-standard in-line powered solutions
- Easy to install, upgrade, and maintain
- Allow utilisation of existing network, including Ethernet switch and cabling
- Years of reliable service and with minimal up-front cost
- Maintenance-free operation

Ordering Information

Description	Catalogue Number
10/100/1000BASE-T 4-Port Midspan Power-over-Ethernet Set-Top Unit	PWR-04DT-GE-E
10/100/BASE-T 4-Port Midspan Power-over-Ethernet Set-Top Unit	PWR-04DT-E
Redundant/Replacement Power Supply	PWR-04DTPS
Wall Mount Bracket Kit	ADCSTBK01A
Rack Mount Kit (holds three units)	PWR-04DTRM

Data Centre & Communications Room

PoE – TrueNet® Four-Port Midspan Power-over-Ethernet Unit

Specifications

Mechanical

Ethernet interface, 10/100/1000 BASE-T Input:	4 x RJ45
Ethernet interface, 10/100/1000 data + power output:	4 x RJ45s
RS232 craft port interface:	D-Sub 9
Dimensions (height x width x depth):	39.37mm x 107.95mm x 203.20mm (1.55" x 4.25" x 8.00")
Weight:	0.7kg
Mounting:	Shelf, wall or rack (with bracket)

Electrical

Power input voltage (power supply):	100 to 240VAC
Power input voltage (set-top unit):	+48 VDC, 1.5 A maximum (dual inputs)
Power Input frequency (power supply):	50–60Hz
Power over Ethernet:	IEEE 802.3af and Cisco in-line
Powering pins:	+48 VDC output, Pins 4,5 and 7,8
Total available power:	72 Watts
LED indicators:	
RJ45 port LED:	Green – powered Dark – non-powered device Yellow – device detected, not powered Flashing yellow – port disabled
Power on/off LED:	Green – unit powered Dark – not powered Red – internal malfunction
Ethernet input/output:	10/100/1000BASE-T
Channel performance:	Category 5e and 6

Environmental and Safety

Safety compliance:	UL, cUL, CE, EN 60950, C-Tick
Emissions:	FCC Class A, EN 55022 (CISPR22)
Operating temperature:	0 to 40°C (32° to 104°F)
Storage temperature:	-20°C to 70°C (-4° to 158°F)





Data Centre & Communications Room Accessories

Advanced Patching Frame (APF).....	4.98
Universal Data Distribution Cabinets	4.99
Wall-Mounted Distribution Cabinets	4.100
HighBand® Frames	4.101
Miscellaneous	4.102

Data Centre & Communications Room

Accessories – Frames

Advanced Patching Frame (APF) II

The ADC KRONE APF has been designed for use in Data Centre and Structured Wiring Installations. ADC KRONE's TrueNet® range of jacks and patch panels are renowned for their advanced cable management features. With its high capacity for patch panels and unique patch cord management features the ADC KRONE APF provides a complete wiring solution for both the installer and the end-user.

The design of the ADC KRONE APF enables it to be used in both stand-alone and multiple installations. Frames connect together in such a way as to provide increased patch cord capacity in the vertical patching field between frames.

Dimensions

2232(h) x 985(w) x 501(d)mm

Features

- 42U Data Frame accommodating up to 42 1U panels and 1000+ patch cords
- Ideal for dedicated Communications Room environment
- Curved patching fields and unique Cable Management Arms prevent patch cords from being bent too tightly
- Frames fit together back-to-back, side-to-side or at right angles
- New dimension to Cable Management Arms makes back-to-back installations simpler and more cost-effective



Ordering Information

Description	Catalogue Number
Advanced Patching Frame 42U (inc. Cable Management Arms)	6420 1 500-00
APF Door Set – Glass	6420 1 510-00
Side Panels	6420 1 504-00
Side Panel Extension Kit	6420 1 505-00
APF Cable Management Arms	6420 1 103-01
APF Cable Management Arm Extensions	6420 1 516-00
Back-to-Back Kit	6420 1 506-00
Side-to-Side Kit	6420 1 507-00

Data Centre & Communications Room

Accessories – Cabinets

Data Distribution Cabinet

The ADC KRONE Data Distribution Cabinet satisfies the international standards IEC 297-1/2 (19") and IEC 917-2-1 (metric). The narrow profile allows maximum usable widths (19") and metric and an additional height unit.

Dimensions

800 x 800 x 2000mm (WxDxH)
 Material: 1.5mm sheet steel
 Surface: Powder-coated, smooth paint (RAL 7035)

Features

- Accessible from three sides to allow fast installation
- Transparent front door (3mm thick single-pane safety glass) with a swivel grip and security lock
- Incorporates passive ventilation
- Installed floor level adjusters
- Protection class: IP41



Ordering Information

Description	Catalogue Number
Data Distribution Cabinet 43U, DVS 2000	7049 1 012-20
Data Distribution Cabinet 43U, DVS 2000, Without Side Walls	7049 1 012-21

Data Distribution Cabinet comes complete with:

- 1 x Glass front door with swivel grip and security lock
- 2 x Side panels
- 1 x BASE, passively ventilated (100mm high)
- 1 x 19" bay, at the front
- 1 x Earthing set

Cabinets can be configured to a more advanced specification, integrating active ventilation.
 Please contact ADC KRONE for additional information.

Data Centre & Communications Room

Accessories – Cabinets

Wall-Mounted Distribution Cabinets

The wall-mounted cabinet has been developed for smaller networks, sub-distributors and floor distributors. ADC KRONE has solved the familiar access problem by utilising doors that can be quickly taken off after opening, the side walls can then be pulled forward. This means that the cabinet is accessible from 3 sides, allowing work to be carried out optimally. Cables enter the cabinet through the roof and floor through brush strips.

Dimensions

570 x 500mm (WxD) other dimensions on request
 Material: 1.5mm sheet steel
 Surface: Powder-coated, smooth paint (RAL 7035)
 19" Perforated angle: Galvanized



Features

- Accessible from three sides to allow fast installation
- Range of height options available, from 6U to 18U
- Lockable glass door
- Incorporates passive ventilation
- Protection class: IP41

Ordering Information

Description	Catalogue Number
Wall-Mounted Distribution Cabinet, 6U WVS 350P	7049 1 205-00
Wall-Mounted Distribution Cabinet, 9U WVS 475P	7049 1 206-00
Wall-Mounted Distribution Cabinet, 12U WVS 600P	7049 1 207-00
Wall-Mounted Distribution Cabinet, 15U WVS 750P	7049 1 208-00
Wall-Mounted Distribution Cabinet, 18U WVS 875P	7049 1 209-00

Wall-mounted distribution cabinet comes complete with:

- 2 x Brush strips (top and bottom)
- 1 x Glass front door with safety lock and one key
- 2 x Side panels (with passive ventilations)
- 1 x 19" bay, at the front
- 1 x Cable support rail
- 1 x Earthing set

Data Centre & Communications Room

Accessories – HighBand® Frames

HighBand® Frames

Frames specifically designed to accommodate HighBand modules. Space efficient with built in cable management. Available in two sizes.



Dimensions

4 vert holds up to 320 modules

2263(h) x 1203(w) x 240(d)mm Weight 70kg

2 vert holds up to 160 modules

2263(h) x 640(w) x 240(d)mm Weight 35kg

Ordering Information

Description	Catalogue Number
4 Vert HighBand Frame	6420 1 060-00
2 Vert HighBand Frame	6420 1 060-01

Data Centre & Communications Room

Accessories – Miscellaneous

Insertion Tool

The standard tool for all data, information technology and telecommunication wiring. Can be used for all LSA-PLUS® Series modules, as well as for RJ45 jacks and HighBand®.



Features

- For termination of wires with the conductor diameter range 0.35 - 0.9mm and overall diameter range 0.7 - 2.6mm
- Inserts and crops wires simultaneously
- Complete with extraction tool and stock clip
- Sensor ensures the conductor is fully inserted into the contact before allowing excess wire to be cut off

Ordering Information

Description	Catalogue Number
Insertion Tool with Sensor	6417 2 055-01
Insertion Tool	6417 1 810-02

KM8® Termination Tool

Tool for terminating KM8 style Category 6 jacks.



Features

- For swift terminations of KM8 jacks
- Hundreds of jack terminations from one tool

Ordering Information

Description	Catalogue Number
KM8 Termination Tool	6830 1 490-00

19" Jumper Bars



Features

- Mounts onto a standard 19" rack
- Provides cable management for patch cords
- Available in a plastic (1U) or metal (2U) option

Ordering Information

Description	Catalogue Number
19" 1U Plastic Rings	6527 1 006-01
19" 2U Metal Rings	6527 1 022-00

Data Centre & Communications Room

Accessories – Miscellaneous

19" Blanking Panels

Features

- Attaches to a standard 19" rack
- Blanks off unused frame/rack space
- Available in 1U, 2U and 3U options



Ordering Information

Description	Catalogue Number
19" 1U Blank	6527 1 007-01
19" 2U Blank	6527 1 007-02
19" 3U Blank	6527 1 007-03

Patch Panel Outrigger

19" outrigger for ADC KRONE TrueNet® patch panels.

Features

- Attaches to standard 19" racks
- Leaves both hands free for rapid patch panel terminations
- Quick release and securing mechanism



Ordering Information

Description	Catalogue Number
19" Patch Panel Outrigger	6527 1 013-00





Horizontal Cabling

Introduction.....	5.03
Fibre to the Desk	5.05
CopperTen™	5.11
Category 6	5.17
Category 5e.....	5.29

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Horizontal Cabling

Introduction

TrueNet® Fibre

Many applications require large amounts of data to be distributed to users over highly secure networks, to enable fast moving and dynamic events to be tracked and acted upon in real time. A network of this nature needs to be robust enough to withstand everyday usage whilst still keeping the transmitted data safe from EMI (Electro Magnetic Interference) or third parties.

Fibre To The Desk (FTTD) is a natural choice to be used as an enabling technology in these circumstances, and ADC KRONE is uniquely positioned to offer a whole suite of FTTD products. Wall Outlets, Media Converters through to patching and Fibre Optic cables are all available to address the FTTD market segment.

TrueNet® Copper

ADC KRONE offers a wide variety of copper cable for the transmission of all types of data, including that for the most critical of applications. The cable portfolio includes Category 6a and Category 7 (CopperTen™) cable for the emerging 10 Gigabit Ethernet market, as well as standards-compliant cable for Category 3, Category 5e and Category 6 applications. Our high performance copper Low Smoke Zero Halogen (LSZH) and PVC data cables for backbone and horizontal applications are produced by highly automated manufacturing processes that ensure consistent quality and dependability with superior electrical performance.

TrueNet® Category 6a (CopperTen™)

The TrueNet Augmented Category 6 Solution, CopperTen, supports 10 Gigabit Ethernet to a full 100m.

At high frequencies unshielded cabling systems are hindered by the combination of insertion loss and alien crosstalk (interference from adjacent cables). This can greatly disrupt transmission and high speed data communications. TrueNet CopperTen cable utilises patented designs and manufacturing processes that enable the products to overcome these challenges. The shielding within our STP solution ensures these issues are addressed with standard Category 7 cable.

TrueNet® Category 6 and Category 5e Cables

TrueNet Category 6 and Category 5e cables for local area network (LAN) horizontals, are fully component compliant to the ISO/IEC, TIA and EN standards. ADC KRONE ensures component compliance through component testing and certification carried out by independent test houses.

Cables are available in UTP, STP and FTP variants with PVC or LSZH sheathings for in-building applications and High Density Polyethylene (HDPE) for outdoor deployment. In addition to the standard 4 pair offering, ADC KRONE offers a range of shotgun (2x4 pair) cables, for use in installations where time and costs of pulled cables are key considerations.



Horizontal Cabling

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Horizontal Cabling

Fibre To The Desk



TrueNet® Tight Buffered, Internal/External,
LSZH Duct Grade and Hybrid Cable 5.06

Horizontal Cabling

Fibre to the Desk

TrueNet® Tight Buffered, Internal/External, LSZH Duct Grade Cable

Features

- Outer sheath
 - Black, Low Smoke Zero Halogen (LSZH)
 - UV stabilised for outdoor applications
 - Sheath thickness 1.1mm
- Fire retardancy
 - 2 to 12 Cores IEC 60332-1 and 60332-3c
 - 16 to 24 Cores IEC 60332-1
- Aramid yarn – for added 'crush' protection to the optical cores
- Available with OM1, OM2, OM3, OM3e, and OS1 grade glass
- Hybrid MM and SM options available
- Covered by the TrueNet System Warrenty



Ordering Information

Description	Catalogue Number*
Fibre Optic Cable, Tight Buffered, OM1 (62.5/125 µm) LSZH, Black	70xxLZHIOC062
Fibre Optic Cable, Tight Buffered, OM2 (50/125 µm) LSZH, Black	00xxLZHIOC050
Fibre Optic Cable, Tight Buffered, OM3 (50/125 µm) LSZH, Black	7023 3 229-xx
Fibre Optic Cable, Tight Buffered, OM3e (50/125 µm) LSZH, Black	7023 3 243-xx
Fibre Optic Cable, Tight Buffered, OS1 (9/125 µm) LSZH, Black	7023 3 228-xx

*Replace xx with the number of cores

TrueNet® Tight Buffered, Internal/External, LSZH Duct Grade Hybrid Cable

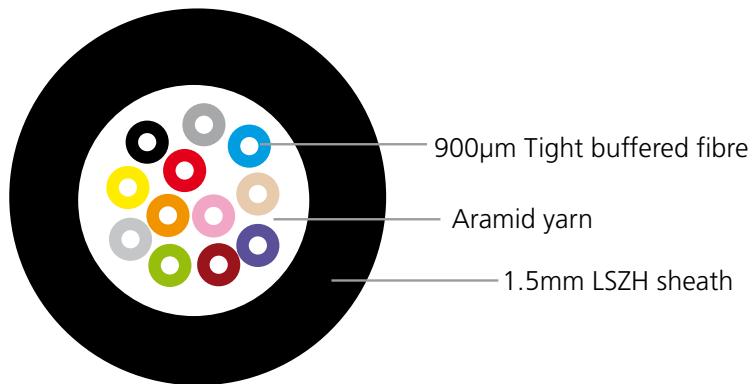
Ordering Information

Description	Catalogue Number
Fibre Optic Cable, Tight Buffered, 8F OM2, 4F OS1, LSZH, Black	7023 4 242-12
Fibre Optic Cable, Tight Buffered, 8F OM2, 6F OS1, LSZH, Black	7023 4 243-14
Fibre Optic Cable, Tight Buffered, 6F OM2, 6F OS1, LSZH, Black	7023 4 233-12
Fibre Optic Cable, Tight Buffered, 12F OM2, 6F OS1, LSZH, Black	7023 4 263-18
Fibre Optic Cable, Tight Buffered, 8F OM3, 4F OS1, LSZH, Black	7023 4 342-12
Fibre Optic Cable, Tight Buffered, 8F OM3, 6F OS1, LSZH, Black	7023 4 343-14
Fibre Optic Cable, Tight Buffered, 6F OM3, 6F OS1, LSZH, Black	7023 4 333-12
Fibre Optic Cable, Tight Buffered, 12F OM3, 6F OS1, LSZH, Black	7023 4 363-18

Horizontal Cabling

Fibre to the Desk

TrueNet® Tight Buffered, Internal/External, LSZH Duct Grade Cable



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Compliances

- ISO11801 OM1, OM2, OM3 or OS1 Channels
- IEC 60332-1 2 to 24 cores
- IEC 60332-3c 2 to 12 cores
- DIN/VDE: I-V (ZN) H 224
- Cenelec: HD 624.7 S1
- DIN/VDE 819 part 107
- RoHS

Applications

- Between main cross-connects and telecommunications room
- Horizontal cable runs from cross-connect to telecommunications room
- Areas requiring flame retardance and LSZH
- Horizontal and vertical cable runs from telecommunications rooms to consolidation points
- Outdoor ducts

Optical Performance

	Fibre Core Size	Maximum Attenuation (dB/km)	Typical Attenuation (dB/km)	Guaranteed Minimum Bandwidth (MHz-km)
Channel		850nm/1300nm	850nm/1300nm	850nm/1300nm
OM1	62.5/125	3.5/1.5	3.2/1.0	200 ¹ /600 ¹
OM2	50/125	3.5/1.5	2.7/0.8	500 ¹ /800 ¹
OM3 ³	50/125	3.5/1.5	2.7/0.8	2000 ² /500 ¹
OM3e ³	50/125	3.5/1.5	2.7/0.8	4700 ² /500 ¹
		1310nm/1550nm	1310nm/1550nm	1310nm/1550nm
Singlemode⁴	9/125	1.0/1.0	0.4/0.3	NA

¹ Bandwidth specified by overfilled launch (OFL)

² Bandwidth specified by laser-based launch

³ DMD Compliance TIA/EIA-492AAAC

⁴ Compliant to G652D

Cable Core

Each of the fibres is held in a 900µm tight buffered jacket. These fibres are bundled with aramid yarns to form a core.

Horizontal Cabling

Fibre to the Desk

TrueNet® Tight Buffered, Internal/External, LSZH Duct Grade Cable

Transmission Performance – Guaranteed Minimum Link Lengths

	Fibre Core Size	Fast Ethernet 100Mbps	Gigabit Ethernet 1Gbps	10 Gigabit Ethernet 10Gbps
Channel		850nm/1300nm	850nm/1300nm	850nm/1300nm
OM1	62.5/125	300m/2km	330m/550m	35m/300m ¹
OM2	50/125	300m/2km	550m/550m	86m/300m ¹
OM3	50/125	300m/2km	900m/550m	300m/300m ¹
OM3e	50/125	300m/2km	1040m/550m	550m/300m ¹
		1310nm/1550nm	1310nm/1550nm	1310nm/1550nm
Singlemode	9/125	2km/NA	5km/NA	10km/40km

¹10 Gigabit Ethernet distance guarantees at 1300nm are achieved via four 3.125Gbps channels multiplexed with WWDM (Wide Wavelength Division Multiplexing) technology (10GBASE-LX4)

Cable Marking

The cable legend will be marked on the sheath as follows:

ADC TRUENET – XX – YY/125 – mmmm – ZZZZ – ZZZZ

Where,

XX = Fibre optic core count

YY = Glass type (e.g. 50/125)

mmmm = Metre mark

ZZZZ – ZZZZ = Manufacturing lot data

Horizontal Cabling

Fibre to the Desk

TrueNet® Tight Buffered, Internal/External, LSZH Duct Grade Cable

Mechanical Specifications

	Units	2	4	6	8	12	16	24
Number of Fibres		2	4	6	8	12	16	24
Nominal Cable Diameter	mm	4.5	5	5.5	6	6.5	7	8.5
Nominal Cable Weight	Kg/km	25	30	30	40	45	50	80
Minimum Bend Radius Installed	mm	50	50	50	50	75	75	115
Minimum Bend Radius Loaded during Install	mm	100	100	100	100	100	130	230
Maximum Tensile Load (Installed)	N	280	280	280	340	340	340	340
Maximum Installation Load	N	1000	1000	1000	1200	1200	1200	1200
Impact	J (Nm)	20	20	20	20	20	20	20
Compressive Strength (Crush)	N/100mm	3000	3000	3000	3000	3000	3000	3000
Torsion	Cycles +/- 1 turn	5	5	5	5	5	5	5
Temperature Range (Operating and Installation)	°C	-20 to +70						
Storage	°C	-40 to +70						



Horizontal Cabling

10 / 06 • 102588BE TrueNet® Structured Cabling

Horizontal Cabling

CopperTen™



Category 7

4 Pair S/FTP Horizontal Cable 5.12

Augmented Category 6

4 Pair LSZH UTP Horizontal Cable 5.14

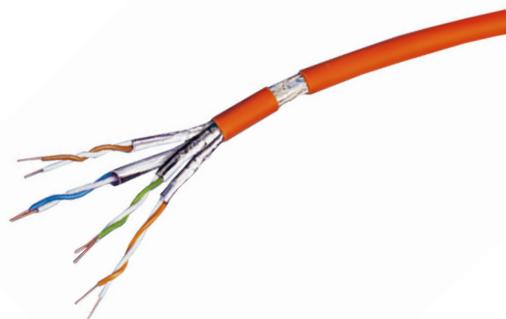
Horizontal Cabling

CopperTen™ Category 7 Cable

CopperTen™ Category 7 4PR S/FTP Horizontal Cable

The ADC KRONE S/FTP 600/AWG23 4PR cable is designed for applications up to 600 MHz and its connection properties exceed Category 7 specifications ISO/IEC 11801 (2002) and EN 50173-1 (2002).

Every pair is separately shielded – pairs in metal foil (PIMF). The twisted pairs are covered with a braided screen (S/FTP) which guarantees outstanding shielding properties.



Features

- Performance exceeding Category 7 specifications up to 600 MHz
- Shielding prevents alien crosstalk
- Guaranteed channel capacity that is equal to or greater than the capacity identified by the IEEE as the minimum requirement for operation of 10 Gigabit Ethernet
- Maximises productivity levels with 10 times the data throughput of Category 6
- True future proofing for tomorrow's network applications
- Covered by the TrueNet System Warranty

Ordering Information

Description	Catalogue Number
Category 7 Horizontal Cable S/FTP, 1000m Reel, Orange	7053 3 362-55
Category 7 Horizontal Cable S/FTP Duplex, 500m Reel, Orange	7053 3 762-54

Other cable types and colours are available upon request.

Horizontal Cabling

CopperTen™ Category 7 Cable

CopperTen™ Category 7 4PR S/FTP Horizontal Cable

Technical data

Copper conductor	AWG 23
Fire load	0.57MJ/m
Halogen-free	Yes
Maximum tensile strength	145N
Outer diameter	7.4mm
Weight	58kg/km

Electrical Data

DC resistance at 20°C (max)	7.3 Ω/100m
DC resistance unbalanced (max)	1%
Insulation resistance	≥ 5000 MΩ x km
Input impedance Z_o at 0.064 MHz	125 Ω ± 20%
Input impedance Z_o at 1 to 100 MHz	100 Ω ± 15%
Input impedance Z_o at 100 to 600 MHz	100 Ω ± 22%
Transfer impedance	≤ 10 mΩ per metre at 10 MHz
Longitudinal conversion loss dB/Ref = 1000 m	≥ 46 dB at 64 kHz
Longitudinal conversion loss dB/Ref = 100 m	≥ 40 dB at 1 MHz
Longitudinal conversion loss dB/Ref = 100 m	≥ 20 dB at 100 MHz
Mutual capacitance	43 pF/m
Capacitance unbalance to ground	1000 pF/km
Nominal velocity of propagation	0.79%
Propagation delay at ≥ 10 MHz	4.2 ns/m
Worst case cable skew	4 ns/100m

Mechanical Characteristics

Cable insulation	LSZH
Insulation material	FRNC
Operating temperature	-20 to +60°C
Minimum bend radius	
– for one bend	40 mm (over flat side)
– during installation	60 mm (over flat side)

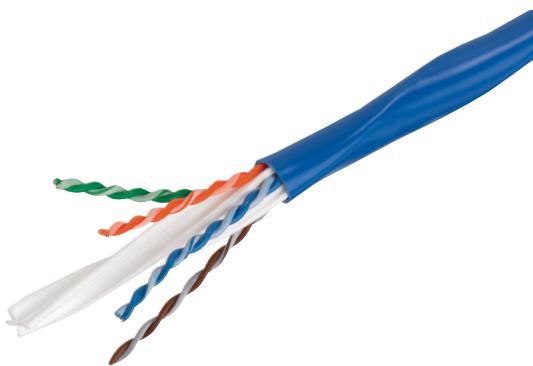
Horizontal Cabling

Augmented Category 6 Horizontal Cable

CopperTen™ Category 6a 4PR LSZH UTP Horizontal Cable

TrueNet® CopperTen™ cable utilises patented designs and manufacturing processes that enable the product to overcome insertion loss and alien crosstalk.

The most noticeable difference when compared to Gigabit cables is the star filler which is elliptical. Not only does the filler maintain the distance between pairs within the cable, but also with the pairs in adjacent cables. The cable ellipse rotates along its length creating a larger air footprint. The distance between all pairs is now maintained removing alien crosstalk.



Features

- Supports 10Gigabit Ethernet to a full 100m up to 500MHz
- Exceeds the requirements of IEEE 802.3an (10GBASE-T) and channel requirements ISO/IEC 11801:2002 amendment channel
- Patented technology to minimise the effect of alien crosstalk and insertion loss
- Maximises productivity levels with 10 times the data throughput of Category 6
- True future proofing for tomorrow's network applications
- Covered by the TrueNet System Warranty

Ordering Information

Description	Catalogue Number
Cable Horizontal CopperTen LSZH, UTP 305m Reel, Blue	10G-A6TZ1-BLM2

Other cable types and colours are available upon request.

Horizontal Cabling

Augmented Category 6 Horizontal Cable

CopperTen™ Category 6a 4PR LSZH UTP Horizontal Cable

Electrical Data

DC resistance at 20°C (max)	9.38Ω / 100m
DC resistance unbalanced (max)	2%
Mutual capacitance at 20°C (max)	5.6nF / 100m
Operating voltage (max)	300 V DC
Worse case cable skew	40 ns / 100m
Nominal velocity of propagation	67%

Construction

Conductor	23 AWG solid bare copper
Insulation	100% polyolefin
Separator	100% polyolefin
Jacket	Low Smoke Zero Halogen
Nominal outside diameter	7.62mm – 6.5mm x 8.4mm

Environmental

Transport and storage	-20° to 75°C
Installation	4° to 50°C
Operation	-20° to 75°C

Compliances

Flammability	IEC 60332-1
Smoke density	IEC 61034
Acid gas	IEC 60754-1
pH	IEC 60754-2
Fire load	828 KJ/m (.23 kWh/m)
Augmented Category 6 horizontal cable requirements	TIA/EIA 568-B.2-10 (draft)
Category 6A horizontal cable requirements	IEC 61156 series (draft) [ref. ISO/IEC 11801]
Channel testing	Latest ISO/IEC 11801:2002 Amendment/channel requirements



Horizontal Cabling

10 / 06 • 102588BE TrueNet® Structured Cabling

Horizontal Cabling

Category 6



Category 6 4PR LSZH UTP Horizontal Cable	5.18
Category 6 4PR PVC UTP Horizontal Cable	5.20
Category 6 2x4PR UTP Horizontal 'Shotgun' Cable	5.22
Category 6 4PR LSZH S/FTP Horizontal Cable	5.24
Category 6 4PR LSZH/PVC F/UTP Horizontal Cable	5.26

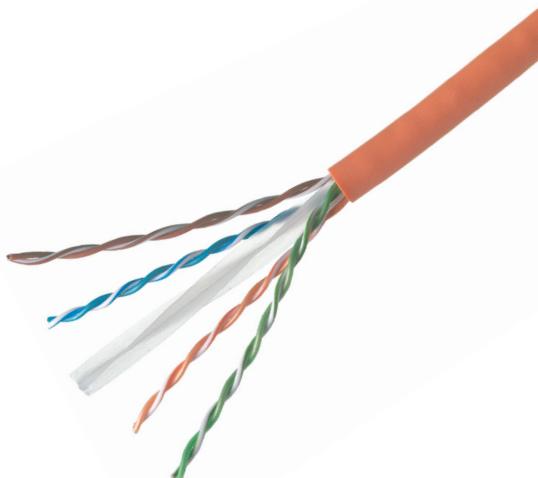
Horizontal Cabling

Category 6 Horizontal Cable

Category 6 4PR LSZH UTP Horizontal Cable

A crucial component of ADC KRONE's impedance matched TrueNet structured cabling solution. This cable guarantees Category 6 performance ensuring maximum network speed, data throughput and efficiency.

TrueNet LSZH horizontal cable is available in standard 305m boxes and 1000m reels and has a fire-rating of IEC 60332-1.



Features

- Performance exceeding Category 6 specifications up to 250MHz
- Ensures zero-bit errors, removing the need for Ethernet to re-transmit data packets and ensures data integrity
- Maximum throughput, reliability and performance in your IT network
- Third party certification at component level
- Covered by the TrueNet System Warranty

Ordering Information

Description	Catalogue Number
Cable Horizontal Category 6 LSZH, UTP 305m Reel-in-a-Box, Orange	TN6TZ1-ORMB
Cable Horizontal Category 6 LSZH, UTP 1000m Reel, Orange	TN6TZ1-ORM6

Other cable types and colours are available upon request and subject to minimum order quantities.

Horizontal Cabling

Category 6 Horizontal Cable

Category 6 4PR LSZH UTP Horizontal Cable

Electrical Data

DC resistance at 20°C (max)	9.38Ω / 100m
DC resistance unbalanced (max)	2%
Mutual capacitance at 20°C (max)	5.6nF / 100m
Operating voltage (max)	300 V DC
Worse case cable skew	25 ns / 100m
Nominal velocity of propagation	69%

Construction

Conductor	24 AWG solid bare copper
Insulation	100% polyolefin
Separator	100% polyolefin
Jacket	Low Smoke Zero Halogen
Nominal outside diameter	6mm

Environmental

Transport and storage	-20° to 75°C
Installation	4° to 50°C
Operation	-20° to 75°C

Compliances

Flammability	IEC 60332-1
Smoke density	IEC 61034
Acid gas	IEC 60754-1
pH	IEC 60754-2
Testing requirements	ISO/IEC 11801:2002 2nd edition (ref: IEC 61156 series) ANSI/TIA/EIA 568-B.2.1 EN 50173:2002 (ref: EN 50288 series)

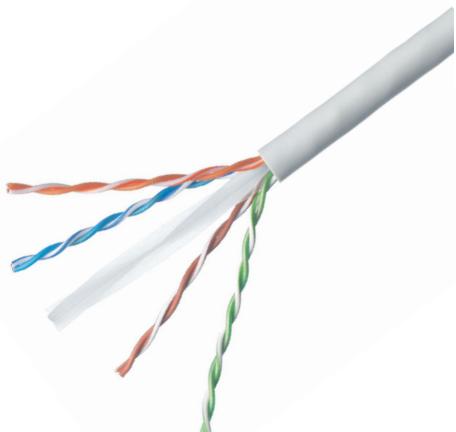
Horizontal Cabling

Category 6 Horizontal Cable

Category 6 4PR PVC UTP Horizontal Cable

A crucial component of ADC KRONE's impedance matched TrueNet structured cabling solution. This cable guarantees Category 6 performance ensuring maximum network speed, data throughput and efficiency.

TrueNet PVC horizontal cable is available in standard 305m boxes and 1000m reels and has a CM fire-rating better than IEC 60332-1.



Features

- Performance exceeding Category 6 specifications up to 250MHz
- Ensures zero-bit errors, removing the need for Ethernet to re-transmit data packets and ensures data integrity
- Maximum throughput, reliability and performance in your IT network
- Third party certification at component level
- Covered by the TrueNet System Warranty

Ordering Information

Description	Catalogue Number
Cable Horizontal Category 6 PVC, UTP 305m Reel-in-a-Box, Grey	TN6TR-LSMB
Cable Horizontal Category 6 PVC, UTP 1000m Reel, Grey	TN6TR-LSM6

Other cable types and colours are available upon request and subject to minimum order quantities.

Horizontal Cabling

Category 6 Horizontal Cable

Category 6 4PR PVC UTP Horizontal Cable

Electrical Data

DC resistance at 20°C (max)	9.38Ω / 100m
DC resistance unbalanced (max)	2%
Mutual capacitance at 20°C (max)	5.6nF / 100m
Operating voltage (max)	300 V DC
Worse case cable skew	25 ns / 100m
Nominal velocity of propagation	69%

Construction

Conductor	24 AWG solid bare copper
Insulation	100% polyolefin
Separator	100% polyolefin
Jacket	Lead-free flame retardant PVC
Nominal outside diameter	6.0mm

Environmental

Transport and storage	-20° to 75°C
Installation	4° to 50°C
Operation	-20° to 75°C

Compliances

Flammability	IEC 60332-1
Testing requirements	ISO/IEC 11801:2002 2nd edition (ref: IEC 61156 series)
	ANSI/TIA/EIA 568-B.2.1
	EN 50173:2002 (ref: EN 50288 series)

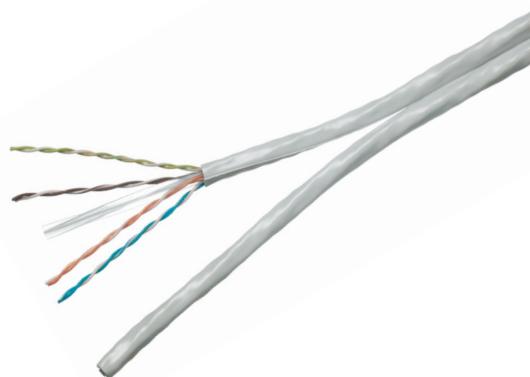
Horizontal Cabling

Category 6 Horizontal Cable

Category 6 2x4PR UTP Horizontal 'Shotgun' Cable

A key component of ADC KRONE's impedance matched TrueNet structured cabling solution. This 'shotgun' cable can be used in installations where time and cost of pulled cables is a key consideration – as two cables can be pulled at once.

Available as PVC or LSZH in standard 500m reels and has a fire-rating better than IEC 60332-1.



Features

- Performance exceeding Category 6 specifications up to 250MHz
- 2x4PR configuration reduces installation costs
- Ensures zero-bit errors, removing the need for Ethernet to re-transmit data packets and ensures data integrity
- Maximum throughput, reliability and performance in your IT network
- Third party certification at component level
- Covered by the TrueNet System Warranty

Ordering Information

Description	Catalogue Number
Cable Horizontal Category 6 LSZH, 2x4PR UTP 500m Reel, Orange	TN6TZ1X2-ORM3
Cable Horizontal Category 6 PVC, 2x4PR UTP 500m Reel, Grey	TN6TMX2-LSM3

Horizontal Cabling

Category 6 Horizontal Cable

Category 6 2x4PR UTP Horizontal 'Shotgun' Cable

Electrical Data

DC resistance at 20°C (max)	9.38Ω / 100m
DC resistance unbalanced (max)	2%
Mutual capacitance at 20°C (max)	5.6nF / 100m
Operating voltage (max)	300 V DC
Worse case cable skew	25 ns / 100m
Nominal velocity of propagation	69%

Construction

Conductor	24 AWG solid bare copper
Insulation	100% polyolefin
Separator	100% polyolefin
Jacket LSZH	Low Smoke Zero Halogen
Jacket PVC	IEC 61034; IEC 60754-1 & -2
Nominal outside diameter	Lead-free flame retardant PVC
	6 x 13mm

Environmental

Transport and storage	-20° to 75°C
Installation	4° to 50°C
Operation	-20° to 75°C

Compliances

Flammability	IEC 60332-1
Testing requirements	ISO/IEC 11801:2002 2nd edition (ref: IEC 61156 series)
	ANSI/TIA/EIA 568-B.2.1
	EN 50173:2002 (ref: EN 50288 series)

Horizontal Cabling

Category 6 Horizontal Cable

Category 6 4PR LSZH S/FTP Horizontal Cable

A crucial component of ADC KRONE's impedance matched TrueNet structured cabling solution. This cable guarantees Category 6 performance ensuring maximum network speed, data throughput and efficiency.

TrueNet LSZH horizontal cable is available in standard 1000m reels single, or 500m shotgun and has a fire-rating of IEC 60332-3 and EN 50266-2-4.



Features

- Performance exceeding Category 6 specifications up to 250MHz
- Ensures zero-bit errors, removing the need for Ethernet to re-transmit data packets and ensures data integrity
- Maximum throughput, reliability and performance in your IT network
- Third party certification at component level
- Covered by the TrueNet System Warranty

Ordering Information

Description	Catalogue Number
Cable Horizontal Category 6 LSZH, S/FTP 1000m Reel, Orange	7053 3 262-55
Cable Horizontal Category 6 LSZH, S/FTP 500m Reel Shotgun, Orange	7053 3 662-54

Horizontal Cabling

Category 6 Horizontal Cable

Category 6 4PR LSZH S/FTP Horizontal Cable

Technical data

Copper conductor	AWG 23
Fire load	0.57MJ/m
Halogen-free	Yes
Maximum tensile strength	145N
Outer diameter	7.4mm
Weight	58kg/km

Electrical Data

DC resistance at 20°C (max)	7.3Ω / 100m
DC resistance unbalanced (max)	1%
Insulation resistance	> 5000 mΩ x km
Impedance Z_o at 0.064 MHz	125 Ω ± 20%
Impedance Z_o at 1 - 100 MHz	100 Ω ± 15%
Impedance Z_o at 101 - 250 MHz	100 Ω ± 18%
Transfer impedance	< 10 mΩ per metre at 10 MHz
Longitudinal conversion loss dB/ref.	Length = 1000 m: > 46 dB at 64 kHz
Longitudinal conversion loss dB/ref.	Length = 100 m: > 40 dB at 1 MHz
Longitudinal conversion loss dB/ref.	Length = 100 m: > 20 dB at 100 MHz
Mutual capacitance	43 pF/m
Capacitance unbalance to ground	1000 pF/km
Nominal velocity of propagation	0.79%
Propagation delay ≥ 10 MHz	4.2 ns/m
Worst case cable skew	4 ns/100m

Mechanical Characteristics

Cable insulation	LSZH
Sheath material	FRNC
Max. temperature range during installation	0°C up to +50 °C
Max. operating temperature	-20 up to +60°C
Min. bend radius for single flexure	40 mm (over flat side)
Min. bend radius during installation or pulling	60 mm (over flat side)

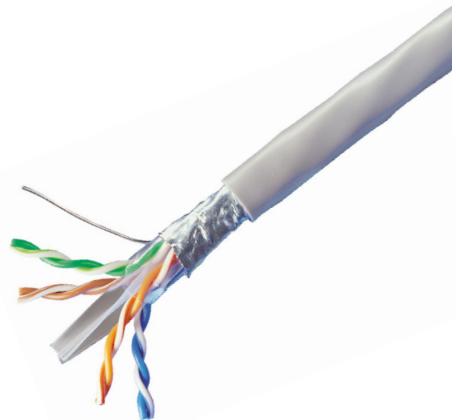
Horizontal Cabling

Category 6 Horizontal Cable

Category 6 4PR LSZH/PVC F/UTP Horizontal Cable

A crucial component of ADC KRONE's impedance matched TrueNet structured cabling solution. This cable guarantees Category 6 performance ensuring maximum network speed, data throughput and efficiency.

This TrueNet LSZH horizontal cable is available in standard 500m or 1000m and also as 500m shotgun.



Features

- Performance exceeding Category 6 specifications up to 250MHz
- Ensures zero-bit errors, removing the need for Ethernet to re-transmit data packets and ensures data integrity
- Maximum throughput, reliability and performance in your IT network
- Covered by the TrueNet System Warranty

Standards:

ISO 11801, EN 50288-2-1, EN 50173, IEC 61156-5-1, EIA/TIA 568-A and B.

Ordering Information

Description	Catalogue Number
Cable Horizontal Category 6 LSZH, F/UTP 1000m Reel, Orange	7053 3 232-75
Cable Horizontal Category 6 LSZH, F/UTP 500m Reel, Orange	7053 3 232-74
Cable Horizontal Category 6 LSZH, F/UTP 500m Reel Shotgun, Orange	7053 3 632-74
Cable Horizontal Category 6 PVC, F/UTP 1000m Reel, Grey	7053 3 221-75
Cable Horizontal Category 6 PVC, F/UTP 500m Reel, Grey	7053 3 221-74

Horizontal Cabling

Category 6 Horizontal Cable

Category 6 4PR LSZH/PVC F/UTP Horizontal Cable

Electrical Data

Mean impedance	100 + 5 Ω
Propagation delay difference (skew)	< 45 ns
DC resistance	$\leq 187.6 \Omega/\text{km}$
Capacitance unbalance to ground	$\leq 1600 \text{ pF/km}$
Dielectric strength	700 V AC/1 min
Insulation resistance	$\geq 5000 \text{ M}\Omega \times \text{km}$
Current carrying capacity at 60°C:	
- all conductors simultaneously	0.175A
- screen	5A
Coupling attenuation:	
- from 30 to 100 MHz	$\geq 55 \text{ dB}$
- from 100 MHz to 1 GHz	$\geq 55 - 20 \log f/100$

Construction

Nominal outside diameter	6.9mm
Nominal outside diameter (shotgun)	7 x 14.8mm

Environmental

Storage temperature	-40°C to +70°C
Operating temperature	-20°C to +60°C
Installation temperature	0°C to +50°C (24 hours prior to installation, store the cable at 20°C \pm 5°C)

Compliances

Fire rating	IEC 60332-1
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Horizontal Cabling

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Horizontal Cabling

Category 5e



Category 5e 4PR LSZH UTP Horizontal Cable	5.30
Category 5e 4PR PVC UTP Horizontal Cable	5.32
Category 5e 4PR Outback® Cable	5.34
Category 5e 4PR LSZH/PVC F/UTP Horizontal Cable	5.36

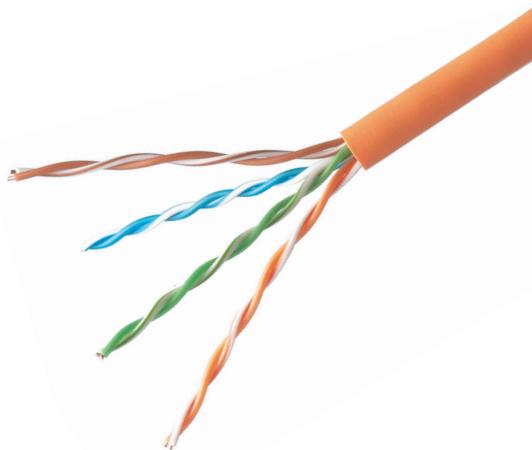
Horizontal Cabling

Category 5e Horizontal Cable

Category 5e 4PR LSZH UTP Horizontal Cable

A crucial component of ADC KRONE's impedance matched TrueNet structured cabling solution. This cable guarantees Category 5e performance.

TrueNet LSZH horizontal cable is available in standard 305m boxes and 1000m reels and has a fire-rating of IEC 60332-1.



Features

- Performance exceeding Category 5e specifications up to 100MHz
- Ensures zero-bit errors, removing the need for Ethernet to re-transmit data packets and ensures data integrity
- Maximum throughput, reliability and performance in your IT network
- Third party certification at component level
- Covered by the TrueNet System Warranty

Ordering Information

Description	Catalogue Number
Cable Horizontal Category 5e LSZH, UTP 305m Reelex, Orange	TN5ETZ1-ORM1
Cable Horizontal Category 5e LSZH, UTP 1000m Reel, Orange	TN5ETZ1-ORM6

Other cable types and colours are available upon request and subject to minimum order quantities.

Horizontal Cabling

Category 5e Horizontal Cable

Category 5e 4PR LSZH UTP Horizontal Cable

Electrical Data

DC resistance at 20°C (max)	9.38Ω / 100m
DC resistance unbalanced (max)	2%
Mutual capacitance at 20°C (max)	5.6nF / 100m
Operating voltage (max)	300 V DC
Worse case cable skew	22 ns / 100m
Nominal velocity of propagation	67%

Construction

Conductor	24 AWG solid bare copper
Insulation	100% polyolefin
Jacket	Low Smoke Zero Halogen
Nominal outside diameter	5.0mm

Environmental

Transport and storage	-20° to 75°C
Installation	4° to 50°C
Operation	-20° to 75°C

Compliances

Flammability	IEC 60332-1
Smoke density	IEC 61034
Acid gas	IEC 60754-1
pH	IEC 60754-2
Testing requirements	ISO/IEC 11801:2002 2nd edition (ref: IEC 61156 series) ANSI/TIA/EIA 568-B.2.1 EN 50173:2002 (ref: EN 50288 series)

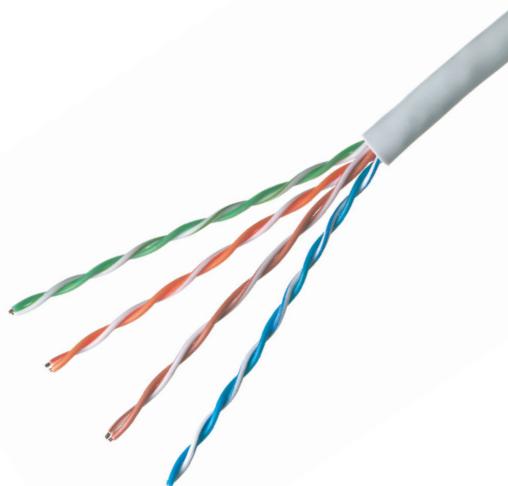
Horizontal Cabling

Category 5e Horizontal Cable

Category 5e 4PR PVC UTP Horizontal Cable

A crucial component of ADC KRONE's impedance matched TrueNet structured cabling solution. This cable guarantees Category 5e performance.

TrueNet PVC horizontal cable is available in standard 305m boxes and 1000m reels and has a CM fire-rating equivalent and better than IEC 60332-1.



Features

- Performance exceeding Category 5e specifications up to 100MHz
- Ensures zero-bit errors, removing the need for Ethernet to re-transmit data packets and ensures data integrity
- Maximum throughput, reliability and performance in your IT network
- Third party certification at component level
- Covered by the TrueNet System Warranty

Ordering Information

Description	Catalogue Number
Cable Horizontal Category 5e PVC, UTP 305m Reelex, Grey	TN5ETR-LSM1
Cable Horizontal Category 5e PVC, UTP 1000m Reel, Grey	TN5ETR-LSM6

Other cable types and colours are available upon request and subject to minimum order quantities.

Horizontal Cabling

Category 5e Horizontal Cable

Category 5e 4PR PVC UTP Horizontal Cable

Electrical Data

DC resistance at 20°C (max)	9.38Ω / 100m
DC resistance unbalanced (max)	2%
Mutual capacitance at 20°C (max)	5.6nF / 100m
Operating voltage (max)	300 V DC
Worse case cable skew	22 ns / 100m
Nominal velocity of propagation	67%

Construction

Conductor	24 AWG solid bare copper
Insulation	100% polyolefin
Jacket	Lead-free flame retardant PVC
Nominal outside diameter	5.0mm

Environmental

Transport and storage	-20° to 75°C
Installation	4° to 50°C
Operation	-20° to 75°C

Compliances

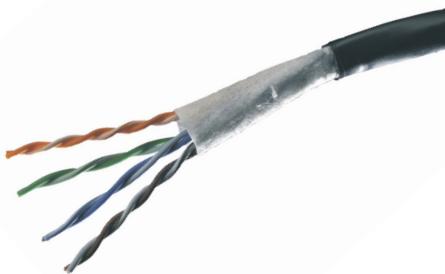
Flammability	IEC 60332-1
Testing requirements	ISO/IEC 11801:2002 2nd edition (ref: IEC 61156 series)
	ANSI/TIA/EIA 568-B.2.1
	EN 50173:2002 (ref: EN 50288 series)

Horizontal Cabling

Category 5e Horizontal Cable

Category 5e 4PR Outback® Cable

The Outback cable is a 4PR, 24 AWG, Category 5e data cable designed for outdoor use. The cable combines excellent transmission and weather resistant properties. It is intended for installations in buried conduit, or as an overhead cable. The core contains a heat and water-blocking tape, which isolates the core from extreme temperature and moisture.



Features

- Performance exceeding Category 5e specifications up to 100MHz
- Contains a heat and water blocking tape to isolate from extreme temperature and moisture
- Ensures zero-bit errors, removing the need for Ethernet to re-transmit data packets and ensures data integrity
- For use in buried conduit or overhead applications
- Covered by the TrueNet System Warranty

Ordering Information

Description	Catalogue Number
Cable Outback Category 5e PE, UTP 305m Reel-in-a-Box, Black	TN5ETOSP-BKRB
Cable Outback Category 5e PE, UTP 305m Reel, Black	TN5ETOSP-BKM2

Horizontal Cabling

Category 5e Horizontal Cable

Category 5e 4PR Outback® Cable

Electrical Data

DC resistance at 20°C (max)	9.38Ω / 100m
DC resistance unbalanced (max)	2%
Mutual capacitance at 20°C (max)	5.6nF / 100m
Operating voltage (max)	300 V DC
Worse case cable skew	45 ns / 100m

Construction

Conductor	24 AWG solid bare copper
Insulation	100% polyolefin
Core tape	Moisture barrier core wrap
Jacket	Linear low-density Polyethelyene
Nominal outside diameter	5.59mm

Environmental

Transport and storage	-20° to 75°C
Installation	4° to 50°C
Operation	-20° to 75°C

Compliances

Testing requirements	TIA/EIA 568-B.2
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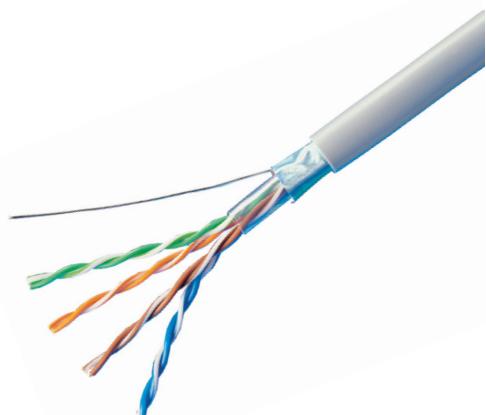
Horizontal Cabling

Category 5e Horizontal Cable

Category 5e 4PR LSZH/PVC F/UTP Horizontal Cable

Commonly known as FTP cable, this is a crucial component of ADC KRONE's impedance matched TrueNet structured cabling solution. This cable guarantees Category 5e performance ensuring maximum network speed, data throughput and efficiency.

This TrueNet LSZH horizontal cable is available in standard 500m or 1000m and also as 500m shotgun.



Features

- Performance exceeding Category 5e specifications up to 100MHz
- Ensures zero-bit errors, removing the need for Ethernet to re-transmit data packets and ensures data integrity
- Maximum throughput, reliability and performance in your IT network
- Covered by the TrueNet System Warranty

Standards:

ISO 11801, EN 50288-2-1, EN 50173, IEC 61156-5-1, EIA/TIA 568-A and B

Ordering Information

Description	Catalogue Number
Cable Horizontal Category 5e LSZH, F/UTP 1000m Reel, Orange	7053 3 132-75
Cable Horizontal Category 5e LSZH, F/UTP 500m Reel, Orange	7053 3 132-74
Cable Horizontal Category 5e LSZH, F/UTP 500m Reel Shotgun, Orange	7053 3 532-74
Cable Horizontal Category 5e PVC, F/UTP 1000m Reel, Grey	7053 3 121-75
Cable Horizontal Category 5e PVC, F/UTP 500m Reel, Grey	7053 3 121-74

Horizontal Cabling

Category 5e Horizontal Cable

Category 5e 4PR LSZH/PVC F/UTP Horizontal Cable

Electrical Data

Mean impedance	$100 \pm 5 \Omega$
Propagation delay difference (skew)	< 45 ns
Loop conductor resistance	$\leq 187.6 \Omega/\text{km}$
Capacitance unbalance to ground	$\leq 1600 \text{ pF/km}$
Dielectric strength	700 V AC / 1 min
Insulation resistance	$\geq 5000 \text{ M}\Omega \times \text{km}$
Current carrying capacity at 60°C:	
- all conductors simultaneously	0.175A
- screen	5A
Coupling attenuation:	
- from 30 to 100 MHz	$\geq 55 \text{ dB}$
- from 100 MHz to 1 GHz	$> 55 - 20 \log f/100$

Construction

Nominal outside diameter	6.3mm
Nominal outside diameter (shotgun)	6.3 x 14mm

Environmental

Storage temperature	-40°C to +70°C
Operating temperature	-20°C to +60°C
Installation temperature	0°C to +50°C (24 hours prior to installation, store the cable at 20°C \pm 5°C)

Compliances

Fire rating:	IEC 60332-1
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Horizontal Cabling

10 / 06 • 102588BE TrueNet® Structured Cabling



Work Area

Fibre To The Desk.....	6.03
Augmented Category 6	6.15
Category 6	6.23
Category 5e.....	6.35
Adaptors, Faceplates and Accessories	6.49
Media Conversion.....	6.57
Wireless – WFX WLAN Array.....	6.71
Industrial.....	6.81

Work Area

Fibre To The Desk



Faceplates.....	6.04
Patch Cords.....	6.06
Pigtails.....	6.12
Glossary.....	6.14

Work Area

Fibre To The Desk – Fibre Optic Wall Outlet

TrueNet® Fibre Optic Wall Outlet

The TrueNet® Fibre Optic Wall Outlet from ADC KRONE is used to terminate horizontal fibre cable at the work station in Fibre To The Desk applications (FTTD).

Formed from a polycarbonate material (PC/ABS polymer), the wall outlet is assembled as two light-weight and robust mouldings. The base moulding can be surface mounted or fixed into a standard (BS4660) double gang back box to secure the whole assembly. The front, or user facing moulding is able to drop down giving the installer access to work on the splicing, routing or splicing of up to eight secondary buffered fibre cables.

The design has many diverse routes through the wall outlet for storing excess fibre whilst managing the bend radius through the hinge and onto the point of presentation for the user.

This wall outlet is suited for deployment using direct, or spliced pigtail terminations. Positions for 'clip-on' heat shrink splice holders are included.

Applications:

Fibre To The Desk (FTTD) connectivity presentation point

Fibre to the home (FTTH) network termination (NT) point.



Ordering Information

Description	Catalogue Number
MT-RJ 2x Outlet	7033 1 067-02
MT-RJ 4x Outlet	7033 1 067-04
1 x SC Duplex Outlet Multimode	7033 1 069-02
2 x SC Duplex Outlet Multimode	7033 1 069-04
2 x ST Outlet Multimode	7033 1 071-02
4 x ST Outlet Multimode	7033 1 071-04
1 x LC Quad Outlet Multimode	7033 1 073-04
2 x LC Quad Outlet Multimode	7033 1 073-08

Work Area

Fibre To The Desk – Fibre Optic Wall Outlet

TrueNet® Fibre Optic Wall Outlet

Features

- Designed for modern small-form-factor deployments and into legacy Gigabit Ethernet deployments
- MT-RJ offers both singlemode and multimode solutions, whilst LC, SC, and ST are available as a multimode solution
- Integrated cable management allows diverse routing for excess spool management and maintenance of the bend radius whilst the fibre optic cable is housed in the outlet
- The footprint suits standard (BS4660) electrical wall back boxes for deployment in trunking and walls
- Designed to allow the insertion of heat shrink splice protection holders giving the flexibility to choose between direct termination and splicing
- Anchor points allow the fibre optic cable to be tied-off at the point of entry into the base which prevents the cable from slipping back into a wall recess during installation
- Per port labelling provides easy identification of each subscriber network link

Technical Specifications

Material

Base and front moulding PC/ABS
Multimode adaptor ferrules phosphor bronze
Colour: white

Environmental Standards

EN 6008-2-2
IEC 68-2-14
IEC 68-2-6
IEC 68-2-27
IEC 68-2-3

Operating Environment

EN 50173
ISO/IEC 11801

Dimensions

147mm (width) x 88mm (height) x 30mm (depth) from mounting face.
Fits BS4660 compliant electrical wall box

Work Area

Fibre To The Desk – Fibre Optic Patch Cords

Introduction

One of the components essential to the operation of a fibre-optic network is the non-permanent connection between fibres which allows the network manager to change routings as needed and to gain access to a channel for test purposes. The quality and reliability of patch cords determine the reliable and smooth functioning of a network.

Both, the optical and mechanical characteristics of a connector must remain stable and reproducible even after repeated re-terminations. Connectors must also withstand, without loss of quality, fluctuations in temperature and humidity – as well as mechanical stress, such as tensile stress, transverse pressure and vibration. ADC KRONE patch cord and pigtail products are designed and built to meet these stresses.

ADC KRONE assembles pigtails and patch cords for singlemode (SM) and multimode (MM) applications using the highest quality optical connectors. ADC KRONE offers a wide range of connector types, cable designs and cable lengths, to meet every application need.

Top quality – tried and tested

TrueNet fibre cable assemblies satisfy the highest requirements in terms of quality, long-term stability and reliability. All fibre optic connectors are tested in accordance with ES 300671 (02/2000). For qualification purposes, the optical characteristics of each individual connector are tested at ADC KRONE:

- the insertion loss against a master connector (in accordance with EN 186000-1, 4.4.7);
- the return loss (in accordance with EN 186000-1, 4.4.12).

Work Area

Fibre To The Desk – Fibre Optic Patch Cords

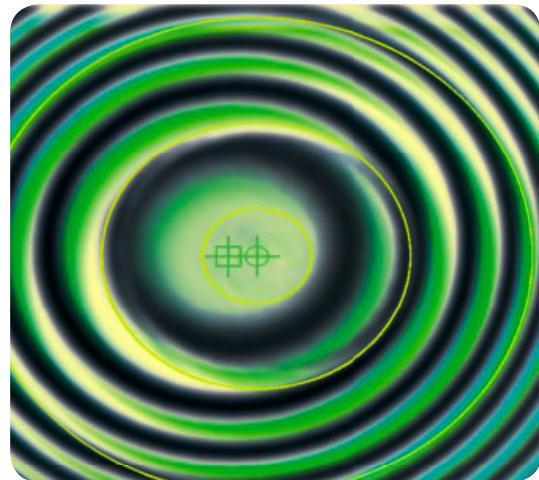
End Face Geometries

The reliable functioning of a Physical Contact (PC) and Angled Physical Contact (APC) connector strongly depends on adherence to the tolerances for the form of the ferrule front face. The geometry, or end face, of this convex surface can be measured using interferometry. The picture on the facing page shows a typical interferogram. The related 3-D image is shown below.

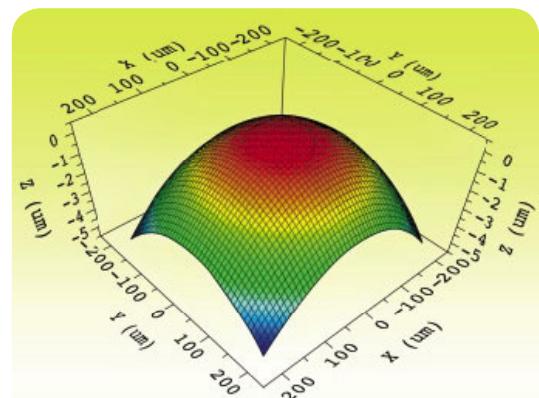
This test, which is routinely performed at ADC KRONE, measures the radius of curvature, the offset of the ferrule apex relative to the central axis (the so-called "apex offset") and the end position of the fibre (protrusion or undercut). In the case of APC connectors, this test can also be used to check the angle of the slant polishing.

The following pages provide an overview of the TrueNet® fibre patch cord and pigtail portfolio.

For further information please contact
ADC KRONE.



Focusing on quality: interferogram of the convex ferrule front face (a three-dimensional imaging can be seen below)



This image shows the three-dimensional transformation of the interferogram display above

Work Area

Fibre To The Desk – Fibre Optic Patch Cords

TrueNet® Fibre Optic Patch Cords – Singlemode and Multimode

ADC KRONE offers a wide array of singlemode and multimode fibre optic patch cords, featuring both 3mm and 1.8mm outer diameter LSZH cable. Product configurators allow 1m patch cord increments to fit with customer specific application needs.

ADC KRONE's multimode connectors are offered with a Physical Contact (PC) polish as standard, whilst singlemode connectors are available with a Ultra Physical Contact (UPC) polish as standard and an Angled Physical Contact (APC) polish on request.

Connector types may be combined to produce 'hybrid' patch cords. All patch cords are tested to ensure the highest quality standards are met.



Features

- 100% optically tested
- Visual inspection of all features
- Insertion loss and return loss values certificated and sent with every patch cord
- Factory installed connectorisation
- Manufactured using advanced techniques

OS1 Fibre Optic Patch Cords

Ordering Information

Description	Catalogue Number*		
Fibre Optic Patch Cord, OS1 (9/125 µm), Duplex Patch Cable, Yellow	7006 1 5XX-YZ		
*For XX use: Connector 1 and 2	*For Y use: Polishing	*For Z use: Length	For example, the order code for an 8m SC duplex (UPC polish) to an LC (UPC polish) would be: 7006 1 578-56
1 = SC	3 = APC8°	1 = 1m	
2 = FC	4 = APC9°	2 = 2m	
3 = DIN	5 = UPC	3 = 3m	
4 = E2000		4 = 4m	
5 = ST		5 = 5m	
7 = Duplex-SC		6 = 8m	
8 = LC		7 = 10m	
		8 = 15m	
		9 = 20m	

Work Area

Fibre To The Desk – Fibre Optic Patch Cords

OM1 Fibre Optic Patch Cords

Ordering Information

Description	Catalogue Number
Fibre Optic Patch Cord, LC-STII, OM1 (62.5/125 µm), Duplex Patch Cable, Grey	7006 3 585-1Z [†]
Fibre Optic Patch Cord, STII-STII, OM1 (62.5/125µm), Duplex Patch Cable, Grey	
1m	STSC2CORE-0018
2m	STSC2CORE-0003
3m	STSC2CORE-0004
5m	STSC2CORE-0017
Fibre Optic Patch Cord, SC-SC, OM1 (62.5/125 µm), Duplex Patch Cable, Grey	
1m	SCSTSC2CORE-0001
2m	SCSTSC2CORE-0003
3m	SCSTSC2CORE-0004
5m	SCSTSC2CORE-0005
Fibre Optic Patch Cord, STII-SC, OM1 (62.5/125 µm), Duplex Patch Cable, Grey	
1m	STSC2CORE-0005
2m	STSC2CORE-0006
3m	STSC2CORE-0007
5m	STSC2CORE-0008
Fibre Optic Patch Cord, MTRJ-SC, OM1 (62.5/125 µm), Duplex Patch Cable, Grey	
1m	MTRJSTSC2CORE-0010
2m	MTRJSTSC2CORE-0011
3m	MTRJSTSC2CORE-0012
5m	MTRJSTSC2CORE-0013
Fibre Optic Patch Cord, MTRJ-STII, OM1 (62.5/125 µm), Duplex Patch Cable, Grey	
1m	MTRJSTSC2CORE-0015
2m	MTRJSTSC2CORE-0016
3m	MTRJSTSC2CORE-0017
5m	MTRJSTSC2CORE-0018
Fibre Optic Patch Cord, MTRJ-MTRJ, OM1 (62.5/125 µm), Duplex Patch Cable, Grey	
1m	MTRJMTRJ2CORE-0005
2m	MTRJMTRJ2CORE-0006
3m	MTRJMTRJ2CORE-0009
5m	MTRJMTRJ2CORE-0007

[†]For meterage please specify Z, e.g. 1 = 1m, 2 = 2m, etc.

Work Area

Fibre To The Desk – Fibre Optic Patch Cords

OM2 Fibre Optic Patch Cords

Ordering Information

Description	Catalogue Number*
Fibre Optic Patch Cord, OM2 (50/125 µm), Duplex Patch Cable, Orange	7023 1 5XX-YY
*For XX use: 36 = STII-LC 37 = STII-STII 38 = SC-STII 39 = MTRJ-MTRJ 40 = MTRJ-SC 41 = MTRJ-STII 42 = MTRJ-LC 43 = SC-SC 44 = SC-LC 45 = LC-LC	*For YY use: 01 = 1m 02 = 2m 03 = 3m 05 = 5m

OM3 Fibre Optic Patch Cords

Ordering Information

Description	Catalogue Number*
Fibre Optic Patch Cord, OM3 (50/125 µm), Duplex Patch Cable, Violet	7023 1 5XX-YY
*For XX use: 62 = LC-STII 01 = 1m 34 = LC-MTRJ 02 = 2m 63 = LC-SC (SC Duplex) 03 = 3m 78 = LC-SC (SC Discrete) 05 = 5m 35 = LC-LC	*For YY use: 01 = 1m 02 = 2m 03 = 3m 05 = 5m
Fibre Optic Patch Cord, SC-SC, OM3 (50/125 µm), Duplex Patch Cable, Violet	
1m	SCSTSC2CORE-0037
2m	SCSTSC2CORE-0039
3m	SCSTSC2CORE-0041
Fibre Optic Patch Cord, SC(Discrete)-MTRJ, OM3 (50/125 µm), Duplex Patch Cable, Violet	
2m	MTRJSTSC2CORE-0027
3m	MTRJSTSC2CORE-002

Optical Characteristics of ADC KRONE Patch Cord and Pigtail

Insertion Loss I_L (dB)		@ 850nm		@ 1310nm	
		Typical	Maximum	Typical	Maximum
		9µm	–	–	0.3
	50µm	0.3	0.5	–	–
	62.5µm	0.2	0.5	–	–

Return Loss R_L (dB)		@ 850nm		@ 1310nm	
		Typical	Maximum	Typical	Maximum
		9µm	–	–	55
	50µm	35	30	–	–
	62.5µm	35	30	–	–

Work Area

Fibre To The Desk – Fibre Optic Patch Cords

TrueNet® Fibre Optic Patch Cords – Singlemode and Multimode



LC (Lucent Connector)

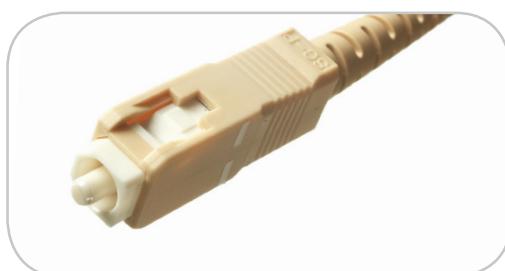
Latest generation of small form factor (SFF) connector, perfectly suited for use in Enterprise networks because of its all-round optical and mechanical performance.

The LC has been adopted by all major active equipment manufacturers for data rates in excess of 1Gb/s.



ST® (Straight Tip)

Still commonly used in LAN applications and is best suited to multimode employment. Modern network designs now tend to move toward SFF or SC connector types.



SC (Subscriber Connector)

Along with the LC connector (see above) the SC is a popular choice of connector for data rates in excess of 10Gb/s.



MT-RJ (Mini Termination Registered Jack)

The MT-RJ was the first SFF connector type to be adopted in volume. The advantage of the MT-RJ is that it is small for higher density applications whilst still housing two fibres (Tx and Rx) in a single body.

The MT-RJ is particularly suited to multimode applications.

The above four connector types are recognised as the most commonly deployed within the LAN. ADC KRONE also offer a range of patch cords and pigtails terminated with E2000, LX.5 and FC, for both multimode and singlemode applications. Contact ADC KRONE for more details.

Work Area

Fibre To The Desk – Fibre Optic Pigtails

TrueNet® Fibre Optic Pigtails – Singlemode and Multimode

ADC KRONE offers a wide array of singlemode and multimode fibre optic pigtails, featuring a 900µm PVC buffer (650µm for MT-RJ).

ADC KRONE's multimode connectors are offered with a PC polish as standard, whilst singlemode connectors are available with a UPC polish as standard and an APC polish on request.

All pigtails are tested to ensure the highest quality standards are met.

Please note that across Europe there are at least two different methods of handling pigtails within fusion splices. This means that pigtails are offered with two different buffer types, tight buffered or semi-loose tube. It is important that the buffer type and fusion splicer are identified prior to ordering.

As a general rule, tight buffered pigtails are deployed in most Western European countries. Semi-loose tube pigtails are commonly used in Germany and Eastern Europe. ADC KRONE technical support can assist in identifying the appropriate buffer types.



Features

- 100% optically tested
- Visual inspection of all features
- Insertion loss and return loss values certificated and sent with every pigtail
- Factory installed connectorisation
- Manufactured using advanced techniques

Work Area

Fibre To The Desk – Fibre Optic Pigtails

TrueNet® Fibre Optic Pigtails – OS1, OM1, OM2 and OM3

Ordering Information

Description	Catalogue Number
OS1 (9/125µm) Tight Buffered Pigtails, 1m Fibre Optic Pigtail, LC Fibre Optic Pigtail, SC Fibre Optic Pigtail, ST	7023 1 594-01 7023 1 591-01 7023 1 593-01
OS1 (9/125µm) Semi-Loose Tube Buffered Pigtails, 1m Fibre Optic Pigtail, LC Fibre Optic Pigtail, SC Fibre Optic Pigtail, ST	7006 1 180-51 7006 1 110-51 7006 1 150-51
OM1 (62.5/125µm) Tight Buffered Pigtails, 1m Fibre Optic Pigtail, SC Fibre Optic Pigtail, ST Fibre Optic Pigtail, MT-RJ	SCST1CORE-0003 SCST1CORE-0004 MTRJ2CORE-0004
OM1 (50/125µm) Semi-Loose Tube Buffered Pigtails, 1m Fibre Optic Pigtail, LC Fibre Optic Pigtail, SC Fibre Optic Pigtail, ST Fibre Optic Pigtail, MT-RJ	7006 3 180-11 7006 3 110-11 7006 3 150-11 7074 3 100-01
OM2 (50/125µm) Tight Buffered Pigtails, 1m Fibre Optic Pigtail, LC Fibre Optic Pigtail, SC Fibre Optic Pigtail, ST Fibre Optic Pigtail, MT-RJ	7023 1 597-01 SCST1CORE-0001 SCST1CORE-0002 MTRJ2CORE-0001
OM2 (50/125µm) Semi-Loose Tube Buffered Pigtails, 1m Fibre Optic Pigtail, LC Fibre Optic Pigtail, SC Fibre Optic Pigtail, ST Fibre Optic Pigtail, MT-RJ	7006 2 180-11 7006 2 110-11 7006 2 150-11 7074 2 100-01
OM3 (50/125µm) Tight Buffered Pigtails, 1m Fibre Optic Pigtail, LC Fibre Optic Pigtail, SC Fibre Optic Pigtail, MT-RJ	7023 1 572-01 SCST1CORE-0008 MTRJ2CORE-0006
OM3 (50/125µm) Semi-Loose Tube Buffered Pigtails, 1m Fibre Optic Pigtail, LC Fibre Optic Pigtail, SC Fibre Optic Pigtail, MT-RJ	7006 6 180-11 7006 6 110-11 7074 6 100-01

Glossary

Insertion loss

Insertion Loss is defined as being the difference in power level just before (P1) and immediately after (P2) a joint or inserted optical device.

Where Insertion Loss = $P1 - P2$ (dB or mW)

The best insertion loss figures tend toward 0 dB, meaning that the optimum amount of optical energy has been transferred across a joint or inserted optical device.

Return Loss

Return Loss refers to the loss in the power level of reflected, or returned light, compared to the incident power level, just before that reflection.

The better the return loss figure across a mated connector or joint, the better chance the signal has of reaching the end of a channel with enough energy to be decoded. In addition, the better return loss figure means that subsequent signals being sent from the source are less likely to be corrupted, or overloaded, with reflected energy, which is particularly important in high speed data networks.

Ferrule

Part of the fibre optic connector in which the optical fibre is centrally positioned. The ferrules of the two connectors are inserted into the sleeve of a through-adaptor until their frontal faces touch each other. In the case of SM connectors, the ferrule front faces are available with different polishings, and are usually made of zirconium ceramic, whilst polymer ferrules are used in MM applications. The majority of connectors have a ferrule with a diameter of 2.5mm. Small-form-factor connectors, e.g. LC or MU, mini-ferrules have a diameter of 1.25mm.

Sleeve

Part of the through-adaptor in which the ferrules of the two connectors to be connected are inserted. For SM applications, they are typically made of zirconium ceramic or, in the case of MM applications, they are also often made of phosphor bronze.

Pigtail

An optical fibre, usually with a secondary coating (typically, 0.9mm in diameter), fitted at one end with a connector; it is primarily used for splicing of loose-tube fibres in racks and cabinets.

Patch Cord

An optical fibre cable fitted at both ends with connectors, usually with a diameter of 2.4 or 3.0mm, or 1.8mm in the case of SFF solutions. Primarily used for patching or as a connection between the transmission and the line systems.

Work Area

Augmented Category 6



Modular Jacks.....	6.16
Distribution Boxes.....	6.18
Loaded Faceplates	6.19
Patch Cords	6.21

Work Area

Augmented Category 6 – Modular Jacks

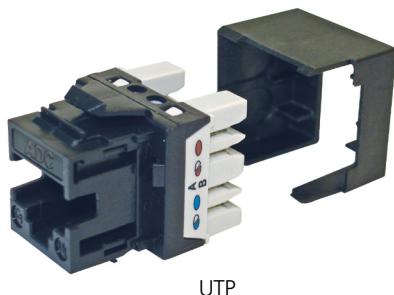
TrueNet® CopperTen™ RJ45 UTP and STP Modular Keystone Jack

The CopperTen jack is a core component of the CopperTen solution and utilised at the outlet and within the patch panel.

The key to delivering a high performing jack is to reduce the insertion loss and alien crosstalk that are prevalent at high frequencies associated with 10 Gigabit Ethernet.

A high performance PCB within the jack, together with carbon cap to mitigate alien crosstalk, have produced a leading edge component necessary to deliver the high performance demanded.

The CopperTen jack utilises punchdown terminations onto LSA-PLUS® contacts to ensure swift installation.



UTP



STP

Features

- Supports 10 Gigabit Ethernet over unshielded copper to a full 100m up to 500MHz
- Exceeds the requirements of IEEE 802.3an (10GBASE-T) and ISO/IEC 11801:2002 amendment/channel requirements
- Keystone design ensures compatibility with a range of keystone faceplates and adaptors
- Maximises productivity levels with 10 times the data throughput of Category 6
- True future proofing for tomorrow's network applications
- T-568A/B wiring
- Covered by the TrueNet® System Warranty

Ordering Information

Description	Catalogue Number
Modular Jack, Augmented Category 6 Keystone UTP, Pure White (Pack of 1)	6830 1 885-01
Modular Jack, Augmented Category 6 Keystone UTP, Black (Pack of 1)	6830 1 885-04
Modular Jack, Augmented Category 6 KM8 STP (Pack of 1)	6830 1 810-0X
Modular Jack, Augmented Category 6 KM8 STP (Bag of 8)	6830 2 711-0X

***For X use:**

1 = White
2 = Ivory
3 = Grey
4 = Black

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Work Area

Augmented Category 6 – Modular Jacks

TrueNet® CopperTen™ RJ45 UTP and STP Modular Keystone Jack

Technical Specification

Electrical Data

	UTP	STP
Insulation resistance at +60°C and 93% relative humidity	≥ 1GΩ	≥ 500mΩ
Dielectric strength	Contact / contact ≥ 1.0kV DC	Contact / contact 1.0kV Contact / shield 1.5kV
Current carrying capacity	≥ 1A	≥ 1A
Typical plug / jack contact resistance	≤ 20mΩ	≤ 20mΩ
Typical IDC contact resistance	≤ 5mΩ	≤ 1mΩ
Conductor terminations of LSA-PLUS® contacts	≥ 200	≥ 30
Conductor diameter	0.5-0.65mm (AWG 24-22)	0.5-0.65mm (AWG 24-22)
Insulation diameter	0.7-1.6mm	0.7-1.6mm
Shield connection		Patented 360° shielding

Mechanical Data

Plug / jack mating cycles	≥ 750 (IEC/EN 60603-7)	≥ 750 (IEC/EN 60603-7)
Plug / jack insertion / withdrawal force	≤ 20N (IEC/EN 60603-7)	≤ 20N (IEC/EN 60603-7)
Operating temperature range	-10°C to +60°C	-10°C to +60°C
Operating humidity range	≤ 95% R.H. non condensing	≤ 95% R.H. non condensing

Testing Requirements

Connection technology	ISO/IEC 11801:2002 ANSI/TIA/EIA-568-B.2-1 EN 50173-1:2002
Channel testing	Latest ISO/IEC 11801:2002 Amendment/channel requirements

Work Area

Augmented Category 6 – Distribution Boxes

TrueNet® Structured Cabling

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Augmented Category 6
Work Area

TrueNet® CopperTen™ UTP Mini Pod

Designed to help simplify the cabling of raised floor work spaces and is ideal for high density environments, such as desk clusters, call centres and dealer desks.

Dimensions

60 x 63 x 200mm

Specification of the Plastic Housing

Casing: ABS UL 94 V0

Test Specification

Connection technology

ISO/IEC 11801:2002

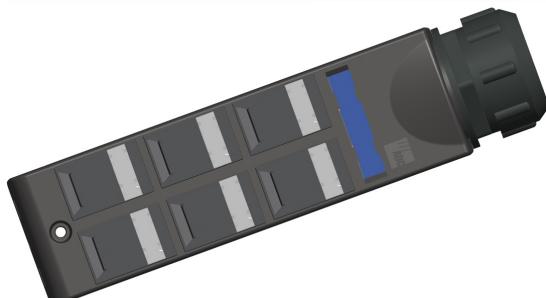
ANSI/TIA/EIA-568-B.2-1

EN 50173-1:2002

Channel Testing

Latest ISO/IEC 11801:2002

Amendment/Channel Requirements



Features

- Performance exceeding Augmented Category 6 specifications
- Can be passed through minimum 127mm (5 inch) floor grommets
- Terminations will not be disturbed during repositioning of enclosure, due to external mounting points
- Ideal as a consolidation point with portability without the need to re-enter the enclosure
- Utilises the CopperTen punch down jack and is available in 4 port and 6 port variants
- Sealed unit and shuttered ports provide dust protection
- Provision for a 40mm gland style fixing to be used in conjunction with flexible conduit
- Covered by the TrueNet System Warranty

Ordering Information

Description	Catalogue Number
Mini Pod, Augmented Category 6 CL UTP, 4 Port	6540 1 679-04
Mini Pod, Augmented Category 6 CL UTP, 6 Port	6540 1 679-06

Work Area

Augmented Category 6 – Loaded Faceplates

TrueNet® CopperTen™ RJ45 UTP and STP Outlet UK Style

UK style faceplates featuring the CopperTen Keystone jack satisfying Augmented Category 6 requirements.

CopperTen outlets available in 2 and 4 port variants.

Dimensions

86 high x 86 wide x 16mm deep



Features

- Supports 10 Gigabit Ethernet over unshielded copper to a full 100m up to 500MHz
- Exceeds the requirements of IEEE 802.3an (10GBASE-T) and channel requirements of ISO/IEC 11801:2002 amendment
- Comes complete with jacks, faceplates and adaptors
- Maximises productivity levels with 10 times the data throughput of Category 6
- True future proofing for tomorrow's network applications
- Covered by the TrueNet System Warranty

Ordering Information

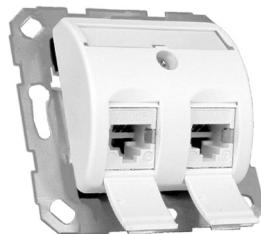
Description	Catalogue Number
Loaded Faceplate, Augmented Category 6 UTP, Double	6540 1 812-11
Loaded Faceplate, Augmented Category 6 UTP, Quad	6540 1 812-12
Loaded Faceplate, Augmented Category 6 STP, Double	6540 1 812-08
Loaded Faceplate, Augmented Category 6 STP, Quad	6540 1 812-10

Work Area

Augmented Category 6 – Loaded Faceplates

TrueNet® RJ45 CopperTen™ KM8® Outlets 50x50 European Style STP

The European style 50x50 faceplates feature the component compliant modular KM8 jack for LAN cabling systems satisfying Augmented Category 6 requirements.



Test Specification

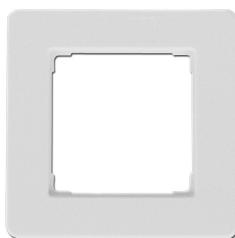
Exceeds specifications according to ISO/IEC 11801:2002, EN 50173-1:2002 and TIA/EIA 568-B

Dimensions

80 high x 80 wide x 24mm deep

Features

- Supports 10 Gigabit Ethernet over shielded copper to a full 100m up to 500MHz
- Exceeds the requirements of IEEE 802.3an (10GBASE-T) and channel requirements of ISO/IEC 11801:2002 amendment
- Comes complete with jacks, faceplates and adaptors
- Maximises productivity levels with 10 times the data throughput of Category 6
- True future proofing for tomorrow's network applications
- Covered by the TrueNet® System Warranty



Ordering Information

Description	Catalogue Number
Loaded Faceplate, Augmented Category 6 KM8 STP, Double, Pure White	6690 1 581-51
Loaded Faceplate, Augmented Category 6 KM8 STP, Double, Ivory	6690 1 581-02
Cover Frame to adapt outer dimensions of 50x50 outlet to 80x80, Pure White	6690 1 725-01
Cover Frame to adapt outer dimensions of 50x50 outlet to 80x80, Ivory	6690 1 725-00

Work Area

Augmented Category 6 – Patch Cords

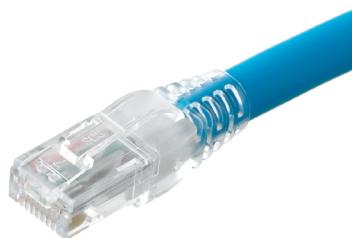
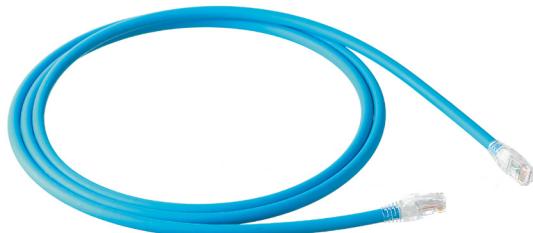
TrueNet® CopperTen™ LSZH UTP and S/FTP Patch Cords

The CopperTen unshielded (UTP) and shielded (S/FTP) patch cord completes the Augmented Category 6 solution and is used at the work area or in the Data Centre/communications room.

The patch cord is designed to reduce insertion loss and alien crosstalk that are prevalent at high frequencies associated with 10 Gigabit Ethernet.

The high performance plug is designed with an integrated strain relief boot that prevents the cable from moving at the termination point when the cable is flexed. The strain relief boot also ensures that the correct bend radius is maintained.

The copper conductors held within the cable pairs are stranded for superior flexibility and are compacted for optimum signal strength.



Features

- Supports 10 Gigabit Ethernet to a full 100m
- Exceeds the requirements of IEEE 802.3an (10GBASE-T) and ISO/IEC 11801:2002 amendment/channel requirements
- Superior cable flexibility from stranded cores
- Boot maintains correct bend radius to ensure maximum performance
- Maximises productivity levels with 10 times the data throughput of Category 6
- True future proofing for tomorrow's network applications
- Covered by the TrueNet® System Warranty

Ordering Information

Description	Cable Colour/Type	Catalogue Number*
Augmented Category 6 LSZH Patch Cord		
RJ45 plug to RJ45 plug, T568B		
		
Blue LSZH UTP 1.0m	6645-2-827-04	
Blue LSZH UTP 2.0m	6645-2-827-07	
Blue LSZH UTP 3.0m	6645-2-827-10	
Blue LSZH UTP 5.0m	6645-2-827-15	
Blue LSZH UTP 7.5m	6645-2-827-25	
Blue LSZH UTP 10m	6645-2-827-33	
Blue LSZH S/FTP	6830 2 861-XX	
Red LSZH S/FTP	6830 2 862-XX	
Yellow LSZH S/FTP	6830 2 863-XX	
Green LSZH S/FTP	6830 2 864-XX	
Orange LSZH S/FTP	6830 2 865-XX	
Grey LSZH S/FTP	6830 2 867-XX	

Contact ADC KRONE for additional cable colours and lengths.

See following page for technical specifications.

Work Area

Augmented Category 6 – Patch Cords

TrueNet® CopperTen™ LSZH UTP and S/FTP Patch Cords

Technical Specifications

Mechanical Data

	UTP	S/FTP
Operating temperature range:	-20°C to 75°C	-10°C to 60°C
RJ45 plug interface according to:	IEC 60603-7	IEC 60603-7 series (= 750 mechanical operations)
Conductor:	24 AWG 7x32 stranded tinned copper	S-STP / S-FTP: AWG26
Jacket:	LSZH (EN 60754-1 & -2)	LSZH (EN 60754-1 & -2)
Nominal outer diameter:	7.7mm	S-STP / S-FTP 6.0mm ± .13mm

Compliances

Safety rating:	IEC/EN 60950 LVD compliant	IEC/EN 60950 LVD compliant
Flammability rating:	IEC 60332-1	S/FTP: IEC 60332-3

Testing Requirements

Connection technology	ISO/IEC 11801:2002 ANSI/TIA/EIA-568-B.2-1 EN 50173-1:2002	ISO/IEC 11801:2002 TIA-568-B.2-1 & -6 EN 50173-1:2002 IEC/EN 61935-2
Channel testing	Latest ISO/IEC 11801:2002 Amendment/channel requirements	Latest ISO/IEC 11801:2002 Amendment/channel requirements

Work Area Category 6



Modular Jacks.....	6.24
Surface Mount Boxes.....	6.26
Distribution Boxes.....	6.27
Consolidation Boxes	6.29
Loaded Faceplates	6.31
Patch Cords	6.34

Work Area

Category 6 – Modular Jacks

TrueNet® RJ45 UTP and STP Modular KM8® Jacks

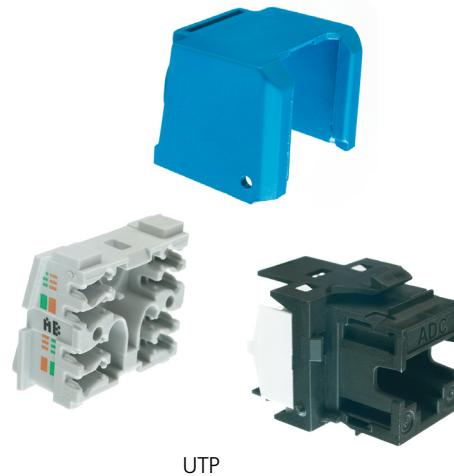
The KM8 jack uses the keystone design, the global standard ensuring compatibility with the diverse range of faceplates systems throughout the world. The cable manager holds cable pairs in place up to the termination point. This prevents untwisting and buckling of the conductors thereby guaranteeing performance for every installation.

Cable Parameters

Conductor diameter 0.5-0.65mm (AWG 22-24)
Cable diameter range with insulation 0.7-1.6mm

Test Specification

Exceeds specifications according to
ISO/IEC 11801:2002, EN 50173-1:2002
and TIA/EIA 568-B



UTP



STP

Features

- Performance exceeding Category 6 specifications up to 250MHz
- KM8 cable managed jack in keystone format
- Spring clip on STP version for 360° shield contact ensuring long-term stability
- Fully interoperable and backwards compatible
- Third party certification at a component level
- Maximum throughput, reliability and performance in your IT network
- Third party certification to offer complete peace of mind and guarantee quality
- T-568 A/B wiring
- Covered by the TrueNet® System Warranty

Ordering Information

Description	Catalogue Number*
Modular Jack, Category 6 KM8 UTP (Pack of 1)	6830 1 800-0X
Modular Jack, Category 6 KM8 UTP (Bag of 8)	6830 2 710-0X
Modular Jack, Category 6 KM8 STP (Pack of 1)	6830 1 810-0X
Modular Jack, Category 6 KM8 STP (Bag of 8)	6830 2 711-0X

*For X use:

1 = White
2 = Ivory
3 = Grey
4 = Black

Category 6 Modular KM8 Jack suitable for

Keystone 25x50 Angled Adaptor: 6538 4 111-05 (see page 6.50)
LJ6C Keystone Adaptor: 6830 2 402-00 (see page 6.52)
Keystone Faceplates: 6538 3 111-03/04 (see page 6.53)
Keystone Faceplate 45x45: 6690 1 825-00 (see page 6.55)
European Keystone Faceplate: 6690 2 67X-0X (see page 6.54)
Unloaded KM8 Panel: 7022 2 155-16/24/32 (see page 4.58)

Work Area

Category 6 – Modular Jacks

TrueNet® RJ45 UTP and STP Modular CL Jacks

The CL jack is a low profile design which requires less than 35mm of depth (including bend radius of Category 6 cable) making it the perfect solution for shallow trunking, back boxes and floor box applications. In addition, the CL comes complete with an integrated spring dust shutter.

Cable Parameters

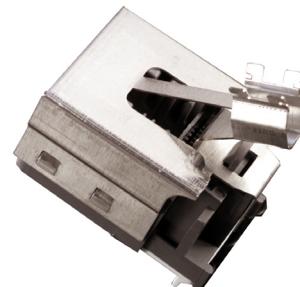
Conductor diameter 0.5-0.65mm (AWG 22-24)
Cable diameter range with insulation 0.7-1.6mm

Test Specification

Exceeds specifications according to
ISO/IEC 11801:2002, EN 50173-1:2002
and TIA/EIA 568-B



UTP



STP

Features

- Performance exceeding Category 6 specifications up to 250MHz
- CL low profile design ideally suited to shallow trunking and floor boxes
- Fully interoperable and backwards compatible
- Maximum throughput, reliability and performance in your IT network
- Third party certification to offer complete peace of mind and guarantee quality
- T-568 A/B wiring
- Covered by the TrueNet® System Warranty

Ordering Information

Description	Catalogue Number
Modular RJ45 Jack, Category 6 CL UTP, White Shutter (Pack of 1)	6537 1 010-00
Modular RJ45 Jack, Category 6 CL STP In Line, White Shutter (Pack of 1)	6537 1 050-00
Modular RJ45 Jack, Category 6 CL STP Angled, White Shutter (Pack of 1)	6537 1 055-00

Category 6 Modular CL Jack suitable for

Standard 25x50 Adaptor: 6540 1 801-00 (see page 6.50)
Angled 25x50 Adaptor: 6540 1 802-00 (see page 6.50)
LJ6C Adaptor: 6540 1 810-00 (see page 6.52)
Angled LJ6C Adaptor: 6540 1 813-00 (see page 6.52)

Work Area

Category 6 – Surface Mount Boxes

TrueNet® RJ45 UTP and STP Surface Mount Boxes

Designed specifically to mount onto surfaces where the wall cavity is not accessible.

Dimensions

1 port model: 45 x 26 x 66mm

2 port model: 64 x 26 x 66mm



Specification of the Plastic Housing

Security: UL 1863

Flammability class: UL 94 V0



Test Specification

Exceeds specifications according to ISO/IEC 11801:2002, EN 50173-1:2002 and TIA/EIA 568-B

Features

- Performance exceeding Category 6 specifications up to 250MHz
- Dimensions enable it to be used in restricted spaces
- Utilises the component compliant keystone KM8® jack
- 1 port and 2 port variants
- Available in UTP and STP
- Covered by the TrueNet® System Warranty

Ordering Information

Description	Catalogue Number
Surface Mount, Category 6 KM8 UTP, 1 Port	6690 1 600-20
Surface Mount, Category 6 KM8 UTP, 2 Port	6690 1 603-00
Surface Mount, Category 6 KM8 STP, 1 Port	6690 1 600-00
Surface Mount, Category 6 KM8 STP, 2 Port	6690 1 601-00
Surface Mount, Unloaded, 1 Port	7080 2 064-10
Surface Mount, Unloaded, 2 Port	7080 2 065-10

Unloaded Surface Mount Boxes compatible with Category 6 KM8 Jack (see page 6.24)

Work Area

Category 6 – Distribution Boxes

TrueNet® RJ45 UTP Distribution Boxes

Modular high density distribution boxes, enabling multiple connections at the desktop

Housing Specification

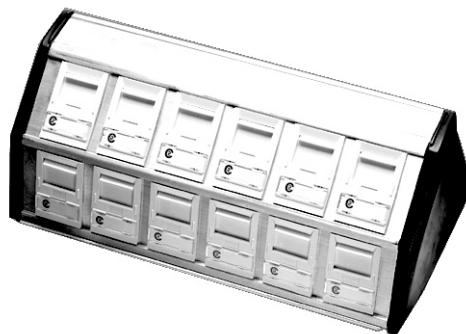
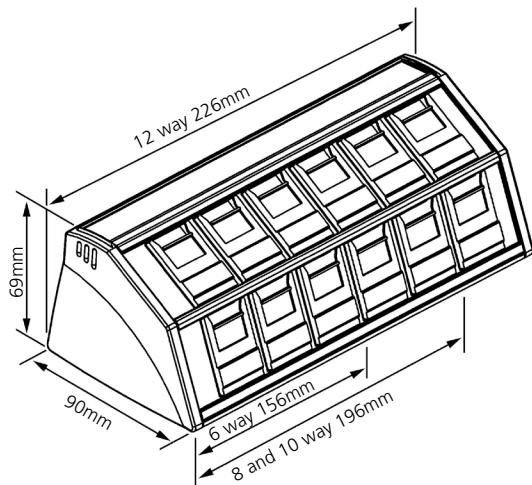
Casing: Extruded aluminium

End caps: Moulded plastic

Test Specification

ISO/IEC 11801:2002, EN 50173-1:2002
and TIA/EIA 568-B

Dimensions



Features

- Performance exceeding Category 6 specifications up to 250MHz
- Utilises the component compliant CL jack with integrated dust protection
- Desk and wall mountable for high density applications
- Can be fitted into standard floor boxes
- 6, 8, 10 and 12 way variants available
- Available in UTP only

Ordering Information

Description	Catalogue Number
Distribution Box, Category 6 CL UTP, 6 way	6537 1 310-06
Distribution Box, Category 6 CL UTP, 8 way	6537 1 310-08
Distribution Box, Category 6 CL UTP, 10 way	6537 1 310-10
Distribution Box, Category 6 CL UTP, 12 way	6537 1 310-12

Work Area

Category 6 – Distribution Boxes

TrueNet® RJ45 UTP Mini Pod

Designed to help simplify the cabling of raised floor work spaces and is ideal for high density environments, such as desk clusters, call centres, dealer desks and point of sale terminals.

Dimensions

85 x 55 x 195mm (excluding gland fittings)

Specification of the Plastic Housing

Casing: ABS UL 94 V0

Test Specification

Exceeds specifications according to ISO/IEC 11801:2002, EN 50173-1:2002 and TIA/EIA 568-B



Features

- Performance exceeding Category 6 specifications up to 250MHz
- Can be passed through minimum 127mm (5 inch) floor grommets
- Terminations will not be disturbed during repositioning of enclosure, due to external mounting points
- Ideal as a consolidation point with portability without the need to re-enter the enclosure
- 4 port and 6 port variants available
- Sealed unit and shuttered ports provide dust protection
- Provision for a 32mm gland style fixing to be used in conjunction with flexible conduit

Ordering Information

Description	Catalogue Number
Mini Pod, Category 6 CL UTP, 4 Port	6540 1 678-04
Mini Pod, Category 6 CL UTP, 6 Port	6540 1 678-06

Work Area

Category 6 – Consolidation Boxes

TrueNet® Consolidation Box (HighBand® Ultim8® Modules)

Connection boxes loaded with HighBand® Ultim8® modules. Used to provide a transition point so that outlet positions can be moved frequently and efficiently without disturbing the horizontal cabling.



Dimensions

250 box: 210 x 160 x 90mm

300 box: 320 x 210 x 120mm

Test Specification

Exceeds specifications according to
ISO/IEC 11801:2002, EN 50173-1:2002
and TIA/EIA 568-B

Features

- Performance exceeding Category 6 specifications up to 250MHz
- Will accept up to 12 cables, 48 pairs
- Utilises the high performance Ultim8® module
- 3 and 6 module variants available
- Flexible cable entry and dust protection

Ordering Information

Description	Catalogue Number
250 Box with 3 x 8 Pair HighBand® Ultim8® Disconnection Modules	6530 1 106-00
300 Box with 6 x 8 Pair HighBand® Ultim8® Disconnection Modules	6530 1 105-00

Work Area

Category 6 – Consolidation Boxes

TrueNet® RJ45 UTP Consolidation Box (CL Jacks)

Connection boxes loaded with RJ-K CL jacks.
Used to provide a transition point so that outlet positions can be moved frequently and efficiently without disturbing the horizontal cabling.



Dimensions

250 box: 210 x 160 x 90mm

Test Specification

Exceeds specifications according to ISO/IEC 11801:2002, EN 50173-1:2002 and TIA/EIA 568-B

Features

- Performance exceeding Category 6 specifications up to 250MHz
- Will accept up to 12 cables, 48 pairs
- 12 jack UTP variant only
- Flexible cable entry and dust protection
- CL jacks come complete with shuttered dust protection

Ordering Information

Description	Catalogue Number
250 Box with 12 UTP Jacks, CL	6525 1 068-00

Work Area

Category 6 – Loaded Faceplates

TrueNet® RJ45 KM8® UTP and STP Outlets UK Style

UK style faceplates featuring the component compliant modular KM8 jacks for LAN cabling systems satisfying Category 6 requirements.

The Category 6 KM8 jack utilises the innovative 'wire-management' system that ensures zero untwist and buckle to the cable.

Dimensions

KM8 double: 86 high x 86 wide x 16mm deep
 KM8 quad: 86 high x 146 wide x 16mm deep

Test Specification

Exceeds specifications according to
 ISO/IEC 11801:2002, EN 50173-1:2002
 and TIA/EIA 568-B



Features

- Performance exceeding Category 6 specifications up to 250MHz
- Double and quad variants available in UTP and STP
- Comes complete with jacks, adaptors, faceplate and fixings
- Adaptors come complete with integrated dust protection
- Utilises the UK style deep faceplate with 6mm of added depth ideal for Category 6 installations into shallow back boxes

Ordering Information

Description	Catalogue Number
Loaded Faceplate, Category 6 KM8 UTP, Double	6540 1 812-07
Loaded Faceplate, Category 6 KM8 UTP, Quad	6540 1 812-09
Loaded Faceplate, Category 6 KM8 STP, Double	6540 1 812-08
Loaded Faceplate, Category 6 KM8 STP, Quad	6540 1 812-10

Work Area

Category 6 – Loaded Faceplates

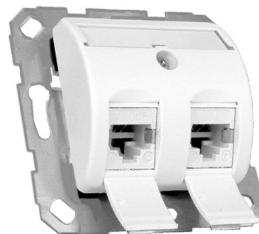
TrueNet® RJ45 KM8® UTP and STP Outlets 50x50 European Style

The European style 50x50 faceplates feature the component compliant modular KM8 jack for LAN cabling systems satisfying Category 6 requirements.

The Category 6 KM8 jack utilises the innovative 'wire-management' system that ensures zero untwist and buckle to the cable.

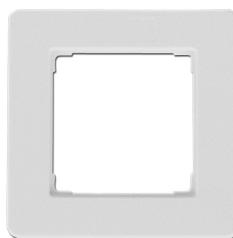
Dimensions

86 high x 80 wide x 24mm deep



Test Specification

Exceeds specifications according to ISO/IEC 11801:2002, EN 50173-1:2002 and TIA/EIA 568-B



Features

- Performance exceeding Category 6 specifications up to 250MHz
- Double variants available in UTP and STP
- Modular construction ensures swift installation
- The 50x50 backplate allows universal installation in trunking systems
- Integrated dust cover
- Covered by the TrueNet® System Warranty

Ordering Information

Description	Catalogue Number
Loaded Faceplate, Category 6 KM8 UTP, Double, Pure White	6690 1 581-71
Loaded Faceplate, Category 6 KM8 UTP, Double, Ivory	6690 1 581-22
Loaded Faceplate, Category 6 KM8 STP, Single, Pure White	6690 1 581-61
Loaded Faceplate, Category 6 KM8 STP, Single, Ivory	6690 1 581-12
Loaded Faceplate, Category 6 KM8 STP, Double, Pure White	6690 1 581-51
Loaded Faceplate, Category 6 KM8 STP, Double, Ivory	6690 1 581-02
Cover Frame to adapt outer dimensions of 50x50 outlet to 80x80, Pure White	6690 1 725-01
Cover Frame to adapt outer dimensions of 50x50 outlet to 80x80, Ivory	6690 1 725-00

Work Area

Category 6 – Loaded Faceplates

TrueNet® RJ45 KM8® UTP and STP Outlets 45x45 European Style

The European style 45x45 faceplates feature the component compliant modular KM8 jack for LAN cabling systems satisfying Category 6 requirements. The design of the jack housing allows for additional bend radius space within the trunking.

The Category 6 KM8 jack utilises the innovative 'wire-management' system that ensures zero untwist and buckle to the cable.

Dimensions

80 high x 80 wide x 32mm deep

Test Specification

Exceeds specifications according to ISO/IEC 11801:2002, EN 50173-1:2002 and TIA/EIA 568-B



Features

- Performance exceeding Category 6 specifications up to 250MHz
- Available in UTP and STP, single and double formats
- Integrated dust protection for optimal jack protection
- The 45x45 backplate allows universal installation in trunking systems
- Additional patch cord protection through the arrangement of the jacks

Ordering Information

Description	Catalogue Number
Loaded Faceplate, Category 6 KM8 UTP 45x45, 1 Port, Pure White	6690 1 741-11
Loaded Faceplate, Category 6 KM8 UTP 45x45, 2 Port, Pure White	6690 1 741-01
Loaded Faceplate, Category 6 KM8 STP 45x45, 1 Port, Pure White	6690 1 740-11
Loaded Faceplate, Category 6 KM8 STP 45x45, 2 Port, Pure White	6690 1 740-01
Surround Faceplate, 80x80 for 45x45 Outlet, Pure White	6690 3 745-01

Work Area

Category 6 – Patch Cords

Category 6 RJ45 KM8® UTP and S/FTP Patch Cord

TrueNet® Category 6 KM8® patch cords from ADC KRONE offer high performance and flexibility.

Impedance matched for use in TrueNet structured cabling systems, the KM8 patch cord exceeds all performance requirements for Category 6. The plug is designed with an integrated strain relief boot that prevents the cable from moving at the termination point when the cable is flexed, safeguarding circuit integrity and guaranteeing maximum performance. The strain relief boot also ensures that the correct bend radius is maintained throughout the network.

Features

- Performance exceeding Category 6 specifications up to 250MHz
- Range of sheath and length variants
- Fully interoperable and backwards compatible
- Maximum throughput, reliability and performance in your IT network
- Superior cable flexibility from stranded cores
- Boot maintains correct bend radius to ensure maximum performance
- Third party certification to offer complete peace of mind and guarantee quality
- Covered by the TrueNet System Warranty



Test Specification

Exceeds specifications according to ISO/IEC 11801:2002, EN 50173-1:2002 and TIA/EIA 568-B

Fire rating IEC 60332-1 (UTP), IEC 60332-3 (S/FTP)

Ordering Information

Description	Cable Colour/Type [†]	Catalogue Number*
Category 6 RJ45 KM8 Patch Cord RJ45 plug to RJ45 plug, T568B RJ45 plug (T568B) 	Blue LSZH UTP/S-FTP [†] Red LSZH UTP/S-FTP [†] Yellow LSZH UTP/S-FTP [†] Green LSZH UTP/S-FTP [†] Orange LSZH UTP/S-FTP [†] Grey LSZH UTP/S-FTP [†]	6830 2 8Y1-XX 6830 2 8Y2-XX 6830 2 8Y3-XX 6830 2 8Y4-XX 6830 2 8Y5-XX 6830 2 8Y7-XX
Category 6 RJ45 KM8 Patch Cord RJ45 plug to RJ45 plug, crossover wired RJ45 plug (T568B) 	Blue LSZH UTP/S-FTP Red LSZH UTP/S-FTP Yellow LSZH UTP/S-FTP Green LSZH UTP/S-FTP Orange LSZH UTP/S-FTP Grey LSZH UTP/S-FTP	6830 2 911-XX 6830 2 912-XX 6830 2 913-XX 6830 2 914-XX 6830 2 915-XX 6830 2 917-XX

[†]For UTP Cable Y = 2, for S/FTP Cable Y = 6.

*Replace XX with:

04 = 1m 10 = 3m 25 = 7.5m
07 = 2m 15 = 5m 33 = 10m

Contact ADC KRONE for additional cable colours and lengths.

Work Area Category 5e



Modular Jacks.....	6.36
Surface Mount Boxes.....	6.38
Distribution Boxes.....	6.39
Consolidation Boxes	6.41
Loaded Faceplates	6.43
Patch Cords	6.46

Work Area

Category 5e – Modular Jacks

TrueNet® RJ45 UTP and STP Modular HK Jacks

The modular RJ45 jack with punch down Insulation Displacement Contacts (IDC's) for swift gas tight terminations.

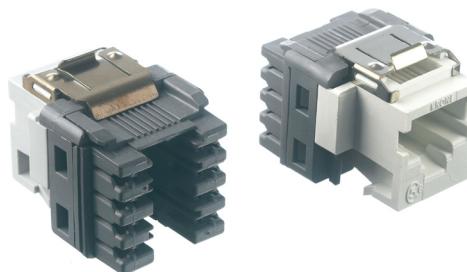
The HK uses the keystone design, the global standard ensuring compatibility with faceplates and adaptors around the world.

Cable Parameters

Conductor diameter 0.4-0.65mm (AWG 22-26)
Cable diameter range with insulation 0.7-1.4mm

Test Specification

Exceeds specifications according to
ISO/IEC 11801:2002, EN 50173-1:2002
and TIA/EIA 568-B



Features

- Performance exceeding Category 5e specifications up to 100MHz
- Swift terminations onto LSA-PLUS® IDC's
- Keystone design, the global standard ensures compatibility with a range of faceplates
- Available in different colours
- Covered by the TrueNet System Warranty

Ordering Information

Description	Catalogue Number
Modular Jack, Category 5e HK UTP, Pure White (Pack of 1)	6540 1 130-01
Modular Jack, Category 5e HK UTP, Ivory (Pack of 1)	6540 1 130-02
Modular Jack, Category 5e HK UTP, Grey (Pack of 1)	6540 1 130-03
Modular Jack, Category 5e HK UTP, Black (Pack of 1)	6540 1 130-04
Modular Jack, Category 5e HK STP, Metal (Pack of 1)	6540 1 154-02

Category 5e Modular HK Jack suitable for

Keystone 25x50 Angled Adaptor: 6538 4 111-05 (see page 6.50)
U6C Keystone Adaptor: 6830 2 402-00 (see page 6.52)
Keystone Faceplate: 6538 3 111-03/04 (see page 6.53)
Keystone Faceplate 45x45: 6690 1 825-00 (see page 6.55)
European Style Faceplate: 6690 2 675-0X (see page 6.54)
Unloaded HK/KM8 Panel: 7022 2 150-16/24/32 (see page 4.67)

Work Area

Category 5e – Modular Jacks

TrueNet® RJ45 and RJ11, UTP and STP Modular CL Jacks

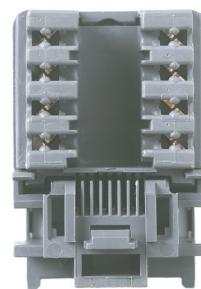
Compact high-performance jack providing a solution for floor box and faceplate applications where only a maximum depth of 17mm is available.

Cable Parameters

Conductor diameter 0.4-0.65mm (AWG 22-26)
Cable diameter range with insulation 0.7-1.4mm

Test Specification

Exceeds specifications according to
ISO/IEC 11801:2002, EN 50173-1:2002
and TIA/EIA 568-B



Features

- Performance exceeding Category 5e specifications up to 100MHz
- Swift terminations onto LSA-PLUS® IDC's
- Low profile design, ideal for shallow back box applications
- Complete with integrated dust protection in black or white
- RJ45 and RJ11 options

Ordering Information

Description	Catalogue Number
Modular RJ45 Jack, Category 5e CL UTP, White Shutter (Pack of 1)	6540 1 200-01
Modular RJ45 Jack, Category 5e CL UTP, Black Shutter (Pack of 1)	6540 1 201-01
Modular RJ11 Jack, Category 5e CL UTP, White Shutter (Pack of 1)	6540 1 204-00
Modular RJ11 Jack, Category 5e CL UTP, Black Shutter (Pack of 1)	6540 1 205-00
Modular RJ45 Jack, Category 5e CL STP In Line, White Shutter (Pack of 1)	6540 1 254-01
Modular RJ45 Jack, Category 5e CL STP Angled, White Shutter (Pack of 1)	6540 1 254-03

Category 5e Modular CL Jack suitable for

Standard 25x50 Adaptor: 6540 1 801-00 (see page 6.50)
Angled 25x50 Adaptor: 6540 1 802-00 (see page 6.50)
LJ6C Adaptor: 6540 1 810-00 (see page 6.52)
Angled LJ6C Adaptor: 6540 1 813-00 (see page 6.52)

Work Area

Category 5e – Surface Mount Boxes

TrueNet® RJ45 UTP and STP Surface Mount Box

Designed specifically to mount onto surfaces where the wall cavity is not accessible.

Dimensions

1 port model: 45 x 26 x 66mm

2 port model: 64 x 26 x 66mm



Specification of the Plastic Housing

Security: UL 1863

Flammability class: UL 94 V0



Test Specification

Exceeds specifications according to ISO/IEC 11801:2002, EN 50173-1:2002 and TIA/EIA 568-B

Features

- Performance exceeding Category 5e specifications up to 100MHz
- Dimensions enable it to be used in restricted spaces
- Utilises the component compliant keystone HK jack
- 1 port and 2 port variants
- Available in UTP and STP

Ordering Information

Description	Catalogue Number
Surface Mount, Category 5e HK UTP, 1 Port	6690 1 602-20
Surface Mount, Category 5e HK UTP, 2 Port	6690 1 603-20
Surface Mount, Category 5e HK STP, 1 Port	6690 1 600-20
Surface Mount, Category 5e HK STP, 2 Port	6690 1 601-20

Work Area

Category 5e – Distribution Boxes

TrueNet® RJ45 UTP and STP Distribution Boxes

Modular high density distribution boxes, enabling multiple connections at the desktop

Housing Specification

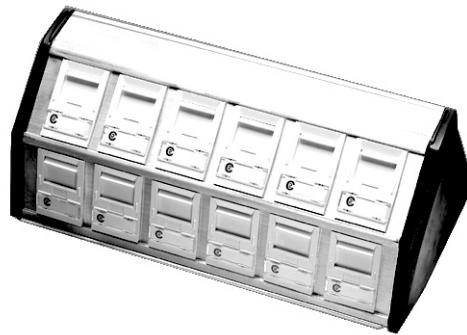
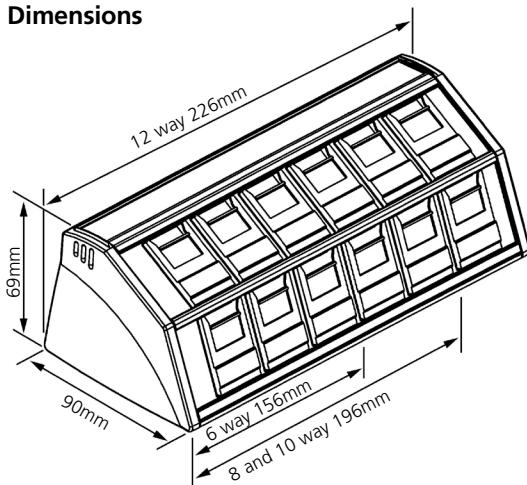
Casing: Extruded aluminium

End caps: Moulded plastic

Test Specification

Exceeds specifications according to
ISO/IEC 11801:2002, EN 50173-1:2002
and TIA/EIA 568-B

Dimensions



Features

- Performance exceeding Category 5e specifications up to 100MHz
- Utilises the component compliant CL jack with integrated dust protection
- Desk and wall mountable for high density applications
- Can be fitted into standard floor boxes
- 6, 8, 10 and 12 way variants available
- Available in UTP and STP

Ordering Information

Description	Catalogue Number
Distribution Box, Category 5e CL UTP, 6 way	6540 1 668-06
Distribution Box, Category 5e CL UTP, 8 way	6540 1 668-08
Distribution Box, Category 5e CL UTP, 10 way	6540 1 668-10
Distribution Box, Category 5e CL UTP, 12 way	6540 1 668-12
Distribution Box, Category 5e CL STP, 6 way	6540 1 669-06
Distribution Box, Category 5e CL STP, 8 way	6540 1 669-08
Distribution Box, Category 5e CL STP, 10 way	6540 1 669-10
Distribution Box, Category 5e CL STP, 12 way	6540 1 669-12

Work Area

Category 5e – Distribution Boxes

TrueNet® Structured Cabling

Work Area Category 5e

10 / 06 • 102588BE

TrueNet® UTP Mini Pod

Designed to help simplify the cabling of raised floor work spaces and is ideal for high density environments, such as desk clusters, call centres, dealer desks and point of sale terminals.

Dimensions

85 x 25 x 195mm

Specification of the Plastic Housing

Casing: ABS UL 94 V0

Test Specification

Exceeds specifications according to ISO/IEC 11801:2002, EN 50173-1:2002 and TIA/EIA 568-B



Features

- Performance exceeding Category 5e specifications up to 100MHz
- Can be passed through minimum 127mm (5 inch) floor grommets
- Surface mountable with various fixing options
- Ideal as a consolidation point with portability without the need to re-enter the enclosure
- 4 and 6 port variants available
- Sealed unit and shuttered ports provide dust protection
- Provision for a 32mm gland style fixing to be used in conjunction with flexible conduit

Ordering Information

Description	Catalogue Number
Mini Pod, Category 5e CL UTP, 4 Port	6540 1 677-04
Mini Pod, Category 5e CL UTP, 6 Port	6540 1 677-06

Work Area

Category 5e – Consolidation Boxes

TrueNet® Consolidation Box (HighBand® Modules)

Connection boxes loaded with HighBand® modules. Used to provide transition point so that outlet positions can be moved frequently and efficiently without disturbing the horizontal cabling.

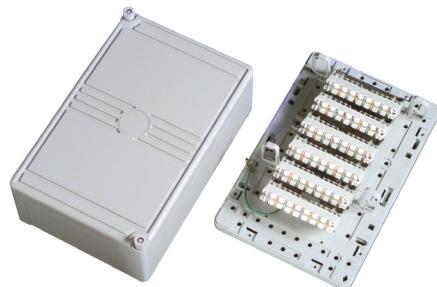
Dimensions

250 box: 210 x 160 x 90mm

300 box: 320 x 210 x 120mm

Test Specification

Exceeds specifications according to ISO/IEC 11801:2002, EN 50173-1:2002 and TIA/EIA 568-B



Features

- Performance exceeding Category 5e specifications up to 100MHz
- Will accept up to 12 cables, 48 pairs
- 3 and 6 module variants available
- Flexible cable entry and dust protection

Ordering Information

Description	Catalogue Number
250 Box with 3 x 8 Pair Disconnection Modules	6525 1 050-00
300 Box with 6 x 8 Pair Disconnection Modules	6530 1 099-00

Work Area

Category 5e – Consolidation Boxes

TrueNet® RJ45 UTP and STP Consolidation Box (CL Jacks)

Connection boxes loaded with RJ45 CL jacks.
Used to provide transition point so that outlet positions can be moved frequently and efficiently without disturbing the horizontal cabling.



Dimensions

250 box: 210 x 160 x 90mm

Test Specification

Exceeds specifications according to ISO/IEC 11801:2002, EN 50173-1:2002 and TIA/EIA 568-B

Features

- Performance exceeding Category 5e specifications up to 100MHz
- Will accept up to 12 cables, 48 pairs
- 6 and 12 jack variants available in UTP and STP
- Flexible cable entry
- CL jacks come complete with shuttered dust protection

Ordering Information

Description	Catalogue Number
250 Box with 6 UTP Jacks, CL	6525 1 056-10
250 Box with 12 UTP Jacks, CL	6525 1 057-10
250 Box with 6 STP Jacks, CL	6525 1 054-10
250 Box with 12 STP Jacks, CL	6525 1 055-10

Work Area

Category 5e – Loaded Faceplates

TrueNet® RJ-K LN Outlets

UK style faceplates featuring high-performance RJ-K LN unshielded modular jacks for LAN cabling systems satisfying Category 5e requirements.

Dimensions

Single: 85 high x 85 wide x 8mm deep
Single: 85 high x 145 wide x 8mm deep

Cable Parameters

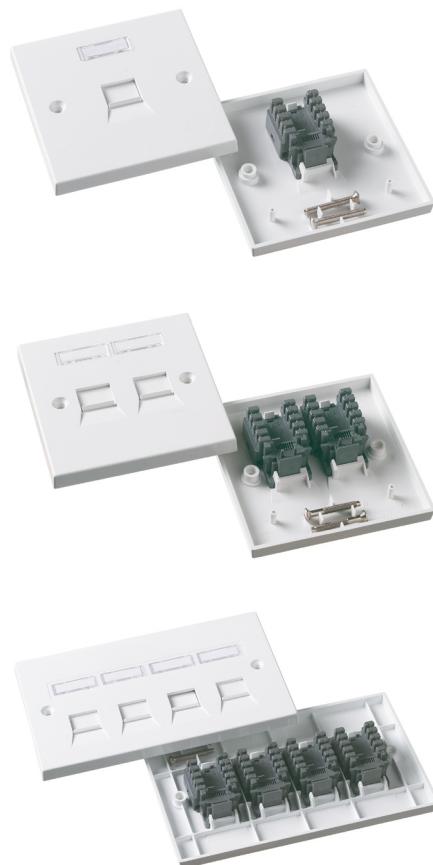
Conductor diameter 0.4-0.65mm (AWG 22-26)
Cable diameter range with insulation 0.7-1.4mm

Test Specification

Exceeds specifications according to
ISO/IEC 11801:2002, EN 50173-1:2002
and TIA/EIA 568-B

Features

- Performance exceeding Category 5e specifications up to 100MHz
- Single, double and quad variants available
- Comes complete with jacks, faceplate and fixings in one box
- Swift terminations onto LSA-PLUS® IDC's
- Includes integrated dust protection in black or white



Ordering Information

Description	Catalogue Number
Loaded Faceplate, Category 5e LN UTP, Single, White Shutter (Pack of 10)	6538 1 111-13
Loaded Faceplate, Category 5e LN UTP, Single, Black Shutter (Pack of 10)	6538 1 112-13
Loaded Faceplate, Category 5e LN UTP, Double, White Shutter (Pack of 10)	6538 1 111-14
Loaded Faceplate, Category 5e LN UTP, Double, Black Shutter (Pack of 10)	6538 1 112-14
Loaded Faceplate, Category 5e LN UTP, Quad, White Shutter (Pack of 10)	6538 1 111-17
Loaded Faceplate, Category 5e LN UTP, Quad, Black Shutter (Pack of 10)	6538 1 112-17

Work Area

Category 5e – Loaded Faceplates

TrueNet® RJ45 PCB Wall Outlets

The RJ45 PCB Wall Outlet is designed for setting up fully shielded 2 pair and 4 pair LAN cabling systems satisfying Category 5e requirements.

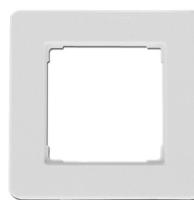
Dimensions

Single: 80 high x 80 wide x 54.4mm deep



Cable Parameters

Conductor diameter 0.4-0.63mm (AWG 22-26)
Cable diameter range with insulation 0.7-1.4mm



Test Specification

Exceeds specifications according to
ISO/IEC 11801:2002, EN 50173-1:2002
and TIA/EIA 568-B

Features

- Performance exceeding Category 5e specifications up to 100MHz
- Double variant available
- Complete with two RJ45 PCB STP jacks, two PCB modules with shielding clips and fixing kit
- Includes integrated dust protection

Ordering Information

Description	Catalogue Number
Loaded Faceplate, Category 5e PCB STP, Double, Ivory	6690 1 511-10
Loaded Faceplate, Category 5e PCB STP, Double, Pure White	6690 1 511-11
Cover Frame to adapt outer dimensions of 50x50 outlet to 80x80, Ivory	6690 1 506-00
Cover Frame to adapt outer dimensions of 50x50 outlet to 80x80, Pure White	6690 1 506-01
Back Box, Single Gang, Ivory	6690 1 525-02
Back Box, Single Gang, Pure White	6690 1 525-03

Work Area

Category 5e – Loaded Faceplates

TrueNet® HK STP Outlets 50x50 European Style

The European style 50x50 faceplates feature the component compliant modular HK jack for LAN cabling systems satisfying Category 5e requirements.

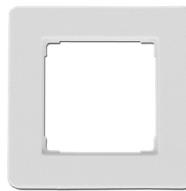


Dimensions

Single: 80 high x 80 wide x 24mm deep

Test Specification

Exceeds specifications according to ISO/IEC 11801:2002, EN 50173-1:2002 and TIA/EIA 568-B



Features

- Performance exceeding Category 5e specifications up to 100MHz
- Double STP variant
- Modular construction ensures swift installation
- The 50x50 backplate allows universal installation in trunking systems

Ordering Information

Description	Catalogue Number
Loaded Faceplate, Category 5e STP, 2 Port, Pure White	6690 1 593-51
Loaded Faceplate, Category 5e STP, 2 Port, Ivory	6690 1 593-02
Loaded Faceplate, Category 5e STP, 1 Port, Pure White	6690 1 593-61
Loaded Faceplate, Category 5e STP, 1 Port, Ivory	6690 1 593-12
Cover Frame to adapt outer dimensions of 50x50 outlet to 80x80, Pure White	6690 1 725-01
Cover Frame to adapt outer dimensions of 50x50 outlet to 80x80, Ivory	6690 1 725-00
Back Box, Single Gang Ivory	6690 1 525-02
Back Box, Single Gang Pure White	6690 1 525-03

TrueNet® Category 5e Overmoulded Patch Cords

TrueNet® Category 5e overmoulded patch cords with integrated strain relief available in standard T568B and crossover configurations, LSZH and PVC.

Before ordering patch cords, check the transmit and receive orientation of the hub and network interface card. Some manufacturers require a crossover of transmit and receive pairs; others have either the hub port or NIC card reversed in advance. Some can switch between the two.



Features

- Performance exceeding Category 5e specifications up to 100MHz
- Range of sheath and length variants
- Fully interoperable and backwards compatible
- Third party certification at a component level
- Superior cable flexibility from stranded cores
- Boot maintains correct bend radius to ensure maximum performance
- Flammability rating for PVC and LSZH cords: IEC 60332-1
- Covered by the TrueNet System Warranty



Test Specification

Exceeds specifications according to ISO/IEC 11801:2002, EN 50173-1:2002 and TIA/EIA 568-B

Fire rating IEC 60332-1

Ordering Information

Description	Cable Colour	Catalogue Number*
Category 5e Overmoulded Patch Cord RJ45 plug to RJ45 plug, T568B RJ45 plug (T568B)  RJ45 plug (T568B) 	White UTP	7063 2 6X0-YY
	Blue UTP	7063 2 6X1-YY
	Red UTP	7063 2 6X2-YY
	Yellow UTP	7063 2 6X3-YY
	Green UTP	7063 2 6X4-YY
	Orange UTP	7063 2 6X5-YY
	Grey UTP	7063 2 6X7-YY
Category 5e Overmoulded Patch Cord RJ45 plug to RJ45 plug, crossover wired RJ45 plug (T568B)  RJ45 plug (T568A) 	White UTP	7063 2 6X0-YY
	Blue UTP	7063 2 6X1-YY
	Red UTP	7063 2 6X2-YY
	Yellow UTP	7063 2 6X3-YY
	Green UTP	7063 2 6X4-YY
	Orange UTP	7063 2 6X5-YY
	Grey UTP	7063 2 6X7-YY

*Replace X in T568B with:

1 = PVC 2 = LSZH

Replace X in crossover with:

7 = PVC 8 = LSZH

Replace YY with:

04 = 1m 07 = 2m

10 = 3m 15 = 5m

25 = 7.5m 33 = 10m

Contact ADC KRONE for additional cable colours and lengths.

Work Area

Category 5e – Patch Cords

TrueNet® Category 5e Unbooted Patch Cords

TrueNet® Category 5e unbooted patch cords available in standard T568B and crossover configurations, LSZH and PVC.

Before ordering patch cords, check the transmit and receive orientation of the hub and network interface card. Some manufacturers require a crossover of transmit and receive pairs; others have either the hub port or NIC card reversed in advance. Some can switch between the two.



Features and Benefits

- Performance exceeding Category 5e specifications up to 100MHz
- Range of sheath and length variants
- Fully interoperable and backwards compatible
- Third party certification at a component level
- Superior cable flexibility from stranded cores
- Flammability rating for PVC and LSZH cords: IEC 60332-1
- Covered by the TrueNet System Warranty



Test Specification

Exceeds specifications according to ISO/IEC 11801:2002, EN 50173-1:2002 and TIA/EIA 568-B

Fire rating IEC 60332-1

Ordering Information

Description	Cable Colour [†]	Catalogue Number*
Category 5e Unbooted Patch Cord RJ45 plug to RJ45 plug, T568B RJ45 plug (T568B)  RJ45 plug (T568B)	White PVC UTP Blue PVC UTP Red PVC UTP Yellow PVC UTP Green PVC UTP Orange LSZH UTP Grey PVC UTP	5718 2 610-YY 5718 2 611-YY 5718 2 612-YY 5718 2 613-YY 5718 2 614-YY 5718 2 625-YY 5718 2 617-YY
Category 5e Unbooted Patch Cord RJ45 plug to RJ45 plug, crossover wired RJ45 plug (T568B)  RJ45 plug (T568A)	White PVC UTP Blue PVC UTP Red PVC UTP Yellow PVC UTP Green PVC UTP Orange LSZH UTP Grey PVC UTP	5718 2 630-YY 5718 2 631-YY 5718 2 632-YY 5718 2 633-YY 5718 2 634-YY 5718 2 645-YY 5718 2 637-YY

[†]Note: LSZH only available in orange

* Replace YY with:

04 = 1m 10 = 3m 25 = 7.5m
07 = 2m 15 = 5m 33 = 10m

Contact ADC KRONE for additional cable colours and lengths.

Work Area

Category 5e – Patch Cords

TrueNet® Category 5e FTP and S/FTP Patch Cords

TrueNet® Category 5e patch cords with strain relief available in standard T568B and crossover configurations, LSZH and PVC.

Before ordering patch cords, check the transmit and receive orientation of the hub and network interface card. Some manufacturers require a crossover of transmit and receive pairs; others have either the hub port or NIC card reversed in advance. Some can switch between the two.



Features

- Performance exceeding Category 5e specifications up to 100MHz
- Range of sheath and length variants
- Fully interoperable and backwards compatible
- Superior cable flexibility from stranded cores
- Boot maintains correct bend radius to ensure maximum performance
- Flammability rating for PVC and LSZH cords: IEC 60332-1
- Covered by the TrueNet System Warranty

Test Specification

Exceeds specifications according to ISO/IEC 11801:2002, EN 50173-1:2002 and TIA/EIA 568-B

Fire rating IEC 60332-1

Ordering Information

Description	Cable Type	Catalogue Number*
Category 5e Patch Cord RJ45 plug to RJ45 plug, T568B RJ45 plug (T568B)	FTP PVC Grey	7063 2 537-XX
	FTP LSZH Grey	7063 2 547-XX
	S/FTP PVC Grey	7063 2 557-XX
	S/FTP LSZH Grey	7063 2 567-XX

*Replace XX with:

04 = 1m 10 = 3m

07 = 2m 15 = 5m

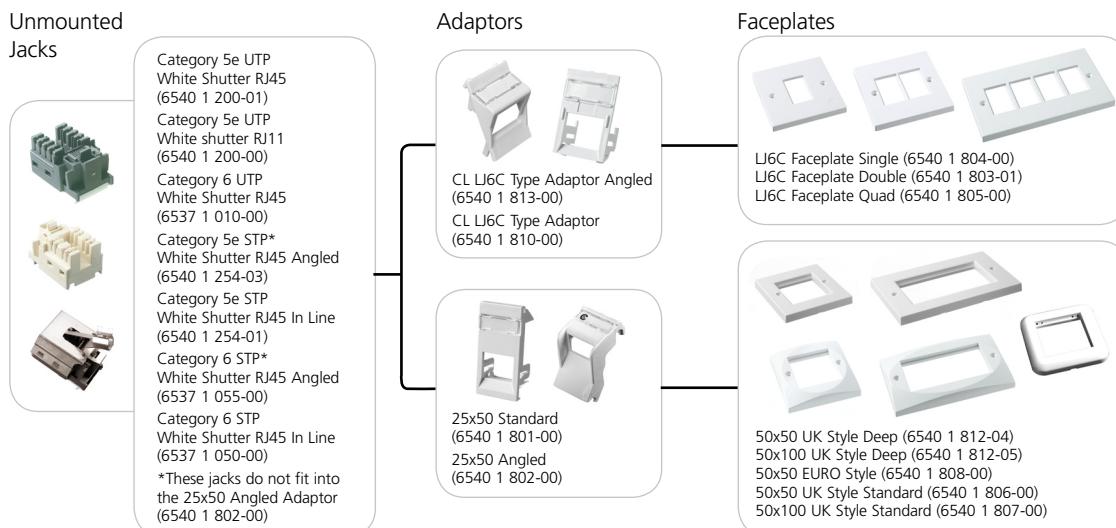
Contact ADC KRONE for additional cable colours and lengths.

Work Area Adaptors, Faceplates & Accessories



Adaptors and Faceplates	6.50
Accessories	6.56

Compact RJ-K CL Compatibility



TrueNet® 25x50 Adaptors

Adaptors for use with CL keystone jacks, and UK style faceplates. In-line and angled options available.

Dimensions

Standard 25x50 adaptor: 24.8 x 50 x 17mm

Angled 25x50 adaptor: 24.8 x 50 x 25.3mm

Keystone angled 25x50 adaptor: 24.8 x 50 x 38mm



Ordering Information

Description	Catalogue Number
RJ-K CL Standard 25x50 Adaptor (Pack of 20)	6540 1 801-00
RJ-K CL Angled 25x50 Adaptor (Pack of 20)	6540 1 802-00
Keystone Angled 25x50 Adaptor (Pack of 1)	6538 4 111-05
25x50 Blank (Pack of 20)	6540 4 801-01

See below and the next page for UK and Euro style faceplates 50x50 and 50x100 for use with these adaptors.

TrueNet® 50x50 European Style Faceplates

The Euro style faceplate will accept up to two 25x50 adaptors.

Dimensions

Single-gang faceplate: 80 x 80 x 10.5mm



Ordering Information

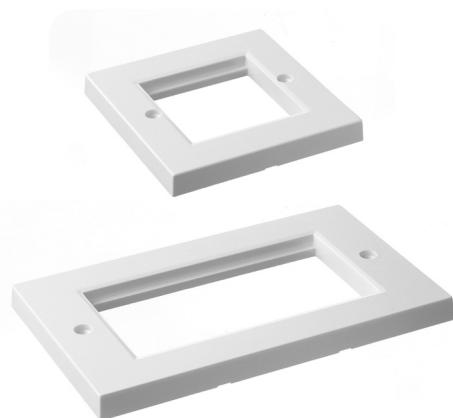
Description	Catalogue Number
Unloaded Faceplate, 50x50 Euro Style, Single-Gang, White (Pack of 10)	6540 1 808-00
Wall-Mountable Back Box	0637 0 006-57

TrueNet® UK Style Standard Faceplates

UK style, single and double-gang faceplates for use with 25x50 adaptors and CL keystone jacks.

Dimensions

50x50 Single-gang faceplate: 80 x 80 x 9.35mm
50x100 Double-gang faceplate: 145 x 80 x 9.35mm



Ordering Information

Description	Catalogue Number
Unloaded Faceplate, UK Style, 50x50 (single-gang), White (Pack of 10)	6540 1 806-00
Unloaded Faceplate, UK Style, 50x100 (double-gang), White (Pack of 10)	6540 1 807-00

50x50 single-gang faceplate accepts two 25x50 adaptors (see previous page)
50x100 double-gang faceplate accepts four 25x50 adaptors (see previous page)

TrueNet® UK Style Deep Faceplates

UK style, single and double-gang deep faceplates for use with 25x50 adaptors and CL keystone jacks. The deeper faceplate has the added benefit of 6mm added depth against standard UK style product and is therefore ideal for use with Category 6 and CopperTen™ in shallow back boxes.



Dimensions

50x50 Single-gang faceplate:
Overall dimensions 80 x 80 x 15.35mm
50x100 Double-gang faceplate:
Overall dimensions 145 x 80 x 15.35mm

Ordering Information

Description	Catalogue Number
Unloaded Deep Faceplate, UK Style, 50x50 (single-gang), White (Pack of 10)	6540 1 812-04
Unloaded Deep Faceplate, UK Style, 50x100 (double-gang), White (Pack of 10)	6540 1 812-05

50x50 single-gang faceplate accepts two 25x50 adaptors (see previous page)
50x100 double-gang faceplate accepts four 25x50 adaptors (see previous page)

TrueNet® LJ6C Adaptors

Adaptors for use with CL keystone jacks, and LJ6C UK style faceplates.
In-line and angled options available.

Dimensions

Standard LJ6C adaptor: 24.8 x 38.5 x 17.7mm
Angled LJ6C adaptor: 24.8 x 38.5 x 19mm
Keystone LJ6C adaptor: 24.8 x 38.5 x 14.5mm



Ordering Information

Description	Catalogue Number
CL Standard LJ6C Adaptor (Pack of 20)	6540 1 810-00
CL Angled LJ6C Adaptor (Pack of 20)	6540 1 813-00
Keystone Standard LJ6C Adaptor (Pack of 1)	6830 2 402-00

See below for LJ6C style faceplates for use with these adaptors.

TrueNet® LJ6C UK Style Faceplates

UK style single, double and quad faceplates for use with LJ6C adaptors and CL keystone jacks.

Dimensions

Single and double LJ6C faceplate: 85 x 85 x 8mm
Quad LJ6C faceplate: 145 x 85 x 8mm



Ordering Information

Description	Catalogue Number
Unloaded Faceplate, UK Style, LJ6C Single, White (Pack of 10)	6540 1 804-00
Unloaded Faceplate, UK Style, LJ6C Double, White (Pack of 10)	6540 1 803-01
Unloaded Faceplate, UK Style, LJ6C Quad, White (Pack of 10)	6540 1 805-00

Single faceplate accepts one LJ6C adaptor
Double faceplate accepts two LJ6C adaptors
Quad faceplate accepts four LJ6C adaptors

TrueNet® Keystone UK Style Faceplate

UK style faceplate with integrated dust protection for accomodating Category 5e HK and Category 6 KM8® and CopperTen™ keystone jacks.

Dimensions

85 x 85mm

**Ordering Information**

Description	Catalogue Number
Unloaded Faceplate, Keystone, UK Style, White, Single	6538 3 111-03
Unloaded Faceplate, Keystone, UK Style, White, Double	6538 3 111-04

TrueNet® Back Boxes for UK Style Outlets

The back box for surface mounting is designed for surface installations of ADC KRONE's flush mounted, wall duct outlets and trunking.

**Ordering Information**

Description	Catalogue Number
Back Box, Single Gang White	6536 1 005-00
Back Box, Double Gang White	6536 3 044-00

TrueNet® European Keystone Faceplate for KM8® Only

Two port faceplate, 50x50, for use with Category 6 KM8 jacks only, complete with integrated dust protection and removable corners for installation in areas with restricted space.

Dimensions

80 high x 80 wide x 24mm deep



Ordering Information

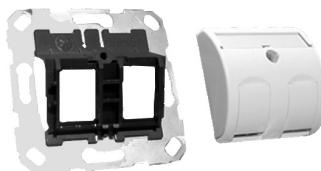
Description	Catalogue Number
Unloaded Category 6 KM8 Faceplate, 50x50, Bright White	6690 2 676-00
Unloaded Category 6 KM8 Faceplate, 50x50, White	6690 2 676-01
Unloaded Category 6 KM8 Faceplate, 50x50, Black	6690 2 676-02
Unloaded Category 6 KM8 Faceplate, 50x50, Grey	6690 2 676-03

TrueNet® European Keystone Faceplate for HK and KM8®

Two port faceplate, 50x50, for use with Category 5e HK and Category 6 KM8 jacks, complete with integrated dust protection and removable corners for installation in areas with restricted space.

Dimensions

80 high x 80 wide x 24mm deep



Ordering Information

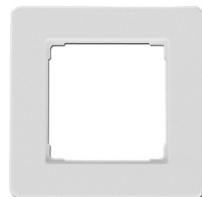
Description	Catalogue Number
Unloaded Keystone Faceplate, 50x50, Bright White	6690 2 675-00
Unloaded Keystone Faceplate, 50x50, White	6690 2 675-01
Unloaded Keystone Faceplate, 50x50, Black	6690 2 675-02
Unloaded Keystone Faceplate, 50x50, Grey	6690 2 675-03

TrueNet® 80x80mm European Faceplate

80x80 faceplate for use with above 50x50 faceplates.

Dimensions

80 high x 80 wide x 8mm deep



Ordering Information

Description	Catalogue Number
Faceplate, 80x80, Bright White	6690 3 725-00
Faceplate, 80x80, White	6690 3 725-01
Faceplate, 80x80, Black	6690 3 725-02
Faceplate, 80x80, Grey	6690 3 725-03

TrueNet® Back Boxes for European Outlets

The back box for surface mounting is designed for surface installations of ADC KRONE's flush mounted, wall duct outlets and trunking.



Dimensions

81 high x 81 wide x 42mm deep

Ordering Information

Description	Catalogue Number
Back Box, Single Gang Ivory	6690 1 525-02
Back Box, Single Gang Pure White	6690 1 525-03

TrueNet® 45x45 Adaptors and Faceplate

Used to accomodate Category 5e and Category 6 RJ45 keystone jacks. Adaptors come complete with integrated dust protection.

1 x 6690 1 825-00 } fit into the 45x45 faceplate 6690 3 745-01
 2 x 6690 1 825-10*

*Not suitable for use with Category 6 KM8® STP jack



Ordering Information

Description	Catalogue Number
Adaptor 22.5x45mm, Single, White	6690 1 825-10
Adaptor 45x45mm, Single, White	6690 1 825-00
Unloaded Faceplate, 45x45mm, White	6690 3 745-01

Converters

These products are an ideal way to integrate PBX or other voice circuits into a standard structured cabling system.



Ordering Information

Description	Catalogue Number
Converter RJ-K PABX Master	6536 1 601-16
Converter RJ-K Full Master	6536 1 601-17
Converter RJ-K Secondary Master	6536 1 601-18
RJ-K Outlet Flying Lead Convertor	6536 1 720-11
RJ-K Outlet Flying Lead Convertor (258A Secondary)	6536 1 720-12
RJ-K Outlet Flying Lead Convertor (ISDN)	6536 1 720-74

Work Area Media Conversion



Intelligent Ethernet Management Platform	6.58
Optical Extension Platform	6.60
Common Equipment	6.61
Line Cards.....	6.64

Ethernet Network Interface Unit

Create an intelligent Ethernet management platform with ADC KRONE's Ethernet Network Interface Unit (ENIU). Installed at the remote premises, the ENIU provides the demarcation point between the customer and carrier network. By providing the ability to demarcate the network at the customer interface, the ENIU enables the carrier to remotely assess whether trouble conditions reside within the carrier or customer network.



Features

- Supports in-band remote signal loopback for troubleshooting and testing as well as remote failure indications and link monitoring for checking service performance
- Features UTP (RJ45) or SFP based optical connections for customer and carrier interface
- Loss of power "cut through" ensures that electrical signal integrity is maintained on RJ45 interfaces if power to the unit is lost
- Configurable to 10Mbps or 100Mbps Ethernet or Gigabit Ethernet (GigE) on carrier and customer demarcation sides
- Bandwidth can be port limited in 1Mb increments
- Includes enclosed carrier-side interfaces with LED performance indicators on the front of the unit
- Fully compliant with IEEE 802.3ah First Mile standards for OAM
- Accepts -48Vdc or AC power
- Saves operations time by limiting technician despatch for troubleshooting and turn-up
- Reduces network downtime through proactive network management via remote access for testing and performance monitoring
- Enables quicker service restoration through single end testing of signal
- Increases network availability by accelerating network trouble repair cycle
- Easily integrates Ethernet network management into existing operations by mirroring current maintenance practices for DS1/DS3 architectures
- Standards-based solution allows interoperability with switches, routers and test equipment

Ordering Information

Description	Catalogue Number
Ethernet Network Interface Unit E/E ENIU, SET TOP 10/100/1000 MB UTP to 10/100/1000 MB UTP E/E ENIU, AC, SET TOP 10/100/1000 MB UTP to 10/100/1000 MB UTP E/O ENIU, SET TOP 10/100/1000 MB UTP to GigE Optical (requires SFP) E/O ENIU, AC, SET TOP 10/100/1000 MB UTP to GigE Optical (requires SFP) O/O ENIU, SET TOP GigE Optical to GigE Optical (requires 2 SFPs) O/O ENIU, AC, SET TOP GigE Optical to GigE Optical (requires 2 SFPs)	ENI-EGXXEGXX1B ENI-EGXXEGXX1B-AC ENI-OGXXEGXX1B ENI-OGXXEGXX1B-AC ENI-OGXXOGXX1B ENI-OGXXOGXX1B-AC

Ethernet Network Interface Unit

Specifications

Power

Voltage	–48VDC, or 110 to 240VAC
Input current	250 mA maximum
Fuse size	1 Amp

Environmental

Operating conditions	+23°F to +122°F (–5°C to +50°C) 5% to 90% relative humidity
Storage conditions	–40°F to +185°F (–40°C to +85°C) 10% to 95% relative humidity

Mechanical

Dimensions (DxWxH)	1.55" x 4.25" x 9.09" (394 x 108 x 231 mm)
Weight	1.8 lb. (0.81 kg)

Electrical

Network interface	RJ45
Network data rates	Configurable to 10Mbps, 100Mbps or 1000Mbps
Customer interface	RJ45
Customer data rates	Configurable to 10Mbps, 100Mbps or 1000Mbps
Media requirements:	10Mbps UTP Category 3, 4, 5 100Mbps UTP Category 5 1000Mbps UTP Category 5e
Distance	328 feet (100 metres)

Optical

Network interface	LX, SX, ZX SFP-based
Network data rates	Gigabit Ethernet
Customer interface	LX, SX, ZX SFP-based
Customer data rates	Gigabit Ethernet

Work Area

Media Conversion – OptEonet™ Optical Extension Platform

Optical Extension Platform

The ADC KRONE OptEonet™ optical extension platform is an intelligent, scalable platform capable of handling any network's Ethernet or SONET media transitions. Bridging the gap between legacy copper infrastructures and fibre growth, the OptEonet platform provides the most economical evolution path. Integrated intelligence allows the user to remotely monitor system performance and transmit alarm conditions to upstream operational support systems. Increasing ADC KRONE's leadership in connectivity solutions, the OptEonet platform provides the ideal solution for Ethernet extensions in support of transparent LAN services or switch router interconnect requirements. A variety of solutions are supported ranging from 10Mb/s Ethernet, OC-12 and Gigabit Ethernet (GigE).



Features

- Modular design enables line card diversity within the same chassis
- Extend central office interconnect between network elements when distances are greater than 100 metres
- Ethernet delivery solution from central office to customer premises
- Reduce capital expenses associated with expensive optical line cards in network elements
- Auto-negotiation features eliminate the need for optical line card upgrade in network elements
- Redundant -48VDC and +24VDC power supplies
- Supports SNMP, TL1 and Telnet communication protocols
- Daisy-chain communication interfaces
- Supports 10BASE-T, 100BASE-TX and 1000BASE-T UTP conversion to fibre
- Multimode fibre to singlemode fibre conversions
- Medium Dependent Interface Cross-over (MDI-X) eliminates network collisions
- NEBS Level 3, CE, UL and FCC standards compliant

Ordering Information

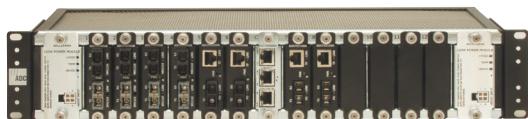
Description	Catalogue Number
Ethernet Network Interface Unit E/E ENIU, SET TOP 10/100/1000 MB UTP to 10/100/1000 MB UTP E/E ENIU, AC, SET TOP 10/100/1000 MB UTP to 10/100/1000 MB UTP E/O ENIU, SET TOP 10/100/1000 MB UTP to GigE Optical (requires SFP) E/O ENIU, AC, SET TOP 10/100/1000 MB UTP to GigE Optical (requires SFP) O/O ENIU, SET TOP GigE Optical to GigE Optical (requires 2 SFPs) O/O ENIU, AC, SET TOP GigE Optical to GigE Optical (requires 2 SFPs)	ENI-EGXXEGXX1B ENI-EGXXEGXX1B-AC ENI-OGXXEGXX1B ENI-OGXXEGXX1B-AC ENI-OGXXOGXX1B ENI-OGXXOGXX1B-AC

Work Area

Media Conversion – OptEnet™ Optical Extension Platform

OptEnet™ Modular Chassis

The OptEnet chassis is a modular chassis, which enables multiple types of line cards deployed simultaneously within the same chassis.



OptEnet 12-Port Modular Chassis



OptEnet 4-Port Modular Chassis

Features

- Supports up to 12 OptEnet line cards in two rack units
- Supports up to 4 OptEnet line cards in one rack unit
- Accepts dual redundant power supplies
- 19 inches wide with 23-inch reverse mounting ears
- Optional SNMP, TL1 and/or alarm functionality

Ordering Information

Description	Catalogue Number
OptEnet Modular Chassis, 12-Port	ADCCE1100A
OptEnet Modular Chassis, 4-Port	ADCCE1000A

Specifications

Physical: 12-Port Chassis

Dimensions (HxWxD): 3.5" x 17.5" x 5.75" (889 x 444 x 120 mm)
Weight (empty): 8.5 lbs (3.86 kg)

Physical: 4-Port Chassis

Dimensions (HxWxD): 1.72" x 17.08" x 9.67" (44 x 434 x 302 mm)
Weight (empty): 5.7 lbs (2.6 kg)

Environmental

Operating conditions: 5°C to 40°C at 5% to 85% relative humidity
Short term conditions: -5°C to 50°C at 5% to 90% relative humidity
Storage conditions: -40°C to 70°C at 10% to 95% relative humidity (no condensation)

Work Area

Media Conversion – OptEnet™ Optical Extension Platform

Power Supply Modules

The OptEnet chassis accepts power from DC sources. Dual power supplies are deployed within the chassis to provide redundant power to all line cards along the back plane.

Features

- -48Vdc (50 W and 100 W) power supply versions
- +24Vdc (100 W) power supply
- Extended temperature versions available
- Power connection on the front panel
- Power and temperature status LEDs



OptEnet DC Power Supply Module

Ordering Information

Description	Catalogue Number
OptEnet +24Vdc Power Supply Module	ADCCE2200A
OptEnet -48Vdc Power Supply Module (100 W) – extended temperature	ADCCE2400A
OptEnet -48Vdc Power Supply Module (100 W) – standard temperature	ADCCE2410A
OptEnet -48Vdc Power Supply Module (50 W) – extended temperature	ADCCE2450A

Specifications

DC input voltage: -48Vdc, +24Vdc

Work Area

Media Conversion – OptEnet™ Optical Extension Platform

Communications Modules

If remote monitoring is required, a central processor unit (CPU) can be deployed within the OptEnet™ platform. An alarm card is available if only local alarm indications are required. The CPU and alarm card are optional. Only one of the two modules can be deployed in the chassis, so the network administrator must determine which alarm notification method is preferable.

Features

CPU:

- Serial and Ethernet interface
- SNMP, TL1 and Telnet communications protocols
- Compatible with all SNMP management platforms
- Daisy-chain up to four units, via one IP address
- Firmware upgrade via TFTP or serial
- Five simultaneous Telnet sessions

Alarm Card:

- Normally open and normally closed alarm contacts



OptEnet CPU



OptEnet Alarm Module

Ordering Information

Description	Catalogue Number
OptEnet Central Processor Unit	ADCCE3000A
OptEnet Alarm Module	ADCCE3100A

Specifications

CPU Specifications

Ethernet interface:	10BASE-T, RJ45 connector
COM IN interface:	RS-232 DCE, RJ45 connector
COM OUT interface:	RS-232 DTE, RJ45 connector
Communications protocol:	SNMP, TL1 and ASCII

Alarm Module Specifications

Power ON indicator:	Green
Alarm indicator:	Red
Contact closures:	Normally open and normally closed

Work Area

Media Conversion – OptEnet™ Optical Extension Platform

Singlemode to Multimode Optical Conversion Line Cards

The OptEnet™ singlemode to multimode optical conversion line card is one of a family of line cards that can be deployed in the OptEnet modular chassis. The card is designed to convert optical signals transported on a singlemode link to an optical signal that can be transported on a multimode link. The card supports any protocol and data rates from 10Mb/s to 622Mb/s (OC-12).



Features

- Single circuit line card
- Duplex transmission
- Link status and power LED indications
- Optical connections on front panel
- Protocol independent
- Supports data rates 10Mb/s up to OC-12

Ordering Information

Description	Catalogue Number
OptEnet Singlemode to Multimode	
10-622 Mb/s Line Card – standard temperature	ADCPE6000A
10-622 Mb/s Line Card – extended temperature	ADCPE6001A

Work Area

Media Conversion – OptEnet™ Optical Extension Platform

Singlemode to Multimode Optical Conversion Line Cards

Supported Data Rates

Signal Type/ Protocol	Data Rate	Comments
Ethernet	10Mb/s	10BASE-FL
Fast Ethernet	100Mb/s	100BASE-FX
ATM/SONET/SDH	155Mb/s 622Mb/s	OC-3 OC-12

Specifications

Electrical

Input power: 2.7 Watts maximum; normal operation

Mechanical

Chassis compatibility: OptEnet modular chassis
 Fibre optic connectors: SC
 Dimensions (HxWxD): 1.14" x 8.07" x 7.4" (29 x 205 x 188 mm)
 Weight: 0.27 lbs (0.122 kg)

Optical

Singlemode

Wavelength: 1274 to 1356 nm range
 Output optical power (XMT): -15dBm minimum, -8dBm maximum
 Input optical power (RCV): -8dBm minimum, -32dBm maximum

Multimode

Wavelength: 1270 to 1380 nm range
 Output optical power (XMT):
 62.5/125µm: -20dBm minimum, -14dBm maximum
 50/125µm: -24dBm minimum, -14dBm maximum
 Input optical power (RCV): -26dBm minimum, -14 dBm maximum

Work Area

Media Conversion – OptEnet™ Optical Extension Platform

OptEnet™ 10/100Mb/s Optical Ethernet Conversion Line Card

The OptEnet 10/100Mb/s optical Ethernet conversion line cards are designed to convert optical signals to electrical signals. The line cards have an auto negotiation feature allowing them to detect and synchronise with either a 10BASE-T or 100BASE-TX signal. The cards support 10BASE-T and 100BASE-T data rates over UTP and singlemode or multimode fibre.



Features

- Supports 10BASE-T, and 100BASE-TX
- Full and half duplex transmission (transmit and receive)
- Ethernet and fibre optic link indicators
- Auto negotiation over fibre and copper (ANSI/TIA 785)
- MDI-X – auto-detects and corrects cross-over

Ordering Information

Description	Catalogue Number
OptEnet Optical Ethernet Conversion Line Cards	
100BASE-SX (SC) Line Card	ADCPE4000A
100BASE-LX (SC) Line Card	ADCPE4200A
100BASE-FX (SC) Line Card	ADCPE4400A

Work Area

Media Conversion – OptEnet™ Optical Extension Platform

OptEnet™ 10/100Mb/s Optical Ethernet Conversion Line Card

Supported Protocols

Application	Data Rate	Media	Distance	Interface
10BASE-T	10Mb/s	UTP Category 3, 4 or 5 (2-pair)	328 feet (100 m)	RJ45
100BASE-TX	100Mb/s	UTP Category 5 (2-pair)	328 feet (100 m)	RJ45
100BASE-LX	10/100Mb/s	1300 nm singlemode fibre	9.3 miles (15 km)	SC
100BASE-SX	10/100Mb/s	850 nm multimode fibre	984 feet (300 m)	SC
100BASE-FX	10/100Mb/s	1310 nm multimode fibre	2562 feet (2 km)	SC

Specifications

Electrical

Input power: 1.75 Watts maximum; normal operation

Mechanical

Chassis compatibility: OptEnet modular chassis
 Fibre optic connectors: SC
 Dimensions (HxWxD): 1.14" x 8.07" x 7.4" (29 x 205 x 188 mm)
 Weight: 0.27 lbs (0.122 kg)
 Electrical interface: RJ45
 Optical interface: SC

Optical

100BASE-LX (singlemode) 100BASE-SX (multimode) 100BASE-FX (multimode)

Wavelength:	1270 to 1380 nm range	830 to 870 nm range	1270 to 1380 nm range
Output optical power (XMT) 8/125 μ m:	-15dBm minimum -8dBm maximum	-17dBm minimum -12dBm maximum	-19dBm minimum -14dBm maximum
Input optical power (RCV):	-31dBm minimum -7dBm maximum	-26dBm minimum -12dBm maximum	-32dBm minimum -11dBm maximum

Work Area

Media Conversion – OptEnet™ Optical Extension Platform

OptEnet™ Gigabit Ethernet Line Card

The OptEnet 1000Mb/s media converter line card is designed to convert optical signals to electrical signals. The card supports 1000BASE-T data rates over UTP and singlemode or multimode fibre.



Features

- Supports Gigabit Ethernet
- Full duplex transmission (transmit and receive)
- Ethernet and fibre optic link indicators
- MDI-X – auto-detects and corrects cross-over

Ordering Information

Description	Catalogue Number
OptEnet Media Conversion	
1000BASE-SX (SC) Line Card	ADCPE5000A
1000BASE-LX (SC) Line Card	ADCPE5100A

Work Area

Media Conversion – OptEnet™ Optical Extension Platform

OptEnet™ 10/100Mb/s Optical Ethernet Conversion Line Card

Supported Protocols

Application	Data Rate	Media	Distance	Interface
10BASE-T	1000Mb/s	UTP Category 5e (4-pair)	328 feet (100 m)	RJ45
100BASE-LX	1000Mb/s	1300 nm singlemode fibre	6.2 miles (10 km) (8/125 μ m)	SC
100BASE-SX	1000Mb/s	850 nm multimode fibre	1804 feet (550 m)	SC

Specifications

Electrical

Input power: 2.2 Watts maximum; normal operation

Mechanical

Chassis compatibility: OptEnet modular chassis
 Fibre optic connectors: SC
 Dimensions (HxWxD): 1.14" x 8.07" x 7.4" (29 x 205 x 188 mm)
 Weight: 0.27 lbs (0.122 kg)
 Electrical interface: RJ45
 Optical interface: SC

Optical

1000BASE-LX 1000BASE-SX

Wavelength:	1270 to 1355 nm range	830 to 870 nm range
Output optical power (XMT):	-11dBm minimum -3dBm maximum	-9.5dBm minimum -4dBm maximum
Input optical power (RCV):	-22dBm minimum -20dBm maximum	-17dBm minimum -3dBm maximum

Work Area Wireless



WFX WLAN Array Systems

Introduction	6.72
WFX WLAN Array	6.75
WFX-3100 Remote Power System.....	6.76
WFX-3300 Management Platform	6.77

Work Area

Wireless – WFX WLAN Array

Introduction

WFX Wireless LAN Array is a next generation, high-performance enterprise solution for Wi-Fi deployment. This solution combines a wireless LAN switch and up to 16 integrated access points to deliver 864 Mbps of Wi-Fi bandwidth over a large area. This innovative approach simplifies the deployment and management of Wi-Fi networks while maximising the amount of Wi-Fi bandwidth and coverage available to users at lower cost.



Wireless LAN Array



Remote Power System



Management Platform

Benefits

Extended Coverage and Capacity

Generates up to 864Mbps of bandwidth over an extended coverage area

Allows up to 1,024 users to be wirelessly connected to the network

Uses fewer devices – simplifies the wireless network

Secure Wireless Access

Multiple layers of authentication and encryption ensure enterprise-grade secure data transmission

Interfaces with external RADIUS servers for proper authentication of users – includes an embedded RADIUS server to support smaller deployments

Wireless Monitoring

One 802.11a/b/g integrated access point can be dedicated as a RF “sniffer” to monitor for rogue access points and other security threats

Redundancy and Failover

Features multiple points of redundancy and failover including uplink, RF and complete system failover protection via “hot standby”

Quality of Service

Wireless capacity that ensures bandwidth for today and tomorrow's demanding applications such as data, voice and video

How It Works

At the heart of the WFX WLAN Array lies an embedded array controller that uses a multi-channel MAC to control and optimise the multiple RF interfaces of the WLAN array. The array controller is supported by a 2Gbps switching fabric and controls the packet flows of up to 16 integrated access points while providing complete spectrum management through a multi-sector antenna system.

The WLAN array can simultaneously use up to 16 non-overlapping channels across the 2.4GHz and 5GHz bands. Programmable integrated access points provide maximum flexibility.

A typical WLAN array configuration would use 12 non-overlapping 802.11a channels and three non-overlapping 802.11b/g channels, leaving one integrated access point as a RF monitor.

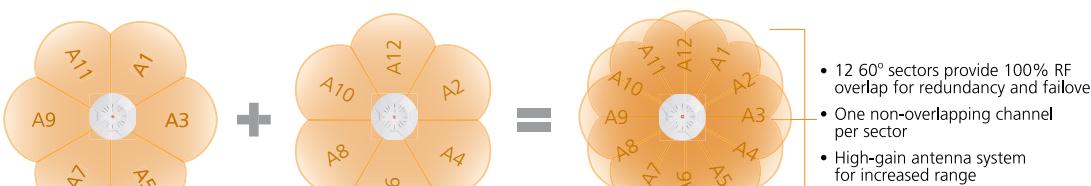
The multi-sector antenna system provides increased directional transmit gain (clients in one direction can hear the WFX WLAN Array more clearly) and provides increased receive gain (allows the WFX WLAN Array to hear clients more clearly from one direction). The result is a segmented coverage pattern that increases rate and range in all directions.

The transmit power settings of each RF sector is programmable, creating a perfect-fit pattern of desired coverage. Dynamic channel selection provides automatic tuning of the RF interfaces to optimise network coverage and performance based on changing RF conditions. Channel optimisation happens on a per WLAN array basis or when multiple WLAN arrays are used.

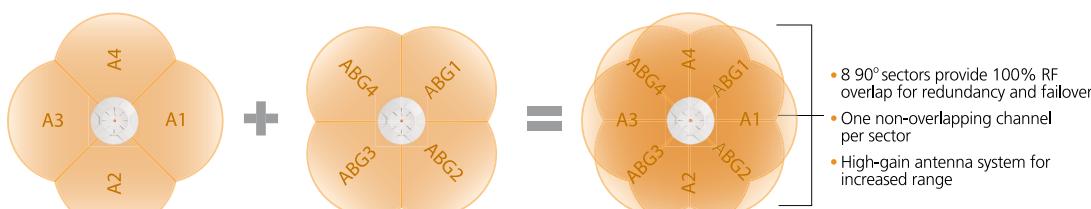
TrueNet® Structured Cabling
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Work Area
Wireless – WFX WLAN Array Systems

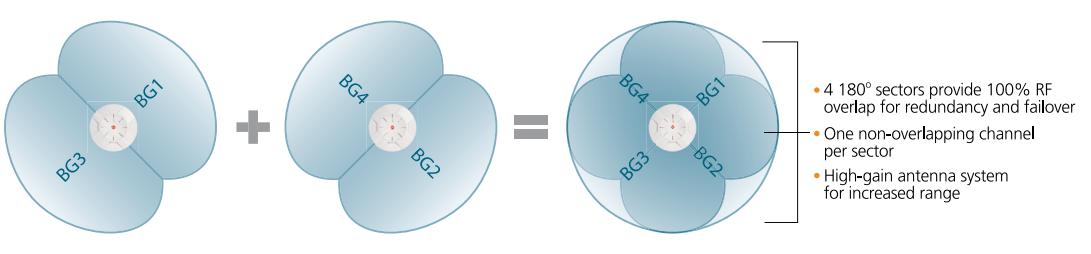
Option 1 802.11a Coverage Pattern



Option 2 802.11a Coverage Pattern



802.11b/g Coverage Pattern



Work Area

Wireless – WFX WLAN Array

WLAN Deployment Architectures

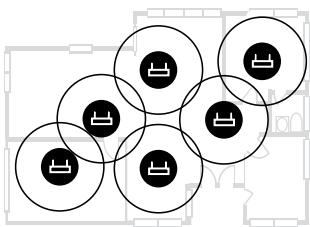
Channel re-use, interference and the “collision avoidance” scheme that governs data transmissions for Wi-Fi networks limits current solutions from providing the needed capacity to support large, data intensive networks.

Active clients in these networks must wait for the channel to be clear before transmitting packets, causing wait times to mount as

network usage increases – ultimately degrading network performance as each device “listens” before transmitting.

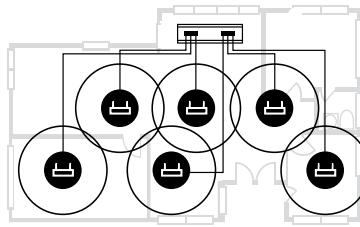
The only means to truly increase capacity in a Wi-Fi network is to simultaneously use multiple non-overlapping channels – the WFX WLAN Array is the first Wi-Fi solution to easily accomplish this in a single device.

Independent Access Points 1st Generation: 1998-2001



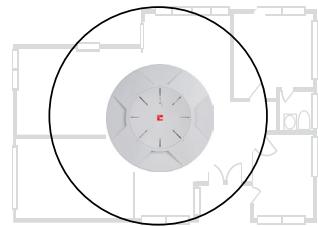
- “Fat” access points
- 802.11b dominant
- Lacked centralised management

WLAN Switch 2nd Generation: 2001-2005



- “Thin” access points with centralised switch
- Addressed management and security issues
- Complicated and expensive

WLAN Array 3rd Generation: 2006-Future



- Array Controller and Integrated Access Points
- Capacity and coverage maximised
- Fewer devices, cost effective and simple

WFX Unique Features

Gigabit-class Wi-Fi Capacity

- Delivers 864Mbps of RF bandwidth using an integrated approach to create up to 16 times the capacity of devices used in current Wi-Fi deployments
- Embedded 16-port array controller features a 2Gbps switching fabric and provides unprecedented coordination of the RF spectrum, security and Quality of Service (QoS) functions across the integrated access points

- Monitors the RF environment for rogue access points and other security threats by dedicating one integrated access point as a full-time RF “sniffer”

Deployment Efficiency – Superior TCO

- Optimises Wi-Fi deployment total cost of ownership (TCO) by reducing the number of devices to install, manage and service
- Optional WFX-3300 management platform provides centralised management when multiple WLAN arrays are used

Reliability

- Features multiple points of redundancy within its architecture including failover modes for the dual Gigabit uplink ports
- Adjacent RF Sectors or the internal omnidirectional antenna provide proper RF overlap to continue service in the unlikely event of an integrated access point failure
- Complete WFX failover is made possible through a “hot standby” mechanism allowing a secondary array to take over if the primary unit has failed

Extended Coverage Area

- Uses a multi-sector, directional antenna system to create a 360° coverage pattern providing 2 times the range in all directions and 4 times the coverage area
- Each RF sector size is configurable, creating an adaptive pattern of desired coverage or to limit RF “bleed” outside of a building

Enterprise Grade Security

- Supports the latest wireless encryption and authentication standards including IEEE 802.1x, WPA (Wi-Fi Protected Access) and IEEE 802.11i AES (Advanced Encryption Standard) for the protection of data

Work Area

Wireless – WFX WLAN Array

ADC KRONE offers multiple versions of the WFX to support a variety of deployment types and client migration strategies.

Each WLAN array includes an embedded array controller and comes in 4 (WFX-3500), 8 (WFX-3700) and 16 (WFX-3900), integrated access point configurations.

WFX-3500

- Embedded 500Mbps 4-port array controller (WLAN switch)
- 4 802.11a/b/g integrated access points
- High gain, multi-sector antenna system



Ordering Information

Description	Catalogue Number
4 Integrated Access Points (802.11 a/b/g), 4-Port Embedded Array Controller, AC-DC Power, EU	WFX-3500-4 L32
Wall Mounting Bracket for WFX-3500 WLAN Array	WFX-BKT-WALL L2
Enhanced Care Package for WFX-3500, 1 Year Software Maintenance	WFX-EC-3700 L1

WFX-3700

- Embedded 1Gbps 8-port array controller (WLAN switch)
- 4 802.11a integrated access points
- 4 802.11a/b/g integrated access points
- High gain, multi-sector antenna system



Ordering Information

Description	Catalogue Number
8 Integrated Access Points (4a+3a/b/g+1a/b/g for Monitoring), 8-Port Embedded Array Controller, AC Power, EU	WFX-3700-8 L12
8 Integrated Access Points (4a+3a/b/g+1a/b/g for Monitoring), 8-Port Embedded Array Controller, DC Power, EU	WFX-3700-8 L22
Wall Mounting Bracket for WFX-3900 and WFX-3700 Series WLAN Array	WFX-BXT-WALL L1
Enhanced Care Package for WFX-3700, 1 Year Software Maintenance	WFX-EC-3700 L1

Work Area

Wireless – WFX WLAN Array

WFX-3900

- Embedded 2Gbps 16-port array controller (WLAN switch)
- 12 802.11a integrated access points
- 4 802.11a/b/g integrated access points
- High gain, multi-sector antenna system



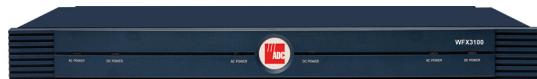
Ordering Information

Description	Catalogue Number
16 Integrated Access Points (12a+3a/b/g+1a/b/g for Monitoring) 16-Port Embedded Array Controller, AC Power, EU	WFX-3900-16 L12
16 Integrated Access Points (12a+3a/b/g+1a/b/g for Monitoring) 16-Port Embedded Array Controller, DC Power, EU	WFX-3900-16 L22
Wall Mounting Bracket for WFX-3900 and 3700 Series WLAN Arrays	WFX-BKT-WALL L1
Enhanced Care Package for WFX-3900, 1 Year Software Maintenance	WFX-EC-3900 L1

WFX-3100 Remote Power System

The WFX-3100 Remote DC Power System (optional) provides a centralised mechanism for distributing 48 volt DC power to the WFX WLAN array product family when AC power is unavailable or cost prohibitive to deploy. The remote power system consists of a chassis (WFX-3100-C) and up to three expansion modules (WFX-3100-M) providing maximum flexibility in provisioning power to each WFX WLAN array deployment location.

Utilising standard copper-based, Category 5e data-grade cable to carry 48 volt DC power, the WFX-3100 provides an alternative to provisioning AC power – reducing deployment costs and simplifying provisioning. All WFX WLAN arrays can be powered using the WFX-3100 at distances up to 300 feet (92 metres) when using Category 5e cable.



Features

- Chassis is rack-mountable and easily installed in an existing wiring closet
- Comes standard with one expansion module supporting up to four WLAN arrays
- Each WFX-3100-C can accept two additional WFX-3100-M expansion modules
- Each expansion module powers four WLAN arrays

Ordering Information

Description	Catalogue Number
1U Chassis with one 48V DC Expansion Module, Powers 4 WLAN Arrays, EU	WFX-3100-C L2
48V DC Power Expansion Module Powers 4 WLAN Arrays, EU	WFX-3100-M L2

WFX-3300 Management Platform

The WFX-3300 Management Platform (optional) is a dedicated network appliance providing a suite of powerful software tools designed to centrally manage up to 500 WLAN arrays from anywhere in the network. This platform is ideal for campus-wide, branch office or other large-scale Wi-Fi deployments.



The WFX-3300 provides a centralised mechanism for managing configurations, security settings and firmware revisions while monitoring network RF activity. Unlike competitive solutions, the WFX-3300 does not reside in the data path. This platform automatically discovers, authenticates and configures WLAN arrays to the network making large-scale, multi-site deployments easy to deploy and manage.

Ordering Information

Description	Catalogue Number
WFX-3300 Wireless Management System 1U Appliance for up to 10 WLAN Arrays (command and control)	WFX-3300-SCC-10 L2
WFX-3300 Wireless Management System 1U Appliance for up to 50 WLAN Arrays (command and control)	WFX-3300-SCC-50 L2
WFX-3300 Wireless Management System 1U Appliance for up to 500 WLAN Arrays (command and control)	WFX-3300-SCC-500 L2
WFX-3300 Wireless Enhanced Management System 1U Appliance for up to 10 WLAN Arrays (RF Plan, Monitor, IDS, Loc Track)	WFX-3300-ECC-10 L2
WFX-3300 Wireless Enhanced Management System 1U Appliance for up to 50 WLAN Arrays (RF Plan, Monitor, IDS, Loc Track)	WFX-3300-ECC-50 L2
WFX-3300 Wireless Enhanced Management System 1U Appliance for up to 500 WLAN Arrays (RF Plan, Monitor, IDS, Loc Track)	WFX-3300-ECC-500 L2
Enhanced Care Package for XM-3300-10, 1 Year Software Maintenance	WFX-EC-3300-10 L1
Enhanced Care Package for XM-3300-50, 1 Year Software Maintenance	WFX-EC-3300-50 L1
Enhanced Care Package for XM-3300-500, 1 Year Software Maintenance	WFX-EC-3300-500 L1

WFX Benefits

Extended Coverage and Capacity

Generates up to 864Mbps of Wi-Fi bandwidth over an extended coverage area

Allows over 1,000 users to be wirelessly connected to the network

Uses fewer devices – simplifies the wireless network

Deploy Once and Forget It

No need to incrementally add capacity or re-engineer and redeploy the wireless network

Secure Wireless Access

Multiple layers of authentication and encryption ensure enterprise-grade secure data transmission

Interfaces with external RADIUS servers for proper authentication of users – includes an embedded RADIUS server to support smaller deployments

Wireless Monitoring

One 802.11a/b/g integrated access point can be dedicated as a RF “sniffer” to monitor for rogue access points and other security threats

Redundancy and Failover

Two Gigabit uplink ports can be configured to provide redundancy

Radio interfaces offer automatic failover capability

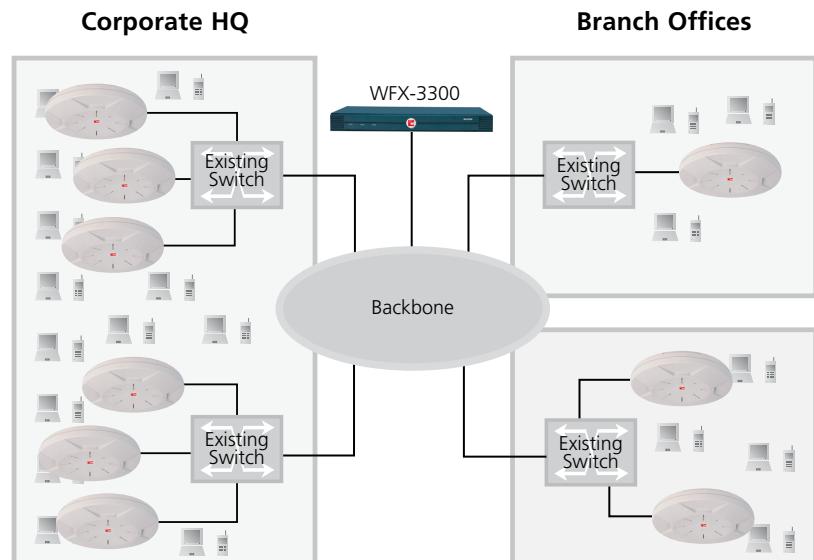
Complete WLAN array failover capability provided through “hot standby” mechanism

Quality of Service

Wireless capacity that ensures bandwidth for today and tomorrow’s demanding applications such as voice and video

Multiple queuing and prioritisation schemes ideally suited for real time applications such as voice

TrueNet® Structured Cabling



Total Solution

ADC KRONE offers the WFX WLAN Array product family that delivers Gigabit-class Wi-Fi access with maximum deployment flexibility. WFX enables Wi-Fi deployments across a wide range of locations, from a single corporate headquarters site to large multi-site branch office deployments.

Example WFX WLAN Array Specifications

Embedded Array Controller

- 2Gbps switching fabric
- 16-Port multi-channel MAC
- 512MB RAM expandable
- 128MB system FLASH expandable
- ADC KRONE PCI-X expansion slot for future options
- Line speed performance of Encryption Engines
- Provides easy upgrade path to future 802.11 standards

Radio Interfaces

- 12 802.11a
- 4 802.11a/b/g, one of which can be dedicated as a RF monitor

RF Bandwidth

- 864Mbps aggregate

Wireless Standards

- 802.11a, 802.11b/g and 802.11g-only modes

Users Supported

- Supports up to 64 associated users per integrated access point, 1024 users per WLAN array
- Recommended number of typical users per integrated access point is 20

Wireless Security

- WPA TKIP and AES encryption
- WEP 40bit/128bit encryption
- Rogue AP detection, alerting, and classification

User and System Authentication

- WPA pre-shared key authentication
- 802.1x EAP-TLS
- 802.1x EAP-TTLS
- 802.1x PEAP
- Built-in RADIUS server supporting PEAP
- MAC access control lists
- Authentication of WLAN arrays to the ADC KRONE management platform

Multiple SSID Support

- Allows up to 16 separate SSIDs to be defined
- Map Security, VLAN, and QoS settings to each SSID

Antenna

- 12 Internal 7dBi 60O 802.11a segmented antennas
- 4 Internal 3dBi 180O 802.11b/g segmented antennas
- 1 Internal 2dBi 360O omni-directional antenna
- 3 RP-TNC connectors for external antennas

Channel Selection

- Manual, Automatic

Frequency Bands 11a/b/g

- 11a: 5.15-5.25 GHz (UNII I)
- 11a: 5.15-5.25 GHz (TELEC)
- 11a: 5.25-5.35 GHz (UNII II)
- 11a: 5.470-5.725 GHz (ETSI)
- 11a: 5.725-5825 GHz (UNII III)
- 11b/g: 2.412-2.462 GHz (FCC)
- 11b/g: 2.412-2.472 GHz (ETSI)
- 11b/g: 2.412-2.484 GHz (TELEC)

Client Load Balancing

- Automatic between integrated access points through the embedded array controller

Quality of Service

- 802.1p wired traffic prioritisation
- 802.11e (draft) wireless prioritisation
- MAP COS to TCID
- Fair queuing of downstream traffic

Ethernet Interfaces

- Two Gigabit interfaces (10/100/1000) with failover
- One fast Ethernet 10/100 interface

Serial Interface

- One RS232 – RJ45 connector

Status LEDs

- System status LED
- Ethernet (3) and radio (16) status LEDs

Networking Services

- DHCP client, DHCP server, NTP

VLAN Support

- 802.1q compliant
- Supports up to 16 VLANs

Management

- Web-based HTTPS, SNMPv3, CLI via SSHv2, FTP, TFTP and ADC KRONE proprietary
- Syslog reporting for alerts/alarms
- Centralised L3 management of multiple WLAN arrays via the optional ADC KRONE management platform

Radio Approvals

- FCC (United States)
- ETSI (Europe, in process)

Dimensions

- Diameter 18.65in (47.37cm)
- Height 3.87in (9.83cm)
- Weight 9lbs (4.08kg)

Environmental

- -10°C to 50°C
- 0-90% relative humidity (non-condensing)

Input Power Requirements

- 100 to 240VAC

Safety and EMI Compliance

- UL/cUL EN60950
- FCC Class A

Warranty

- One year hardware
- 90 days software



Work Area Industrial

DIN Rail Distributor IP20	6.82
Industrial Outlet IP67/65	6.83

DIN Rail Distributor IP20

The TrueNet DIN Rail Distributor is used for the configuration of RJ45 based industrial Ethernet cabling as well as building control and Enterprise structured cabling systems.

This module is designed for indoor or outdoor use in distribution cabinets, space saving wall-mounted distributors or boxes. The modules are simply snapped onto DIN rails commonly used in distribution cabinet production and in the field of process automation.

High density, compact consumer friendly design and outstanding transmission capacities highlight the DIN rail distributor from all other similar products in the marketplace.



Features

- Robust RJ45 distributor for DIN rail mounting
- 2 Port KM8® Category 6, shielded
- Shielding/earthing through DIN rail
- Can be aligned in a row, small mounting depth, high density
- Detached dust cover and separate label for every single port
- Cable entry possible from top and bottom
- Protection class IP20, suited for use in distribution cabinets, boxes and weather-proof outdoor cabinets
- Simple and quick installation without special tools

Ordering Information

Description	Catalogue Number
RJ45 KM8 DIN Rail Distributor	6690 1 755-00

Specifications

Electrical Properties

Type of socket ADC KRONE Category 6 RJ45 KM8, shielded
 Electrical characteristics Category 6 according to ISO/IEC 11801:2002,
 EN50173-1:2002 and TIA/EIA 568B.2

Mechanical Characteristics

Protection class IP20 according to EN 60529
 Mounting Clipped on mounting bars according to EN60715
 for DIN rails TH 35-7,5 and TH 35-15
 Cable entry From top or bottom
 Colour Light grey / RAL 7035
 Dimensions (HxWxD) (82x66x28.5)mm
 Alignment Horizontally in a row
 Weight Empty = 57g; with KM8 jacks = 117g
 Temperature range -20°C to +75°C

Material

Housing Polycarbonate V0, halogen free

Environmental Characteristics

Complies with RoHS terms
 EMV solid according to EN 55022 Class B

Industrial Outlet IP67/65



The TrueNet industrial outlet from ADC KRONE allows the installation of RJ45 based Ethernet connections in extreme environmental conditions like industrial production facilities, outdoors or rooms with high security requirements.

The industrial outlet offers protection according to IP67/65 against humidity, steam and dust as well as resistance against mechanic destruction or unauthorised access, combined with quick installation and simple operation.

Ordering Information

Ordering information for this product is on the next page

Features

- Robust housing for AP mounting in extreme environments
- Protection class according to IP67 and IP65 connected and unconnected
- Automatic covers for the RJ45 outputs
- Mechanic access protection possible
- Two shielded Category 6 RJ45 KM8 connections per outlet with anti-vibration support
- No special tool for the termination of the KM8® RJ45 necessary
- Cabling from top or bottom possible
- PROFINET compatible push pull interface, recommended by PNO
- Simple, quick and secure installation
- Waterproof label on the cover
- Suitable for outdoor installation due to the use of Polycarbonate
- Flammability class UL-V0, halogen free
- Available in white and black

Industrial Outlet IP67/65



Ordering Information

Description	Catalogue Number
IP67/65 RJ45 Industrial Outlet Push Pull, Cat6 2xKM8, STP, black	6690 1 860-10
IP67/65 RJ45 Industrial Outlet Push Pull, Cat6 2xKM8, STP, white	6690 1 860-20
KM8 RJ45 Connection Cord, RJ45 IP20 to RJ45 IP20, shielded S-FTP, LSZH, 1m, for use in IP20 environments, grey	6830 2 867-04
KM8 RJ45 Connection Cord, RJ45 IP20 to RJ45 IP20, shielded S-FTP, LSZH, 2m, for use in IP20 environments, grey	6830 2 867-07
KM8 RJ45 Connection Cord, RJ45 IP20 to RJ45 IP20, shielded S-FTP, LSZH, 3m, for use in IP20 environments, grey	6830 2 867-10
KM8 RJ45 Connection Cord, RJ45 IP20 to RJ45 IP20, shielded S-FTP, LSZH, 5m, for use in IP20 environments, grey	6830 2 867-15
RJ45 Connection Cord, RJ45 IP67/65 Push Pull to RJ45 IP20, S-FTP PROFINET, PVC, 3m, for use in IP54 environments, green	09 45 701 1510
RJ45 Connection Cord, RJ45 IP67/65 Push Pull to RJ45 IP20, S-FTP PROFINET, PVC, 5m, for use in IP54 environments, green	09 45 701 1511
RJ45 Connection Cord, RJ45 IP67/65 Push Pull to RJ45 IP20, S-FTP PROFINET, PVC, 10m, for use in IP54 environments, green	09 45 701 1512
RJ45 Connection Cord, RJ45 IP67/65 Push Pull to RJ45 IP20, S-FTP PROFINET, PVC, 15m, for use in IP54 environments, green	09 45 701 1513
RJ45 Connection Cord, RJ45 IP67/65 Push Pull to RJ45 IP20, S-FTP PROFINET, PVC, 20m, for use in IP54 environments, green	09 45 701 1514
RJ45 Connection Cord, on both sides with RJ45 IP67/65 Push Pull, S-FTP PROFINET, PVC, 3m, for use in IP54 and IP67/65 environments, green	09 45 745 1525
RJ45 Connection Cord, on both sides with RJ45 IP67/65 Push Pull, S-FTP PROFINET, PVC, 5m, for use in IP54 and IP67/65 environments, green	09 45 745 1527
RJ45 Connection Cord, on both sides with RJ45 IP67/65 Push Pull, S-FTP PROFINET, PVC, 10m, for use in IP54 and IP67/65 environments, green	09 45 745 1551
RJ45 Connection Cord, on both sides with RJ45 IP67/65 Push Pull, S-FTP PROFINET, PVC, 15m, for use in IP54 and IP67/65 environments, green	09 45 745 1552
RJ45 Connection Cord, on both sides with RJ45 IP67/65 Push Pull, S-FTP PROFINET, PVC, 15m, for use in IP54 and IP67/65 environments, green	09 45 745 1553

Industrial Outlet IP67/65

Specifications

Electrical Properties

Type of socket
Electrical characteristics

ADC KRONE Category 6 RJ45 KM8, shielded
Category 6 according to ISO/IEC 11801:2002,
EN50173-1:2002v and TIA/EIA 568B.2

Mechanical Characteristics

Mechanical stability
Protection class
Cable entry
Plug interface
Colours

Tested according to IEC 60512-2/-4/-5/-6/-8
IP67 and IP65 according to EN 60529
Metric screws M16, cable diameter: 6-9 mm
Push pull connection, according to PROFINET, PNO recommended
White / RAL 9010
Black / RAL 9011

Dimensions
Weight
Temperature range

(HxWxD) (150x90x70) mm
Empty 260g; with KM8 jacks 320g
-20°C to +75°C

Material

Housing

Polycarbonate V0, halogen free

Environmental Characteristics

Complies with RoHS terms
EMV solid according to EN 55022 Class B



Complementary Solutions

Other Enterprise Solutions	7.02
Other Infrastructure Solutions	7.03
Voice Solutions	7.05

Complementary Solutions

Other Enterprise Solutions

Power Distribution Products

ADC KRONE's PowerWorx® power distribution products have been engineered from the ground up to properly protect and distribute power to valuable, revenue-generating network equipment. Flexible PowerWorx configurations suit almost every network application and the platform sets a new standard for delivering power and protection.

Features

- Compliant with all major standards, including UL, NEBS Level 3, Telcordia (BellCore), NEC 2002, CSA, IEC, and CE
- Backed by ADC KRONE quality, manufacturing excellence and exceptional customer service
- Flexible platform for use in central offices, head ends, hubs, remote sites, etc.



Digital Signal Cross-Connect Products

ADC KRONE is the world's leading supplier of Digital Signal Cross-connect (DSX) solutions. By working closely with our customers and paying close attention to industry trends, we have anticipated changing needs and met the challenges of today's highly competitive environment with our innovative copper products. With the widest portfolio of digital signal cross-connect solutions, ADC KRONE offers its customers the best solutions for their networks, addressing the need for flexible network management for both large and small applications.

Features

- Ideal for applications where cross-connecting, patching, testing or monitoring is required between network elements
- Configurations for high and low density, front or rear cross-connections, twisted pair applications or coaxial, T1/E1 or T3/E3 signal rates



Complementary Solutions

Other Infrastructure Solutions

Outside Plant (OSP) Cabinets for Campus Applications

ADC KRONE OSP systems provide fully protected, environmentally secure systems for the management and administration of OSP fibre optic cables and splitters. All OSP enclosures feature ADC KRONE's industry-leading fibre cable management products, ensuring optimum network performance.

Features

- Lower life-cycle costs
- Maximum fibre provisioning
- Improved service levels
- Easy test access



Megabit Modem 702G2

ADC KRONE's G.SHDSL MM702G2 provides an affordable, high performance 4.6Mbps connection over copper to support LAN-to-LAN or LAN-to-WAN solutions. The new 4-wire modem increases reach by up to 30 percent.

Features

- Supports 2-wire G.SHDSL speeds up to 2.3Mbps or 4-wire speeds up to 4.6Mbps (1-pair/2-pair copper)
- Enables easy web-based management program using standard web browsers
- Supports both point-to-point and DSLAM operation
- Built-in SNMP for remote or local management
- Supports 8 simultaneous PPP or bridge/routing sessions allowing multiple concurrent connections to the same or different service providers with ATM QoS
- 10/100 BT Ethernet port with MDI/MDI-X switch next to Ethernet port to connect directly to a PC with a straight-through cable, eliminating the need for crossover cable

Complementary Solutions

Other Infrastructure Solutions

Sound and Video Solutions for Auditoriums and Surveillance Applications

ADC KRONE designs, engineers and manufactures a wide array of audio, video and data patching products. From durable patchbays to precision jacks and connectors, consistent quality is the hallmark of all our products.

Features

- UniPatch® modular patching system supports data, audio and video patching in one patch panel
- Pro Patch™ Programmable patching system combines WECO-compliant bantam jacks with a precision DIP switch
- IEEE 1394a FireWire® patch panel accommodates 24 ports in one rack unit and mounts in standard 19-inch racks, allowing interconnection of cameras, servers, workstations and non-linear editing suites via FireWire at 400Mbps



Data Management and Access Products

ADC KRONE's PatchMate® and PatchSwitch™ data management and access products provide a convenient, organised method of digital communications line monitoring and reconfiguration.

Features

- Built-in circuit diagnostic aids
 - Quick isolation of circuit problems
 - Rapid restoration of critical circuit paths
 - Routine "at-a-glance" visibility of basic network health and activity (without instruments)
- Rugged, fail-safe design
 - High quality and innovative design assures absolute integrity of circuit
 - No sliding, hinged or rotating mechanical parts





Complementary Solutions Voice Solutions

Cable.....	7.06
Backmount Frame Products	7.10
PROFIL® Mount Products.....	7.14
1U Voice Patch Panel	7.20

Category 3 Plenum Cable

Common Applications

- POTS
- T1 and T1 Fractional
- ISDN Basic and Primary Rate
- 4/16Mbps Token Ring (IEEE 802.5)
- 10Base-t (IEEE 802.3)
- 52Mbps ATM (ATM Forum)
- 100Base-T4 (Fast Ethernet)
- 100VG-AnyLAN (IEEE 802.12)



Compliances

- UL Subject 444
- (UL)-C(UL) Type CMP
- ICEA S-90-661
- NEC 800 Type CMP
- Two- to four-pair: TIA/EIA-568-B.2 Category 3 horizontal cable
- Over four-pair: TIA/EIA-568-B.2 Category 3 backbone cable

Ordering Information

Description	Packaging	Catalogue Number*
Category 3 Plenum Cable Jacket colour: white		
2-pair	Reelex – 305m (1000')	VXV0224-19R2
3-pair	Reelex – 305m (1000')	VXV0324-19R2
4-pair	Reelex – 305m (1000')	VXV0424-19R2
6-pair	Reelex – 305m (1000')	VXV0624-19R2
2-pair	Spool	VXV0224-19XX
3-pair	Spool	VXV0324-19XX
4-pair	Spool	VXV0424-19XX
6-pair	Reel	VXV0624-19XX
8-pair	Reel	VXV0824-19XX
12-pair	Reel	VXV1224-19XX
25-pair	Reel	VXV2524-19XX
50-pair	Reel	VXV5024-19XX
75-pair	Reel	VXV7524-19XX
100-pair	Reel	VXV0024-19XX
200-pair	Reel	VXCCC24-19XX
300-pair	Reel	VXC3X24-19XX

*To designate reel length, replace XX with:

02 = 305 metres (1000')

04 = 609 metres (2000')

05 = 762 metres (2500')

06 = 914 metres (3000')

10 = 1524 metres (5000')

12 = 1828 metres (6000')

Category 3 Plenum Cable

Specifications

Electrical Characteristics

Conductor DC resistance (maximum):	28.6Ω/1000 feet (9.38Ω/100 metres) @20°C
DC resistance unbalance (maximum):	5%
Insulation resistance (minimum):	500 Megohms/1000 feet @20°C
Mutual capacitance (typical):	19 pF/foot (5.6nF/100 metres)
Operating temperature (maximum):	60°C
Operating voltage (maximum):	300VDC

Frequency (MHz)	Impedance (Ohms)	Attenuation Max (dB/100m)	NEXT Min (dB)	SRL (return loss) Min (dB)
1.0	85–115	2.6	41	12
4.0	85–115	5.6	32	12
8.0	85–115	8.5	27	12
10.0	85–115	9.7	26	12
16.0	85–115	13.1	23	10

Notes: (1) Compliance testing for the above parameters is based on Swept Frequency Measurements.

(2) NEXT = Near-End Crosstalk. NEXT requirements for cables up to and including 4 pair are for Worst-Case-Pair NEXT. Cables over 4 pair are subject to PowerSum NEXT requirements.

Construction

Conductors:	24 AWG solid bare copper
Insulation:	LS-flame retardant PVC
Pairing:	Short, staggered pair lays
Colour-coding:	See Technical Reference Section, 25-pair colour-code table
Rip cord:	Applied under jacket
Jacket:	LS-flame retardant PVC (2- to 100-pair) PVDF Copolymer (Over 100-pair)

Complementary Solutions

Voice Solutions

Category 3 Riser Cable

Common Applications

- POTS
- T1 and T1 Fractional
- ISDN Basic and Primary Rate
- 4/16Mbps Token Ring (IEEE 802.5)
- 10Base-T (IEEE 802.3)
- 52Mbps ATM (ATM Forum)
- 100Base-T4 (Fast Ethernet)
- 100VG-AnyLAN (IEEE 802.12)



Compliances

- UL Subject 444
- (UL)-C(UL) Type CMR/CMG
- ICEA S-90-661
- NEC 800 Type CMR
- Two- to four-pair: TIA/EIA-568-B.2 Category 3 horizontal cable
- Over four-pair: TIA/EIA-568-B.2 Category 3 backbone cable

Ordering Information

Description	Packaging	Catalogue Number*
Category 3 Riser Cable Jacket colour: white		
2-pair	Reelex – 305m (1000')	D0224D0-GYR2
3-pair	Reelex – 305m (1000')	D0324D0-GYR2
4-pair	Reelex – 305m (1000')	D0424D0-GYR2
6-pair	Reelex – 305m (1000')	D0624D0-GYR2
2-pair	Spool	D0224D0-GYXX
3-pair	Spool	D0324D0-GYXX
4-pair	Spool	D0424D0-GYXX
6-pair	Reel	D0624D0-GYXX
8-pair	Reel	D0824D0-GYXX
12-pair	Reel	D1224D0-GYXX
25-pair	Reel	D2524D0-GYXX
50-pair	Reel	D5024D0-GYXX
100-pair	Reel	D0024D0-GYXX
200-pair	Reel	DCC24D0-GYXX
300-pair	Reel	D3X24D0-GYXX
400-pair	Reel	D4X24D0-GYXX

*To designate reel length, replace XX with:

02 = 305 metres (1000')

04 = 609 metres (2000')

05 = 762 metres (2500')

06 = 914 metres (3000')

10 = 1524 metres (5000')

12 = 1828 metres (6000')

Category 3 Riser Cable

Specifications

Electrical Characteristics

Conductor DC resistance (maximum):	28.6Ω/1000 feet (9.38Ω/100 metres) @20°C
DC resistance unbalance (maximum):	5%
Insulation resistance (minimum):	500 Megohms/1000 feet @20°C
Mutual capacitance (typical):	19 pF/foot (5.6nF/100 metres)
Operating temperature (maximum):	60°C
Operating voltage (maximum):	300VDC

Frequency (MHz)	Impedance (Ohms)	Attenuation Max (dB/100m)	NEXT Min (dB)	SRL (return loss) Min (dB)
1.0	85–115	2.6	41	12
4.0	85–115	5.6	32	12
8.0	85–115	8.5	27	12
10.0	85–115	9.7	26	12
16.0	85–115	13.1	23	10

Notes: (1) Compliance testing for the above parameters is based on Swept Frequency Measurements.

(2) NEXT = Near-End Crosstalk. NEXT requirements for cables up to and including 4 pair are for Worst-Case-Pair NEXT. Cables over 4 pair are subject to PowerSum NEXT requirements.

Construction

Conductors:	24 AWG solid bare copper
Insulation:	Lead-free, flame retardant PVC
Pairing:	Staggered pair lays
Colour-coding:	Standard telephony (See Technical Reference Section, 25-pair colour-code table)
Rip cord:	Applied under jacket
Jacket:	Lead-free, flame retardant PVC

Complementary Solutions

Voice Solutions

Backmount Frames

Backmount frames in a variety of sizes, suitable for LSA-PLUS® Series 2 Modules.



Ordering Information

Description	Quantity	Catalogue Number
11mm Deep, 1 Module	1	6424 3 005-01
11mm Deep, 2 Modules	1	6424 3 005-02
11mm Deep, 7 Modules	1	6424 3 005-07
30mm Deep, 10 Modules	1	6424 3 007-10
50mm Deep, 30 Modules	1	6424 3 009-30
60mm Deep, 34 Modules	1	6424 3 010-34

LSA-PLUS® Backmount Disconnection Module

10 pair LSA-PLUS® modules which contain two piece contacts normally closed. Has advantage of individual pair disconnection and four wire test access.



Ordering Information

Description	Catalogue Number
LSA-PLUS® Backmount Disconnection Module, White, Pack of 10	6089 1 102-02
LSA-PLUS® Backmount Disconnection Module, Cream, Pack of 10	6089 1 810-00

Complementary Solutions

Voice Solutions

10 Pair Label Holder and Labels

Easy identification of terminations and groups of modules. Label holders are available for mounting on 10 pair LSA-PLUS® modules and for mounting directly onto the backmount frame. Labels can be ordered separately.



Ordering Information

Description	Quantity	Catalogue Number
Double Sided Hinged Label Holder Grey	Pack of 10	6092 1 810-00
Label Holder Complete with Label, fits on one position on backmount frame	Pack of 10 Strips	6092 1 820-00
Blank white labels for use with label holders 6092 1 810-00 & 6092 1 840-00	Pack of 100	6534 1 001-00

Connection Cord

Equipped with a plug at each end of the cord. Primarily used for interconnecting separate circuits either on the same or between different LSA-PLUS® modules.



Ordering Information

Description	Quantity	Catalogue Number
2 Pole. For use with LSA-PLUS® connection and disconnection modules, cord length 1.5m	Pack of 10	6529 1 022-01
4 Pole. For use with LSA-PLUS® switching and disconnection modules, cord length 1.5m	Pack of 10	6529 1 042-01

Complementary Solutions

Voice Solutions

ComProtect Series B

Compact plug-in single pair overvoltage protection for LSA-PLUS® series. ComProtect Series B protects from damage caused by overvoltage with a 3-pole GDT with failsafe (primary circuit) and transient secondary elements (Diodes) for quick responding fine protection. Additional overcurrent protection is realised with reversible thermistors (PTCs) that complete the 5 point protective circuitry. These devices are designed for use in exchanges and terminal equipment in both analogue and ISDN (<2MBps) systems. All include earthing rail.



Ordering Information

Description	Quantity	Catalogue Number
CP BI12A1 – 5 point and transient protection, max. operating voltage is 12V, GDT with failsafe	10	5909 1 084-00
CP BI24A1 – as above, max. operating voltage is 24V	10	5909 1 083-00
CP BI70A1 – as above, max. operating voltage is 70V	10	5909 1 082-00
CP BI180A1 – as above, max. operating voltage is 180V	10	5909 1 076-00
CP BOD180A2 – high GDT clamping voltage (>250V)	10	5909 1 078-10

TrueNet® Connection Box 201D

Low profile plastic box accommodates up to 20 pairs or 2 LSA-PLUS® modules.

Dimensions

170(H) x 120(W) x 43(D)mm



Ordering Information

Description	Catalogue Number
Connection Box 201D, 20 Pair	6429 1 076-00
Connection Box 201D, 10 Pair	6429 1 078-00

Complementary Solutions

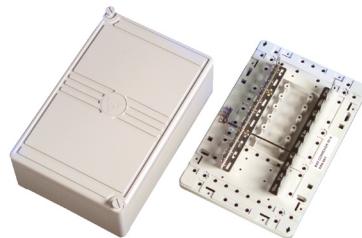
Voice Solutions

TrueNet® Connection Box 301A

Plastic modular box, for 100 pairs designed to accommodate 10 LSA-PLUS® 10 pair modules.

Dimensions

320(H) x 210(W) x 120(D)mm



Ordering Information

Description	Catalogue Number
Connection Box 301A Includes 1 backmount frame 5/30/10A equivalent and earthing	6530 1 017-00

Distribution Frame 108A

Modular frame for 1380 pairs using LSA-PLUS® modules. May be mounted back to back, side by side, wall mounted or free standing. Complete with detachable legs.



Ordering Information

Description	Dimensions	Weight	Catalogue Number
Distribution frame 108A	2004(H)*x560(W)x150(D)	29kg	6420 1 013-00

*Height measurement includes fitted legs

Complementary Solutions

Voice Solutions

PROFIL® Frame 95/46

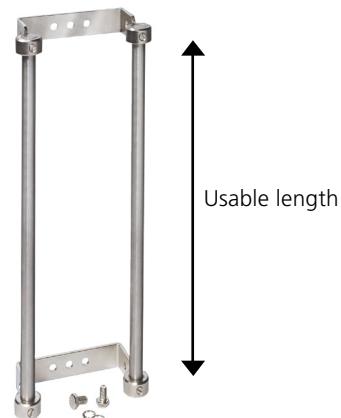
For installation in already set-up distribution frames and distribution cabinets.

The frame consists of:

2 PROFIL rods, 12mm in diameter (stainless steel)
An adequate number of PROFIL holders with a depth of 46mm

Completely assembled PROFIL frame:

PROFIL frame 95 for accommodation of LSA PROFIL modules 2/10, 2/8-95, LSA-PROFIL NT 10 pairs and HighBand®



Ordering Information

Description	Catalogue Number
PROFIL Frame 95/46, length of rods 299mm	6577 2 812-01
PROFIL Frame 95/46, length of rods 574mm	6577 2 812-02
PROFIL Frame 95/46, length of rods 861mm	6577 2 812-03
PROFIL Frame 95/46, length of rods 1136mm	6577 2 812-04
PROFIL Frame 95/46, length of rods 1423mm	6577 2 812-05
PROFIL Frame 95/46, length of rods 1698mm	6577 2 812-06

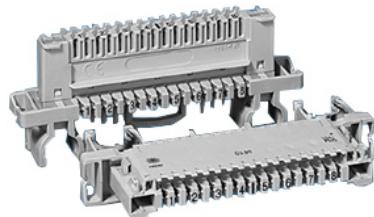
LSA-PLUS® PROFIL® NT Disconnection Module

Disconnection module for 10 pairs, with right-angled arrangement of the contact rows for distributor systems ensuring enhanced access security.

The mounting pitch is only 17.5mm. For installation in PROFIL rack systems with rod spacing 95mm for 10 pairs.

Small jumper guides left and right with built-in earth contact clips.

Housing colour: cream white



Ordering Information

Description	Catalogue Number
LSA-PLUS PROFIL NT Disconnection Module, 10 Pairs	7014 1 601-00

Complementary Solutions

Voice Solutions

LSA-PLUS® PROFIL® NT Earth Module

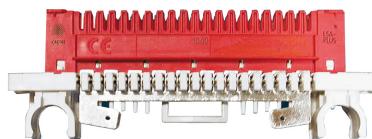
For connecting drain wires to an earth contact without soldering, wire-stripping or the use of screws.

Designed for universal use with:

Up to 20 drain wires

For clicking onto PROFIL frames

Housing colour: red



Ordering Information

Description	Catalogue Number
LSA-PLUS PROFIL NT Earth Module	7014 2 152-00

PROFIL® Module Label Holder

Designed for universal use with backmount frame and PROFIL rod systems. For vertical identification

Label size: 95 x 18 mm for 2/10

Requires the space of one connection module in the backmount frame / PROFIL rod system.



Ordering Information

Description	Catalogue Number
PROFIL Module Label Holder	6753 2 009-00

LSA-PLUS® NT Hinged Label Holder

Hinged label holder for LSA-PLUS NT. Can be inserted directly onto LSA-PLUS NT/PROFIL NT modules for 10 pairs. Comes with paper label and transparent cover. The flammability class of the grey label holder is UL94 V-0



Ordering Information

Description	Catalogue Number
Hinged Label Holder	7014 2 007-00

Complementary Solutions

Voice Solutions

UniVK Mini-distributor for Indoor Applications

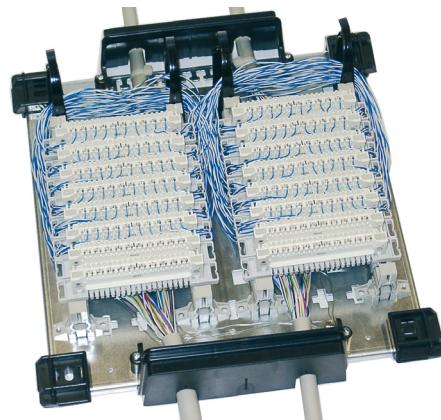
These mini-distributors are space-saving solutions for small and medium-sized data and telecommunication networks based on either copper or fibre technology.

The boxes come in various dimensions and are designed for wall mounting in dry, indoor areas.

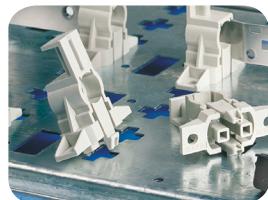
Different mounting systems fixed to the base plate allow the installation of LSA PROFIL®, LSA-PLUS® or LSA PROFIL® NT modules (as a partial or mixed installation).

The UniVK distribution boxes are designed for the installation of the following connection and distribution components:

- LSA PROFIL®/LSA PROFIL® NT Series 2 modules (eight or ten pair; fixing width: 95mm)
- LSA-PLUS® Series 2 modules (eight or ten pair; fixing width: 95mm)



UniClip on the base-plate of the UniVK



Features

- Boxes can be outfitted with overvoltage protection up to a maximum height of 33mm above the modules
- Protection against unauthorised access is achieved by a swivel handle and security lock. The swivel handle is installed in the cover in place of the plastic label

UniVK Mini-distributor for Indoor Applications

Ordering Information

Description	Dimensions H x W x D (in mm)	Maximum Capacity	Catalogue Number
Distribution Box UniVK 2 (modules ordered separately); for installation of: 6 LSA PROFIL® Series 2 modules 8 LSA-PLUS® NT modules 6 LSA-PLUS® Series 2 modules	320mm x 225mm x 86mm	60 pairs 80 pairs 60 pairs	7079 1 020-00 7079 1 020-04 7079 1 020-03
Distribution Box UniVK 4 (modules ordered separately); for installation of: 12 LSA PROFIL® Series 2 modules 16 LSA-PLUS® NT modules 12 LSA-PLUS® Series 2 modules Fibre applications	320mm x 320mm x 86mm	120 pairs 160 pairs 120 pairs	7079 1 040-00 7079 1 040-04 7079 1 040-03 7079 1 040-05
Distribution Box UniVK 8 (modules ordered separately); for installation of: 30 LSA PROFIL® Series 2 modules 38 LSA-PLUS® NT modules 30 LSA-PLUS® Series 2 modules Fibre applications	535mm x 320mm x 86mm	300 pairs 380 pairs 300 pairs	7079 1 080-00 7079 1 080-04 7079 1 080-03 7079 1 080-05
Distribution Box UniVK 12 (modules ordered separately); for installation of: 45 LSA PROFIL® Series 2 modules 57 LSA-PLUS® NT modules 45 LSA-PLUS® Series 2 modules	535mm x 520mm x 86mm	450 pairs 570 pairs 450 pairs	7079 1 120-00 7079 1 120-04 7079 1 120-03
Accessories			
Swivel handle			7079 1 430-00
PROFIL half-cylinder, Code 19 (without keys)			7056 2 360-00
PROFIL half-cylinder, Code 15 (without keys)			7056 2 364-00
Key for lock, Code 19			5267 3 383-52
Key for lock, Code 15			5267 3 383-57
Kit for cover contact			7079 1 435-00
Earth kit for UniVK 2 and UniVK 4			7079 1 440-00
Earth kit for UniVK 8 and UniVK 12			7079 1 441-00
Earth terminals (Quantity: 10)			7079 1 442-00

1 0 / 0 6 • 1 0 2 5 8 8 B E TrueNet® Structured Cabling

Technical data

Base-plate

- Galvanised sheet metal
- Plastic corner pieces for wall mounting
- Holes for mounting UniClip and guide ring components
- Integrated cable supports at the top and bottom

Cover

- Sheet metal, powder-painted RAL 7035
- Plastic label with turnbuckle lock
- Swivel grip for PROFIL half-cylinder and cover contact

Cable entries

- Cable entries made of plastic at the top and bottom (pre-formed breakouts)
- Cable entries fixed to the base plate

Earth

- Earth clamp mounted on the base plate

Protection Class

- IP 40, satisfying DIN 40 050

Complementary Solutions

Voice Solutions

LSA-PLUS® NT Connection Cord, 1 Pair

Connection cord with 2 NT plugs. Thanks to the extended length, the plug can be easily gripped even when there are adjacent protection magazines. Designed for LSA-PLUS NT/LSA PROFIL NT disconnection and switching modules; 2-pole connection on the cable side (a to a and b to b).



Ordering Information

Description	Catalogue Number
LSA-PLUS NT connection cord, 1 pair 2m	7014 2 040-00

NTP OD180A2

Recommended for protection of distribution and terminal equipment in analog, ISDN, HDSL and ADSL telecommunication systems. Designed for the partial or complete equipping of LSA-PLUS NT or LSA PROFIL NT disconnection or switching modules in conjunction with a 10-pair earth bar (Order No.: 7019 3 037-00). The protection circuit consists of a 3-pole overvoltage arrestor, fail-safe contact, reversible overcurrent protection components and diodes for secondary overvoltage protection. The overcurrent protection functions as a reversible line fuse.



Ordering Information

Description	Catalogue Number
NTP OD180A2	7019 1 014-00

Complementary Solutions

Voice Solutions

PROFIL® Distribution Frame 108P

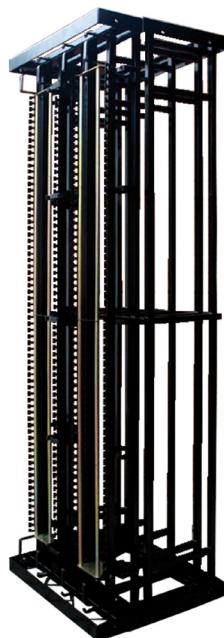
The PROFIL Distribution Frame 108P offers a pre-assembled modular solution that enables universal installation of copper, coaxial and fibre optic applications. When used in conjunction with the additional jumper frame a high jumpering volume can be achieved.

Features

- Distribution frame with two vertical bays for accommodation of components with a fixing dimension of 95 mm
- System and line side components can be installed within a single bay, this allows jumpering within the bay
- High jumpering volume thanks to a sufficient number of pre-mounted vertical and horizontal jumper guides
- Delivered fully assembled
- High connection density



Basic Frame 108P



Jumper Frame 108P

Ordering Information

Description	Catalogue Number
Basic Frame 108P	MDF-7081 1 007-01
Jumper Frame 108P	MDF-7081 1 007-10

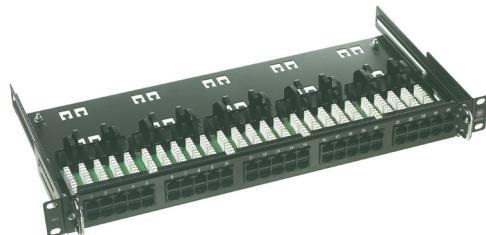
Complementary Solutions

Voice Solutions

1U Voice Patch Panel

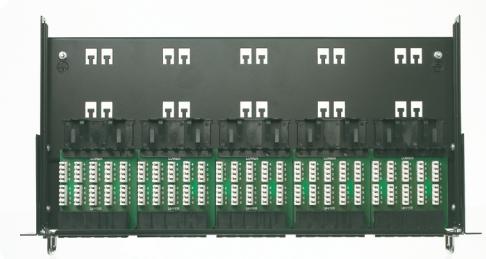
The 1U Voice Patch Panel range from ADC KRONE comprises two versions for use with the multi-pair voice cables – the 25 port RJ45 version or the higher density 50 port RJ45 version.

These products are an ideal way to integrate PBX or other voice circuits into a standard structured cabling system.



Features

- Available in 25 and 50 port variants, both 1U 19"
- Designed specifically to integrate voice circuits into standard structured cabling systems
- Expansive cable management for maximum cable protection
- Innovative sliding panel mechanism for improved ease of installation
- 2 pair 258A voice wiring configuration



Ordering Information

Description	Catalogue Number
Unshielded Patch Panels	
25 Port Voice Panel	7022 4 001-25
50 Port Voice Panel	7022 4 001-50

For RJ-K converters (PABX master, full master and secondary) please refer to page 6.56

For 1U plastic ring jumper bars please refer to page 4.102



Index

Index by Part Number	8.02
Index by Product Name	8.14

Index

Part Number – Product Name

Part Number	Product Name	Page Number
00XXLZHI0C050.....	Fibre Optic Cable, Tight Buffered, OM2 (50/125 m) LSZH	3.06, 5.06
0637 0 006-57	Wall-Mountable Back Box	6.50
09 45 701 15XX	Connection Cord, RJ45 IP67/65 to RJ45 IP20, S/FTP PROFINET	6.84
10G-A6TZ1-BLM2.....	Augmented Category 6 (CopperTen™) Cable LSZH, UTP	3.54, 5.14
5718 2 611-YY	Patch Cords Category 5e Unbooted UTP PVC UTP	4.74
5718 2 625-YY	Patch Cords Category 5e Unbooted UTP LSZH UTP	4.74
5718 2 6X0-YY	Patch Cord Category 5e Unbooted	6.47
5719 2 821-XX	Patch Cord PLM Category 6 Booted Patch Cord, KM8, LSZH UTP	4.84
5719 2 83Y-XX	Patch Cord PLM Category 6 Booted, KM8, PVC UTP	4.84
5719 2 887-XX	Patch Cord PLM Category 6 Booted, KM8, LSZH S/FTP	4.84
5909 1 076-00	ComProtect Series B CP BI180A1	7.12
5909 1 078-10	ComProtect Series B CP BOD180A2	7.12
5909 1 082-00	ComProtect Series B CP BI70A1	7.12
5909 1 083-00	ComProtect Series B CP BI24A1	7.12
5909 1 084-00	ComProtect Series B CP BI12A1	7.12
6089 1 102-02	LSA-PLUS® Backmount Disconnection Module, White	7.10
6089 1 810-00	LSA-PLUS® Backmount Disconnection Module, Cream	7.10
6092 1 810-00	Double Sided Hinged Label Holder	7.11
6092 1 820-00	Label Holder Complete with Label	7.11
6417 1 810-02	Insertion Tool	4.102
6417 2 055-01	Insertion Tool with Sensor	4.102
6420 1 013-00	Distribution frame 108A	7.13
6420 1 060-0X	HighBand Vert Frame	4.101
6420 1 103-01	Advanced Patching Frame Cable Management Arms	4.98
6420 1 500-00	Advanced Patching Frame 42U (inc. Cable Management Arms)	4.98
6420 1 504-00	Advanced Patching Frame Side Panels	4.98
6420 1 505-00	Advanced Patching Frame Side Panel Extension Kit	4.98
6420 1 506-00	Advanced Patching Frame Back-to-Back Kit	4.98
6420 1 507-00	Advanced Patching Frame Side-to-Side Kit	4.98
6420 1 510-00	Advanced Patching Frame Door Set – Glass	4.98
6420 1 516-00	Advanced Patching Frame Cable Management Arm Extensions	4.98
6424 3 0YY-XX	Backmount Frames	7.10
6429 1 07X-00	Connection Box 201D	7.12
6451 2 055-00	HighBand 1 Pair Test Plug	4.60
6462 2 096-00	HighBand Label Holder	4.60
6462 2 097-00	HighBand 1 Pair Disconnection Plug	4.60
6468 5 060-00	HighBand Category 5e 8 pair module complete with jumper rings	4.70
6468 5 060-06	HighBand Ultim8 Termination Blocks	4.60
6468 5 060-20	HighBand Category 5e 8 pair module without jumper rings	4.70
6468 5 080-00	HighBand Category 5e 16 Pair Module – complete with jumper rings	4.71
6468 5 080-20	HighBand Category 5e 16 Pair Module – without jumper rings	4.71
6525 1 050-00	250 Box with 3 x 8 Pair Disconnection Modules	6.41
6525 1 05X-10	250 Box with UTP/STP Jacks, CL	6.42
6525 1 068-00	250 Box with 12 UTP Jacks, CL	6.30
6527 1 006-01	Plastic Rings 19" 1U	4.102
6527 1 007-01	Blanking Panel 19" 1U	4.103
6527 1 007-02	Blanking Panel 19" 2U	4.103
6527 1 007-03	Blanking Panel 19" 3U	4.103
6527 1 013-00	Outrigger 19" Patch Panel	4.103
6527 1 022-00	Metal Rings 19" 2U	4.102
6527 1 607-24	Category 5e, Patch Panel, PCB, UTP	4.66
6527 1 623-24	Category 5e, Patch Panel, Through Coupler 24 Port UTP	4.68
6427 1 630-00	Category 5e, Patch Panel, 48 Port UTP	4.66
6527 1 660-24	Category 6, Patch Panel, PCB UTP 24 ports	4.59
6527 1 728-00	PLM Category 6 Patch Panel, KM8, 24 Ports UTP	4.84
6527 1 728-01	PLM Category 6 Patch Panel, KM8, 24 Ports S/FTP	4.84
6527 1 730-00	PLM Active Hardware – Scanner	4.86
6527 1 732-00	PLM Active Hardware – Master Expander	4.86

Index

Part Number – Product Name

Part Number	Product Name	Page Number
6527 1 734-00	PLM Active Hardware – Expander	4.86
6527 1 735-00	PLM Active Hardware – Indicator Controller	4.86
6527 1 736-00	PLM Active Hardware – Control Pad	4.86
6527 1 737-00	PLM Active Hardware – Rack Indicator	4.86
6527 1 739-00	PLM Active Hardware – Mini Scanner	4.86
6527 1 741-00	PLM Active Hardware – Network Scanner	4.86
6527 1 743-00	Augmented Category 6 (CopperTen) Patch Panels	4.52
6527 1 750-XX	PLM Active Hardware – Scanner Attachment Cord Cu	4.86
6527 1 751-XX	PLM Active Hardware – Scanner Attachment Cord FO	4.86
6527 1 752-01	PLM Management Software – Licenses	4.88
6527 1 753-00	PLM Management Software – PBX Module	4.88
6527 1 754-00	PLM Management Software – CAD Module (Without MapGuide)	4.88
6527 1 755-00	PLM Management Software – CA Unicenter Module	4.88
6527 1 756-00	PLM Management Software – HP OpenView NNM Module	4.88
6529 1 022-01	LSA-PLUS® modules 2 Pole Connection Cord	7.11
6529 1 042-01	LSA-PLUS® modules 4 Pole Connection Cord	7.11
6529 1 205-20	Patch Cord, Category 5e, Solid Core, UTP LSZH	4.75
6529 1 225-XX	Patch Cord, Category 6, Solid Core LSZH UTP	4.61
6530 1 017-00	Connection Box 301A	7.13
6530 1 099-00	300 Box with 6 x 8 Pair Disconnection Modules	6.41
6530 1 105-00	300 Box with 6 x 8 Pair HighBand® Ultim8® Disconnection Modules	6.29
6530 1 106-00	250 Box with 3 x 8 Pair HighBand® Ultim8® Disconnection Modules	6.29
6533 1 710-16	Category 5e, Patch Panel, Modular LN 16 Port UTP	4.69
6534 1 001-00	Labels Blank, White	7.11
6536 1 005-00	Back Boxes for UK Style Outlets, Single Gang White	6.53
6536 1 601-XX	Converter RJ-K PABX Master	6.56
6536 1 720-XX	RJ-K Outlet Flying Lead Convertor	6.56
6536 3 044-00	Back Boxes for UK Style Outlets, Double Gang White	6.53
6537 1 010-00	Modular RJ45 Jack, Category 6 CL UTP, White Shutter	6.25
6537 1 050-00	Modular RJ45 Jack, Category 6 CL STP In Line, White Shutter	6.25
6537 1 055-00	Modular RJ45 Jack, Category 6 CL STP Angled, White Shutter	6.25
6537 1 310-XX	Distribution Box, Category 6 CL UTP, 6 way	6.27
6538 1 111-13	Loaded Faceplate, Category 5e LN UTP, Single, White Shutter	6.43
6538 1 111-14	Loaded Faceplate, Category 5e LN UTP, Double, White Shutter	6.43
6538 1 111-17	Loaded Faceplate, Category 5e LN UTP, Quad, White Shutter	6.43
6538 3 111-XX	Unloaded Faceplate, Keystone, UK Style, White	6.53
6538 4 111-05	Keystone Angled 25x50 Adaptor	6.50
6540 1 130-0X	Modular Jack, Category 5e HK UTP	6.36
6540 1 154-02	Modular Jack, Category 5e HK STP, Metal	6.36
6540 1 200-01	Modular RJ45 Jack, Category 5e CL UTP, White Shutter	6.37
6540 1 204-00	Modular RJ11 Jack, Category 5e CL UTP, White Shutter	6.37
6540 1 254-01	Modular RJ45 Jack, Category 5e CL STP In Line, White Shutter	6.37
6540 1 254-03	Modular RJ45 Jack, Category 5e CL STP Angled, White Shutter	6.37
6540 1 668-XX	Distribution Box, Category 5e CL UTP	6.39
6540 1 669-XX	Distribution Box, Category 5e CL STP	6.39
6540 1 677-0X	Mini Pod, Category 5e CL UTP	6.40
6540 1 678-0X	Mini Pod, Category 6 CL UTP	6.28
6540 1 679-0X	Mini Pod, Augmented Category 6 CL UTP	6.18
6540 1 801-00	RJ-K CL Standard 25x50 Adaptor	6.50
6540 1 802-00	RJ-K CL Angled 25x50 Adaptor	6.50
6540 1 806-00	Unloaded Faceplate, UK Style, 50x50 (single-gang), White	6.51
6540 1 807-00	Unloaded Faceplate, UK Style, 50x100 (double-gang), White	6.51
6540 1 808-00	Unloaded Faceplate, 50x50 Euro Style, (single-gang), White	6.50
6540 1 80X-00	Unloaded Faceplate, UK Style, LJ6C, White	6.52
6540 1 810-00	CL Standard LJ6C Adaptor	6.52
6540 1 812-04	Unloaded Deep Faceplate, UK Style, 50x50 (single-gang), White	6.51
6540 1 812-05	Unloaded Deep Faceplate, UK Style, 50x100 (double-gang), White	6.51
6540 1 812-0X	Loaded Faceplate, Category 6 KM8 UTP	6.31

Index

Part Number – Product Name

Part Number	Product Name	Page Number
6540 1 812-1X	Loaded Faceplate, Augmented Category 6 UTP	6.19
6540 1 812-XX	Loaded Faceplate, Augmented Category 6 STP	6.19
6540 1 812-XX	Loaded Faceplate, Category 6 KM8 STP	6.31
6540 1 813-00	CL Angled LJ6C Adaptor	6.52
6540 4 801-01	25x50 Blank Adaptor	6.50
6577 2 812-01	PROFIL Frame 95/46	7.14
6645-2-827-04	Patch Cord Augmented Category 6 LSZH LSZH UTP	6.21
6645-2-827-XX	Patch Cord Augmented Category 6 (CopperTen™) Blue LSZH UTP	4.54
6648 2 000-XX	Patch Cords HighBand Ultim8 1 Pair – Ultim8 plug to Ultim8 plug	4.64
6648 2 005-XX	Patch Cords HighBand Ultim8 2 Pair Patch Cords – Ultim8 plug to Ultim8 plug	4.64
6690 1 402-16	Category 5e, Patch Panel, Category 5e HK UTP	4.67
6690 1 412-16	Category 5e, Patch Panel, HK S/FTP	4.67
6690 1 506-01	Cover Frame to adapt outer dimensions of 50x50 outlet to 80x80, Pure White	6.44
6690 1 511-11	Loaded Faceplate, Category 5e PCB STP, Double, Pure White	6.44
6690 1 525-03	Back Box, Single Gang, Pure White	6.44, 6.45
6690 1 525-XX	European Back Box, Single Gang	6.55
6690 1 581-51	Loaded Faceplate, Augmented Category 6 KM8 STP, Double, Pure White	6.20
6690 1 581-51	Loaded Faceplate, Category 6 KM8 STP, Double, Pure White	6.32
6690 1 581-61	Loaded Faceplate, Category 6 KM8 STP, Single, Pure White	6.32
6690 1 581-71	Loaded Faceplate, Category 6 KM8 UTP, Double, Pure White	6.32
6690 1 593-X1	Loaded Faceplate, Category 5e STP, Pure White	6.45
6690 1 60X-00	Surface Mount, Category 6 KM8 STP	6.26
6690 1 60X-20	Surface Mount, Category 5e HK STP, 1 Port	6.38
6690 1 60X-20	Surface Mount, Category 5e HK UTP	6.38
6690 1 60X-X0	Surface Mount, Category 6 KM8 UTP	6.26
6690 1 725-01	Cover Frame to adapt outer dimensions of 50x50 outlet to 80x80, Pure White	6.32, 6.45
6690 1 740-X1	Loaded Faceplate, Category 6 KM8 STP 45x45, Pure White	6.33
6690 1 741-X1	Loaded Faceplate, Category 6 KM8 UTP 45x45, Pure White	6.33
6690 1 755-00	Industrial – DIN Rail Distributor IP20	6.82
6690 1 825-00	Adaptor 45x45mm, Single, White	6.55
6690 1 825-10	Adaptor 22.5x45mm, Single, White	6.55
6690 1 860-XX	IP67/65 RJ45 Industrial Outlet Push Pull, Cat6 2xKM8, STP	6.84
6690 2 675-XX	European Keystone Faceplate for HK and KM8, 50x50	6.54
6690 2 676-XX	European Keystone Faceplate for KM8, 50x50	6.54
6690 3 725-00	European Faceplate, 80x80	6.54
6690 3 745-01	Surround Faceplate, 80x80 for 45x45 Outlet, Pure White	6.33, 6.55
6753 2 009-00	PROFIL Module Label Holder	7.15
6824 1 001-00	SC Connector – Singlemode, APC8°/APC9°, green housing	4.12
6824 1 002-00	SC Connector – Singlemode, PC/UPC, blue housing	4.12
6824 1 003-00	SC Connector – Multimode, beige housing	4.12
6824 1 100-XX	SC Crimp Set – 3.0mm cable	4.12
6824 1 101-XX	SC Crimp Set – 2.4mm cable	4.12
6824 1 102-XX	SC Crimp Set – 2.0mm cable	4.12
6824 1 103-XX	SC Crimp Set – 0.9mm cable	4.12
6824 2 220-00	SC Duplex Clip	4.12
6824 3 900-00	SC Dust Protection Cover	4.12
6830 1 490-00	KM8 Termination Tool	4.102
6830 1 800-0X	Modular Jack, Category 6 KM8 UTP	6.24
6830 1 810-0X	Modular Jack, Augmented Category 6 KM8 STP	6.16
6830 1 810-0X	Modular Jack, Category 6 KM8 STP	6.24
6830 1 885-01	Modular Jack, Augmented Category 6 Keystone UTP, Pure White	6.16
6830 2 402-00	Keystone Standard LJ6C Adaptor	6.52
6830 2 861-XX	Augmented Category 6 LSZH S/FTP	6.21
6830 2 867-XX	KM8 RJ45 Connection Cord, RJ45 IP20 to RJ45 IP20, shielded S-FTP, LSZH	6.84
6830 2 8Y1-XX	Patch Cord Category 6 RJ45 KM8 LSZH UTP/S-FTP T568B	6.34
6830 2 8YZ-XX	Patch Cord Category 6 KM8 LSZH UTP/S-FTP	4.62
6830 2 911-XX	Patch Cord Category 6 RJ45 KM8 LSZH UTP/S-FTP crossover wired	6.34
7006 1 1X0-51	Fibre Pigtail OS1 (9/125µm) Semi-Loose Tube Buffered	6.13

Index

Part Number – Product Name

Part Number	Product Name	Page Number
7006 1 5XX-YZ	Patch Cord Fibre Optic, OS1 (9/125 µm), Duplex Patch Cable	6.08
7006 2 1X0-11	Fibre pigtail OM2 (50/125µm) Semi-Loose Tube Buffered	6.13
7006 3 1X0-11	Fibre pigtail OM1 (50/125µm) Semi-Loose Tube Buffered	6.13
7006 3 585-1Z	Patch Cord Fibre Optic, LC-STII, OM1 (62.5/125 µm), Duplex Patch Cable	6.09
7006 6 1X0-11	Fibre pigtail OM3 (50/125µm) Semi-Loose Tube Buffered	6.13
7014 1 601-00	LSA-PLUS PROFIL NT Disconnection Module, 10 Pairs	7.14
7014 2 007-00	Hinged Label Holder	7.15
7014 2 040-00	LSA-PLUS NT connection cord	7.18
7014 2 152-00	LSA-PLUS PROFIL NT Earth Module	7.15
7019 1 014-00	NTP OD180A2	7.18
7022 1 015-16	Category 5e, Patch Panel, PCB S/FTP	4.66
7022 1 055-XX	Category 6, Patch Panel, KM8 STP	4.58
7022 1 056-XX	Category 6, Patch Panel, KM8 UTP	4.58
7022 2 150-16	Category 5e, Patch Panel, Unloaded HK/KM8	4.67
7022 2 155-XX	Category 6, Patch Panel, KM8 (unloaded panels)	4.58
7022 3 153-00	Augmented Category 6 (CopperTen) Clip & Grip Cable Management	4.52
7022 4 001-25	Voice Panel 25 Port	7.20
7022 4 001-50	Voice Panel 50 Port	7.20
7022 4 001-XX	Voice Patch Panel 1U	4.78
7023 1 043-00	MT-RJ multimode connector kit, female (without guide pins)	4.14
7023 1 047-00	MT-RJ singlemode connector kit, female (without guide pins)	4.14
7023 1 048-00	Guide pins for MT-RJ multimode connectors, male	4.14
7023 1 049-00	Guide pins for MT-RJ singlemode connectors, male	4.14
7023 1 073-00	LC multimode connector & crimp set	4.17
7023 1 572-01	Fibre pigtail OM3 (50/125µm) Tight Buffered, LC	6.13
7023 1 597-01	Fibre pigtail OM2 (50/125µm) Tight Buffered, LC	6.13
7023 1 59X-01	Fibre pigtail OS1 (9/125µm) Tight Buffered	6.13
7023 1 5XX-YY	Patch Cord Fibre Optic, Duplex Patch Cable	6.10
7023 3 043-00	MT-RJ boots for buffered fibres (0.65mm)	4.14
7023 3 220-XX	Fibre Optic Cable, Loose Tube, OM1 (62.5/125 µm) LSZH	3.10
7023 3 222-XX	Fibre Optic Cable, Loose Tube, OM2 (50/125 µm) LSZH	3.10
7023 3 224-XX	Fibre Optic Cable, Loose Tube, OS1 (9/125 µm) LSZH	3.10
7023 3 227-XX	Fibre Optic Cable, Loose Tube, OM3 (50/125 µm) LSZH	3.10
7023 3 228-XX	Fibre Optic Cable, Tight Buffered, OS1 (9/125 µm) LSZH	3.06, 5.06
7023 3 229-XX	Fibre Optic Cable, Tight Buffered, OM3 (50/125 µm) LSZH	3.06, 5.06
7023 3 243-XX	Fibre Optic Cable, Tight Buffered, OM3e (50/125 µm) LSZH	3.06, 5.06
7023 3 246-XX	Fibre Optic Cable, Loose Tube, OM3e (50/125 µm) LSZH	3.10
7023 3 248-XX	Fibre Optic Interconnect Patch Cable, Steel Tape Armoured, LSZH	3.18
7023 3 2YY-XX	Fibre Optic Cable, Steel Tape Armoured, LSZH	3.14
7023 4 233-12	Fibre Optic Cable, Tight Buffered, 6F OM2, 6F OS1, LSZH	3.06, 5.06
7023 4 242-12	Fibre Optic Cable, Tight Buffered, 8F OM2, 4F OS1, LSZH	3.06, 5.06
7023 4 243-14	Fibre Optic Cable, Tight Buffered, 8F OM2, 6F OS1, LSZH	3.06, 5.06
7023 4 263-18	Fibre Optic Cable, Tight Buffered, 12F OM2, 6F OS1, LSZH	3.06, 5.06
7023 4 333-12	Fibre Optic Cable, Tight Buffered, 6F OM3, 6F OS1, LSZH	3.06, 5.06
7023 4 342-12	Fibre Optic Cable, Tight Buffered, 8F OM3, 4F OS1, LSZH	3.06, 5.06
7023 4 343-14	Fibre Optic Cable, Tight Buffered, 8F OM3, 6F OS1, LSZH	3.06, 5.06
7023 4 363-18	Fibre Optic Cable, Tight Buffered, 12F OM3, 6F OS1, LSZH	3.06, 5.06
7023 4 533-12	Fibre Optic Hybrid Cable, Loose Tube, 6F OM2, 6F OS1, LSZH	3.10
7023 4 542-12	Fibre Optic Hybrid Cable, Loose Tube, 8F OM2, 4F OS1, LSZH	3.10
7023 4 543-14	Fibre Optic Hybrid Cable, Loose Tube, 8F OM2, 6F OS1, LSZH	3.10
7023 4 563-18	Fibre Optic Hybrid Cable, Loose Tube, 12F OM2, 6F OS1, LSZH	3.10
7023 4 633-12	Fibre Optic Hybrid Cable, Loose Tube, 6F OM3, 6F OS1, LSZH	3.10
7023 4 642-12	Fibre Optic Hybrid Cable, Loose Tube, 8F OM3, 4F OS1, LSZH	3.10
7023 4 643-14	Fibre Optic Hybrid Cable, Loose Tube, 8F OM3, 6F OS1, LSZH	3.10
7023 4 663-18	Fibre Optic Hybrid Cable, Loose Tube, 12F OM3, 6F OS1, LSZH	3.10
7032 1 134-XX	Fibre Distribution Unit 1 tray	4.04
7032 1 135-00	Fibre Distribution Unit 6 tray	4.04
7032 1 222-00	Blown Fibre Gas Seal Connector	3.47

Index

Part Number – Product Name

Part Number	Product Name	Page Number
7032 1 223-00	Blown Fibre Tube Sealing Cap	3.47
7032 1 227-00	Blown Fibre Tube Integrity and Length Tester	3.49
7032 1 228-00	Blown Fibre Close Down Assembly	3.50
7032 1 400-16	Blown Fibre Cable, Multimode 50/125µm, 8 Fibre Cores	3.31
7032 1 400-25	Blown Fibre Cable, Multimode 62.5/125µm, 4 Fibre Cores	3.31
7032 1 400-29	Blown Fibre Cable, Multimode 62.5/125µm, 8 Fibre Cores	3.31
7032 1 400-33	Blown Fibre Tubes (Duct Grade/Direct Install)	3.35
7032 1 400-43	Blown Fibre Tubes (Internal)	3.34
7032 1 400-49	Blown Fibre Tubes (Direct Bury Cable)	3.36
7032 1 400-53	Blown Fibre Blowing Head 2A (MKII)	3.37
7032 1 400-54	Blown Fibre Petrol Compressor	3.39
7032 1 400-58	Blown Fibre Blowing Beads	3.49
7032 1 400-72	Blown Fibre End Cap	3.46
7032 1 400-73	Blown Fibre Reducer Connector	3.47
7032 1 400-76	Blown Fibre Tube Connector	3.46
7032 1 400-77	Blown Fibre Water Blocking Connector	3.46
7032 1 400-85	Blown Fibre Customer Lead-in Units	3.42
7032 1 401-00	Blown Fibre Cable, Singlemode, 2 Fibre Cores	3.27
7032 1 401-01	Blown Fibre Cable, Singlemode, 4 Fibre Cores	3.27
7032 1 401-02	Blown Fibre Cable, Singlemode, 8 Fibre Cores	3.27
7032 1 401-04	Blown Fibre Cable, Multimode 50/125µm, 2 Fibre Cores	3.31
7032 1 401-05	Blown Fibre Cable, Multimode 50/125µm, 4 Fibre Cores	3.31
7032 1 401-06	Blown Fibre Cable, Multimode 62.5/125µm, 2 Fibre Cores	3.31
7032 1 401-12	Blown Fibre Cable, Singlemode, 12 Fibre Cores	3.27
7032 1 401-19	Blown Fibre Gas Seal Unit	3.40
7032 1 401-50	Blown Fibre Internal Tube Distribution Unit	3.44
7032 1 405-00	Blown Fibre Electric Compressor	3.39
7032 1 406-01	Blown Fibre Cable, Multimode (OM3) (62.5/125µm) 2 Fibre Cores PANS	3.32
7032 1 406-05	Blown Fibre Cable, Multimode (OM3) (62.5/125µm) 4 Fibre Cores PANS	3.32
7032 1 406-09	Blown Fibre Cable, Multimode (OM3) (62.5/125µm) 8 Fibre Cores PANS	3.32
7032 1 406-14	Blown Fibre Cable, Multimode (OM3) (62.5/125µm) 12 Fibre Cores PANS	3.32
7032 1 407-01	Blown Fibre Cable, Multimode (OM3e) (62.5/125µm) 2 Fibre Cores PANS	3.32
7032 1 407-05	Blown Fibre Cable, Multimode (OM3e) (62.5/125µm) 4 Fibre Cores PANS	3.32
7032 1 407-09	Blown Fibre Cable, Multimode (OM3e) (62.5/125µm) 8 Fibre Cores PANS	3.32
7032 1 407-14	Blown Fibre Cable, Multimode (OM3e) (62.5/125µm) 12 Fibre Cores PANS	3.32
7032 1 501-00	Blown Fibre Valve and Moisture Trap	3.48
7032 1 502-00	Blown Fibre Flow Meter Kit	3.48
7032 1 503-00	Blown Fibre Pan Guide	3.48
7032 1 508-00	Blown Fibre Blowing Head Seals	3.49
7033 1 015-XX	Split Patch Panel (Fibre)	4.06
7033 1 016-XX	PLM Fibre Split Patch Panel – LC Multimode	4.82
7033 1 067-0X	Fibre Optic wall outlet MT-RJ Outlet	6.04
7033 1 069-0X	Fibre Optic wall outlet SC Duplex Outlet Multimode	6.04
7033 1 071-0X	Fibre Optic wall outlet ST Outlet Multimode	6.04
7033 1 073-0X	Fibre Optic wall outlet LC Quad Outlet Multimode	6.04
7033 1 076-XX	Plastic Fibre Patch Panel – 04/08/12/24 Port MT-RJ GY	4.09
7033 1 080-XX	Plastic Fibre Patch Panel – 04/08/12/24 Port SC Duplex GY	4.09
7033 1 082-XX	Plastic Fibre Patch Panel – 04/08/12/24 Port ST GY	4.09
7033 1 084-XX	Plastic Fibre Patch Panel – 08/24 Port LC/UPC GY	4.09
7033 1 101-XX	Plastic Fibre Patch Panel – 04/08/12/24 Port SM SC Duplex GY	4.09
7033 1 103-XX	Plastic Fibre Patch Panel – 04/08/12/24 Port LC/mm GY	4.09
7033 1 176-XX	Plastic Fibre Patch Panel – 04/08/12/24 Port – MT-RJ BK	4.09
7033 1 180-XX	Plastic Fibre Patch Panel – 04/08/12/24 Port – SC Duplex BK	4.09
7033 1 182-XX	Plastic Fibre Patch Panel – 04/08/12/24 Port – ST BK	4.09
7033 1 250-XX	Fibre Patch Panel – 12/24 Port SC OM2 GY H/S	4.09
7033 1 251-XX	Fibre Patch Panel – 12/24 Port SC OM2 BK H/S	4.09
7033 1 252-XX	Fibre Patch Panel – 24/48 Port LC OM2 GY H/S	4.09
7033 1 253-XX	Fibre Patch Panel – 24/48 Port LC OM2 BK H/S	4.09

Index

Part Number – Product Name

Part Number	Product Name	Page Number
7033 1 254-XX	Fibre Patch Panel – 12/24 Port SC OM2 GY CRMP	4.09
7033 1 255-XX	Fibre Patch Panel – 12/24 Port SC OM2 BK CRMP	4.09
7033 1 256-XX	Fibre Patch Panel – 24/48 Port LC OM2 GY CRMP	4.09
7033 1 257-XX	Fibre Patch Panel – 24/48 Port LC OM2 BK CRMP	4.09
7033 1 258-XX	Fibre Patch Panel – 12/24 Port SC OS1 BK H/S	4.09
7033 1 259-XX	Fibre Patch Panel – 12/24 Port SC OS1 GY H/S	4.09
7033 1 260-XX	Fibre Patch Panel – 24/48 Port LC OS1 BK H/S	4.09
7033 1 261-XX	Fibre Patch Panel – 24/48 Port LC OS1 GY H/S	4.09
7033 1 262-XX	Fibre Patch Panel – 12/24 Port SC OM3 BK H/S	4.09
7033 1 263-XX	Fibre Patch Panel – 12/24 Port SC OM3 GY H/S	4.09
7033 1 264-XX	Fibre Patch Panel – 24/48 Port LC OM3 BK H/S	4.09
7033 1 265-XX	Fibre Patch Panel – 24/48 Port LC OM3 GY H/S	4.09
7033 1 266-XX	Fibre Patch Panel – 12/24 Port SC OM1 BK H/S	4.09
7033 1 267-XX	Fibre Patch Panel – 12/24 Port SC OM1 GY H/S	4.09
7033 1 268-XX	Fibre Patch Panel – 24/48 Port LC OM1 BK H/S	4.09
7033 1 269-XX	Fibre Patch Panel – 24/48 Port LC OM1 GY H/S	4.09
7033 1 270-XX	Fibre Patch Panel – 12/24 Port SC OM3 GY CRMP	4.09
7033 1 271-XX	Fibre Patch Panel – 24/48 Port LC OM3 GY CRMP	4.09
7033 1 272-XX	Fibre Patch Panel – 12/24 Port SC OM3 BK CRMP	4.09
7033 1 273-XX	Fibre Patch Panel – 24/48 Port LC OM3 BK CRMP	4.09
7033 1 274-XX	Fibre Patch Panel – 12/24 Port SC OM1 GY CRMP	4.09
7033 1 275-XX	Fibre Patch Panel – 24/48 Port LC OM1 GY CRMP	4.09
7033 1 276-XX	Fibre Patch Panel – 12/24 Port SC OM1 BK CRMP	4.09
7033 1 277-XX	Fibre Patch Panel – 24/48 Port LC OM1 BK CRMP	4.09
7033 1 278-XX	Fibre Patch Panel – 12/24 Port SC OS1 GY CRMP	4.09
7033 1 279-XX	Fibre Patch Panel – 24/48 Port LC OS1 GY CRMP	4.09
7048 1 011-00	LC Connector kit – Singlemode, for 1.6 to 3.0mm cable – PC/UPC, blue housing	4.17
7048 1 014-00	LC Connector kit – Singlemode, for 1.6 to 3.0mm cable – APC, green housing	4.17
7048 1 017-00	LC Connector kit – Multimode, for 1.6 to 3.0mm cable, beige housing	4.17
7048 1 018-00	LC Connector kit – Multimode, for buffered fibre (0.9mm), beige housing	4.17
7048 1 050-00	SC/LC Tuning Tool	4.12, 4.17
7048 1 051-00	LC Crimping Tool for cable kits	4.17
7048 1 052-00	LC UPC Master Cord	4.17
7048 1 065-00	LC Offset Cord	4.17
7048 1 100-XX	LC Crimp Set – 3.0mm cable	4.17
7048 1 101-XX	LC Crimp Set – 2.4mm cable	4.17
7048 1 102-XX	LC Crimp Set – 2.0mm cable	4.17
7048 1 103-XX	LC Crimp Set – 0.9mm cable	4.17
7048 2 050-00	LC Duplex Clip	4.17
7049 1 012-20	Data Distribution Cabinet 43U, DVS 2000	4.100
7049 1 205-00	Wall-Mounted Distribution Cabinet, 6U WVS 350P	4.100
7049 1 206-00	Wall-Mounted Distribution Cabinet, 9U WVS 475P	4.100
7049 1 207-00	Wall-Mounted Distribution Cabinet, 12U WVS 600P	4.100
7049 1 208-00	Wall-Mounted Distribution Cabinet, 15U WVS 750P	4.100
7049 1 209-00	Wall-Mounted Distribution Cabinet, 18U WVS 875P	4.100
7053 3 121-74	Cable Horizontal Category 5e PVC, F/UTP 500m Reel, Grey	5.36
7053 3 121-75	Cable Horizontal Category 5e PVC, F/UTP 1000m Reel, Grey	5.36
7053 3 132-74	Cable Horizontal Category 5e LSZH, F/UTP 500m Reel, Orange	5.36
7053 3 132-75	Cable Horizontal Category 5e LSZH, F/UTP 1000m Reel, Orange	5.36
7053 3 221-74	Cable Horizontal Category 6 PVC, F/UTP 500m Reel, Grey	5.26
7053 3 221-75	Cable Horizontal Category 6 PVC, F/UTP 1000m Reel, Grey	5.26
7053 3 232-74	Cable Horizontal Category 6 LSZH, F/UTP 500m Reel, Orange	5.26
7053 3 232-75	Cable Horizontal Category 6 LSZH, F/UTP 1000m Reel, Orange	5.26
7053 3 262-55	Cable Horizontal Category 6 LSZH, S/FTP 1000m Reel, Orange	5.24
7053 3 362-55	Category 7 (CopperTen™) Horizontal Cable S/FTP	3.52, 5.12
7053 3 532-74	Cable Horizontal Category 5e LSZH, F/UTP 500m Reel Shotgun, Orange	5.36
7053 3 632-74	Cable Horizontal Category 6 LSZH, F/UTP 500m Reel Shotgun, Orange	5.26
7053 3 662-54	Cable Horizontal Category 6 LSZH, S/FTP 500m Reel Shotgun, Orange	5.24

Index

Part Number – Product Name

Part Number	Product Name	Page Number
7053 3 762-54	Category 7 (CopperTen™) Horizontal Cable S/FTP Duplex	3.52, 5.12
7057 1 400-01	MT-RJ crimp tool	4.14
7063 2 537-XX	Patch Cords Category 5e FTP	4.72, 6.48
7063 2 557-XX	Patch Cords Category 5e S/FTP	4.72, 6.48
7063 2 6X0-YY	Patch Cord Category 5e Overmoulded	6.46
7063 2 6X1-YY	Patch Cords Category 5e Overmoulded UTP	4.73
7074 2 100-01	Fibre pigtail OM2 (50/125µm) Semi-Loose Tube Buffered, MT-RJ	6.13
7074 3 100-01	Fibre pigtail OM1 (50/125µm) Semi-Loose Tube Buffered, MT-RJ	6.13
7074 6 100-01	Fibre pigtail OM3 (50/125µm) Semi-Loose Tube Buffered, MT-RJ	6.13
7078 1 150-XX	Patch Cords PLM LC-LC Duplex OS1	4.82
7078 6 110-XX	Patch Cords PLM LC-LC Duplex OM3	4.82
7079 1 020-00	Distribution Box UniVK 2	7.17
7079 1 040-00	Distribution Box UniVK 4	7.17
7079 1 080-00	Distribution Box UniVK 8	7.17
7079 1 120-00	Distribution Box UniVK 12	7.17
7080 2 06X-10	Surface Mount, Unloaded	6.26
70XXLZHOIC062	Fibre Optic Cable, Tight Buffered, OM1 (62.5/125µm) LSZH	3.06, 5.06
ADCCE1X00A	OptEnet Modular Chassis	6.61
ADCCE2200A	OptEnet +24Vdc Power Supply Module	6.62
ADCCE2410A	OptEnet -48Vdc Power Supply Module (100 W) – standard temperature	6.62
ADCCE3000A	OptEnet Central Processor Unit	6.63
ADCCE3100A	OptEnet Alarm Module	6.63
ADCPE4X00A	OptEnet Optical Ethernet Conversion Line Cards 100BASE-SX Line Card	6.66
ADCPE5000A	OptEnet Media Conversion 1000BASE-SX (SC) Line Card	6.68
ADCPE600XA	OptEnet Singlemode to Multimode 10-622 Mb/s Line Card – standard temperature	6.64
ADCPP24RJ5E-S	Category 5e, Patch Panel, Through Coupler 24 Port S/FTP	4.68
ADCSTBK01A	Power-over-Ethernet Wall Mount Bracket Kit	4.94
D0224D0-GYXX	Category 3 Riser Cable Spool	7.08
D0624D0-GYXX	Category 3 Riser Cable Reel	7.08
D0X24D0-GYR2	Category 3 Riser Cable Reelex – 305m (1000')	7.08
DGVI-100000CRD	Power-over-Ethernet UK Power Cord	4.92
DGVI-200000CRD	Power-over-Ethernet Central Europe Power Cord	4.92
ENI-EGXXEGXX1B	Ethernet Network Interface Unit	6.58
FGS-ACC063	FiberGuide® – 2x2 vertical to 1x2 vertical adaptor bracket	4.43
FGS-ASRI-10F	FiberGuide® – 4-inch square to 2-inch round adaptor with 10-feet flex tubing	4.40
FGS-ASRI-15F	FiberGuide® – 4-inch square to 2-inch round adaptor with 15-feet flex tubing	4.40
FGS-ASRI-5F	FiberGuide® – 4-inch square to 2-inch round adaptor with 5-feet flex tubing	4.40
FGS-BTBL-C	FiberGuide® – 2x2 bay top long L bracket kit	4.38
FGS-BTBS-C	FiberGuide® – 2x2 bay top short L bracket kit	4.38
FGS-HAEJ-C	FiberGuide® – Track connecting bar kit	4.38
FGS-HASB-1/2-36	FiberGuide® – 4x4 Adjacent angle support bracket 1/2 -13/36-inch	4.40
FGS-HASB-1/2-48	FiberGuide® – 4x4 Adjacent angle support bracket 1/2 -13/48-inch	4.40
FGS-HASB-5/8-36	FiberGuide® – 4x4 Adjacent angle support bracket 5/8 -11/36-inch	4.40
FGS-HASB-5/8-48	FiberGuide® – 4x4 Adjacent angle support bracket 5/8 -11/48-inch	4.40
FGS-HASK-C	FiberGuide® – Aluminium track support (6-feet)	4.38
FGS-HCBL-12	FiberGuide® – 4x4 Digital cableway bracket kit (12-inch)	4.40
FGS-HCBL-15	FiberGuide® – 4x4 Digital cableway bracket kit (15-inch)	4.40
FGS-HDCB-C	FiberGuide® – 2x2 digital cableway support kit	4.38
FGS-HDGR	FiberGuide® – 4x4 Unistrut nut kit (5/8 -inch)	4.40
FGS-HDSI-AB	FiberGuide® – 4x4/4x6 downspout insert (adapts to 2x2 system)	4.40
FGS-HETR-1/2	FiberGuide® – 4x4 Existing threaded rod bracket (1/2 -inch)	4.40
FGS-HETR-5/8	FiberGuide® – 4x4 Existing threaded rod bracket (5/8 -inch)	4.40
FGS-HETR-5/8-A	FiberGuide® – 4x4 Modified existing threaded rod bracket (5/8 -inch)	4.40
FGS-HETR-F-5/8	FiberGuide® – 4x12 Existing threaded rod bracket (5/8 -inch)	4.42
FGS-HFCK-1/2	FiberGuide® – 4x4 Auxiliary framing clip kit 1/2 -11 thread	4.40
FGS-HFCK-5/8	FiberGuide® – 4x4 Auxiliary framing clip kit 5/8 -11 thread	4.40
FGS-HFRR-10	FiberGuide® – Accessories – Retainer rings (kit of 10)	4.43
FGS-HHEC-10	FiberGuide® – Accessories – Flex tube clamps (kit of 10)	4.43

Index

Part Number – Product Name

Part Number	Product Name	Page Number
FGS-HHGK	FiberGuide® – Accessories – Hinge kit for 4x4 and 4x6 covers (kit of 1)	4.43
FGS-HIFC-A	FiberGuide® – 4x4 IFC tie bracket	4.39
FGS-HIFC-B	FiberGuide® – 4x6 IFC tie bracket	4.41
FGS-HIFC-F	FiberGuide® – 4x12 IFC tie bracket	4.42
FGS-HLBK	FiberGuide® – 4x4 L bay support bracket	4.40
FGS-HLDR-5/8	FiberGuide® – Ladder rack bracket kit (5/8 -inch)	4.38, 4.40
FGS-HLR2-C	FiberGuide® – 2x2 ladder rack support kit	4.38
FGS-HMEC-A	FiberGuide® – 4x4 end cap	4.39
FGS-HMEC-B	FiberGuide® – 4x6 end cap	4.41
FGS-HMEC-C	FiberGuide® – 2x2 end cap kit (includes junction)	4.37
FGS-HMEC-F	FiberGuide® – 4x12 end cap	4.42
FGS-HMEC-G	FiberGuide® – 2x6 end cap	4.38
FGS-HNLR-AB	FiberGuide® – 4x4 Ladder rack centre support bracket kit	4.40
FGS-HNLR-F	FiberGuide® – 4x12 Ladder rack centre support bracket kit	4.42
FGS-HNTP-F-5/8	FiberGuide® – 4x12 Trapeze bracket kit	4.42
FGS-HNTR-1/2	FiberGuide® – 4x4 New threaded rod bracket (1/2 -inch)	4.40
FGS-HNTR-5/8	FiberGuide® – 4x4 New threaded rod bracket (5/8 -inch)	4.40
FGS-HNTR-5/8-A	FiberGuide® – 4x4 Modified new threaded rod bracket (5/8 -inch)	4.40
FGS-HNTR-F-5/8	FiberGuide® – 4x12 New threaded rod bracket (5/8 -inch)	4.42
FGS-HNTS-5/8	FiberGuide® – 4x4 Top support C-bracket	4.40
FGS-HNTS-5/8-LP	FiberGuide® – 4x4 Top support low profile C-bracket	4.40
FGS-HNTS-F-5/8	FiberGuide® – 4x12 Top support threaded rod bracket kit	4.42
FGS-HNTS-F-5/8-LP	FiberGuide® – 4x12 Top support low profile threaded rod bracket kit	4.42
FGS-HQKK	FiberGuide® – Accessories – Quick knobs (100)	4.43
FGS-HSHC-10	FiberGuide® – Kit of 107/8 -inch flex tube clamps	4.37
FGS-HTHR-5/8-12	FiberGuide® – Threaded rod 12" long	4.38, 4.40
FGS-HTHR-5/8-30	FiberGuide® – 4x4 Threaded rod, 5/8 -11x30-inch	4.40
FGS-HTHR-5/8-72	FiberGuide® – 4x4 Threaded rod, 5/8 -11x72-inch	4.40
FGS-HTR2-1/2	FiberGuide® – New threaded rod kit (1/2 -inch)	4.38
FGS-HTR2-5/8	FiberGuide® – New threaded rod kit (5/8 -inch)	4.38
FGS-HTUB-1/2	FiberGuide® – 4x4 Centre support bracket (1/2 -inch)	4.40
FGS-HTUB-2-AB	FiberGuide® – Dual threaded rod bracket kit	4.38
FGS-HTUB-5/8	FiberGuide® – 4x4 Centre support bracket (5/8 -inch)	4.40
FGS-HUFB-C	FiberGuide® – 2x2 underfloor support kit	4.38
FGS-HVHG	FiberGuide® – Accessories – Self-closing hinge (kit of 3)	4.43
FGS-HWMB-D	FiberGuide® – 2x2 vertical duct mounting bracket	4.43
FGS-HWMB-D	FiberGuide® – 4x4 vertical duct mounting bracket	4.43
FGS-KDH2-C	FiberGuide® – 2x2 downspout kit with 2ft. length 2in. flex tube and cover	4.37
FGS-KQKB	FiberGuide® – Accessories – Quick knobs (10)	4.43
FGS-KT03-A	FiberGuide® – 4x4 dual flex tube with (2) 5-foot lengths 2-inch flex tubing	4.40
FGS-KT03-A1	FiberGuide® – 4x4 single flex tube with (1) 5-foot length 2-inch flex tubing	4.40
FGS-KT03-C	FiberGuide® – Dual 7/8 inch flex tube with (2) 5-foot lengths flex tube and junction	4.37
FGS-KT09	FiberGuide® – Accessories – Trough cover clip kit	4.43
FGS-KTW1-C	FiberGuide® – 2x2 vertical slotted duct kit, 6-feet	4.43
FGS-KTW1-CA	FiberGuide® – 2x2 vertical 1.5-inch slotted duct kit, 6-feet	4.43
FGS-KTW1-E	FiberGuide® – 1x2 vertical duct kit	4.43
FGS-KTW2-D	FiberGuide® – 4x4 vertical duct kit	4.43
FGS-KTW4-C	FiberGuide® – 2x2 vertical solid duct	4.43
FGS-KTW4-E	FiberGuide® – 1x2 solid vertical duct kit	4.43
FGS-MCDS-AB	FiberGuide® – 4x4 and 4x6 downspout cover	4.39, 4.41
FGS-MCDS-EX-AB	FiberGuide® – 4x4 and 4x6 extended downspout cover	4.39
FGS-MCDS-EX-AB	FiberGuide® – 4x4/4x6 extended downspout cover	4.41
FGS-MD4A-C	FiberGuide® – 2x2 45° down elbow with cover	4.37
FGS-MD4E-A	FiberGuide® – 4x4 45° down elbow	4.39
FGS-MD4E-B	FiberGuide® – 4x6 45° down elbow	4.41
FGS-MD4E-F	FiberGuide® – 4x12 45° down elbow	4.42
FGS-MD4E-G	FiberGuide® – 2x6 45° down elbow	4.38
FGS-MD9A-C	FiberGuide® – 2x2 90° down elbow with cover	4.37

Index

Part Number – Product Name

Part Number	Product Name	Page Number
FGS-MD9E-A	FiberGuide® – 4x4 90° down elbow	4.39
FGS-MD9E-B	FiberGuide® – 4x6 90° down elbow	4.41
FGS-MD9E-F	FiberGuide® – 4x12 90° down elbow	4.42
FGS-MD9E-G	FiberGuide® – 2x6 90° down elbow	4.38
FGS-MDRT-F	FiberGuide® – 4x12 downspout with rear T	4.42
FGS-MDSA-AB	FiberGuide® – 4x4 to 4x6 straight adaptor	4.39
FGS-MDSA-AC	FiberGuide® – 2x2 to 4-inch straight adaptor with cover	4.37
FGS-MDSA-F2B	FiberGuide® – 4x12 to dual 4x6 adaptor	4.42
FGS-MDSA-FB	FiberGuide® – 4x12 to 4x6 adaptor	4.42
FGS-MDSA-GA	FiberGuide® – 2x6 to 4x4 adaptor	4.38
FGS-MDSA-GB	FiberGuide® – 2x6 to 4x6 adaptor	4.38
FGS-MDSP-A	FiberGuide® – 4x4 downspout	4.39
FGS-MDSP-B	FiberGuide® – 4x6 downspout	4.41
FGS-MDSP-C	FiberGuide® – 2x2 extended downspout with cover	4.37
FGS-MDSP-EX-A	FiberGuide® – 4x4 extended downspout	4.39
FGS-MDSP-EX-B	FiberGuide® – 4x6 extended downspout	4.41
FGS-MDSP-F	FiberGuide® – 4x12 downspout with 4x6 exit	4.42
FGS-MDSP-G	FiberGuide® – 2x6 to 2x2 downspout	4.38
FGS-MEX1-C-5F	FiberGuide® – flex tube with 5-foot length 2-inch flex tube and junction	4.37, 4.40
FGS-MEXC-E-A	FiberGuide® – Rear cover, 4-inch Express Exit—4x4 system	4.37
FGS-MEXC-E-A/B/F	FiberGuide® – 4-inch Express Exit rear cover kit	4.37
FGS-MEXC-E-B	FiberGuide® – Rear cover, 4-inch Express Exit—4x6 system	4.37
FGS-MEXC-E-F	FiberGuide® – Rear cover, 4-inch Express Exit—4x12 system	4.37
FGS-MEXP-A/B/F	FiberGuide® – 2-inch Express Exit Unit	4.37
FGS-MEXP-E-A/B/F	FiberGuide® – 4-inch Express Exit base with base cover	4.37
FGS-MEXP-LP-A/B/F	FiberGuide® – Low profile Express Exit	4.37
FGS-MEXP-LP-G	FiberGuide® – 2x6 Express Exit	4.38
FGS-MFAW-A	FiberGuide® – 4x4 snap-fit junction	4.39
FGS-MFAW-B	FiberGuide® – 4x6 snap-fit junction	4.41
FGS-MFAW-F	FiberGuide® – 4x12 snap-fit junction	4.42
FGS-MFTY-10F	FiberGuide® – 7/8 -inch outer diameter slotted flex tube, 10-feet	4.43
FGS-MFTY-15F	FiberGuide® – 7/8 -inch outer diameter slotted flex tube, 15-feet	4.43
FGS-MFTY-200F	FiberGuide® – 7/8 -inch outer diameter slotted flex tube, 200-feet	4.43
FGS-MFTY-5F	FiberGuide® – 7/8 -inch outer diameter slotted flex tube, 5-feet	4.43
FGS-MH4A-C	FiberGuide® – 2x2 45° horizontal elbow with cover	4.37
FGS-MH4E-A	FiberGuide® – 4x4 45° horizontal elbow	4.39
FGS-MH4E-B	FiberGuide® – 4x6 45° horizontal elbow	4.41
FGS-MH4E-F	FiberGuide® – 4x12 45° horizontal elbow	4.42
FGS-MH4E-G	FiberGuide® – 2x6 45° horizontal elbow	4.38
FGS-MH9A-C	FiberGuide® – 2x2 90° horizontal elbow with cover	4.37
FGS-MH9E-A	FiberGuide® – 4x4 90° horizontal elbow	4.39
FGS-MH9E-B	FiberGuide® – 4x6 90° horizontal elbow	4.41
FGS-MH9E-F	FiberGuide® – 4x12 90° horizontal elbow	4.42
FGS-MH9E-G	FiberGuide® – 2x6 90° horizontal elbow	4.38
FGS-MHIS-A	FiberGuide® – 4x4 cut-in T	4.39
FGS-MHIS-B	FiberGuide® – 4x6 cut-in T	4.41
FGS-MHIS-F	FiberGuide® – 4x12 cut-in T	4.42
FGS-MHIS-JIG-A/B/F	FiberGuide® – 4x12 cut-in T fixture	4.42
FGS-MHIS-JIG-A/B/F	FiberGuide® – 4x4 cut-in T fixture	4.39
FGS-MHIS-JIG-A/B/F	FiberGuide® – 4x6 Cut-in T fixture	4.41
FGS-MHRT-A	FiberGuide® – 4x4 horizontal T	4.39
FGS-MHRT-B	FiberGuide® – 4x6 horizontal T	4.41
FGS-MHRT-F	FiberGuide® – 4x12 horizontal T	4.42
FGS-MHRT-G	FiberGuide® – 2x6 horizontal T	4.38
FGS-MHTA-C	FiberGuide® – 2x2 horizontal tee with cover	4.37
FGS-MHXP-A	FiberGuide® – 4x4 horizontal cross	4.39
FGS-MHXP-B	FiberGuide® – 4x6 horizontal cross	4.41
FGS-MHXP-B/F	FiberGuide® – 4x12 to 4x6 horizontal cross	4.42

Index

Part Number – Product Name

Part Number	Product Name	Page Number
FGS-MHXP-C	FiberGuide® – 2x2 horizontal cross with cover	4.37
FGS-MHXP-F	FiberGuide® – 4x12 horizontal cross	4.42
FGS-MHXP-G	FiberGuide® – 2x6 horizontal cross	4.38
FGS-MIDY-10F	FiberGuide® – 2-inch outer diameter slotted flex tube, 10-feet	4.43
FGS-MIDY-15F	FiberGuide® – 2-inch outer diameter slotted flex tube, 15-feet	4.43
FGS-MIDY-5F	FiberGuide® – 2-inch outer diameter slotted flex tube, 5-feet	4.43
FGS-MJWR-A	FiberGuide® – 4x4 downspout junction kit	4.40
FGS-MJWR-C	FiberGuide® – 2x2 junction	4.37
FGS-MJWR-D	FiberGuide® – 4x4 vertical adaptor junction kit	4.43
FGS-MKIT-ABF	FiberGuide® – Accessories – Mitre box and saw	4.43
FGS-MLDY-100F	FiberGuide® – 1-inch outer diameter slotted flex tube, 100-feet	4.43
FGS-MLDY-150F	FiberGuide® – 1-inch outer diameter slotted flex tube, 150-feet	4.43
FGS-MLDY-200F	FiberGuide® – 1-inch outer diameter slotted flex tube, 200-feet	4.43
FGS-MLDY-250F	FiberGuide® – 1-inch outer diameter slotted flex tube, 250-feet	4.43
FGS-MSDS-C	FiberGuide® – 2x2 standard downspout with cover	4.37
FGS-MSHA-C	FiberGuide® – 2x2 6-foot horizontal straight with cover	4.37
FGS-MSHC-A	FiberGuide® – 4x4 6-foot horizontal straight section hinged cover	4.39
FGS-MSHC-B	FiberGuide® – 4x6 6-foot horizontal straight section hinged cover	4.41
FGS-MSHC-C	FiberGuide® – Cover for 2x2 vertical duct, 6-feet	4.43
FGS-MSHC-D	FiberGuide® – Cover for 4x4 vertical duct, 6-feet	4.43
FGS-MSHS-A	FiberGuide® – 4x4 6-foot horizontal straight section	4.39
FGS-MSHS-B	FiberGuide® – 4x6 6-foot horizontal straight section	4.41
FGS-MSHS-C	FiberGuide® – 2x2 vertical slotted duct, 6-feet	4.43
FGS-MSHS-CA	FiberGuide® – 2x2 vertical 1.5-inch slotted duct, 6-feet	4.43
FGS-MSHS-D	FiberGuide® – 4x4 vertical slotted duct, 6-feet	4.43
FGS-MSHS-F	FiberGuide® – 4x12 6-foot horizontal straight section	4.42
FGS-MSHS-G	FiberGuide® – 2x6 horizontal straight section (6-feet)	4.38
FGS-MSNC-B/G	FiberGuide® – 2x6 horizontal straight section hinged cover	4.38
FGS-MSSC-A	FiberGuide® – 4x4 6-foot horizontal straight section snap-on cover	4.39
FGS-MSSC-B/G	FiberGuide® – 2x6 horizontal straight section snap-on cover (6-feet)	4.38
FGS-MSSC-B/G	FiberGuide® – 4x6 6-foot horizontal straight section snap-on cover	4.41
FGS-MSSC-F	FiberGuide® – 4x12 6-foot snap-on cover	4.42
FGS-MTRM-A	FiberGuide® – 4x4 trumpet flare kit	4.40
FGS-MTRM-B	FiberGuide® – 4x6 trumpet flare kit	4.41
FGS-MTRM-F	FiberGuide® – 4x12 trumpet flare kit	4.42
FGS-MTRM-G	FiberGuide® – 2x6 trumpet flare	4.38
FGS-MU4A-C	FiberGuide® – 2x2 45° up elbow with cover	4.37
FGS-MU4E-A	FiberGuide® – 4x4 45° up elbow with cover	4.39
FGS-MU4E-B	FiberGuide® – 4x6 45° up elbow with cover	4.41
FGS-MU4E-F	FiberGuide® – 4x12 45° up elbow with cover	4.42
FGS-MU4E-G	FiberGuide® – 2x6 45° up elbow with cover	4.38
FGS-MU9A-C	FiberGuide® – 2x2 90° up elbow with cover	4.37
FGS-MU9E-A	FiberGuide® – 4x4 90° up elbow with cover	4.39
FGS-MU9E-B	FiberGuide® – 4x6 90° up elbow with cover	4.41
FGS-MVAR-A	FiberGuide® – 4x4 expandable straight section	4.39
FGS-MVAR-B	FiberGuide® – 4x6 expandable straight section	4.41
FGS-MVAR-F	FiberGuide® – 4x12 expandable straight section	4.42
FGS-SD4E-A	FiberGuide® – 4x4 45° down elbow cover	4.39
FGS-SD4E-B	FiberGuide® – 4x6 45° down elbow cover	4.41
FGS-SD9E-A	FiberGuide® – 4x4 90° down elbow cover	4.39
FGS-SD9E-B	FiberGuide® – 4x6 90° down elbow cover	4.41
FGS-SDSA-AB	FiberGuide® – 4x4 to 4x6 straight adaptor cover	4.39
FGS-SH4E-A	FiberGuide® – 4x4 45° horizontal elbow cover	4.39
FGS-SH4E-B	FiberGuide® – 4x6 45° horizontal elbow cover	4.41
FGS-SH9E-A	FiberGuide® – 4x4 90° horizontal elbow cover	4.39
FGS-SH9E-B	FiberGuide® – 4x6 90° horizontal elbow cover	4.41
FGS-SHRT-A	FiberGuide® – 4x4 horizontal T cover	4.39
FGS-SHRT-B	FiberGuide® – 4x6 horizontal T cover	4.41

Index

Part Number – Product Name

Part Number	Product Name	Page Number
FGS-SHXP-A.....	FiberGuide® – 4x4 horizontal cross cover.....	4.39
FGS-SHXP-B.....	FiberGuide® – 4x6 horizontal cross cover.....	4.41
MDF-7081 1 007-01....	PROFIL Distribution Frame 108P	7.19
MTRJ2CORE-0004	Fibre pigtail OM1 (62.5/125µm) Tight Buffered, MT-RJ	6.13
MTRJ2CORE-0006	Fibre pigtail OM3 (50/125µm) Tight Buffered, MT-RJ	6.13
MTRJMTRJ2CORE-0005	Patch Cord Fibre Optic, MTRJ-MTRJ, OM1 (62.5/125 µm), Duplex Patch Cable	6.09
MTRJSTSC2CORE-0010.	Patch Cord Fibre Optic, MTRJ-SC, OM1 (62.5/125 µm), Duplex Patch Cable	6.09
MTRJSTSC2CORE-0015.	Patch Cord Fibre Optic, MTRJ-STII, OM1 (62.5/125 µm), Duplex Patch Cable	6.09
MTRJSTSC2CORE-0027.	Patch Cord Fibre Optic, SC(Discrete)-MTRJ, OM3 (50/125 µm), Duplex Patch Cable	6.10
NGF-ACCCLMP04.....	Next Generation Frame Cable Clamp Kits.....	4.30
NGF-ACCISOP30X24 ...	Next Generation Frame Isolation Pad.....	4.30
NGFB-ACCEXT12-30....	Next Generation Frame Rack Extenders	4.30
NGFB-ACCRCMSLU	Fibre Termination Blocks.....	4.23
PFGF-DSPT-C/B/F	FiberGuide® – Plenum – Diagonal span bracket kit for 2x2, 4x6, and 4x12	4.49
PFGF-EADSPT-C/B/F	FiberGuide® – Plenum – Diagonal span bracket kit with square U-bolt.....	4.49
PFGF-EAESPT-C/B/F.....	FiberGuide® – Plenum – Span bracket kit with square U-bolt	4.49
PFGF-EALSPT-C/B/F.....	FiberGuide® – Plenum – Long bracket kit with square U-bolt	4.49
PFGF-EASSPT-C/B	FiberGuide® – Plenum – Short bracket kit with square U-bolt	4.49
PFGF-ESPT-C/B/F	FiberGuide® – Plenum – Span bracket kit for 2x2, 4x6, and 4x12 sizes; spans 24"	4.49
PFGF-LSPT-C/B/F	FiberGuide® – Plenum – Long bracket kit for 2x2, 4x6, and 4x12 sizes.....	4.49
PFGF-PD4E-B.....	FiberGuide® – Plenum – 4x6 45° down elbow	4.48
PFGF-PD4E-F.....	FiberGuide® – Plenum – 4x12 45° down elbow	4.49
PFGF-PDNE-B	FiberGuide® – Plenum – 4x6 90° down elbow	4.48
PFGF-PDNE-F.....	FiberGuide® – Plenum – 4x12 90° down elbow	4.49
PFGF-PDSA-B/F.....	FiberGuide® – Plenum – 4x6 Plenum to 12" Plenum conversion	4.48
PFGF-PFPT-B	FiberGuide® – Plenum – 4x6 trumpet flare – 4 sided	4.48
PFGF-PFPT-F	FiberGuide® – Plenum – 4x12 trumpet flare – 4 sided	4.49
PFGF-PH4E-B	FiberGuide® – Plenum – 4x6 45° horizontal elbow	4.48
PFGF-PH4E-F	FiberGuide® – Plenum – 4x12 45° horizontal elbow	4.49
PFGF-PH9E-B.....	FiberGuide® – Plenum – 4x6 90° horizontal elbow	4.48
PFGF-PH9E-F	FiberGuide® – Plenum – 4x12 90° horizontal elbow	4.49
PFGF-PHRT-B	FiberGuide® – Plenum – 4x6 horizontal T	4.48
PFGF-PHRT-F	FiberGuide® – Plenum – 4x12 horizontal T	4.49
PFGF-PHRT-F/B	FiberGuide® – Plenum – 4x12/4x6 horizontal T	4.49
PFGF-PHXP-B	FiberGuide® – Plenum – 4x6 horizontal cross	4.48
PFGF-PHXP-F	FiberGuide® – Plenum – 4x12 horizontal cross	4.49
PFGF-PJWR-B	FiberGuide® – Plenum – 4x6 junction	4.48
PFGF-PJWR-F	FiberGuide® – Plenum – 4x12 junction	4.49
PFGF-PMEC-B	FiberGuide® – Plenum – 4x6 end cap – includes 4x6 junction	4.48
PFGF-PMEC-F	FiberGuide® – Plenum – 4x12 end cap – includes 4x12 junction	4.49
PFGF-PPSC-B.....	FiberGuide® – Plenum – 4x6 Plenum to 4x6 standard conversion	4.48
PFGF-PSHS-B.....	FiberGuide® – Plenum – 4x6 straight section – 6' long	4.48
PFGF-PSHS-F	FiberGuide® – Plenum – 4x12 straight section – 6' long	4.49
PFGF-PTRM-B	FiberGuide® – Plenum – 4x6 trumpet flare – 3 sided	4.48
PFGF-PTRM-F	FiberGuide® – Plenum – 4x12 trumpet flare – 3 sided	4.49
PFGF-PU4E-B.....	FiberGuide® – Plenum – 4x6 45° up elbow	4.48
PFGF-PU4E-F	FiberGuide® – Plenum – 4x12 45° up elbow	4.49
PFGF-PUPE-B	FiberGuide® – Plenum – 4x6 90° up elbow	4.48
PFGF-PUPE-F	FiberGuide® – Plenum – 4x12 90° up elbow	4.49
PFGF-SPT-C/B	FiberGuide® – Plenum – Short bracket kit for 2x2 and 4x6 sizes	4.49
PWR-04DT-GE-E	Power-over-Ethernet Midspan Four-Port Unit	4.94
PWR-04DTPS	Power-over-Ethernet Redundant/Replacement Power Supply	4.94
PWR-04DTRM.....	Power-over-Ethernet Rack Mount Kit (holds three units)	4.94
PWR-M.....	Power-over-Ethernet SNMP module (Mounts in all chassis)	4.92
PWR-PS.....	Power-over-Ethernet Redundant power supply (Mounts in all chassis)	4.92
PWR-XXACS-GE-E.....	Power-over-Ethernet Midspan Controller	4.92
SCST1CORE-0008.....	Fibre pigtail OM3 (50/125µm) Tight Buffered, SC	6.13
SCST1CORE-000X.....	Fibre pigtail OM1 (62.5/125µm) Tight Buffered	6.13

Index

Part Number – Product Name

Part Number	Product Name	Page Number
SCST1CORE-000X.....	Fibre pigtail OM2 (50/125µm) Tight Buffered	6.13
SCSTSC2CORE-0001....	Patch Cord Fibre Optic, SC-SC, OM1 (62.5/125 µm), Duplex Patch Cable	6.09
SCSTSC2CORE-0037....	Patch Cord Fibre Optic, SC-SC, OM3 (50/125 µm), Duplex Patch Cable	6.10
STSC2CORE-0005.....	Patch Cord Fibre Optic, STII-SC, OM1 (62.5/125 µm), Duplex Patch Cable	6.09
STSC2CORE-0018.....	Patch Cord Fibre Optic, STII-STII, OM1 (62.5/125µm), Duplex Patch Cable	6.09
TN5ETOSP-BKM2	Cable Outback Category 5e PE, UTP 305m Reel, Black	5.34
TN5ETOSP-BKRB	Cable Outback Category 5e PE, UTP 305m Reel-in-a-Box, Black	5.34
TN5ETR-LSM6	Cable Horizontal Category 5e PVC, UTP 1000m Reel, Grey	5.32
TN5ETR-LSMI	Cable Horizontal Category 5e PVC, UTP 305m Reelex, Grey	5.32
TN5ETZ1-ORM6	Cable Horizontal Category 5e LSZH, UTP 1000m Reel, Orange	5.30
TN5ETZ1-ORMI	Cable Horizontal Category 5e LSZH, UTP 305m Reelex, Orange	5.30
TN6TMX2-LSM3	Cable Horizontal Category 6 PVC, 2x4PR UTP 500m Reel, Grey	5.22
TN6TR-LSM6.....	Cable Horizontal Category 6 PVC, UTP 1000m Reel, Grey	5.20
TN6TR-LSMB.....	Cable Horizontal Category 6 PVC, UTP 305m Reel-in-a-Box, Grey	5.20
TN6TZ1-ORM6.....	Cable Horizontal Category 6 LSZH, UTP 1000m Reel, Orange	5.18
TN6TZ1-ORMB.....	Cable Horizontal Category 6 LSZH, UTP 305m Reel-in-a-Box, Orange	5.18
TN6TZ1X2-ORM3.....	Cable Horizontal Category 6 LSZH, 2x4PR UTP 500m Reel, Orange	5.22
TP6TB0WTXX.....	Patch Cords HighBand Ultim8 – Ultim8 plug to RJ45 plug – T568A	4.63
TP6TB-WTXX	Patch Cords HighBand Ultim8 – Ultim8 plug to RJ45 plug – T568B	4.63
TP6TH-WTXX	Patch Cords HighBand Ultim8 – Ultim8 plug to Ultim8 plug	4.63
VXV0624-19XX	Category 3 Plenum Cable Reel	7.06
VXV0X24-19R2.....	Category 3 Plenum Cable Reelex – 305m (1000')	7.06
VXV0X24-19XX	Category 3 Plenum Cable Spool	7.06
WFX-3100-C L2	WFX WLAN Array WFX-3100 Remote Power System	6.76
WFX-3300-SCC-10 L2..	WFX WLAN Array WFX-3300 Management Platform	6.77
WFX-3500-4 L32	WFX WLAN Array WFX-3500	6.75
WFX-3700-8 L12	WFX WLAN Array WFX-3700	6.75
WFX-3900-16 L12	WFX WLAN Array WFX-3900	6.76

Index

Product Name – Part Number

Product Name	Part Number	Page Number
250 Box with 12 UTP Jacks, CL	6525 1 068-00	6.30
250 Box with 3 x 8 Pair Disconnection Modules	6525 1 050-00	6.41
250 Box with 3 x 8 Pair HighBand® Ultim8® Disconnection Modules	6530 1 106-00	6.29
250 Box with UTP/STP Jacks, CL	6525 1 05X-10	6.42
25x50 Blank Adaptor	6540 4 801-01	6.50
300 Box with 6 x 8 Pair Disconnection Modules	6530 1 099-00	6.41
300 Box with 6 x 8 Pair HighBand® Ultim8® Disconnection Modules	6530 1 105-00	6.29
Adaptor 22.5x45mm, Single, White	6690 1 825-10	6.55
Adaptor 45x45mm, Single, White	6690 1 825-00	6.55
Advanced Patching Frame 42U (inc. Cable Management Arms)	6420 1 500-00	4.98
Advanced Patching Frame Back-to-Back Kit	6420 1 506-00	4.98
Advanced Patching Frame Cable Management Arm Extensions	6420 1 516-00	4.98
Advanced Patching Frame Cable Management Arms	6420 1 103-01	4.98
Advanced Patching Frame Door Set – Glass	6420 1 510-00	4.98
Advanced Patching Frame Side Panel Extension Kit	6420 1 505-00	4.98
Advanced Patching Frame Side Panels	6420 1 504-00	4.98
Advanced Patching Frame Side-to-Side Kit	6420 1 507-00	4.98
Augmented Category 6 (CopperTen™) Clip & Grip Cable Management	7022 3 153-00	4.52
Augmented Category 6 (CopperTen™) Patch Panels	6527 1 743-00	4.52
Augmented Category 6 (CopperTen™) Cable LSZH, UTP	10G-A6TZ1-BLM2	3.54, 5.14
Augmented Category 6 LSZH S/FTP	6830 2 861-XX	6.21
Back Box, Single Gang, Pure White	6690 1 525-03	6.44, 6.45
Back Boxes for UK Style Outlets, Double Gang White	6536 3 044-00	6.53
Back Boxes for UK Style Outlets, Single Gang White	6536 1 005-00	6.53
Backmount Frames	6424 3 0YY-XX	7.10
Blanking Panel 19" 1U	6527 1 007-01	4.103
Blanking Panel 19" 2U	6527 1 007-02	4.103
Blanking Panel 19" 3U	6527 1 007-03	4.103
Blown Fibre Blowing Beads	7032 1 400-58	3.49
Blown Fibre Blowing Head 2A (MkII)	7032 1 400-53	3.37
Blown Fibre Blowing Head Seals	7032 1 508-00	3.49
Blown Fibre Cable, Multimode (OM3) (62.5/125µm) 12 Fibre Cores PANS	7032 1 406-14	3.32
Blown Fibre Cable, Multimode (OM3) (62.5/125µm) 2 Fibre Cores PANS	7032 1 406-01	3.32
Blown Fibre Cable, Multimode (OM3) (62.5/125µm) 4 Fibre Cores PANS	7032 1 406-05	3.32
Blown Fibre Cable, Multimode (OM3) (62.5/125µm) 8 Fibre Cores PANS	7032 1 406-09	3.32
Blown Fibre Cable, Multimode (OM3e) (62.5/125µm) 12 Fibre Cores PANS	7032 1 407-14	3.32
Blown Fibre Cable, Multimode (OM3e) (62.5/125µm) 2 Fibre Cores PANS	7032 1 407-01	3.32
Blown Fibre Cable, Multimode (OM3e) (62.5/125µm) 4 Fibre Cores PANS	7032 1 407-05	3.32
Blown Fibre Cable, Multimode (OM3e) (62.5/125µm) 8 Fibre Cores PANS	7032 1 407-09	3.32
Blown Fibre Cable, Multimode 50/125µm, 2 Fibre Cores	7032 1 401-04	3.31
Blown Fibre Cable, Multimode 50/125µm, 4 Fibre Cores	7032 1 401-05	3.31
Blown Fibre Cable, Multimode 50/125µm, 8 Fibre Cores	7032 1 400-16	3.31
Blown Fibre Cable, Multimode 62.5/125µm, 2 Fibre Cores	7032 1 401-06	3.31
Blown Fibre Cable, Multimode 62.5/125µm, 4 Fibre Cores	7032 1 400-25	3.31
Blown Fibre Cable, Multimode 62.5/125µm, 8 Fibre Cores	7032 1 400-29	3.31
Blown Fibre Cable, Singlemode, 12 Fibre Cores	7032 1 401-12	3.27
Blown Fibre Cable, Singlemode, 2 Fibre Cores	7032 1 401-00	3.27
Blown Fibre Cable, Singlemode, 4 Fibre Cores	7032 1 401-01	3.27
Blown Fibre Cable, Singlemode, 8 Fibre Cores	7032 1 401-02	3.27
Blown Fibre Close Down Assembly	7032 1 228-00	3.50
Blown Fibre Customer Lead-in Units	7032 1 400-85	3.42
Blown Fibre Electric Compressor	7032 1 405-00	3.39
Blown Fibre End Cap	7032 1 400-72	3.46
Blown Fibre Flow Meter Kit	7032 1 502-00	3.48
Blown Fibre Gas Seal Connector	7032 1 222-00	3.47
Blown Fibre Gas Seal Unit	7032 1 401-19	3.40
Blown Fibre Internal Tube Distribution Unit	7032 1 401-50	3.44
Blown Fibre Pan Guide	7032 1 503-00	3.48

Index

Product Name – Part Number

Product Name	Part Number	Page Number
Blown Fibre Petrol Compressor.....	7032 1 400-54	3.39
Blown Fibre Reducer Connector	7032 1 400-73	3.47
Blown Fibre Tube Connector	7032 1 400-76	3.46
Blown Fibre Tube Integrity and Length Tester	7032 1 227-00	3.49
Blown Fibre Tube Sealing Cap	7032 1 223-00	3.47
Blown Fibre Tubes (Direct Bury Cable)	7032 1 400-49	3.36
Blown Fibre Tubes (Duct Grade/Direct Install).....	7032 1 400-33	3.35
Blown Fibre Tubes (Internal)	7032 1 400-43	3.34
Blown Fibre Valve and Moisture Trap	7032 1 501-00	3.48
Blown Fibre Water Blocking Connector	7032 1 400-77	3.46
Cable Horizontal Category 5e LSZH, F/UTP 1000m Reel, Orange	7053 3 132-75	5.36
Cable Horizontal Category 5e LSZH, F/UTP 500m Reel Shotgun, Orange	7053 3 532-74	5.36
Cable Horizontal Category 5e LSZH, F/UTP 500m Reel, Orange	7053 3 132-74	5.36
Cable Horizontal Category 5e LSZH, UTP 1000m Reel, Orange	TN5ETZ1-ORM6	5.30
Cable Horizontal Category 5e LSZH, UTP 305m Reelex, Orange	TN5ETZ1-ORMI	5.30
Cable Horizontal Category 5e PVC, F/UTP 1000m Reel, Grey	7053 3 121-75	5.36
Cable Horizontal Category 5e PVC, F/UTP 500m Reel, Grey	7053 3 121-74	5.36
Cable Horizontal Category 5e PVC, UTP 1000m Reel, Grey	TN5ETR-LSM6	5.32
Cable Horizontal Category 5e PVC, UTP 305m Reelex, Grey	TN5ETR-LSMI	5.32
Cable Horizontal Category 6 LSZH, 2x4PR UTP 500m Reel, Orange	TN6TZ1X2-ORM3	5.22
Cable Horizontal Category 6 LSZH, F/UTP 1000m Reel, Orange	7053 3 232-75	5.26
Cable Horizontal Category 6 LSZH, F/UTP 500m Reel Shotgun, Orange	7053 3 632-74	5.26
Cable Horizontal Category 6 LSZH, F/UTP 500m Reel, Orange	7053 3 232-74	5.26
Cable Horizontal Category 6 LSZH, S/FTP 1000m Reel, Orange	7053 3 262-55	5.24
Cable Horizontal Category 6 LSZH, S/FTP 500m Reel Shotgun, Orange	7053 3 662-54	5.24
Cable Horizontal Category 6 LSZH, UTP 1000m Reel, Orange	TN6TZ1-ORM6	5.18
Cable Horizontal Category 6 LSZH, UTP 305m Reel-in-a-Box, Orange	TN6TZ1-ORMB	5.18
Cable Horizontal Category 6 PVC, 2x4PR UTP 500m Reel, Grey	TN6TMX2-LSM3	5.22
Cable Horizontal Category 6 PVC, F/UTP 1000m Reel, Grey	7053 3 221-75	5.26
Cable Horizontal Category 6 PVC, F/UTP 500m Reel, Grey	7053 3 221-74	5.26
Cable Horizontal Category 6 PVC, UTP 1000m Reel, Grey	TN6TR-LSM6	5.20
Cable Horizontal Category 6 PVC, UTP 305m Reel-in-a-Box, Grey	TN6TR-LSMB	5.20
Cable Outback Category 5e PE, UTP 305m Reel, Black	TN5ETOSP-BKM2	5.34
Cable Outback Category 5e PE, UTP 305m Reel-in-a-Box, Black	TN5ETOSP-BKRB	5.34
Category 3 Plenum Cable Reel	VXV0624-19XX	7.06
Category 3 Plenum Cable Reelex – 305m (1000')	VXV0X24-19R2	7.06
Category 3 Plenum Cable Spool	VXV0X24-19XX	7.06
Category 3 Riser Cable Reel	D0624D0-GYXX	7.08
Category 3 Riser Cable Reelex – 305m (1000')	D0X24D0-GYR2	7.08
Category 3 Riser Cable Spool	D0224D0-GYXX	7.08
Category 5e, Patch Panel, HK S/FTP	6690 1 412-16	4.67
Category 5e, Patch Panel, PCB S/FTP	7022 1 015-16	4.66
Category 5e, Patch Panel, Category 5e HK UTP	6690 1 402-16	4.67
Category 5e, Patch Panel, Modular LN 16 Port UTP	6533 1 710-16	4.69
Category 5e, Patch Panel, PCB, UTP	6527 1 607-24	4.66
Category 5e, Patch Panel, Through Coupler 24 Port S/FTP	ADCPP24RJ5E-S	4.68
Category 5e, Patch Panel, Through Coupler 24 Port UTP	6527 1 623-24	4.68
Category 5e, Patch Panel, Unloaded HK/KM8	7022 2 150-16	4.67
Category 6, Patch Panel, KM8 (unloaded panels)	7022 2 155-XX	4.58
Category 6, Patch Panel, KM8 STP	7022 1 055-XX	4.58
Category 6, Patch Panel, KM8 UTP	7022 1 056-XX	4.58
Category 6, Patch Panel, PCB UTP 24 ports	6527 1 660-24	4.59
Category 7 (CopperTen™) Horizontal Cable S/FTP Duplex	7053 3 762-54	3.52, 5.12
Category 7 (CopperTen™) Horizontal Cable S/FTP	7053 3 362-55	3.52, 5.12
CL Angled LJ6C Adaptor	6540 1 813-00	6.52
CL Standard LJ6C Adaptor	6540 1 810-00	6.52
ComProtect Series B CP BI12A1	5909 1 084-00	7.12
ComProtect Series B CP BI180A1	5909 1 076-00	7.12

Index

Product Name – Part Number

Product Name	Part Number	Page Number
ComProtect Series B CP BI24A1	5909 1 083-00	7.12
ComProtect Series B CP BI70A1	5909 1 082-00	7.12
ComProtect Series B CP BOD180A2	5909 1 078-10	7.12
Connection Box 201D	6429 1 07X-00	7.12
Connection Box 301A	6530 1 017-00	7.13
Converter RJ-K PABX Master	6536 1 601-XX	6.56
Cover Frame to adapt outer dimensions of 50x50 outlet to 80x80	6690 1 506-01	6.44
Cover Frame to adapt outer dimensions of 50x50 outlet to 80x80	6690 1 725-01	6.2, 6.32, 6.45
Data Distribution Cabinet 43U, DVS 2000	7049 1 012-20	4.100
Distribution Box UniVK 12	7079 1 120-00	7.17
Distribution Box UniVK 2	7079 1 020-00	7.17
Distribution Box UniVK 4	7079 1 040-00	7.17
Distribution Box UniVK 8	7079 1 080-00	7.17
Distribution Box, Category 5e CL STP	6540 1 669-XX	6.39
Distribution Box, Category 5e CL UTP	6540 1 668-XX	6.39
Distribution Box, Category 6 CL UTP, 6 way	6537 1 310-XX	6.27
Distribution frame 108A	6420 1 013-00	7.13
Double Sided Hinged Label Holder	6092 1 810-00	7.11
Ethernet Network Interface Unit	ENI-EGXXEGXX1B	6.58
European Back Box, Single Gang	6690 1 525-XX	6.55
European Faceplate, 80x80	6690 3 725-00	6.54
European Keystone Faceplate for HK and KM8 50x50	6690 2 675-XX	6.54
European Keystone Faceplate for KM8 Unloaded 50x50	6690 2 676-XX	6.54
FiberGuide® – 1-inch outer diameter slotted flex tube, 100-feet	FGS-MLDY-100F	4.43
FiberGuide® – 1-inch outer diameter slotted flex tube, 150-feet	FGS-MLDY-150F	4.43
FiberGuide® – 1-inch outer diameter slotted flex tube, 200-feet	FGS-MLDY-200F	4.43
FiberGuide® – 1-inch outer diameter slotted flex tube, 250-feet	FGS-MLDY-250F	4.43
FiberGuide® – 1x2 solid vertical duct kit	FGS-KTW4-E	4.43
FiberGuide® – 1x2 vertical duct kit	FGS-KTW1-E	4.43
FiberGuide® – 2-inch Express Exit Unit	FGS-MEXP-A/B/F	4.37
FiberGuide® – 2-inch outer diameter slotted flex tube, 10-feet	FGS-MIDY-10F	4.43
FiberGuide® – 2-inch outer diameter slotted flex tube, 15-feet	FGS-MIDY-15F	4.43
FiberGuide® – 2-inch outer diameter slotted flex tube, 5-feet	FGS-MIDY-5F	4.43
FiberGuide® – 2x2 45° down elbow with cover	FGS-MD4A-C	4.37
FiberGuide® – 2x2 45° horizontal elbow with cover	FGS-MH4A-C	4.37
FiberGuide® – 2x2 45° up elbow with cover	FGS-MU4A-C	4.37
FiberGuide® – 2x2 6-foot horizontal straight with cover	FGS-MSHA-C	4.37
FiberGuide® – 2x2 90° down elbow with cover	FGS-MD9A-C	4.37
FiberGuide® – 2x2 90° horizontal elbow with cover	FGS-MH9A-C	4.37
FiberGuide® – 2x2 90° up elbow with cover	FGS-MU9A-C	4.37
FiberGuide® – 2x2 bay top long L bracket kit	FGS-BTBL-C	4.38
FiberGuide® – 2x2 bay top short L bracket kit	FGS-BTBS-C	4.38
FiberGuide® – 2x2 digital cableway support kit	FGS-HDCB-C	4.38
FiberGuide® – 2x2 end cap kit (includes junction)	FGS-HMEC-C	4.37
FiberGuide® – 2x2 extended downspout kit with Flex tube and cover	FGS-KDH2-C	4.37
FiberGuide® – 2x2 extended downspout with cover	FGS-MDSP-C	4.37
FiberGuide® – 2x2 flex tube attachment with flex tube and 2x2 junction	FGS-MEX1-C-5F	4.37, 4.40
FiberGuide® – 2x2 horizontal cross with cover	FGS-MHXP-C	4.37
FiberGuide® – 2x2 horizontal tee with cover	FGS-MHTA-C	4.37
FiberGuide® – 2x2 junction	FGS-MJWR-C	4.37
FiberGuide® – 2x2 ladder rack support kit	FGS-HLR2-C	4.38
FiberGuide® – 2x2 standard downspout with cover	FGS-MSDS-C	4.37
FiberGuide® – 2x2 to 4-inch straight adaptor with cover	FGS-MDSA-AC	4.37
FiberGuide® – 2x2 underfloor support kit	FGS-HUFB-C	4.38
FiberGuide® – 2x2 vertical 1.5-inch slotted duct kit, 6-feet	FGS-KTW1-CA	4.43
FiberGuide® – 2x2 vertical 1.5-inch slotted duct, 6-feet	FGS-MSHS-CA	4.43
FiberGuide® – 2x2 vertical duct mounting bracket	FGS-HWMB-D	4.43
FiberGuide® – 2x2 vertical slotted duct kit, 6-feet	FGS-KTW1-C	4.43

Index

Product Name – Part Number

Product Name	Part Number	Page Number
FiberGuide® – 2x2 vertical slotted duct, 6-feet.....	FGS-MSHS-C.....	4.43
FiberGuide® – 2x2 vertical solid duct	FGS-KTW4-C	4.43
FiberGuide® – 2x2 vertical to 1x2 vertical adaptor bracket	FGS-ACC063	4.43
FiberGuide® – 2x6 45° down elbow	FGS-MD4E-G	4.38
FiberGuide® – 2x6 45° horizontal elbow	FGS-MH4E-G	4.38
FiberGuide® – 2x6 45° up elbow with cover	FGS-MU4E-G	4.38
FiberGuide® – 2x6 90° down elbow	FGS-MD9E-G	4.38
FiberGuide® – 2x6 90° horizontal elbow	FGS-MH9E-G	4.38
FiberGuide® – 2x6 end cap.....	FGS-HMEC-G	4.38
FiberGuide® – 2x6 Express Exit	FGS-MEXP-LP-G	4.38
FiberGuide® – 2x6 horizontal cross.....	FGS-MHXP-G	4.38
FiberGuide® – 2x6 horizontal straight section (6-feet).....	FGS-MSHS-G	4.38
FiberGuide® – 2x6 horizontal straight section hinged cover	FGS-MSNC-B/G	4.38
FiberGuide® – 2x6 horizontal straight section snap-on cover (6-feet)	FGS-MSSC-B/G	4.38
FiberGuide® – 2x6 horizontal T.....	FGS-MHRT-G	4.38
FiberGuide® – 2x6 to 2x2 downspout.....	FGS-MDSP-G	4.38
FiberGuide® – 2x6 to 4x4 adaptor	FGS-MDSA-GA	4.38
FiberGuide® – 2x6 to 4x6 adaptor	FGS-MDSA-GB	4.38
FiberGuide® – 2x6 trumpet flare	FGS-MTRM-G	4.38
FiberGuide® – 4-inch Express Exit base with base cover	FGS-MEXP-E-A/B/F	4.37
FiberGuide® – 4-inch Express Exit rear cover kit	FGS-MEXC-E-A/B/F	4.37
FiberGuide® – 4-inch square to 2-inch adaptor with 10-feet flex tubing.....	FGS-ASRI-10F	4.40
FiberGuide® – 4-inch square to 2-inch adaptor with 15-feet flex tubing.....	FGS-ASRI-15F	4.40
FiberGuide® – 4-inch square to 2-inch adaptor with 5-feet flex tubing.....	FGS-ASRI-5F	4.40
FiberGuide® – 4x12 45° down elbow	FGS-MD4E-F	4.42
FiberGuide® – 4x12 45° horizontal elbow	FGS-MH4E-F	4.42
FiberGuide® – 4x12 45° up elbow with cover	FGS-MU4E-F	4.42
FiberGuide® – 4x12 6-foot horizontal straight section.....	FGS-MSHS-F	4.42
FiberGuide® – 4x12 6-foot snap-on cover.....	FGS-MSSC-F	4.42
FiberGuide® – 4x12 90° down elbow	FGS-MD9E-F	4.42
FiberGuide® – 4x12 90° horizontal elbow	FGS-MH9E-F	4.42
FiberGuide® – 4x12 cut-in T	FGS-MHIS-F	4.42
FiberGuide® – 4x12 cut-in T fixture.....	FGS-MHIS-JIG-A/B/F	4.42
FiberGuide® – 4x12 downspout with 4x6 exit.....	FGS-MDSP-F	4.42
FiberGuide® – 4x12 downspout with rear T	FGS-MDRT-F	4.42
FiberGuide® – 4x12 end cap	FGS-HMEC-F	4.42
FiberGuide® – 4x12 Existing threaded rod bracket (5/8 -inch)	FGS-HETR-F-5/8	4.42
FiberGuide® – 4x12 expandable straight section	FGS-MVAR-F	4.42
FiberGuide® – 4x12 horizontal cross	FGS-MHXP-F	4.42
FiberGuide® – 4x12 horizontal T	FGS-MHRT-F	4.42
FiberGuide® – 4x12 IFC tie bracket	FGS-HIFC-F	4.42
FiberGuide® – 4x12 Ladder rack centre support bracket kit	FGS-HNLR-F	4.42
FiberGuide® – 4x12 New threaded rod bracket (5/8 -inch)	FGS-HNTR-F-5/8	4.42
FiberGuide® – 4x12 snap-fit junction	FGS-MFAW-F	4.42
FiberGuide® – 4x12 to 4x6 adaptor	FGS-MDSA-FB	4.42
FiberGuide® – 4x12 to 4x6 horizontal cross	FGS-MHXP-B/F	4.42
FiberGuide® – 4x12 to dual 4x6 adaptor	FGS-MDSA-F2B	4.42
FiberGuide® – 4x12 Top support low profile threaded rod bracket kit	FGS-HNTS-F-5/8-LP	4.42
FiberGuide® – 4x12 Top support threaded rod bracket kit	FGS-HNTS-F-5/8	4.42
FiberGuide® – 4x12 Trapeze bracket kit	FGS-HNTP-F-5/8	4.42
FiberGuide® – 4x12 trumpet flare kit	FGS-MTRM-F	4.42
FiberGuide® – 4x4 45° down elbow	FGS-MD4E-A	4.39
FiberGuide® – 4x4 45° down elbow cover	FGS-SD4E-A	4.39
FiberGuide® – 4x4 45° horizontal elbow	FGS-MH4E-A	4.39
FiberGuide® – 4x4 45° horizontal elbow cover	FGS-SH4E-A	4.39
FiberGuide® – 4x4 45° up elbow with cover	FGS-MU4E-A	4.39
FiberGuide® – 4x4 6-foot horizontal straight section	FGS-MSHS-A	4.39
FiberGuide® – 4x4 6-foot horizontal straight section hinged cover	FGS-MSHC-A	4.39

Index

Product Name – Part Number

Product Name	Part Number	Page Number
FiberGuide® – 4x4 6-foot horizontal straight section snap-on cover	FGS-MSSC-A	4.39
FiberGuide® – 4x4 90° down elbow	FGS-MD9E-A	4.39
FiberGuide® – 4x4 90° down elbow cover	FGS-SD9E-A	4.39
FiberGuide® – 4x4 90° horizontal elbow	FGS-MH9E-A	4.39
FiberGuide® – 4x4 90° horizontal elbow cover	FGS-SH9E-A	4.39
FiberGuide® – 4x4 90° up elbow with cover	FGS-MU9E-A	4.39
FiberGuide® – 4x4 Adjacent angle support bracket 1/2 -13/36-inch	FGS-HASB-1/2-36	4.40
FiberGuide® – 4x4 Adjacent angle support bracket 1/2 -13/48-inch	FGS-HASB-1/2-48	4.40
FiberGuide® – 4x4 Adjacent angle support bracket 5/8 -11/36-inch	FGS-HASB-5/8-36	4.40
FiberGuide® – 4x4 Adjacent angle support bracket 5/8 -11/48-inch	FGS-HASB-5/8-48	4.40
FiberGuide® – 4x4 and 4x6 downspout cover	FGS-MCDS-AB	4.39, 4.41
FiberGuide® – 4x4 and 4x6 extended downspout cover	FGS-MCDS-EX-AB	4.39
FiberGuide® – 4x4 Auxiliary framing clip kit 1/2 -11 thread	FGS-HFCK-1/2	4.40
FiberGuide® – 4x4 Auxiliary framing clip kit 5/8 -11 thread	FGS-HFCK-5/8	4.40
FiberGuide® – 4x4 Centre support bracket (1/2 -inch)	FGS-HTUB-1/2	4.40
FiberGuide® – 4x4 Centre support bracket (5/8 -inch)	FGS-HTUB-5/8	4.40
FiberGuide® – 4x4 cut-in T	FGS-MHIS-A	4.39
FiberGuide® – 4x4 cut-in T fixture	FGS-MHIS-JIG-A/B/F	4.39
FiberGuide® – 4x4 Digital cableway bracket kit (12-inch)	FGS-HCBL-12	4.40
FiberGuide® – 4x4 Digital cableway bracket kit (15-inch)	FGS-HCBL-15	4.40
FiberGuide® – 4x4 downspout	FGS-MDSP-A	4.39
FiberGuide® – 4x4 downspout junction kit	FGS-MJWR-A	4.40
FiberGuide® – 4x4 dual flex tube with (2) 5-foot lengths 2-inch flex tubing	FGS-KT03-A	4.40
FiberGuide® – 4x4 end cap	FGS-HMEC-A	4.39
FiberGuide® – 4x4 Existing threaded rod bracket (1/2 -inch)	FGS-HETR-1/2	4.40
FiberGuide® – 4x4 Existing threaded rod bracket (5/8 -inch)	FGS-HETR-5/8	4.40
FiberGuide® – 4x4 expandable straight section	FGS-MVAR-A	4.39
FiberGuide® – 4x4 extended downspout	FGS-MDSP-EX-A	4.39
FiberGuide® – 4x4 horizontal cross	FGS-MHXP-A	4.39
FiberGuide® – 4x4 horizontal cross cover	FGS-SHXP-A	4.39
FiberGuide® – 4x4 horizontal T	FGS-MHRT-A	4.39
FiberGuide® – 4x4 horizontal T cover	FGS-SHRT-A	4.39
FiberGuide® – 4x4 IFC tie bracket	FGS-HIFC-A	4.39
FiberGuide® – 4x4 L bay support bracket	FGS-HLBK	4.40
FiberGuide® – 4x4 Ladder rack centre support bracket kit	FGS-HNLR-AB	4.40
FiberGuide® – 4x4 Modified existing threaded rod bracket (5/8 -inch)	FGS-HETR-5/8-A	4.40
FiberGuide® – 4x4 Modified new threaded rod bracket (5/8 -inch)	FGS-HNTR-5/8-A	4.40
FiberGuide® – 4x4 New threaded rod bracket (1/2 -inch)	FGS-HNTR-1/2	4.40
FiberGuide® – 4x4 New threaded rod bracket (5/8 -inch)	FGS-HNTR-5/8	4.40
FiberGuide® – 4x4 single flex tube with (1) 5-foot length 2-inch flex tubing	FGS-KT03-A1	4.40
FiberGuide® – 4x4 snap-fit junction	FGS-MFAW-A	4.39
FiberGuide® – 4x4 Threaded rod, 5/8 -11x30-inch	FGS-HTHR-5/8-30	4.40
FiberGuide® – 4x4 Threaded rod, 5/8 -11x72-inch	FGS-HTHR-5/8-72	4.40
FiberGuide® – 4x4 to 4x6 straight adaptor	FGS-MDSA-AB	4.39
FiberGuide® – 4x4 to 4x6 straight adaptor cover	FGS-SDSA-AB	4.39
FiberGuide® – 4x4 Top support C-bracket	FGS-HNTS-5/8	4.40
FiberGuide® – 4x4 Top support low profile C-bracket	FGS-HNTS-5/8-LP	4.40
FiberGuide® – 4x4 trumpet flare kit	FGS-MTRM-A	4.40
FiberGuide® – 4x4 Unistrut nut kit (5/8 -inch)	FGS-HDGR	4.40
FiberGuide® – 4x4 vertical adaptor junction kit	FGS-MJWR-D	4.43
FiberGuide® – 4x4 vertical duct kit	FGS-KTW2-D	4.43
FiberGuide® – 4x4 vertical duct mounting bracket	FGS-HWMB-D	4.43
FiberGuide® – 4x4 vertical slotted duct, 6-feet	FGS-MSHS-D	4.43
FiberGuide® – 4x4/4x6 downspout insert (adapts to 2x2 system)	FGS-HDSI-AB	4.40
FiberGuide® – 4x4/4x6 extended downspout cover	FGS-MCDS-EX-AB**	4.41
FiberGuide® – 4x6 45° down elbow	FGS-MD4E-B	4.41
FiberGuide® – 4x6 45° down elbow cover	FGS-SD4E-B	4.41
FiberGuide® – 4x6 45° horizontal elbow	FGS-MH4E-B	4.41

Index

Product Name – Part Number

Product Name	Part Number	Page Number
FiberGuide® – 4x6 45° horizontal elbow cover.....	FGS-SH4E-B	4.41
FiberGuide® – 4x6 45° up elbow with cover	FGS-MU4E-B	4.41
FiberGuide® – 4x6 6-foot horizontal straight section.....	FGS-MSHS-B	4.41
FiberGuide® – 4x6 6-foot horizontal straight section hinged cover.....	FGS-MSHC-B	4.41
FiberGuide® – 4x6 6-foot horizontal straight section snap-on cover.....	FGS-MSSC-B/G	4.41
FiberGuide® – 4x6 90° down elbow	FGS-MD9E-B	4.41
FiberGuide® – 4x6 90° down elbow cover	FGS-SD9E-B	4.41
FiberGuide® – 4x6 90° horizontal elbow	FGS-MH9E-B	4.41
FiberGuide® – 4x6 90° horizontal elbow cover.....	FGS-SH9E-B	4.41
FiberGuide® – 4x6 90° up elbow with cover	FGS-MU9E-B	4.41
FiberGuide® – 4x6 cut-in T	FGS-MHIS-B	4.41
FiberGuide® – 4x6 Cut-in T fixture.....	FGS-MHIS-JIG-A/B/F	4.41
FiberGuide® – 4x6 downspout	FGS-MDSP-B	4.41
FiberGuide® – 4x6 end cap	FGS-HMEC-B	4.41
FiberGuide® – 4x6 expandable straight section.....	FGS-MVAR-B	4.41
FiberGuide® – 4x6 extended downspout	FGS-MDSP-EX-B	4.41
FiberGuide® – 4x6 horizontal cross	FGS-MHXP-B	4.41
FiberGuide® – 4x6 horizontal cross cover.....	FGS-SHXP-B	4.41
FiberGuide® – 4x6 horizontal T.....	FGS-MHRT-B	4.41
FiberGuide® – 4x6 horizontal T cover.....	FGS-SHRT-B	4.41
FiberGuide® – 4x6 IFC tie bracket.....	FGS-HIFC-B	4.41
FiberGuide® – 4x6 snap-fit junction.....	FGS-MFAW-B	4.41
FiberGuide® – 4x6 trumpet flare kit	FGS-MTRM-B	4.41
FiberGuide® – 7/8 -inch outer diameter slotted flex tube, 10-feet	FGS-MFTY-10F	4.43
FiberGuide® – 7/8 -inch outer diameter slotted flex tube, 15-feet	FGS-MFTY-15F	4.43
FiberGuide® – 7/8 -inch outer diameter slotted flex tube, 200-feet	FGS-MFTY-200F	4.43
FiberGuide® – 7/8 -inch outer diameter slotted flex tube, 5-feet	FGS-MFTY-5F	4.43
FiberGuide® – Accessories – Flex tube clamps (kit of 10).....	FGS-HHEC-10	4.43
FiberGuide® – Accessories – Hinge kit for 4x4 and 4x6 covers (kit of 1).....	FGS-HHGK	4.43
FiberGuide® – Accessories – Mitre box and saw	FGS-MKIT-ABF	4.43
FiberGuide® – Accessories – Quick knobs (10)	FGS-KQKB	4.43
FiberGuide® – Accessories – Quick knobs (100)	FGS-HQKK	4.43
FiberGuide® – Accessories – Retainer rings (kit of 10)	FGS-HFRR-10	4.43
FiberGuide® – Accessories – Self-closing hinge (kit of 3)	FGS-HVHG	4.43
FiberGuide® – Accessories – Trough cover clip kit.....	FGS-KTO9	4.43
FiberGuide® – Aluminium track support (6-feet)	FGS-HASK-C	4.38
FiberGuide® – Cover for 2x2 vertical duct, 6-feet.....	FGS-MSHC-C	4.43
FiberGuide® – Cover for 4x4 vertical duct, 6-feet.....	FGS-MSHC-D	4.43
FiberGuide® – Dual 7/8 inch flex tube with (2) flex tubes and 2x2 junction	FGS-KT03-C	4.37
FiberGuide® – Dual threaded rod bracket kit	FGS-HTUB-2-AB	4.38
FiberGuide® – Kit of 107/8 -inch flex tube clamps.....	FGS-HSHC-10	4.37
FiberGuide® – Ladder rack bracket kit (5/8 -inch)	FGS-HLDR-5/8	4.38, 4.40
FiberGuide® – Low profile Express Exit.....	FGS-MEXP-LP-A/B/F	4.37
FiberGuide® – New threaded rod kit (1/2 -inch)	FGS-HTR2-1/2	4.38
FiberGuide® – New threaded rod kit (5/8 -inch)	FGS-HTR2-5/8	4.38
FiberGuide® – Plenum – 4x12 45° down elbow	PFGF-PD4E-F	4.49
FiberGuide® – Plenum – 4x12 45° horizontal elbow	PFGF-PH4E-F	4.49
FiberGuide® – Plenum – 4x12 45° up elbow	PFGF-PU4E-F	4.49
FiberGuide® – Plenum – 4x12 90° down elbow	PFGF-PDNE-F	4.49
FiberGuide® – Plenum – 4x12 90° horizontal elbow	PFGF-PH9E-F	4.49
FiberGuide® – Plenum – 4x12 90° up elbow	PFGF-PUPE-F	4.49
FiberGuide® – Plenum – 4x12 end cap – includes 4x12 junction	PFGF-PMEC-F	4.49
FiberGuide® – Plenum – 4x12 horizontal cross	PFGF-PHXP-F	4.49
FiberGuide® – Plenum – 4x12 horizontal T	PFGF-PHRT-F	4.49
FiberGuide® – Plenum – 4x12 junction	PFGF-PJWR-F	4.49
FiberGuide® – Plenum – 4x12 straight section – 6' long	PFGF-PSHS-F	4.49
FiberGuide® – Plenum – 4x12 trumpet flare – 3 sided	PFGF-PTRM-F	4.49
FiberGuide® – Plenum – 4x12 trumpet flare – 4 sided	PFGF-PFPT-F	4.49

Index

Product Name – Part Number

Product Name	Part Number	Page Number
FiberGuide® – Plenum – 4x12/4x6 horizontal T	PFGF-PHRT-F/B	4.49
FiberGuide® – Plenum – 4x6 45° down elbow	PFGF-PD4E-B	4.48
FiberGuide® – Plenum – 4x6 45° horizontal elbow	PFGF-PH4E-B	4.48
FiberGuide® – Plenum – 4x6 45° up elbow	PFGF-PU4E-B	4.48
FiberGuide® – Plenum – 4x6 90° down elbow	PFGF-PDNE-B	4.48
FiberGuide® – Plenum – 4x6 90° horizontal elbow	PFGF-PH9E-B	4.48
FiberGuide® – Plenum – 4x6 90° up elbow	PFGF-PUPE-B	4.48
FiberGuide® – Plenum – 4x6 end cap – includes 4x6 junction	PFGF-PMEC-B	4.48
FiberGuide® – Plenum – 4x6 horizontal cross	PFGF-PHXP-B	4.48
FiberGuide® – Plenum – 4x6 horizontal T	PFGF-PHRT-B	4.48
FiberGuide® – Plenum – 4x6 junction	PFGF-PJWR-B	4.48
FiberGuide® – Plenum – 4x6 Plenum to 12" Plenum conversion	PFGF-PDSB-A/F	4.48
FiberGuide® – Plenum – 4x6 Plenum to 4x6 standard conversion	PFGF-PPSC-B	4.48
FiberGuide® – Plenum – 4x6 straight section – 6' long	PFGF-PSHS-B	4.48
FiberGuide® – Plenum – 4x6 trumpet flare – 3 sided	PFGF-PTRM-B	4.48
FiberGuide® – Plenum – 4x6 trumpet flare – 4 sided	PFGF-PFPT-B	4.48
FiberGuide® – Plenum – Diagonal span bracket kit	PFGF-DSPT-C/B/F	4.49
FiberGuide® – Plenum – Diagonal span bracket kit with square U-bolt	PFGF-EADSPT-C/B/F	4.49
FiberGuide® – Plenum – Long bracket kit	PFGF-LSPT-C/B/F	4.49
FiberGuide® – Plenum – Long bracket kit with square U-bolt	PFGF-EALSP-T-C/B/F	4.49
FiberGuide® – Plenum – Short bracket kit	PFGF-SSPT-C/B	4.49
FiberGuide® – Plenum – Short bracket kit with square U-bolt	PFGF-EASSPT-C/B	4.49
FiberGuide® – Plenum – Span bracket kit	PFGF-ESPT-C/B/F	4.49
FiberGuide® – Plenum – Span bracket kit with square U-bolt	PFGF-EAESPT-C/B/F	4.49
FiberGuide® – Rear cover, 4-inch Express Exit – 4x12 system	FGS-MEXC-E-F	4.37
FiberGuide® – Rear cover, 4-inch Express Exit – 4x4 system	FGS-MEXC-E-A	4.37
FiberGuide® – Rear cover, 4-inch Express Exit – 4x6 system	FGS-MEXC-E-B	4.37
FiberGuide® – Threaded rod 12" long	FGS-HTHR-5/8-12	4.38, 4.40
FiberGuide® – Track connecting bar kit	FGS-HAEJ-C	4.38
Fibre Distribution Unit 1 tray	7032 1 134-XX	4.04
Fibre Distribution Unit 6 tray	7032 1 135-00	4.04
Fibre Optic Cable, Loose Tube, OM1 (62.5/125µm) LSZH	7023 3 220-XX	3.10
Fibre Optic Cable, Loose Tube, OM2 (50/125µm) LSZH	7023 3 222-XX	3.10
Fibre Optic Cable, Loose Tube, OM3 (50/125µm) LSZH	7023 3 227-XX	3.10
Fibre Optic Cable, Loose Tube, OM3e (50/125µm) LSZH	7023 3 246-XX	3.10
Fibre Optic Cable, Loose Tube, OS1 (9/125µm) LSZH	7023 3 224-XX	3.10
Fibre Optic Cable, Steel Tape Armoured, LSZH	7023 3 2YY-XX	3.14
Fibre Optic Cable, Tight Buffered, 12F OM2, 6F OS1, LSZH	7023 4 263-18	3.06, 5.06
Fibre Optic Cable, Tight Buffered, 12F OM3, 6F OS1, LSZH	7023 4 363-18	3.06, 5.06
Fibre Optic Cable, Tight Buffered, 6F OM2, 6F OS1, LSZH	7023 4 233-12	3.06, 5.06
Fibre Optic Cable, Tight Buffered, 6F OM3, 6F OS1, LSZH	7023 4 333-12	3.06, 5.06
Fibre Optic Cable, Tight Buffered, 8F OM2, 4F OS1, LSZH	7023 4 242-12	3.06, 5.06
Fibre Optic Cable, Tight Buffered, 8F OM2, 6F OS1, LSZH	7023 4 243-14	3.06, 5.06
Fibre Optic Cable, Tight Buffered, 8F OM3, 4F OS1, LSZH	7023 4 342-12	3.06, 5.06
Fibre Optic Cable, Tight Buffered, 8F OM3, 6F OS1, LSZH	7023 4 343-14	3.06, 5.06
Fibre Optic Cable, Tight Buffered, OM1 (62.5/125µm) LSZH	70XXLZHIOC062	3.06, 5.06
Fibre Optic Cable, Tight Buffered, OM2 (50/125µm) LSZH	00XXLZHIOC050	3.06, 5.06
Fibre Optic Cable, Tight Buffered, OM3 (50/125µm) LSZH	7023 3 229-XX	3.06, 5.06
Fibre Optic Cable, Tight Buffered, OM3e (50/125µm) LSZH	7023 3 243-XX	3.06, 5.06
Fibre Optic Cable, Tight Buffered, OS1 (9/125µm) LSZH	7023 3 228-XX	3.06, 5.06
Fibre Optic Hybrid Cable, Loose Tube, 12F OM2, 6F OS1, LSZH	7023 4 563-18	3.10
Fibre Optic Hybrid Cable, Loose Tube, 12F OM3, 6F OS1, LSZH	7023 4 663-18	3.10
Fibre Optic Hybrid Cable, Loose Tube, 6F OM2, 6F OS1, LSZH	7023 4 533-12	3.10
Fibre Optic Hybrid Cable, Loose Tube, 6F OM3, 6F OS1, LSZH	7023 4 633-12	3.10
Fibre Optic Hybrid Cable, Loose Tube, 8F OM2, 4F OS1, LSZH	7023 4 542-12	3.10
Fibre Optic Hybrid Cable, Loose Tube, 8F OM2, 6F OS1, LSZH	7023 4 543-14	3.10
Fibre Optic Hybrid Cable, Loose Tube, 8F OM3, 4F OS1, LSZH	7023 4 642-12	3.10
Fibre Optic Hybrid Cable, Loose Tube, 8F OM3, 6F OS1, LSZH	7023 4 643-14	3.10

Index

Product Name – Part Number

Product Name	Part Number	Page Number
Fibre Optic Interconnect Patch Cable, Steel Tape Armoured, LSZH	7023 3 248-XX	3.18
Fibre Optic wall outlet LC Quad Outlet Multimode	7033 1 073-0X	6.04
Fibre Optic wall outlet MT-RJ Outlet	7033 1 067-0X	6.04
Fibre Optic wall outlet SC Duplex Outlet Multimode	7033 1 069-0X	6.04
Fibre Optic wall outlet ST Outlet Multimode	7033 1 071-0X	6.04
Fibre Patch Panel – 12/24 Port SC OM1 BK CRMP	7033 1 276-XX	4.09
Fibre Patch Panel – 12/24 Port SC OM1 BK H/S	7033 1 266-XX	4.09
Fibre Patch Panel – 12/24 Port SC OM1 GY CRMP	7033 1 274-XX	4.09
Fibre Patch Panel – 12/24 Port SC OM1 GY H/S	7033 1 267-XX	4.09
Fibre Patch Panel – 12/24 Port SC OM2 BK CRMP	7033 1 255-XX	4.09
Fibre Patch Panel – 12/24 Port SC OM2 BK H/S	7033 1 251-XX	4.09
Fibre Patch Panel – 12/24 Port SC OM2 GY CRMP	7033 1 254-XX	4.09
Fibre Patch Panel – 12/24 Port SC OM2 GY H/S	7033 1 250-XX	4.09
Fibre Patch Panel – 12/24 Port SC OM3 BK CRMP	7033 1 272-XX	4.09
Fibre Patch Panel – 12/24 Port SC OM3 BK H/S	7033 1 262-XX	4.09
Fibre Patch Panel – 12/24 Port SC OM3 GY CRMP	7033 1 270-XX	4.09
Fibre Patch Panel – 12/24 Port SC OM3 GY H/S	7033 1 263-XX	4.09
Fibre Patch Panel – 12/24 Port SC OS1 BK H/S	7033 1 258-XX	4.09
Fibre Patch Panel – 12/24 Port SC OS1 GY CRMP	7033 1 278-XX	4.09
Fibre Patch Panel – 12/24 Port SC OS1 GY H/S	7033 1 259-XX	4.09
Fibre Patch Panel – 24/48 Port LC OM1 BK CRMP	7033 1 277-XX	4.09
Fibre Patch Panel – 24/48 Port LC OM1 BK H/S	7033 1 268-XX	4.09
Fibre Patch Panel – 24/48 Port LC OM1 GY CRMP	7033 1 275-XX	4.09
Fibre Patch Panel – 24/48 Port LC OM1 GY H/S	7033 1 269-XX	4.09
Fibre Patch Panel – 24/48 Port LC OM2 BK CRMP	7033 1 257-XX	4.09
Fibre Patch Panel – 24/48 Port LC OM2 BK H/S	7033 1 253-XX	4.09
Fibre Patch Panel – 24/48 Port LC OM2 GY CRMP	7033 1 256-XX	4.09
Fibre Patch Panel – 24/48 Port LC OM2 GY H/S	7033 1 252-XX	4.09
Fibre Patch Panel – 24/48 Port LC OM3 BK CRMP	7033 1 273-XX	4.09
Fibre Patch Panel – 24/48 Port LC OM3 BK H/S	7033 1 264-XX	4.09
Fibre Patch Panel – 24/48 Port LC OM3 GY CRMP	7033 1 271-XX	4.09
Fibre Patch Panel – 24/48 Port LC OM3 GY H/S	7033 1 265-XX	4.09
Fibre Patch Panel – 24/48 Port LC OS1 BK H/S	7033 1 260-XX	4.09
Fibre Patch Panel – 24/48 Port LC OS1 GY CRMP	7033 1 279-XX	4.09
Fibre Patch Panel – 24/48 Port LC OS1 GY H/S	7033 1 261-XX	4.09
Fibre pigtail OM1 (50/125µm) Semi-Loose Tube Buffered	7006 3 1X0-11	6.13
Fibre pigtail OM1 (50/125µm) Semi-Loose Tube Buffered, MT-RJ	7074 3 100-01	6.13
Fibre pigtail OM1 (62.5/125µm) Tight Buffered	SCST1CORE-000X	6.13
Fibre pigtail OM1 (62.5/125µm) Tight Buffered, MT-RJ	MTRJ2CORE-0004	6.13
Fibre pigtail OM2 (50/125µm) Semi-Loose Tube Buffered	7006 2 1X0-11	6.13
Fibre pigtail OM2 (50/125µm) Semi-Loose Tube Buffered, MT-RJ	7074 2 100-01	6.13
Fibre pigtail OM2 (50/125µm) Tight Buffered	SCST1CORE-000X	6.13
Fibre pigtail OM2 (50/125µm) Tight Buffered, LC	7023 1 597-01	6.13
Fibre pigtail OM3 (50/125µm) Semi-Loose Tube Buffered	7006 6 1X0-11	6.13
Fibre pigtail OM3 (50/125µm) Semi-Loose Tube Buffered, MT-RJ	7074 6 100-01	6.13
Fibre pigtail OM3 (50/125µm) Tight Buffered, LC	7023 1 572-01	6.13
Fibre pigtail OM3 (50/125µm) Tight Buffered, MT-RJ	MTRJ2CORE-0006	6.13
Fibre pigtail OM3 (50/125µm) Tight Buffered, SC	SCST1CORE-0008	6.13
Fibre pigtail OS1 (9/125µm) Semi-Loose Tube Buffered	7006 1 1X0-51	6.13
Fibre pigtail OS1 (9/125µm) Tight Buffered	7023 1 59X-01	6.13
Fibre Termination Blocks	NGFB-ACCRCMSLU	4.23
Guide pins for MT-RJ multimode connectors, male	7023 1 048-00	4.14
Guide pins for MT-RJ singlemode connectors, male	7023 1 049-00	4.14
HighBand 1 Pair Disconnection Plug	6462 2 097-00	4.60
HighBand 1 Pair Test Plug	6451 2 055-00	4.60
HighBand 2 Vert Frame	6420 1 060-01	4.101
HighBand 4 Vert Frame	6420 1 060-00	4.101
HighBand Category 5e 16 Pair Module – complete with jumper rings	6468 5 080-00	4.71

Index

Product Name – Part Number

Product Name	Part Number	Page Number
HighBand Category 5e 16 Pair Module – without jumper rings	6468 5 080-20	4.71
HighBand Category 5e 8 pair module complete with jumper rings	6468 5 060-00	4.70
HighBand Category 5e 8 pair module without jumper rings	6468 5 060-20	4.70
HighBand Label Holder	6462 2 096-00	4.60
HighBand Ultim8 Termination Blocks.....	6468 5 060-06	4.60
Hinged Label Holder	7014 2 007-00	7.15
Industrial – DIN Rail Distributor IP20.....	6690 1 755-00	6.82
Insertion Tool	6417 1 810-02	4.102
Insertion Tool with Sensor	6417 2 055-01	4.102
IP67/65 RJ45 Industrial Outlet Push Pull, Cat6 2xKM8, STP.....	6690 1 860-XX	6.84
Keystone Angled 25x50 Adaptor	6538 4 111-05	6.50
Keystone Standard LJ6C Adaptor.....	6830 2 402-00	6.52
KM8 RJ45 Connection Cord, RJ45 IP20 to RJ45 IP20, shielded S-STP, LSZH.....	6830 2 867-XX	6.84
KM8 Termination Tool	6830 1 490-00	4.102
Label Holder Complete with Label.....	6092 1 820-00	7.11
labels Blank white	6534 1 001-00	7.11
LC Connector kit – Multimode, for 1.6 to 3.0mm cable, beige housing.....	7048 1 017-00	4.17
LC Connector kit – Multimode, for buffered fibre (0.9mm), beige housing	7048 1 018-00	4.17
LC Connector kit – Singlemode, for 1.6 to 3.0mm cable – APC, green housing	7048 1 014-00	4.17
LC Connector kit – Singlemode, for 1.6 to 3.0mm cable – PC/UPC, blue housing	7048 1 011-00	4.17
LC Crimp Set – 0.9mm cable	7048 1 103-XX	4.17
LC Crimp Set – 2.0mm cable.....	7048 1 102-XX	4.17
LC Crimp Set – 2.4mm cable	7048 1 101-XX	4.17
LC Crimp Set – 3.0mm cable.....	7048 1 100-XX	4.17
LC Crimping Tool for cable kits.....	7048 1 051-00	4.17
LC Duplex Clip	7048 2 050-00	4.17
LC Multimode Connector & Crimp Set	7023 1 073-00	4.17
LC Offset Cord	7048 1 065-00	4.17
LC UPC Master Cord	7048 1 052-00	4.17
Loaded Faceplate, Augmented Category 6 KM8 STP, Double, Pure White	6690 1 581-51	6.20
Loaded Faceplate, Augmented Category 6 STP	6540 1 812-XX	6.19
Loaded Faceplate, Augmented Category 6 UTP	6540 1 812-1X	6.19
Loaded Faceplate, Category 5e LN UTP, Double, White Shutter	6538 1 111-14	6.43
Loaded Faceplate, Category 5e LN UTP, Quad, White Shutter	6538 1 111-17	6.43
Loaded Faceplate, Category 5e LN UTP, Single, White Shutter	6538 1 111-13	6.43
Loaded Faceplate, Category 5e PCB STP, Double, Pure White	6690 1 511-11	6.44
Loaded Faceplate, Category 5e STP, Pure White	6690 1 593-X1	6.45
Loaded Faceplate, Category 6 KM8 STP	6540 1 812-XX	6.31
Loaded Faceplate, Category 6 KM8 STP 45x45, Pure White	6690 1 740-X1	6.33
Loaded Faceplate, Category 6 KM8 STP, Double, Pure White	6690 1 581-51	6.32
Loaded Faceplate, Category 6 KM8 STP, Single, Pure White	6690 1 581-61	6.32
Loaded Faceplate, Category 6 KM8 UTP.....	6540 1 812-0X	6.31
Loaded Faceplate, Category 6 KM8 UTP 45x45, Pure White	6690 1 741-X1	6.33
Loaded Faceplate, Category 6 KM8 UTP, Double, Pure White	6690 1 581-71	6.32
LSA-PLUS® NT connection cord	7014 2 040-00	7.18
LSA-PLUS® PROFIL® NT Disconnection Module, 10 Pairs	7014 1 601-00	7.14
LSA-PLUS® PROFIL® NT Earth Module	7014 2 152-00	7.15
LSA-PLUS® Backmount Disconnection Module, White	6089 1 102-02	7.10
LSA-PLUS® Backmount Disconnection Module, Cream	6089 1 810-00	7.10
LSA-PLUS® modules 2 Pole Connection Cord.....	6529 1 022-01	7.11
LSA-PLUS® modules 4 Pole Connection Cord.....	6529 1 042-01	7.11
Metal Rings 19" 2U	6527 1 022-00	4.102
Mini Pod, Augmented Category 6 CL UTP	6540 1 679-0X	6.18
Mini Pod, Category 5e CL UTP, 4 Port	6540 1 677-0X	6.40
Mini Pod, Category 6 CL UTP	6540 1 678-0X	6.28
Modular Jack, Augmented Category 6 Keystone UTP, Pure White.....	6830 1 885-01	6.16
Modular Jack, Augmented Category 6 KM8 STP	6830 1 810-0X	6.16
Modular Jack, Category 5e HK STP, Metal	6540 1 154-02	6.36

Index

Product Name – Part Number

Product Name	Part Number	Page Number
Modular Jack, Category 5e HK UTP, Pure White	6540 1 130-01	6.36
Modular Jack, Category 6 KM8 STP	6830 1 810-0X	6.24
Modular Jack, Category 6 KM8 UTP	6830 1 800-0X	6.24
Modular RJ11 Jack, Category 5e CL UTP, White Shutter	6540 1 204-00	6.37
Modular RJ45 Jack, Category 5e CL STP Angled, White Shutter	6540 1 254-03	6.37
Modular RJ45 Jack, Category 5e CL STP In Line, White Shutter	6540 1 254-01	6.37
Modular RJ45 Jack, Category 5e CL UTP, White Shutter	6540 1 200-01	6.37
Modular RJ45 Jack, Category 6 CL STP Angled, White Shutter	6537 1 055-00	6.25
Modular RJ45 Jack, Category 6 CL STP In Line, White Shutter	6537 1 050-00	6.25
Modular RJ45 Jack, Category 6 CL UTP, White Shutter	6537 1 010-00	6.25
MT-RJ boots for buffered fibres (0.65mm)	7023 3 043-00	4.14
MT-RJ crimp tool	7057 1 400-01	4.14
MT-RJ multimode connector kit, female (without guide pins)	7023 1 043-00	4.14
MT-RJ singlemode connector kit, female (without guide pins)	7023 1 047-00	4.14
Next Generation Frame Cable Clamp Kits	NGF-ACCCLMP04	4.30
Next Generation Frame Isolation Pad	NGF-ACCISOP30X24	4.30
Next Generation Frame Rack Extenders	NGFB-ACCEXT12-30	4.30
NTP OD180A2	7019 1 014-00	7.18
OptEnet +24Vdc Power Supply Module	ADCCE2200A	6.62
OptEnet -48Vdc Power Supply Module (100 W) – standard temperature	ADCCE2410A	6.62
OptEnet Alarm Module	ADCCE3100A	6.63
OptEnet Central Processor Unit	ADCCE3000A	6.63
OptEnet Media Conversion 1000BASE-SX (SC) Line Card	ADCPE5000A	6.68
OptEnet Modular Chassis	ADCCE1X00A	6.61
OptEnet Optical Ethernet Conversion Line Cards 100BASE-SX Line Card	ADCPE4X00A	6.66
OptEnet Singlemode to Multimode 10-622 Mb/s Line Card	ADCPE600XA	6.64
Outrigger 19" Patch Panel	6527 1 013-00	4.103
Patch Cord Augmented Category 6 (CopperTent™) Blue LSZH UTP	6645-2-827-XX	4.54
Patch Cord Augmented Category 6 LSZH LSZH UTP	6645-2-827-04	6.21
Patch Cord Category 5e Overmoulded	7063 2 6X0-YY	6.46
Patch Cord Category 5e Unbooted	5718 2 6X0-YY	6.47
Patch Cord Category 6 KM8 LSZH UTP/S-FTP	6830 2 8YZ-XX	4.62
Patch Cord Category 6 RJ45 KM8 LSZH UTP/S-FTP crossover wired	6830 2 911-XX	6.34
Patch Cord Category 6 RJ45 KM8 LSZH UTP/S-FTP T568B	6830 2 8Y1-XX	6.34
Patch Cord Fibre Optic, Duplex Patch Cable	7023 1 5XX-YY	6.10
Patch Cord Fibre Optic, LC-STII, OM1 (62.5/125µm), Duplex Patch Cable	7006 3 585-1Z	6.09
Patch Cord Fibre Optic, MTRJ-MTRJ, OM1 (62.5/125µm), Duplex Patch Cable	MTRJMTRJ2CORE-0005	6.09
Patch Cord Fibre Optic, MTRJ-SC, OM1 (62.5/125µm), Duplex Patch Cable	MTRJSTSC2CORE-0010	6.09
Patch Cord Fibre Optic, MTRJ-STII, OM1 (62.5/125µm), Duplex Patch Cable	MTRJSTSC2CORE-0015	6.09
Patch Cord Fibre Optic, OS1 (9/125µm), Duplex Patch Cable	7006 1 5XX-YZ	6.08
Patch Cord Fibre Optic, SC(Discrete)-MTRJ, OM3 (50/125µm), Duplex Patch Cable	MTRJSTSC2CORE-0027	6.10
Patch Cord Fibre Optic, SC-SC, OM1 (62.5/125µm), Duplex Patch Cable	SCSTSC2CORE-0001	6.09
Patch Cord Fibre Optic, SC-SC, OM3 (50/125µm), Duplex Patch Cable	SCSTSC2CORE-0037	6.10
Patch Cord Fibre Optic, STII-SC, OM1 (62.5/125µm), Duplex Patch Cable	STSC2CORE-0005	6.09
Patch Cord Fibre Optic, STII-STII, OM1 (62.5/125µm), Duplex Patch Cable	STSC2CORE-0018	6.09
Patch Cord PLM Category 6 Booted Patch Cord, KM8, LSZH UTP	5719 2 821-XX	4.84
Patch Cord PLM Category 6 Booted, KM8, LSZH S/FTP	5719 2 887-XX	4.84
Patch Cord PLM Category 6 Booted, KM8, PVC UTP	5719 2 83Y-XX	4.84
Patch Cord, Category 5e, Solid Core, UTP LSZH	6529 1 205-20	4.75
Patch Cord, Category 6, Solid Core LSZH UTP	6529 1 225-XX	4.61
Patch Cords Category 5e FTP	7063 2 537-XX	4.72, 6.48
Patch Cords Category 5e Overmoulded UTP	7063 2 6X1-YY	4.73
Patch Cords Category 5e S/FTP	7063 2 557-XX	4.72, 6.48
Patch Cords Category 5e Unbooted UTP LSZH UTP	5718 2 625-YY	4.74
Patch Cords Category 5e Unbooted UTP PVC UTP	5718 2 611-YY	4.74
Patch Cords HighBand® Ultim8® – Ultim8 plug to RJ45 plug – T568A	TP6TB0WTXX	4.63
Patch Cords HighBand® Ultim8® – Ultim8 plug to RJ45 plug – T568B	TP6TB-WTXX	4.63
Patch Cords HighBand® Ultim8® – Ultim8 plug to Ultim8 plug	TP6TH-WTXX	4.63

Index

Product Name – Part Number

Product Name	Part Number	Page Number
Patch Cords HighBand® Ultim8® 1 Pair – Ultim8 plug to Ultim8 plug	6648 2 000-XX	4.64
Patch Cords HighBand® Ultim8® 2 Pair Patch Cords – Ultim8 plug to Ultim8 plug ...	6648 2 005-XX	4.64
Patch Cords PLM LC-LC Duplex OM3	7078 6 110-XX	4.82
Patch Cords PLM LC-LC Duplex OS1	7078 1 150-XX	4.82
Plastic Fibre Patch Panel – 04/08/12/24 Port – MT-RJ BK	7033 1 176-XX	4.09
Plastic Fibre Patch Panel – 04/08/12/24 Port – SC Duplex BK	7033 1 180-XX	4.09
Plastic Fibre Patch Panel – 04/08/12/24 Port – ST BK	7033 1 182-XX	4.09
Plastic Fibre Patch Panel – 04/08/12/24 Port LC/mm GY	7033 1 103-XX	4.09
Plastic Fibre Patch Panel – 04/08/12/24 Port MT-RJ GY	7033 1 076-XX	4.09
Plastic Fibre Patch Panel – 04/08/12/24 Port SC Duplex GY	7033 1 080-XX	4.09
Plastic Fibre Patch Panel – 04/08/12/24 Port SM SC Duplex GY	7033 1 101-XX	4.09
Plastic Fibre Patch Panel – 04/08/12/24 Port ST GY	7033 1 082-XX	4.09
Plastic Fibre Patch Panel – 08/24 Port LC/UPC GY	7033 1 084-XX	4.09
Plastic Rings 19" 1U	6527 1 006-01	4.102
PLM Active Hardware – Control Pad	6527 1 736-00	4.86
PLM Active Hardware – Expander	6527 1 734-00	4.86
PLM Active Hardware – Indicator Controller	6527 1 735-00	4.86
PLM Active Hardware – Master 4 Ports	6527 1 733-00	4.86
PLM Active Hardware – Master Expander	6527 1 732-00	4.86
PLM Active Hardware – Mini Scanner	6527 1 739-00	4.86
PLM Active Hardware – Network Scanner	6527 1 741-00	4.86
PLM Active Hardware – Rack Indicator	6527 1 737-00	4.86
PLM Active Hardware – Scanner	6527 1 730-00	4.86
PLM Active Hardware – Scanner Attachment Cord Cu	6527 1 750-XX	4.86
PLM Active Hardware – Scanner Attachment Cord FO	6527 1 751-XX	4.86
PLM Category 6 Patch Panel, KM8, 24 Ports S/FTP	6527 1 728-01	4.84
PLM Category 6 Patch Panel, KM8, 24 Ports UTP	6527 1 728-00	4.84
PLM Fibre Split Patch Panel – LC Multimode	7033 1 016-XX	4.82
PLM Management Software – CA Unicenter Module	6527 1 755-00	4.88
PLM Management Software – CAD Module (Without MapGuide)	6527 1 754-00	4.88
PLM Management Software – HP OpenView NNM Module	6527 1 756-00	4.88
PLM Management Software – Licenses	6527 1 752-01	4.88
PLM Management Software – PBX Module	6527 1 753-00	4.88
Power-over-Ethernet Central Europe Power Cord	DGVI-20000CRD	4.92
Power-over-Ethernet Midspan Controller	PWR-XXACS-GE-E	4.92
Power-over-Ethernet Midspan Four-Port Unit	PWR-04DT-GE-E	4.94
Power-over-Ethernet Rack Mount Kit (holds three units)	PWR-04DTRM	4.94
Power-over-Ethernet Redundant power supply (Mounts in all chassis)	PWR-PS	4.92
Power-over-Ethernet Redundant/Replacement Power Supply	PWR-04DTPS	4.94
Power-over-Ethernet SNMP module (Mounts in all chassis)	PWR-M	4.92
Power-over-Ethernet UK Power Cord	DGVI-10000CRD	4.92
Power-over-Ethernet Wall Mount Bracket Kit	ADCSTBK01A	4.94
PROFIL Distribution Frame 108P	MDF-7081 1 007-01	7.19
PROFIL® Frame 95/46	6577 2 812-01	7.14
PROFIL® Module Label Holder	6753 2 009-00	7.15
Connection Cord, RJ45 IP67/65 to RJ45 IP20, S/FTP PROFINET	09 45 701 15XX	6.84
RJ-K CL Angled 25x50 Adaptor	6540 1 802-00	6.50
RJ-K CL Standard 25x50 Adaptor	6540 1 801-00	6.50
RJ-K Outlet Flying Lead Convertor	6536 1 720-XX	6.56
SC Connector – Multimode, beige housing	6824 1 003-00	4.12
SC Connector – Singlemode, APC8°/APC9°, green housing	6824 1 001-00	4.12
SC Connector – Singlemode, PC/UPC, blue housing	6824 1 002-00	4.12
SC Crimp Set – 0.9mm cable	6824 1 103-XX	4.12
SC Crimp Set – 2.0mm cable	6824 1 102-XX	4.12
SC Crimp Set – 2.4mm cable	6824 1 101-XX	4.12
SC Crimp Set – 3.0mm cable	6824 1 100-XX	4.12
SC Duplex Clip	6824 2 220-00	4.12
SC Dust Protection Cover	6824 3 900-00	4.12

Index

Product Name – Part Number

Product Name	Part Number	Page Number
SC/LC Tuning Tool	7048 1 050-00	4.12, 4.17
Split Patch Panel (Fibre)	7033 1 015-XX	4.06
Surface Mount, Category 5e HK STP, 1 Port	6690 1 60X-20	6.38
Surface Mount, Category 5e HK UTP	6690 1 60X-20	6.38
Surface Mount, Category 6 KM8 STP	6690 1 60X-00	6.26
Surface Mount, Category 6 KM8 UTP	6690 1 60X-X0	6.26
Surface Mount, Unloaded	7080 2 06X-10	6.26
Surround Faceplate, 80x80 for 45x45 Outlet, Pure White	6690 3 745-01	6.33, 6.55
Unloaded Deep Faceplate, UK Style, 50x100 (double-gang), White	6540 1 812-05	6.51
Unloaded Deep Faceplate, UK Style, 50x50 (single-gang), White	6540 1 812-04	6.51
Unloaded Faceplate, 50x50 Euro Style, (single-gang), White	6540 1 808-00	6.50
Unloaded Faceplate, Keystone, UK Style, White	6538 3 111-XX	6.53
Unloaded Faceplate, UK Style, 50x100 (double-gang), White	6540 1 807-00	6.51
Unloaded Faceplate, UK Style, 50x50 (single-gang), White	6540 1 806-00	6.51
Unloaded Faceplate, UK Style, LJ6C, White	6540 1 80X-00	6.52
Voice Panel 25 Port	7022 4 001-25	7.20
Voice Panel 50 Port	7022 4 001-50	7.20
Voice Patch Panel 1U	7022 4 001-XX	4.78
Wall-Mountable Back Box	0637 0 006-57	6.50
Wall-Mounted Distribution Cabinet, 12U WVS 600P	7049 1 207-00	4.100
Wall-Mounted Distribution Cabinet, 15U WVS 750P	7049 1 208-00	4.100
Wall-Mounted Distribution Cabinet, 18U WVS 875P	7049 1 209-00	4.100
Wall-Mounted Distribution Cabinet, 6U WVS 350P	7049 1 205-00	4.100
Wall-Mounted Distribution Cabinet, 9U WVS 475P	7049 1 206-00	4.100
WFX WLAN Array WFX-3100 Remote Power System	WFX-3100-C L2	6.76
WFX WLAN Array WFX-3300 Management Platform	WFX-3300-SCC-10 L2	6.77
WFX WLAN Array WFX-3500	WFX-3500-4 L32	6.75
WFX WLAN Array WFX-3700	WFX-3700-8 L12	6.75
WFX WLAN Array WFX-3900	WFX-3900-16 L12	6.76

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