

# Physical Layer Management

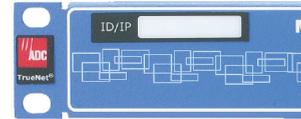


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# Physical Layer Management

## 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

# Physical Layer Management

## 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.



TrueNet® PLM 24 Port LC-LC Duplex Metal Split Patch Panel

#### 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	Product No.
<b>PLM Fibre Split Patch Panel – LC Multimode</b>	<b>7033 1 016-00</b>
PLM Fibre Split Patch Panel – LC Singlemode	7033 1 016-01
<b>PLM Patch Cord LC-LC Duplex OM3 50/125 1m</b>	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
<b>PLM Patch Cord LC-LC Duplex OS1 9/125 1m</b>	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

# Physical Layer Management

## 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

Singlemode – 0.2

Multimode – 0.3

**Typical insertion loss, dB**

#### 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

# Physical Layer Management 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	Product No.
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

# Physical Layer Management

## Patch Panels

TrueNet® PLM UTP and S/FTP Category 6 Patch Panel

### Specifications

#### 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	500μ
Dielectric strength	Contact/contact 1.0kV
Current carrying capacity	1A / contact
Typical plug/jack resistance	20μ
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
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#### ENVIRONMENTAL AND SAFETY

Operating temperature range	-10° to +60°C
Operating humidity range	≤ 95% relative humidity non condensing

# Physical Layer Management

## Patch Panels

### TrueNet® PLM CopperTen™ and Upgradeable Fascia 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™ UTP solution, it was critical the insertion loss and alien crosstalk issues prevalent at high frequencies were addressed.

This involved electrical enhancements to the jack and introduction of a carbon cap alongside the use of a plastic 19" 1U housing.

The standard CopperTen™ UTP patch panel has an innovative cable management system that clips into the panel and grips the cable, which allows for fast installation and protection.

A key feature of the panel is the unique upgrade path to Physical Layer Management (PLM) providing complete end-to-end, real time control and remote management of the Enterprise network. This industry first design incorporates a removable front fascia which can easily be replaced with the PLM fascia. This upgrade is quick, simple, tool-less and has no impact on the permanent wiring leaving the existing jacks untouched.



#### Features

- supports 10 Gigabyte Ethernet over unshield copper to a full 100m upto 500mhz
- Complete physical layer monitoring
- Exceeds the requirements of ISO/IEC 11801:2002 (channel requirements) and TIA-568-B.2-10 (channel, permanent link and componenet requirements)
- 19" 1U design incorporating 24 CopperTen™ UTP modular jacks
- Unique upgrade path of PLM
- Innovative and intergrated 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 No.
Standard Patch Panel, CopperTen™ Modular UTP 24 ports	6527 1 743-00
Upgradeable Patch Panel, CopperTen™ Modular UTP 24 ports	6527 1 780-00
PLM Fascia	6527 1 780-01
Patch Cord, PLM CopperTen™ UTP, LSZH 1.0m blue	6529 2 101-04
Patch Cord, PLM CopperTen™ UTP, LSZH 2.0m blue	6529 2 101-07
Patch Cord, PLM CopperTen™ UTP, LSZH 3.0m blue	6529 2 101-10
Patch Cord, PLM CopperTen™ UTP, LSZH 5.0m blue	6529 2 101-15

# Physical Layer Management

Patch Panels

TrueNet® PLM CopperTen™ and Upgradeable Fascia Patch Panel

Specifications (Patch Panels)

## ELECTRICAL DATA

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

## MECHANICAL DATA

<b>Plug / jack mating cycles</b>	≥ 750 (IEC/EN 60603-7)
<b>Plug / jack insertion / withdrawl force</b>	≤ 20N (IEC/EN 60603-7)
<b>Operating temperature range</b>	-10°C to +60°C
<b>Operating humidity range</b>	≤ 95% R.H. non condensing
<b>Dimensions</b>	483mm X 44mm X142mm

## TESTING REQUIREMENTS

Testing to ISO Class Ea Channel 25N 1255

# Physical Layer Management

## 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 together 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	Product No.
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

# Physical Layer Management

## Active Hardware

### TrueNet® PLM Solution – Active Hardware

#### Specifications (Excludes 6527 1 736-00)

<b>Panel rack mounting</b>	1U 19" (IEC 60297)
<b>Panel dimensions (mm)</b>	44 x 483 x 160 deep
<b>Product weight</b>	2.0Kg / 4.4lb

#### INTERFACES

<b>Up/down links</b>	Standard RS-485, Full-duplex connector shielded RJ-45 socket Data rate up to 115.2 Kbps
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<b>Serial</b>	RS-232 Connector 9-pin D-type male Data rate up to 115.2 Kbps Protocol UART, start bit 1, Stop bit 1, nonparity
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<b>100BASE-Tx</b>	RJ-45 socket, Ethernet IEEE 802.3, 100BASE-Tx/10BASE-T, 100/10 Mbps industry standard for connection to local area network
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<b>Control pad</b>	Connector RJ-45 socket, 8 pins
<b>Patch Panel connections</b>	Connectors 6 or 12 headers, 26-pin

#### LED INDICATORS (WHERE USED)

<b>PWR</b>	On when scanner is powered
<b>CPU</b>	Blinking to indicate master heartbeat
<b>DOWN LINK YELLOW</b>	On during transmission of each of the DOWN LINK ports
<b>DOWN LINK GREEN</b>	On during reception of each of the DOWN LINK ports
<b>100BASE-Tx – Rx</b>	On during reception from local area network
<b>100BASE-Tx – Tx</b>	On during transmission to local area network
<b>100BASE-Tx LINK</b>	On when link is active

#### ENVIRONMENTAL & SAFETY

<b>Operating temperature range</b>	0°C - +50°C
<b>Operating humidity range</b>	≤ 90% relative humidity non condensing
<b>Safety</b>	UL 60950, EN 60950
<b>EMC</b>	EN 55022, FCC part 15 Class A, EN 55024
<b>Power</b>	100 – 240 VAC, 47 – 63Hz, 30W maximum

# Physical Layer Management 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.



TrueNet® PLM Solution – Software

### 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	Product No.	Remarks
PV4E Standard – Online Ports	R5000500 – AXXXXX	Available for 500,1000 ports multiples of 1000 thereafter
PV4E Standard – Additional Online Ports	R5000501 – AXXXXX	Available for 500,1000 ports multiples of 1000 thereafter
PV4E Standard Discovery module ports	R5000501 – AXXXXX	Available for 500,1000 ports multiples of 1000 thereafter
PV4E Standard Provisioning module ports	R5000501 – AXXXXX	Available for 500,1000 ports multiples of 1000 thereafter
PV4E Standard PBX module ports	R5000501 – AXXXXX	Available for 500,1000 ports multiples of 1000 thereafter
PV4E Standard SDK module ports	R5000501 – AXXXXX	Available for 500,1000 ports multiples of 1000 thereafter
Enterprise Solutions Media package - PV4E, Dashboard, Site pro , CAD Module (Including 4 Cds and technical documentation ; Not including licence)	R5009808	
Report Center – Additional Users – 1	R5003704-1	
Report Center – Additional Users – 5	R5003704-5	
Site Builder Inventory Editor Module 2.5	R5004200	
Site Builder Inventory Editor Module Media Package (Not Including License)	R5004208	
Site Builder Links & Work Order Editor Module 2.5	R5004300	
Site Builder Links & Work Order Editor Module Media Package (Not Including License)	R5004308	
PV4E Customisation for a new switch driver	R5003600	
Dashboard 2.2 Users – 1	R500100-1	
Dashboard 2.2 Users – 5	R500100-5	
Dashboard 2.2 Users – 10	R500100-10	
Site Pro 1.4 – Users –1	R5001100-1	
Site Pro 1.4 – Users –5	R5001100-5	
PV4E 5.0 – CAD Module License (Without Autodesk MapGuide)	R5006300	
Upgrade – CAD Module from PV4E Version 4.x to Version 5.	R5006310	
Microsoft SQL 2005 (Including Media Package and License)	R5007000	
Crystal Reports 11 (Including Media Package and License)	R5007100	
Autodesk Map Guide 6.5 only (Including Media Package and License)	R5007200	
Autodesk Map Guide Upgrade to 6.5	R3820081	
SDK Developer	R3820046	

Note: XXXXX denotes number of ports

# Physical Layer Management 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)



# TrueNet® Structured Cabling

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