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Allied Telesis
Rozwiązania Optyczne

Rozwiązania optyczne Allied Telesis

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16 czerwiec 2010

Agenda



- Wstęp – technika światłowodowa
- Moduły SFP/GBIC
- Media Konwertery
- Karty sieciowe
- Przełączniki sieciowe

Layer 1 - Why Fibre Optic Cable?



Distance

- » Spans far greater distance than copper

Security

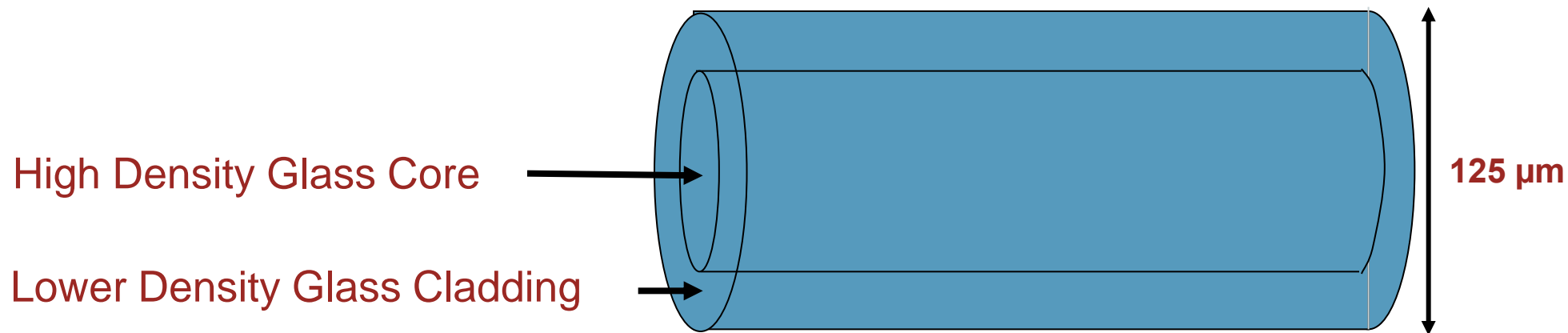
- » Fibre eliminates data signals radiating from a cable
- » Difficult to 'tap' and does not emit signals

Immunity from Electro-Magnetic Interference (EMI)

- » Fibre eliminates electrical energy corrupting data on a cable
- » E.g. lightning, Welding, heavy electrical motors, power generation

10Gb cabling

Construction of Multi Mode Glass Fibre

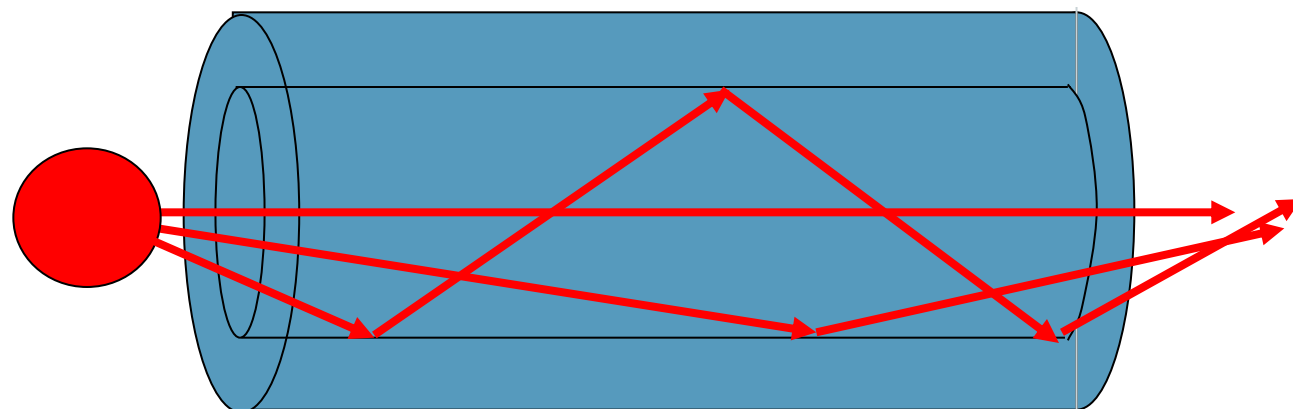


1 micron = 1 millionth of a metre = 1 µm
125 microns = thick human hair

Construction of Multi Mode Glass Fibre

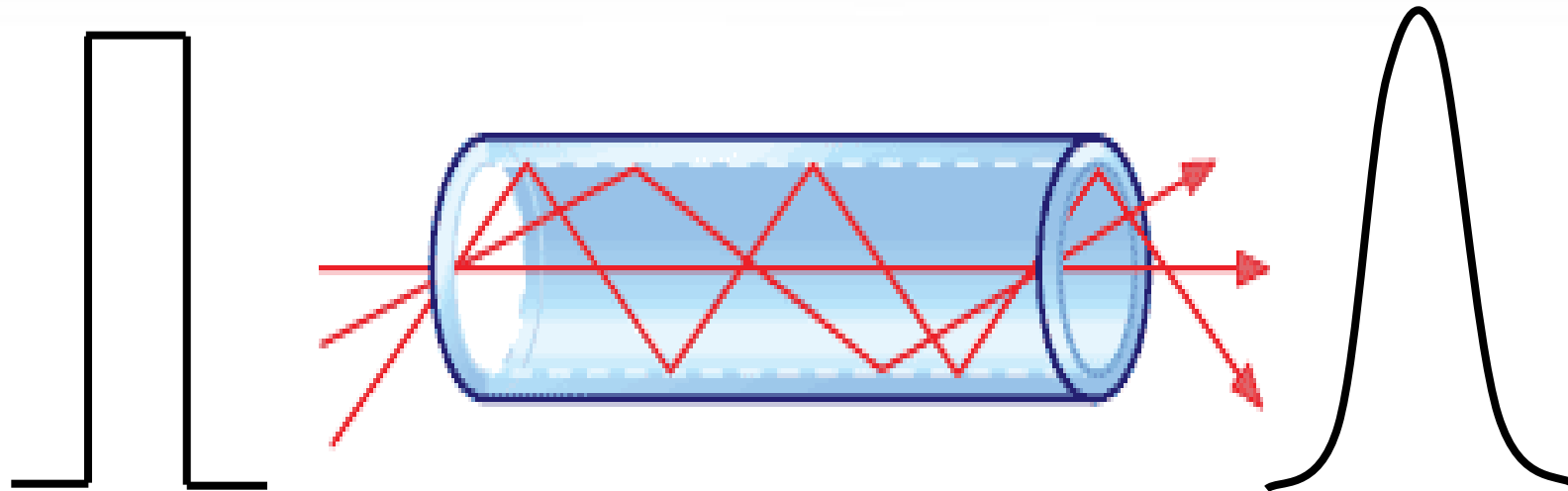


Light Source



Light reflects off of high density low density interface

Limitation of Multi Mode Fibre

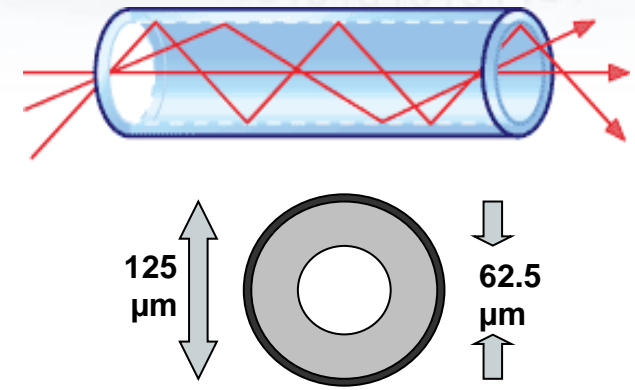


Sharp pulse of light in – different path lengths through fibre – slightly blurred pulse out
Longer the fibre – more the blur
Blur limits frequency of light, therefore limits speed of data
Each bounce reduces power of signal, thus reducing max distance of fibre

Types of Fibre

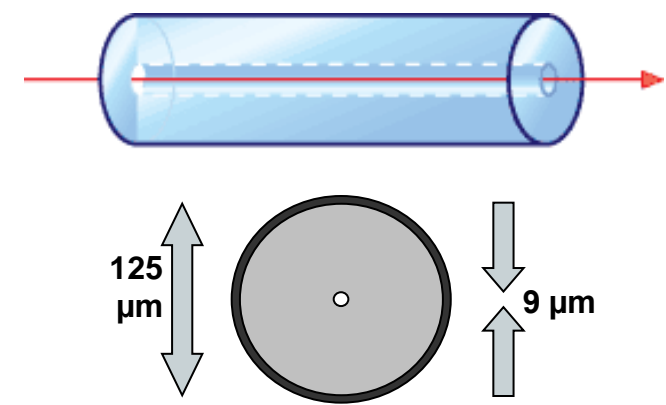
Multi-mode fibre

- 62.5/125 Multi Mode fibre – first available fibre type
- 50/125 Multi mode fibre – available later - better
- Multi Mode = Multi bounce
- 2km maximum distance at 100Mbps
- 500m maximum distance at 1000Mbps (50/125)
- Multi Mode allows ‘tighter’ bends

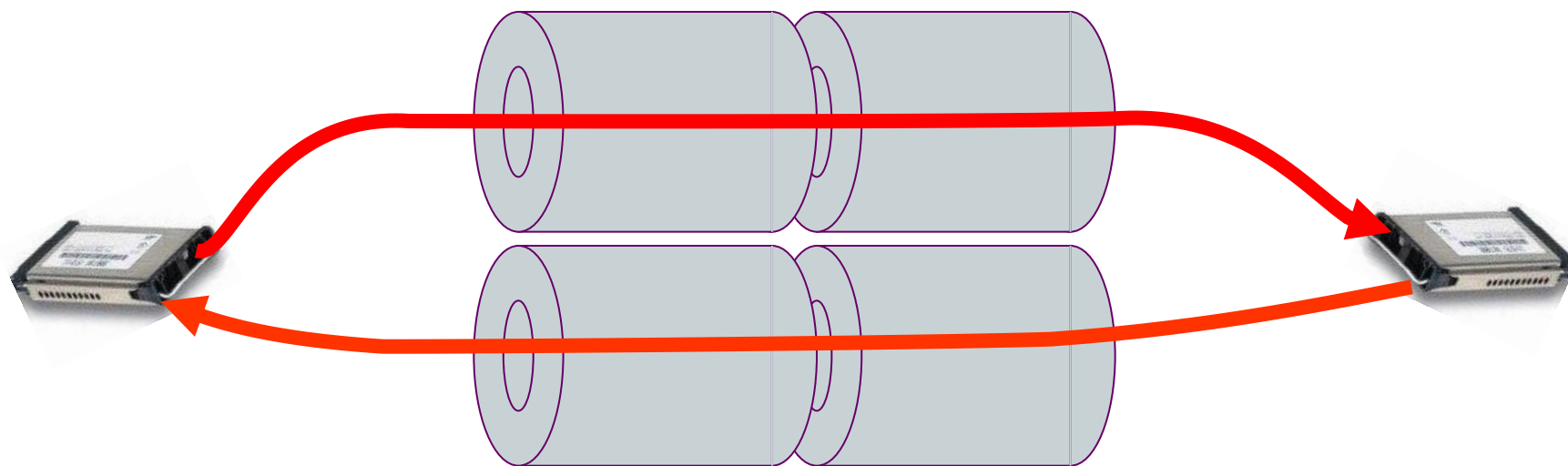


Single-mode fibre

- 9/125 or 10/125 µm
- Single mode ≈ Single bounce
- 100 km maximum distance
- Large minimum bend radius
- More expensive optics at each end



Fibre Links mainly have one fibre for Tx one Fibre for RX

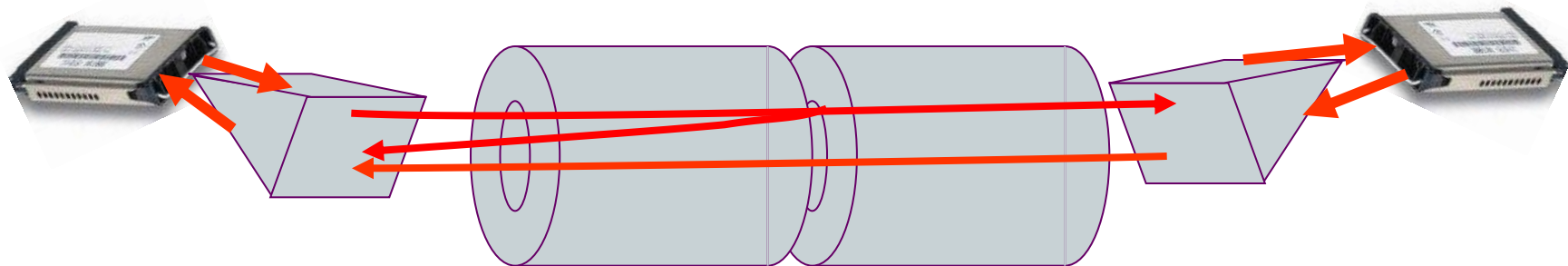


Bi-Directional or “Single Fibre” Drivers

Adding a “prism” at each end can direct Rx and Tx light down the same fibre

With good fibre joints all OK

With bad fibre joints, reflection goes back in Rx



Multi Mode Fibre Distances using standard fibre



	Wavelength	Distance using 62.5/125	Distance using 50/125			
10FL MM	850nm	2Km	2Km			
100SX MM	850nm	300m	300m			
100FX MM	1310nm	2Km	2Km			
1000SX	850nm	220m	550m			
1000LX SM (10Km) + Mode conditioning patchcord	1310nm	550m	550m			
1000SX MM + AT-EX1002	Multi Wavelength	2Km	2Km			

OM1, OM2, OM3



In the same way that copper cable manufacturers improved Cat 5 to Cat 5e Cat 6 and Cat 7, (without having an application that can use it) fibre manufacturers have done the same thing.

62.5/125 was originally 160/500 MHz.Km (850nm / 1310nm)

50/125 was originally 400/500 MHz.Km (850nm / 1310nm)

Now there are high bandwidth versions available:

62.5/125 is also available as 200/500 MHz.Km (OM1)

50/125 is also available as 500/500 MHz.Km (OM2)

50/125 is also available as 1500/500 MHz.Km (OM3)



Advanced Multi Mode Fibre Distances

	Wavelength	Distance using 62.5/125 (160MHz.Km)	Distance using 50/125 (400MHz.Km)	Distance using 62.5/125 OM1 (200MHz.Km)	Distance using 50/125 OM2 (500MHz.Km)	Distance Using 50/125 OM3 * (1500MHz.Km)
10FL MM	850nm	2Km	2Km	2Km	2Km	2Km
100SX MM	850nm	300m	300m			
100FX MM	1310nm	2Km	2Km	2Km	2Km	2Km
1000SX	850nm	220m	550m	275m	550m	900m
1000LX SM (10Km)+Mode conditioning patchcord	1310nm	550m	550m			
1000SX MM + AT-EX1002	Multi	2Km	2Km	2Km	2Km	2Km
10G SR MM	850nm	26m		33m	82m	300m
XPLRM	1300nm	300m	300m	300m	300m	300m

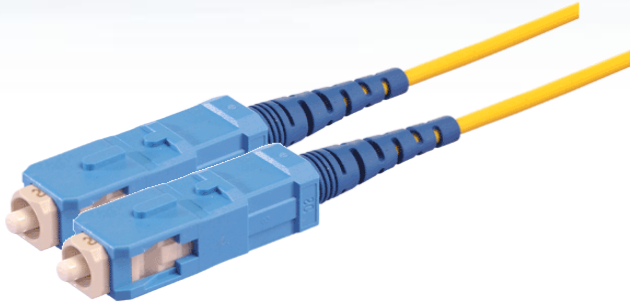
* OM3 is optimised for 850nm



Single Mode Fibre Distance Limitations

Standard	Optical Wavelength	Distance using 9/125
1000LX SM (10Km)	1310nm	10Km
1000LX SM (20Km)	1310nm	20Km
1000LX SM (50Km)	1550nm	50Km
1000LX SM (70Km)	1550nm	70Km
XPLR	1310nm	10Km
XPER40	1550nm	40Km

1000BaseX (Gigabit) Ethernet Connectors



1000BaseSX on SC

1000BaseLX on SC



1000BaseSX on LC

1000BaseLX on LC

LC is High density (RJ45 size)

Agenda

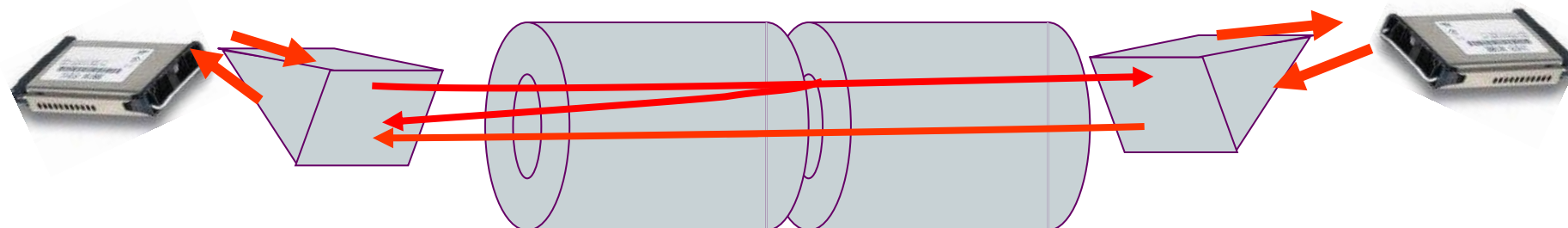


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100Mbps SFPs



Part Code	Description
AT-SPFX/2 *	100BaseFX, 2Km, 1310nm, MMF
AT-SPFX/15 *	100BaseFX, 15Km, 1310nm, SMF
AT-SPFXBD-LC-13**	100BaseBD Bi-Directional SFP 1310Tx /1550Rx SMF 10Km
AT-SPFXBD-LC-15**	100BaseBD Bi- Directional SFP 1550Tx /1310Rx SMF 10Km





Allied Telesyn GBIC's (Giga Bit Interface Conversion)



GBICs are the predecessor to SFPs – Fixed at 1Gbps

Part Code	Description
AT-G8T	1000BaseT Module (only 1000, GBIC do not support 10/100)
AT-G8SX	1000BaseSX Module uplink for ATI Gigabit Switches (500m) MMF
AT-G8LX10	1000BaseLX Module uplink for ATI Gigabit Switches (10Km) SMF

SFP / Mini GBIC (Small Form factor Pluggable)



Part Code	Description
AT-SPTX	10/100/1000 SFP due June 2005, requires 2.7.3 for 10/100
AT-SPSX	1000BaseSX SFP Module uplink (500m) MMF 850nm LC
AT-SPLX10	1000BaseLX SFP Module uplink (10Km) SMF 1310nm LC
AT-SPLX40	1000BaseLX SFP Module uplink (40Km) SMF 1310nm LC
AT-SPLX40/1550	1000BaseLX SFP Module uplink (40Km) SMF 1550nm LC
AT-SPZX80	1000BaseZX SFP Module uplink (80Km) SMF 1550nm LC
AT-SPBD10-13	1Gbps Bi-Directional SFP SMF 1310 Tx / 1490 Rx LC (blue bale)
AT-SPBD10-14	1Gbps Bi-Directional SFP SMF 1490 Tx / 1310 Rx LC (violet bale)

Optical Modules



GBIC

100Mbps SFP

1000Mbps SFP

XFP

AT-G8T	AT-SPFX/2	AT-SPTX		AT-XPSR
AT-G8SX-01	AT-SPFX/15	AT-SPSX	AT-SPSX/I	AT-XPLR
AT-G8LX10	AT-SPFXBD-LC-13	AT-SPLX10	AT-SPLX10/I	AT-XPER40
	AT-SPFXBD-LC-15	AT-SPLX40		AT-XPER80
		AT-SPLX40/1550		
		AT-SPLX80		
		AT-SPEX		
		AT-SPBD10-13		
		AT-SPBD10-14		
		AT-SPBD20B-14		

New Industrial Temp Gigabit SFP's



Distance	Commercial	Industrial
220m MMF 10km SMF	AT-SPSX AT-SPLX10	AT-SPSX/I AT-SPLX10/I
Operating Temp.	-5 to +70 C	-40 to +85 C

AT-SPEX



- 1 Gigabit SFP Module (standard physical size)
- Support up to 2km over Multi-Mode Fiber
- A replacement for the AT-EX1002, supported on all Allied products with 1Gigabit SFP uplink





XFPs – 10G pluggable



Part Code	Description
AT-XPSR	26m - 300m (300m if using OM3 High bandwidth MMF) 850nm 10G XFP - Hot Swappable
AT-XPLR	10km 1310nm 10G Base-LR XFP SMF - Hot Swappable
AT-XPER40	40km 1550nm
AT-XPER80	80km 1550nm

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Media Portfolio



Managed
Chassis



Highly Flexible Managed Solution *Ethernet and More*

- Flexible Mixed Media Capability
- Multiple redundancy options
- End-to-end management
- Ethernet and serial over common fiber

Managed
Multi-port



High Density Managed Media *Fast and Gigabit Ethernet*

- Managed or unmanaged options
- Reliability and redundancy
- Provides cost effective connectivity
- Concentration of common media types

Unmanaged
Standalone



Point to Point Media Conversion *Fast and Gigabit Ethernet*

- Plug & Play
- Ethernet Distance over Fiber
- Layer 1 Transparent Media Conversion
- Layer 2 Bridging Media Conversion

Fast Ethernet

Gigabit Ethernet

Modular Chassis

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Media – Line Up



MCR12

CONVERTEON

MCF2XXX

MISC.

AT-MCR12	AT-CV5000 → AT-CV5001	AT-MCF2000	AT-TRAY1
AT-MCPWR-60	AT-CV1000	AT-MCF2000AC	AT-TRAY4
AT-MCR1	AT-CV1203	AT-MCF2300	AT-MC605
AT-PWR4	AT-PWR14 → AT-CV5001AC AT-CV5001DC	AT-MCF2300AC-60	AT-DINRAIL1-010
AT-PWR9	AT-CV1200PSU	AT-MCF2KFAN	AT-WLMT-010
AT-MC13	AT-CV5M02	AT-MCF2000M	AT-6101G
AT-MC101XL	AT-CVFAN	AT-MCF2000S	AT-6102G
AT-MC102XL	AT-CVMNT12	AT-MCF2012LC	AT-PC232/POE
AT-MC103XL	AT-CVMCR	AT-MCF2012LC/1	AT-PC2002/POE
AT-MC103LH	AT-CM301	AT-MCF2032SP	AT-MC601
AT-MC104XL	AT-CM302		AT-MC602
AT-MC115XL	AT-CM70S		
AT-MC116XL	AT-CV1KSS		
AT-FS201	AT-CM3K0S		
AT-FS202			
AT-FS232			
AT-FS232/1			
AT-FS232/2			
AT-FS238A/1			
AT-FS238B/1			
AT-MC1004			
AT-MC1008/GB			
AT-MC1008/SP			
AT-GS2002/SP			

Note –**GREEN** products new to this roadmap or not yet shipping, **RED** products to be phased out

Unmanaged Media Converters



- Allied Telesis make a range of media converters and rate converters:
- Media Converters:
 - » Convert media type, both interfaces at the same speed
 - (i.e. 100TX to 100FX)
- Rate Converters:
 - » Converts both media and speed.
 - (i.e. 10/100TX to 100FX)



Media Converters



<u>Model</u>	<u>Port 1</u>	<u>Port 2</u>	<u>Chassis</u>
AT-MC13	10T	10FL (MM ST)	Universal
AT-MC101XL	100TX	100FX (MM ST)	Universal
AT-MC102XL	100TX	100FX (MM SC)	Universal
AT-MC103XL	100TX	100FX (SM SC 15km)	Universal
AT-MC103LH	100TX	100FX (SM SC 40km)	Universal
AT-MC104XL	100FX (MM SC)	100FX (SM SC 15km)	Universal
AT-MC104LH	100FX (MM SC)	100FX (SM SC 40km)	Universal
AT-MC1004	1000T	1000SX (MM SC)	Universal
AT-MC1008/GB	1000T	1000X (GBIC)	Universal
AT-MC1008/SP	1000T	1000X (SFP)	Universal

Media/Rate Converters



<u>Model</u>	<u>Port 1</u>	<u>Port 2</u>	<u>Chassis</u>
AT-FS201	10/100TX	100FX (MM ST)	Universal
AT-FS202	10/100TX	100FX (MM SC)	Universal
AT-FS232	10/100TX	100FX (MM SC)	Universal
AT-FS232/1	10/100TX	100FX (SM SC 15km)	Universal
AT-FS232/2	10/100TX	100FX (SM SC 40km)	Universal
AT-FS238A/1	10/100TX	100FX (SC Bidi 15km)	Universal
AT-FS232B/1	10/100TX	100FX (SC Bidi 15km)	Universal
AT-GS2002/SP	10/100/1000T	1000X (SFP)	Universal
AT-MC601	10/100TX	VDSL	Universal
AT-MC602	10/100TX	VDSL	Universal
AT-MC605	10/100TX	VDSL	Universal

Universal Chassis Accessories



- 12 Slot Chassis: AT-MCR12



- Accommodates up to 12 media/rate converters
- One or two Internal Power Supplies (Redundant)
- AC or DC power supplies
- 19" Rack Mountable, or Standalone

Universal Chassis Accessories



- 1 Slot Chassis: AT-MCR1



- Accommodates up to 1 media/rate converters
- One Internal Power Supply
- AC or DC power supplies
- 19" Rack Mountable, or Standalone

Universal Chassis Accessories



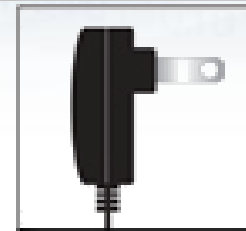
- 1 Slot 19" Rack Mount Kit: AT-TRAY1
- 4 Slot 19" Rack Mount Kit: AT-TRAY4
- 1 Slot DINRAIL Mounting Kit: AT-DINRAIL
- 1 Slot Wall Mount Kit: AT-WLMT1
- All Accommodate up to 1 media/rate converter



Media Converters



What's New?



Powered by an ENERGY STAR® qualified adapter for a better environment

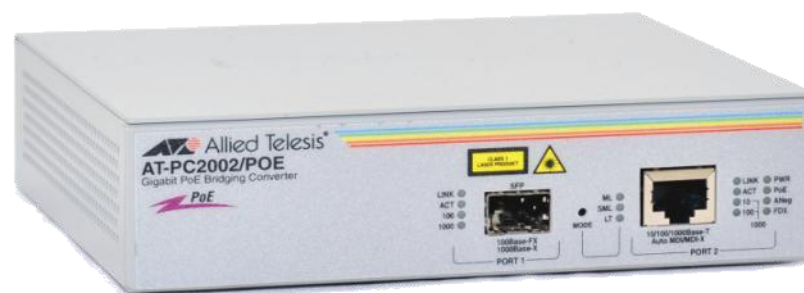
- Energy Star Compliant Power Adapters.
 - » All External Power Supplies on AT-MC1XX, AT-FSXXX, AT-GSXXX
- With the exception of AT-MC101XL, AT-MC102XL, AT-MC103XL, AT-MC1004, all External Power Adapter media converters now ship with Multi-region Power Adapter.
 - » One product for the world
 - » Less inventory
 - » Faster Delivery
 - » Easier Forecasting



Power Converters (AT-PC Family)



- Supplies Power-over-Ethernet PoE over the copper port.
- Full power 15.4W 802.11af compliant
- Internal Power Adapter
- Stand alone (not chassis based)



Model	Port 1	Port 2
AT-PC232	10/100TX	100FX (MM SC)
AT-PC2002	10/100/1000T	SFP



Managed Media Converters

Managed Media Converters



- Allied Telesis have two media converter platforms, that can be used in both managed, and un-managed operation.
- Converteon:
 - » Granularity to a single channel
 - » Resilient Management
 - » Remote Management
 - » Flexible
- AT-MCF2000:
 - » Granularity to 12 channels
 - » Stackable
 - » Targeted at high density applications



Converteon



- Converteon has 3 chassis options:
- AT-CV1000
 - » Single Slot Chassis, External PSU
- AT-CV1203
 - » Dual Slot Chassis, External PSU
 - » Optional Redundant External PSU
- AT-CV5001
 - » 18 Slot Chassis
 - » Internal PSU (AC or DC)
 - » Optional Redundant PSU



Converteon Blades



<u>Model</u>	<u>Port 1</u>	<u>Port 2</u>
AT-CM301	10/100TX	100FX (MM ST)
AT-CM302	10/100TX	100FX (MM SC)
AT-CV1KSS	1000X (SFP)	1000X (SFP)
AT-CM3K0S	10/100/1000T	100/1000X (SFP)
AT-CV5M02	10/100TX – Management Card	



AT-MCF2000 Multi-channel Media Converters

- Two Chassis Options
- AT-MCF2000
 - » Support for 4 blades in 2RU
- AT-MCF2300
 - » Support for 4 blades in 3RU



Modules



Module

Function

Blades

AT-MCF2012LC

12 x 10/100TX to 100FX (LC Multi-mode) 2km

AT-MCF2012LC/1

12 x 10/100TX to 100FX (LC Single-mode) 15km

AT-MCF2032/SP

12 x 10/100/1000T to SFP (100 or 1000 Mbps)

Management Modules

AT-MCF2000M

Management Module

AT-MCF2000S

Stacking Module

Power Supplies

AT-MCF2000AC

Hot-swappable AC PSU

AT-MCF2000DC

Hot-swappable DC PSU

Agenda



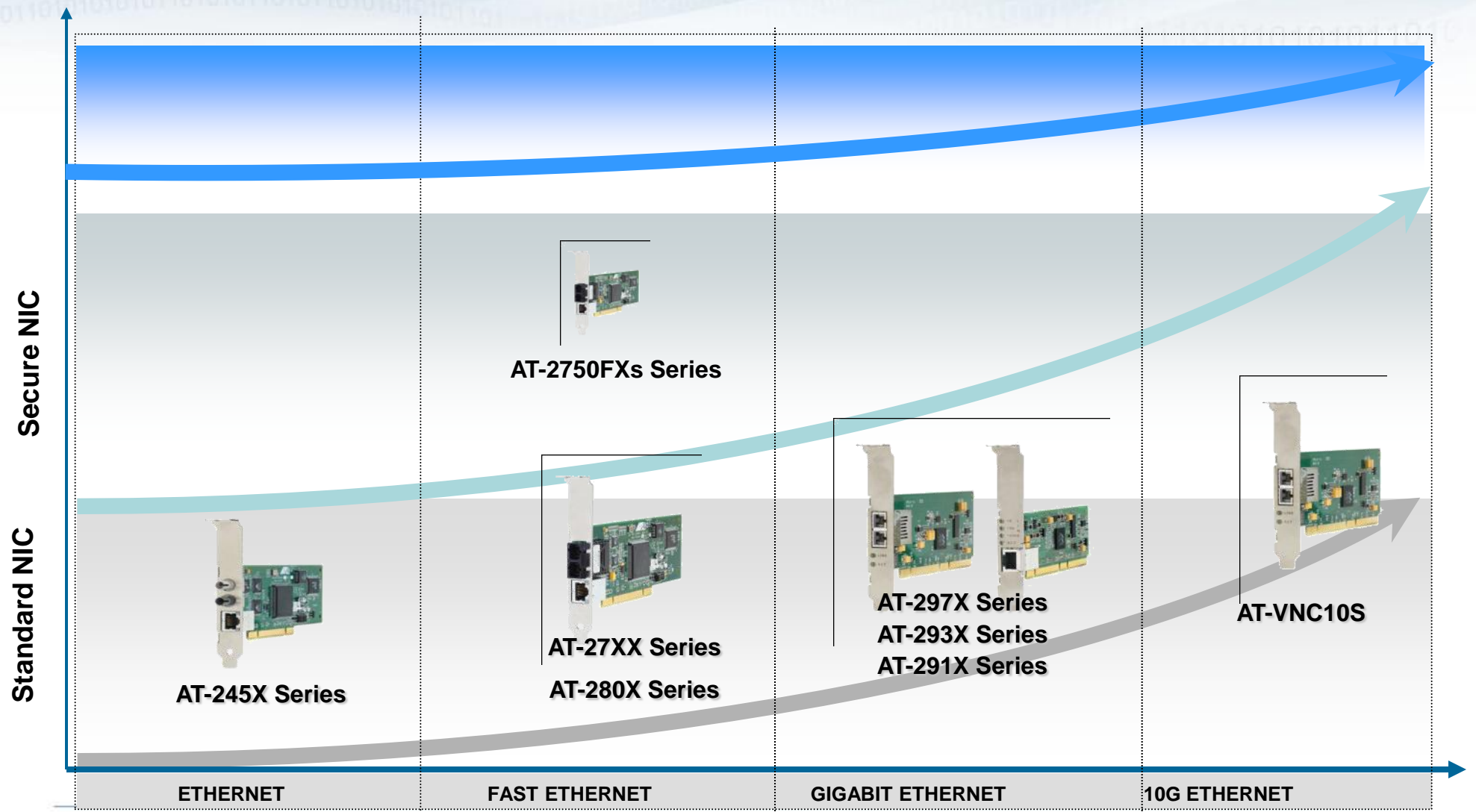
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Network Adapters – Line Up



	Laptops		Desktops			Servers
	Cardbus	ExpressCard	PCI	PCI-x	PCI-e (x1)	PCI-e (x4)
10Mbps			AT-2451FTX			
100Mbps	AT-2801FX	AT-2812FX	AT-2701FX AT-2701FTX AT-2746FX AT-2701LX20/SC		AT-2711FX AT-2712FX AT-2712LX20/SC AT-2716FX/TP	
1000Mbps		AT-2872SX	AT-2916T AT-2916SX AT-2916LX10/LC	AT-2931SX	AT-2912T AT-2972SX AT-2972LX10/LC	AT-2973T AT-2973SX AT-2973T/4
10G						AT-VNC10S

Network Adapter Card Portfolio



New Products – AT-2812FX



- What is it?
 - » 100Mbps Multi-mode Fiber ExpressCard bus, with encryption
- Target Market
 - » Government and Military customers with modern laptops.
- Competition
 - » None – Allied Telesis is the first card into this market segment
- Key Selling Points
 - » Allied Telesis is the only supplier to provide modern fiber laptop connectivity.
 - » Data Encryption (s/w option) for high security applications
 - » High Performance
- Availability
 - » FAS in Late Feb./Early March 2010
- Federal
 - » Yes



New Products – AT-2712FX



- What is it?
 - » 100Mbps Multi-mode Fiber PCI-e (x1) with Encryption
- Target Market
 - » Government and Military customers for desktops requiring data encryption. (If they do not require encryption – sell AT-2711FX)
- Key Selling Points
 - » High Performance (modern PCI-e bus)
 - » Designed and supports modern O/S
 - » DASH Management ?
- Availability
 - » Now (July 09)
- Federal?
 - » Yes



New Products – AT-2973SX



- What is it?
 - » 2 x 1000SX fiber PCI-e (x4) Server card with Virtualization
- Target Market
 - » All types of virtualization servers (running multiple applications)
- Competition
 - » Intel® Gigabit EF Dual Port Server Adapter
- Key Selling Points
 - » High Performance (modern PCI-e x4 bus)
 - » Operates at Layer 5 and incorporates RDMAC (remote direct memory access) version 1.0 to allow very fast access to the memory without host CPU intervention.
 - » Significantly lower costs than Intel
- Availability
 - » NOW (Q4/09)
- Federal?
 - » Yes



4 New Long Distance NICs



- AT-2701LX20/SC
 - » (AT-2701FX/SC with 20km single mode optics)
 - » Available Late Q1, 2010
- AT-2712LX20/SC
 - » (AT-2712FX/SC with 20km single mode optics)
 - » Available Early Q2, 2010
- AT-2916LX10/LC
 - » (AT-2916SX/LC with 10km single mode optics)
 - » Available Late Q1, 2010
- AT-2972LX10/LC
 - » (AT-2972SX/LC with 10km single mode optics)
 - » Available Early Q2, 2010

AT-VNC10S



- Chip has been Selected from B'com (BCM57711, PHY 84823)
- Fiber Channel over Ethernet is NOT supported
 - » Next chip from B'com in Late Q4 supports FCoE
- PCI-e x 8 V1.1 or x4 V.2 (decision needs to be made)
 - » If CPU PCIe slot is 1.1, throughput is lessened
 - » Simple change if needed
- VMWARE and CITRIX logos should be available
- Two Models being considered:
 - » 2 x 10G Copper
 - » 2 x 10G SFP+

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AT-8516F/SC



Porty: 16 x 100Base-FX

- Moduły: 2 sloty rozszerzeń



Bezpieczeństwo sieci LAN !!!

- Wykrywanie i blokowanie ataków DoS w sieci LAN
- 802.1x, listy ACL L2-L4, Bezpieczne zarządzanie, Radius/ TACACS+

Zaawansowane usługi

- Ograniczanie ruchu (We i Wy) na portach fizycznych
- 4 poziomy (kolejki) QoS
- 802.1p (MAC QoS)
- DiffServ (IP QoS)

Nadmiarowość i niezawodność sieci

- 802.1s, 802.1w (PVST, RSTP)
- 802.3ad (agregacja łączy)
- System nadmiarowych zasilaczy AC i DC

Wsteczna zgodność sprzętowa

- Wspólne moduły z rodzina AT-8000M

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 Allied Telesis

x900-48FS

The perfect solution for FTTx!

x900-48FS: 48 x 100BASE-X SFP
4 GbE SFP



- Perfect for FTTH, FTTD, and FTTB
- High port density, low cost per port
- Powerful: Best-in-class QoS, rich feature set
- Reliability: Dual PSUs, EPSR, front-to-back cooling, etc.
- SFPs: 100FX (dual-fiber) or 100BX (single-fiber), easy to replace, hot-swappable
- Future-proof: IPv6 in HW



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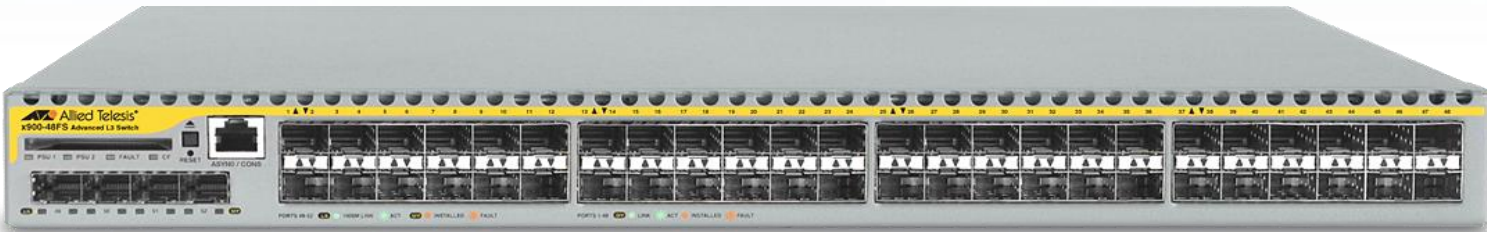




x900-48FS & x900-48FE

To position the rear components go to the View menu on the main menu bar, go down to "Grid and Guides" and turn off "snap objects to grid". Drag the components on to the products and use the arrow keys on your keyboard to position them correctly.

x900-48FS



x900-48FE



Rear view of x900 with moveable PSU



AT-PWR01

AT-PWR01

AT-9000/28SP



24 SFP Ports

4 x 10/100/1000T / SFP Combo Ports

Uplink SFP:

AT-SPEX

AT-SPSX

AT-SPLX

AT-SPZX

100FX Supported

LED Mode Switch



ECO Low Power Mode Switch

Terminal Connector RS232



9000 Key Features

Industry Standard CLI
Allied Telesis Web Interface
IEEE 802.1D Spanning-Tree Protocol
IEEE 802.1w Rapid Spanning-Tree
Static port trunking
IEEE 802.3ad LACP
IEEE 802.1Q VLAN Tag
GARP, GVRP, GMRP
MAC Address Aging
Port Mirroring
RFC 826 ARP
DHCP Static IP Configuration
RFC 2131 DHCP Client
RFC 854 Telnet
Network Time Protocol
HTTP
TFTP

- IEEE 802.1p QoS at MAC Level
- Supports SP and WRR QoS
- L2 Multicast Forwarding and Filtering up to 256 groups
- IGMPv1 and IGMPv2
- RFC 1157 SNMPv1/v2c
- RFC 2570 SNMPv3
- RFC 1215 Traps
- RFC 1213 MIB-II
- RFC 1573 Extended Interface MIB
- RFC 1757 RMON Groups: Stats, History, Alarms, Events
- Port Security (limited/dynamic)
- 802.1x Basic Port Base
- 802.1x Multiple Host Mode
- 802.1x EAP-MD5
- RFC 2865 Radius Client
- SSH Server

AT-9408LC



AT-9408LC/SP - 8 x 1000BaseSX LC + 4 x SFP slots



AT-9900 Series

AT-9924SP

- » 24 x 1000Base-X SFP ports

Excellent Quality of Service

- » Advanced Policy-based QoS
- » Two rate, three colour bandwidth metering
- » Weighted Round Robin and Strict Priority scheduling
- » 8 egress/priority queues per port
- » Bandwidth limit resolution down to 1Kbps

Redundancy/Resilience

- » Link aggregation 802.3ad LACP
- » STP, RSTP, MSTP (802.1s)
- » VRRP
- » ECMP routing
- » Hot Swappable PSUs

IPv6

- » RIPng, DHCPv6, MLD, PIM-SM, PIM-DM
- » 10Gbps IPv6 routing (9924T/4SP)



ŚWIETLANA PROMOCJA

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MEDIA-KONWERTERY

AT-MC101XL – 368USD (GPL)

AT-MC102XL – 368USD (GPL)

AT-MC103XL – 862USD (GPL)

AT-MC1004 – 862USD (GPL)



Rabat dla projektów z udziałem Media-Konwerterów za kwotę minimum 3.000 USD
Promocja obowiązuje do 30.06.2010r.



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