Allied Telesis™

CM3xx SERIES
Converteon™ Series Line Cards

AT-CM301
10/100TX, 100FX (ST, 2km, MM) media and rate converter line card, with OAM

AT-CM302
10/100TX, 100FX (SC, 2km, MM) media and rate converter line card, with OAM

AT-CM3K0S
10/100/1000T, 100/1000Mbps SFP, media and rate converter line card, with OAM

Overview

The CM3xx series Ethernet media and rate converter line cards are designed to extend the distance of your network by interconnecting LAN devices physically separated by large distances, providing ease of management and reduced operational expenditure. The range of line cards support both multi-mode and single-mode fiber by the use of SFP modules in the AT-CM3K0S, at distances up to 80km. The CM3xx series supports IEEE 802.3ah OAM (Operations, Administration, and Maintenance or Ethernet in the First Mile), and thus are ideal for service providers or enterprise customers with demanding diagnostic capabilities. This functionality allows network managers to configure and monitor a remote line card in-band, from a central location, without having to deploy any additional network management agents. Compliant with IEEE standards, these converters will inter-operate with other standards-based media converters, switches, fiber interface cards, etc over the fiber optic cable.

Extend the Distance of Ethernet

The AT-CM301 and AT-CM302 media and rate converter line cards feature a 10/100TX twisted pair port and a 100FX optical port. The AT-CM3K0S line card features a 10/100/1000T twisted pair port, and an optical SFP slot. The twisted pair port has an RJ-45 connector and a maximum operating distance of 100 meters (328 feet) when connected to either an Ethernet, Fast Ethernet, or Gigabit device. Depending on the model, the media and rate converter line cards can operate in multi-mode or single-mode fiber over various distances up to 80km. The range support both dual fiber pair transmission, and single fiber transmission, allowing network administrators to build highly cost-effective network, when considering the costs of terminating fiber cables. These cards can operate at half and full-duplex.

The AT-CM301 fiber optic port has a multi-mode
dual fiber ST connector and a maximum operating
distance of 2km (1.24 miles).

The AT-CM302 fiber optic port has a multi-mode
dual fiber SC connector and a maximum operating distance of 2km (1.24 miles).

The AT-CM3K0S fiber optic port is dependent on the type of SFP module installed. These can be 100Mbps or 1000Mbps, multi or single-mode, dual or single fiber.

Key Features

- Converts speed as well as media type
- Extends Ethernet and Fast Ethernet and Gigabit networks
- Supports IEEE 802.3ah 'Ethernet in the First Mile'
- Support MissingLink™ and Smart MissingLink™
- Transparent to IEEE 802.1Q VLAN packets
- Automatic address learning and aging
- Managed or unmanaged operation
- Auto MDI/MDI-X
- Auto-negotiation (IEEE 802.3u-compliant)
- Store and forward data packet handling
- Supports multi-mode and single-mode fiber
- Supports dual and single fiber
- System and port LEDs
- Line card for all Converteon series chassis'
- 10K jumbo frame support
- Rate limiting
- Remote chassis dying gasp and 1st RPS failure via OAM
- Low power Eco-friendly mode
- Port flow control and port statistics
- Supports dual speed SFP (1000Mbps/100Mbps)
- Supports SFP DDM (Digital Diagnostic Monitoring) reading
- Supports combo operating mode (LT/ML/SML + OAM) for local/remote line card
- Remote line card link fault via OAM
- Restoring manufacturing configuration settings via management card
- One image run all CM3xx series line cards

eco friendly

IEEE 802.3ah (OAM) Remote Management

All the CM3xx series line cards support IEEE 802.3ah (OAM) (Operations, Administration, and Maintenance), allowing a remotely deployed line card to be configured and monitored from the central location using in-band signalling. This signalling does not interfere with normal traffic carried by the line cards. This functionality can seriously reduce the maintenance costs for service providers, by allowing them to determine the nature of remote faults without having to dispatch a maintenance engineer.

Flexible Deployment

The CM3xx series of line cards can be installed in the complete range of Converteon chassis, allowing them to be deployed in a stand-alone fashion (AT-CV1000), or in a multi-slot chassis (AT-CV1203 and AT-CV5000). When deployed with no management module, all the line cards operate in an unmanaged mode. When deployed with a management module in a multi-slot chassis, line cards installed in the same chassis and also line cards connected to the chassis can be managed via RS232, Telnet, SNMP or Web.

In unmanaged mode, the line cards can be easily configured using DIP switches, where as in a managed chassis, all the configuration can be performed remotely.

Whatever the chassis, the line cards can be hot swapped providing the network manager with a mechanism to simply perform moves/adds/changes without having to power down other parts of the network.

Hassle Free Support

All Allied Telesis Ethernet media converter line cards offer free technical support, ensuring trouble-free installation.

MissingLink and Smart MissingLink (SML)

The MissingLink (ML) feature allows the ports on the media converter blade to pass the 'Link' status of their connections to each other. When the media converter detects a problem with one of the ports, such as the loss of connection to a node, it shuts down the connection to the other port, thus notifying the node that the connection has been lost. Smart MissingLink (SML) is when a link is lost on a port, the Link LED of the port which still has a valid connection to its end node starts to blink. These features allow network administrators to quickly troubleshoot network problems.

Link Test, MissingLink, and Smart MissingLink Functions

Link Test

The link test is a fast and easy way for you to test the connections between the media converter ports and the end-nodes that are connected to the ports. If a network problem occurs, you can perform a link test to determine which port is experiencing a problem, and so be able to focus your troubleshooting efforts on the cable or endnode where the problem resides.

MissingLink

The MissingLink feature enables the two ports on the media converter to pass the 'Link' status of their connections to each other. When the media converter detects a loss of connection to an end-node, the media converter shuts down the connection to the other port, thus notifying the end-node that the connection has been lost.

Smart MissingLink

The Smart MissingLink feature performs exactly the same function as MissingLink with one additional feature. When a link is lost on a port, the LINK LED of the port which still has a valid connection to its end-node starts to blink. This allows you to quickly determine which port still has a valid connection (LINK LED blinking) and which port has lost its connection (LINK LED off).

Eco-Friendly Mode

The AT-CM3xx line cards feature an Eco-friendly switch, which turns off the LED indicators on the cards. This reduces the operational power required by each of the line cards, thus reducing OPEX and helping the environment. The Eco-friendly function can also be controlled by management.

SFP Digital Diagnostic Monitoring (DDM)

The AT-CM3K0S line card supports SFP DDM reading which provides the user with real-time diagnostic information about the SFP device's operating parameters.

Technical Specifications
Status Indicators

System LEDs

LED	Color	Description
RDY	Green	The line card has passed diagnostics
	Off	The line card has not passed diagnostics
ML	Green	MissingLink mode is enabled
	Off	MissingLink mode is disabled
SML	Green	Smart MissingLink mode is enabled
	Off	Smart MissingLink mode is disabled
OAM	Green	OAM mode is enabled
	Off	OAM mode is disabled

Fiber Port LEDs

LED	Color	Description
LK	Green	Link established on the port
	Flashing	If Smart MissingLink enabled, this shows the correctly working port, when the complete link has a failure
	Off	No link established on the port
AT	Green	TX/RX activity detected on the port
	Off	No activity detected on the port

Copper Port LEDs (AT-CM301 and AT-CM302)

LED	Color	Description
LK	Green	Link established on the port
	Flashing	If Smart MissingLink enabled, this shows the correctly working port, when the complete link has a failure
	Off	No link established on the port
AT	Green	TX/RX activity detected on the port
	Off	No activity detected on the port
FD	Green	Port operating in full-duplex mode
	Off	Port operating in half-duplex mode
100m	Green	Port operating at 100Mbps
	Off	Port operating at 10Mbps

100M and 1000M

1000M	100M	Function
Off	Off	Port operating at 10Mbps
Off	On	Port operating at 100Mbps
On	Off	Port operating at 1000Mbps

Technical Specifications

DIP Switches

The AT-CM3xx line card features the following Configuration DIP switches. The DIP switches allow the line cards to be configured for unmanaged operation.

Table 1 lists the Port Configuration DIP switches positions.

Table 1.
Port Configuration DIP Switches Positions

Operation Mode	DIP 4	DIP 3	DIP 2	DIP 1
Link Test	Off	Off	Off	Off
MissingLink (ML)	Off	Off	Off	On
Smart MissingLink (SML)	Off	Off	On	Off
Link Test with OAM	Off	On	Off	Off
MissingLink (ML) with OAM	Off	On	Off	On
Smart MissingLink (SML) with OAM	Off	On	On	Off

Performance

Maximum packet size	10,240 bytes
MAC address table	1k addresses

Forwarding/filtering rate
1,488,000pps for 1000Mbps
148,800pps for 100Mbps
14,880pps for 10Mbps

Latency   14.3 µsec
(64 byte packet,
100Mbps full-duplex)

Egress/ingress rate limiting
Desired rate between 64kbps and 1Mbps in increments of 64kbps
Desired rate between 1Mbps and 100Mbps in increments of 1Mbps
Desired rate between 100Mbps and 1Gbps in increments of 100Mbps

Interface Standards

IEEE 802.3u	100TX and 100FX
IEEE 802.3z	1000SX
IEEE 802.3ab	1000T
IEEE 802.3ah	OAM

Physical Specifications

Dimensions (W x D x H)	2.2cm x 7.3cm x 13cm (0.855" x 2.89" x 5.1")
Weight	0.113kg (0.25lbs)

Power Characteristics

Power consumption

AT-CM3K0S	6W normal mode 5.8W low power mode
AT-CM30x	5.5W normal mode 5.3W low power mode

System Capacity

16MB DRAM
2MB flash memory

Environmental Specifications

Maximum operating temperature:	0°C to 40°C (32°F to 104°F)
Maximum storage temperature:	-25°C to 70°C (-13°F to 158°F)
Operating and storage altitude:	Up to 3,048 meters (10,000 feet)
Relative humidity operating and storage:	5% to 95% (non-condensing)

Predicted MTBF (Telcordia SR332):

AT-CM301	1,500,000 hrs
AT-CM302	1,500,000 hrs
AT-CM3K0S	1,530,000 hrs

Optical Characteristics

Connector type	Dual ST (AT-CM301) Dual SC (AT-CM302)

Optical Output Power (dBm)

Product	Minimum	Maximum	Wavelength	Connector
AT-CM301	-20 dBm	-14 dBm	1310nm	Dual ST
AT-CM302	-20 dBm	-14 dBm	1310nm	Dual SC

Receiver Power Sensitivity (dBm)

Product	Minimum	Maximum
AT-CM301	-31 dBm	-11 dBm
AT-CM302	-31 dBm	-11 dBm

Standards

EMI part 15:
FCC class A, EN55022 class A, VCCI class A, C-Tick, CE

Immunity:
EN55024

Safety:
UL60950-1 (cULUS), EN60950-1 (TUV)
EN60825

Electrical Interfaces:
UL60950-1 (cULus)
EN60950-1 (TUV)
CAN/CSA C22.2 No. 60950-1

Ordering Information

AT-CM301
10/100TX, 100FX (ST multi-mode, dual fiber) bridging converter line card with IEEE 802.3ah, 2km

AT-CM302
10/100TX, 100FX (SC multi-mode, dual fiber) bridging converter line card with IEEE 802.3ah, 2km

AT-CM3K0S
10/100/1000T, 100Mbps / 1000Mbps SFP, bridging converter line card with IEEE 802.3ah

Associated Products

AT-CV1000-xx
Single slot Converteon chassis

AT-CV1203-xx
Two slot Converteon chassis

AT-CV5000-xx
18 slot, Converteon chassis

Connecting The (IP) World

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