Allied Telesis™

CM2xx SERIES
Converteon™ Series Line Cards

AT-CM201
10/100TX, 100FX (ST, 2km, MM) media and rate converter line card, with OAM

AT-CM202
10/100TX, 100FX (SC, 2km, MM) media and rate converter line card, with OAM

AT-CM202/1
10/100TX, 100FX (SC, 15km, SM) media and rate converter line card, with OAM

AT-CM202/2
10/100TX, 100FX (SC, 40km, SM) media and rate converter line card, with OAM

AT-CM212A/1
10/100TX, 100FX (SC,15km, SM) single fiber media and rate converter line card, with OAM

AT-CM212B/1
10/100TX, 100FX (SC,15km, SM) single fiber media and rate converter line card, with OAM

Overview
The CM2xx series Ethernet media and rate converter line cards are designed to extend the distance of your network by interconnecting LAN devices that are physically separated by large distances and provide ease of management and reduced operational expenditure. The range of line cards support both multi-mode and single-mode fiber, at distances up to 40km. The CM2xx series supports IEEE 802.3ah OAM (Operations, Administration, and Maintenance or Ethernet in the First Mile), and thus are ideal for service providers. This functionality allows network managers to configure and monitor a remote line card, from a central location in-band, 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.

Key Features

- Converts speed as well as media type

- Extends Ethernet and Fast Ethernet 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 dual and single fiber from 2km to 40km

- System and port LEDs

- Line card for all Converteon series chassis'

- Rate limiting

- Dying gasp

Extend the Distance of Ethernet

Each CM2xx series media and rate converter line card features a 10/100TX twisted pair port and a 100FX optical port. 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 or Fast Ethernet 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 40km. 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-CM201 fiber optic port has a multi-mode dual fiber ST connector and a maximum operating distance of 2km (1.24 miles).

The AT-CM202 fiber optic port has a multi-mode dual fiber SC connector and a maximum operating distance of 2km (1.24 miles).

The AT-CM202/1 fiber optic port has a single-mode dual fiber SC connector and a maximum operating distance of 15km (9.32 miles).

The AT-CM202/2 fiber optic port has a single-mode dual fiber SC connector and a maximum operating distance of 40km (24.85 miles).

The AT-CM212A/1 fiber optic port has a single-mode, single fiber SC connector and a maximum operating distance of 15km (9.32 miles), and is paired with the AT-CM212B/1.

The AT-CM212B/1 fiber optic port has a single-mode single fiber SC connector and a maximum operating distance of 15km (9.32 miles), and is paired with the AT-CM212A/1.

IEEE 802.3ah (OAM) Remote Management

All the CM2xx series of 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 CM2xx 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 or SNMP. 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 end-node 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).

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

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

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Technical Specifications

DIP Switches

The AT-CM2xx line card features the following Configuration DIP switches. The tables below list the positions of the DIP switches.

Table 1. Diagnostic Mode DIP Switches Positions

Operating Mode	DIP 1	DIP 2	DIP 3	DIP 4
Link Test (default)	Off	Off	Off	X
Smart MissingLink (SML)	Off	On	On	X
MissingLink (ML)	Off	Off	On	X
Manufacturing Default Settings	Off	Off	Off	Off
OAM Bypass	On	Off	Off	X
OAM Visible	On	On	Off	X

'X' means the DIP switch position could be either On or Off.

Table 2 lists the Port Configuration DIP switches positions.

Table 2. Port Configuration DIP Switches Positions

Operating Mode	DIP 1	DIP 2	DIP 3	DIP 4
Auto MDI-X Enabled (default)	X	Off	X	X
Auto MDI-X Disabled	X	On	X	X
Manufacturing Default Settings	Off	Off	Off	Off

'X' means the DIP switch position could be either On or Off.

Physical Specifications

Dimensions (W x D x H)	2.2cm x 7.3cm x 13cm (0.855" x 2.89" x 5.1")
Weight	0.27kg (0.60lbs)

Power Characteristics

Input supply voltage	5vDC, 3.3vDC
Power consumption	9 W maximum

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-CM201	1,200,000 hrs
AT-CM202	1,200,000 hrs
AT-CM202/1	1,200,000 hrs
AT-CM202/2	1,200,000 hrs

Optical Characteristics

Connector type	Dual ST (AT-CM201) Dual SC (AT-CM202/x) Single SC (AT-CM212/x)
Fiber type	Single-mode or multi-mode
Operating distance	2 km (1.24 miles) to 40 km (24.8 miles)

Optical Output Power (dBm)

Product	Minimum	Maximum	Wavelength	Connector
AT-CM201	-20 dBm	-14 dBm	1310nm	Dual ST
AT-CM202	-20 dBm	-14 dBm	1310nm	Dual SC
AT-CM202/1	-15 dBm	-5 dBm	1310nm	Dual SC
AT-CM202/2	-15 dBm	0 dBm	1310nm	Dual SC
AT-CM212A/1	-15 dBm	-5 dBm	1310nm	Single SC
AT-CM212B/1	-15 dBm	-5 dBm	1550nm	Single SC

Receiver Power Sensitivity (dBm)

Product	Minimum	Maximum
AT-CM201	-31 dBm	-11 dBm
AT-CM202	-31 dBm	-11 dBm
AT-CM202/1	-34 dBm	-3 dBm
AT-CM202/2	-34 dBm	-3 dBm
AT-CM212/A1	-34 dBm	-3 dBm
AT-CM202/B1	-34 dBm	-3 dBm
AT-CM202/A2	-34 dBm	-3 dBm
AT-CM202/B2	-34 dBm	-3 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-CM201-xx
10/100TX, 100FX (ST multi-mode, dual fiber) bridging converter line card with IEEE 802.3ah, 2km

AT-CM202-xx
10/100TX, 100FX (SC multi-mode, dual fiber) bridging converter line card with IEEE 802.3ah, 2km

AT-CM202/y-xx
10/100TX, 100FX (SC, single-mode, dual fiber) bridging converter line card with IEEE 802.3ah

AT-CM212A/1-xx
10/100TX, 100FX (SC, single-mode, single fiber) bridging converter line card with IEEE 802.3ah (TX = 1310nm, RX = 1550nm)

AT-CM212B/1-xx
10/100TX, 100FX (SC, single-mode, single fiber) bridging converter line card with IEEE 802.3ah (TX = 1550nm, RX = 1310nm)

Where y = 1, 15km reach
2, 40km reach

and xx = 10 US power adapter
20 European power adapter
30 UK power adapter
40 Australian power adapter

Associated Products

AT-CV1000-xx
Single slot Converteon chassis

AT-CV1203-xx
Two slot Converteon chassis

AT-CV5000-xx
18 slot, Converteon chassis

AT-CV5M01
SNMP management module

Connecting The IP World

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