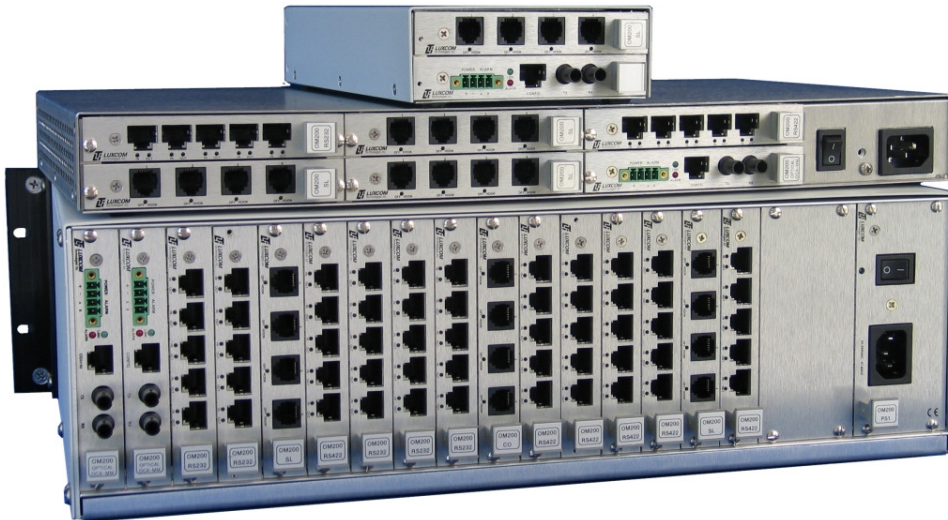


High Speed Ethernet CWDW For OM200 SONET-OC3 Multiplexer



Chassis

- Chassis sizes of 2, 4, 6, and 16 slot.
- Optical data rate of 155Mbps
- Single or multimode fiber versions
- Point-to-point topology
- Add/drop topology
- Fiber protection ring switching

Interfaces

Telephony

Subscriber Loop & CO
Digital - MC300
Digital – M3903/4
T1 or E1

Data

EIA530, RS232, V.35
RS485/RS232 - Add/Drop
RS232
RS485
Ethernet

Audio

Analog 2-wire
Analog 4-wire
E&M
Radio - Harris RF5800H

Other

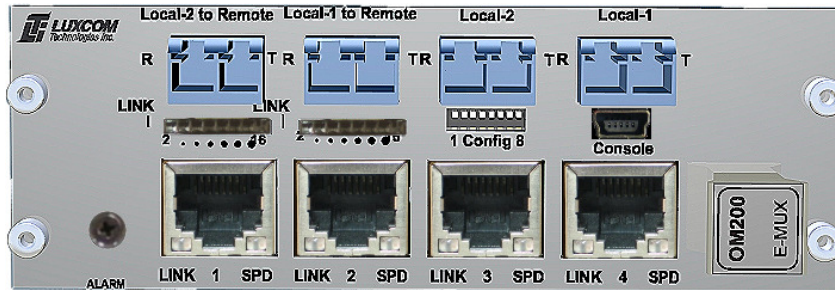
Contact sense/closure
Alarm - chassis monitor
Radar - video
Optical SONET

General

Every chassis requires at least one *Optical SONET* card and one *Interface* card.
Full details can be found at: www.luxcom.com/product/om200

Interface: OM200-EMUX (Ethernet)

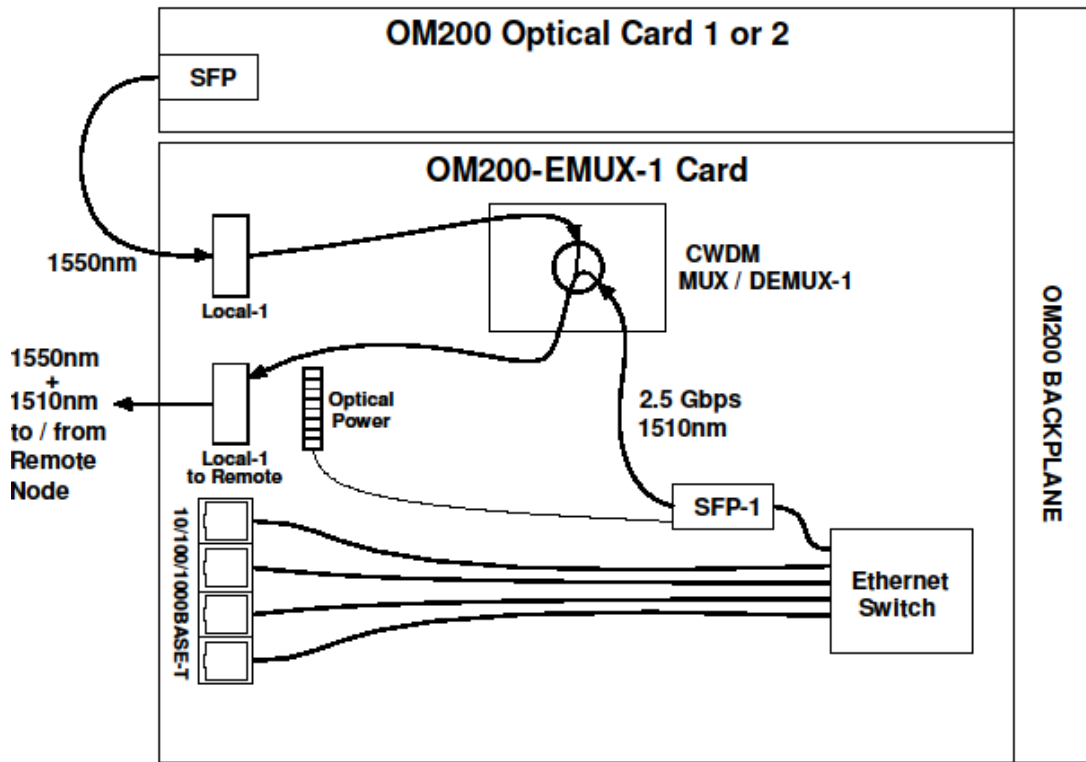
Front Panel



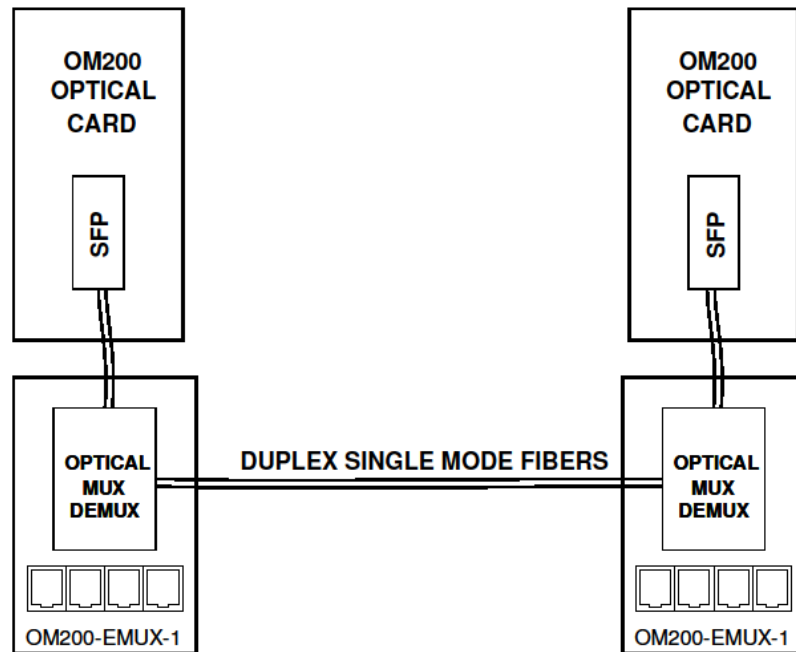
Description

This interface has four 10/100/1000 electrical Ethernet ports which are combined into a 2.5 Gigabit optical stream. This optical stream is then combined with the OM200 optical stream using a CWDM Mux / Demux (Coarse Wave Division Multiplexer). The OM200 capability and bandwidth is unaffected by the presence of the Ethernet channel. This card occupies two slots, and is used in six or 16 slot chassis. Single mode fiber pairs connect the OM200 nodes. Basic card status is available over the OM200 management interface, and full status for this card can be accessed in-band using a web browser. Two versions of the card available as shown in the following block diagrams.

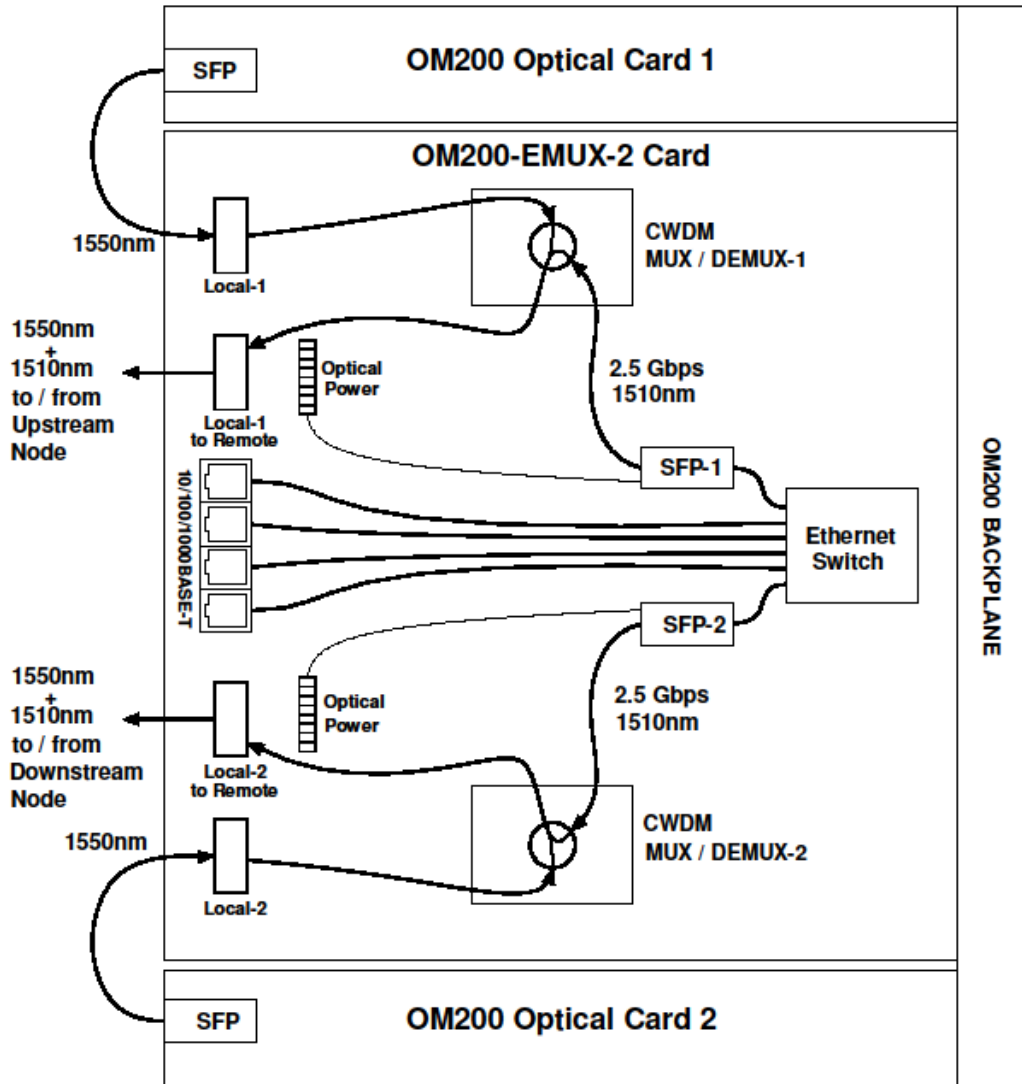
OM200-EMUX-1 for a Point to Point Topology



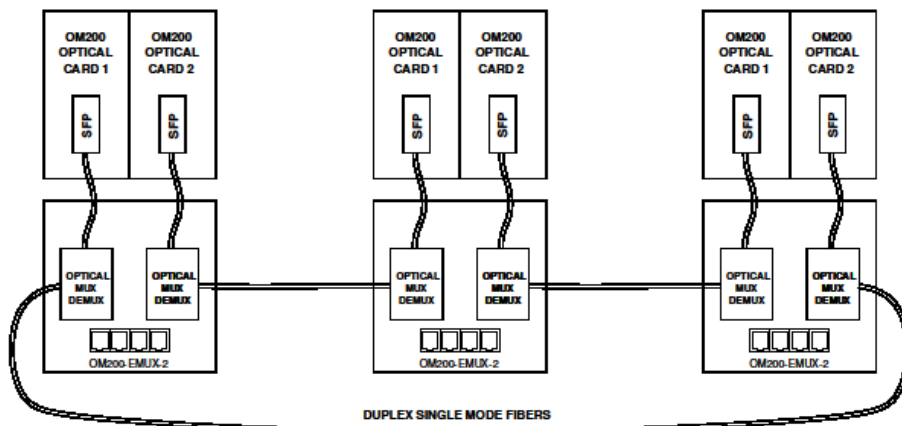
Point-To-Point Topology



OM200-EMUX-2 for Add/Drop Topology



Typical Add/Drop Network with Three Nodes



Ports

RJ45s

These four ports are Ethernet 10/100/1000BASE-T.

Local-1 to Remote LC fiber I/O

In a Point to Point network the fiber from this port connects to the remote **Local-1 to Remote** port. In an Add/Drop network the fiber from this port connects to the remote node's **Local-2 to Remote** port.

Local-2 to Remote LC fiber I/O, OM200-EMUX-2 only

In an Add/Drop network or Point to Point network with redundant fibers, the fiber from this port connects to the remote node's **Local-1 to Remote** port.

Local-1

A short fiber from this port connects to the OM200 Optical Card in slot 1 of the same chassis.

Local-2 OM200-EMUX-2 only

A short fiber from this port connects to the OM200 Optical Card in slot 2 of the same chassis.

Console USB

This mini USB 2.0 connector is the out of band management port.

See 1. *USB Console Port on EMUX Card* section.

Indicators

ALARM

This indicates there is no fiber optic Ethernet connection with a remote partner, or the card has failed.

LINK Optical

On indicates this card has a connection with the remote Ethernet card.

Flashing indicates there is a link and packets are being input or output.

LINK RJ45

On indicates this port has a Ethernet link.

Flashing indicates there is a link and packets are being input or output.

SPD RJ45

This indicator is on when there is an RJ45 link and the *speed* is 1000BASE-T.

It is off for 10/100BASE-T.

Optical Power meter

This bar graph displays the remaining optical power before link loss in 2 dB steps.

- When there is less than 1dB of link margin is left the first indicator flashes.
- All indicators flash when a receiver overload condition may be present.
- When all the indicators are off, the optical signal is absent or weak.
- The link margin is typically about 12 dB (six indicators on), and as the fiber length increases, the number of indicators decreases.

Note: The optical power meter displays the receive power for the Ethernet optical port. A satisfactory signal implies that the OM200-OCA card is also receiving a satisfactory signal since it is travelling on the same fiber.

Three Ways to Access the Management information

The Management information may be accessed through the following three methods.

1. OM200 Management Interface

This port is on the OM200 optical card. It may be USB, Serial, or Ethernet. The OM200 manual describes its use. Only a limited set of this card's status is available, such as link, and alarm.

2. USB Console: Out-of-Band Management

The OM200-EMUX has a USB mini B console interface using a USB UART. Windows systems require installation of a FTDI Chip FT2232HL device driver. The system will prompt to install the driver when the OM200-EMUX is first connected. The driver can be downloaded automatically from the Internet or manually from FTDI.

Windows allocates a USB serial COM port when the OM200-EMUX is connected but it doesn't inform the user which port it allocated. This can be determined by opening the Ports (COM & LPT) tab in the Windows Device Manager.

A serial terminal program such as Tera Term is required to connect to the OM200-EMUX console interface. Connect to the OM200-EMUX using the selected COM port and set the serial settings to 115200 baud, 8 bit, no parity. The terminal backspace may have to be set to the ^H character. Once you see the text *shell: type swconfig* to bring up the management menu, or if you forget type *help* to see the available commands.

The OM200-EMUX has a menu driven management interface to display status of subsystems and to configure the unit. Menu actions are specified by entering a single alphanumeric character. <CR> causes the current menu to redisplay. <ESC> goes up one menu level and aborts entries.

Main Menu

1) Show Ethernet status

Shows Link, Speed, Duplex, MDI/MDI-X, etc.

In this menu the Port column has two numbers separated by a "/". The first number is the internal port, and the second number is the port number shown on the chassis rear panel.

2) Show SFP status

Shows detailed information about the installed transceiver. For parameter descriptions, refer to INF-8074 and SFF-8472. If the transceiver has digital diagnostics, the measured Current, Voltage, TX power, RX power, and Temperature and alarm levels are also displayed.

This menu does not show if the port is 100BASE-FX or 1000BASE-X; that can be seen from the Show Ethernet status command.

3) *Setup menu*1) *Switch3 - setup menu*

Sets and shows Ethernet port parameters.

2) *Alarm setup menu*

Alarm enables are provided for the following conditions:

- Link lost for any port.
- Power supply loss for inputs 1 or 2.

Some alarms are always enabled (e.g., fan fault etc.).

When an alarm condition is present, the status is shown as “LOST”, the Alarm LED is on, and the alarm relay contact is closed.

3) *Network setup menu*

for setup of in-band management’s IP addresses etc.

4) *Software upload menu*

allows for software upgrades to functionality. Luxcom will supply full load instructions with the new software.

5) *Change password*

This command changes the unit's password which is used to control access to configurable data in the Switch 3 – setup menu. Password requests can be disabled by entering an empty password. The default password as shipped is *luxcom*.

4) *Diagnostics menu*

This is mainly used by the factory; however the “Show port n statistics” displays the Ethernet packet MIBs. It will be necessary to go to the Show Ethernet status menu to cross reference the port number on the rear panel with the actual switch port. For example port 15 on the rear panel is actually Switch 2/P7 in the Diagnostic menu/Show Switch 2 diagnostics menu.

5) *Reset microcontroller*

Same as a power-on-reset; for factory use only.

3. Ethernet: In-Band Management

The OM200-EMUX has an on-board web server which can be accessed through a web browser. The default IP address is 192.168.0.58 If this IP is not compatible with your network you will need to change it in the *Network setup menu* using the USB console. Enter this IP address as the URL in your web browser, and OM200-EMUX Login page should come up. The default User Name: is *luxcom* and the default Password: is *luxcom*.

Switch information such as the following is available.

- Optical Link status
- RJ45 Link status
- MIB counters
- Traffic rates for each port
- SFP optical transmit/receive power

For security reasons the following functions cannot be performed using this interface, and must be performed using the USB console.

- Changing IP configuration information
- Changing login password and user name

Specifications

OM200 bandwidth used by this card 0%
 Current used by this card..... < 0.7 A
 Power consumption < 3.5 W
 Operating temperature..... -10C to +70C

Ethernet Electrical

Number of channels..... 4
 Data IEEE 802.3
 Data I/O connector RJ45
 Data Rate..... 10/100/1000BASE-T

Optical

Ethernet Data Rate 2.5 Gbps
 Fiber type singlemode
 Ethernet channel wavelength 1510nm
 OM200 SONET wavelength 1550nm
 CWDM multiplexer insertion loss max..... < 3dB

SFP Module	Specification	Laser Light Source	Fiber Size	Optical Output	Optical Sensitivity	Optical ² Range
SFC-51-24-20	2500BASE-X	1510 nm	9/125 μm	-3 dBm	<-20 dBm	20 km
SFC-51-24-80	2500BASE-X	1510 nm	9/125 μm	0 dBm	<-26 dBm	80 km ³
<i>One of the following optics is required in the OM200 optical card.</i>						
SFC-55-03-20	SONET OC3	1550 nm	9/125 μm	-3 dBm	<-24 dBm	20 km
SFC-55-03-80	SONET OC3	1550 nm	9/125 μm	0 dBm	<-26 dBm	80 km ³

Notes:

¹ Specifications are subject to change without notice.

² Typical fiber

³ These optics will overload on a short fiber. At least 12 dB of attenuation is necessary. Inexpensive LC optical attenuators are available at the Fiber Store (fs.com).

Ordering Information

OM200-EMUX-1 for Point-to-Point connection

OM200-EMUX-2 for Add-Drop connection

The SFP optics must be specified as a separate item; however they will be installed in the interface when it is shipped. See the **SFP Module** number listed above.