

# Ethernet over Bonded Copper



## MX3112

### Product Features

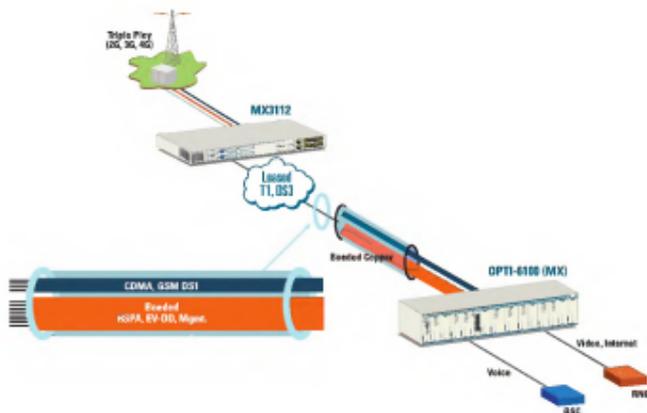
- Ethernet delivery over PDH (channelized DS3, DS1, or E1)
- Bonded DS1s/E1s for Ethernet services
- DS3 for Ethernet and DS1/E1s services
- Up to 12 DS1s/E1s available for up to 4 Ethernet channels
- M13 features: delivers 12 DS1s or 5 E1s over a DS3
- VLAN tagging
- Compact 1 RU size
- Hot-swappable controller cards protected with optional 1:1 redundancy
- End-to-end management via local craft; locally and via the OPTI-6100
- Remotely managed through Telnet
- DB9 craft interface for access to user-friendly configuration and performance monitoring menus
- NEBS Level 3 compliant
- Powered by  $\pm 24\text{VDC}$  or  $-48\text{VDC}$
- Extended Temperature range,  $-40^{\circ}\text{C}$  to  $65^{\circ}\text{C}$

As 4G services and the applicable base station architecture to deliver them become available, Ethernet backhaul may become your only option for effectively delivering these new services. As well, these new next-generation base stations whether WIMAX, HSPA, or EV-DO Rev. A may actually require Ethernet connections. This reliance on Ethernet backhaul does present a challenge as the vast majority of cell sites are only served by TDM leased line. As a mobile operator you are looking to deliver broadband Ethernet services using your existing narrowband TDM backhaul. You can not wait for, nor pay for, new fiber facilities. The MX3112 is designed to address this challenge — the MX3112 allows operators to deliver 4G services over existing 2G mobile backhaul.

The MX3112 maps Ethernet across DS1 or DS3 facilities to enable Ethernet service delivery over currently tariffed copper facilities. In its copper application mode, the

MX3112 provides up to twelve DS1/E1 ports that can be bonded for transporting the traffic of up to four client Ethernet ports. In its DS3 application mode, the MX3112 provides DS3 service for transporting the traffic of up to four client Ethernet ports and up to 12 client DS1 ports or five client E1 ports. Its compact 1 RU size minimizes space allocation and provides for dense utilization.

The MX3112 may be used in a back-to-back architecture or as part of a system with the OPTI-6100 as a Central Office aggregator. The OPTI-6100 aggregates up to twenty MX3112 systems, from multiple remote locations, to a single GigE port and passes through TDM traffic.



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## MX3112

## Product Specifications

### Front Panel Features

- **Controller module:** Activity, Alarm, DS3 Status, DSX-1/E1 Status, DSX-1/E1 Test, and Ethernet 1-4 LEDs
- Alarm cut-off button

### Interfaces

#### T3 Interface

- Channelized DS3
- **Line build out:** No adjustments required 0 to 450 feet
- **Framing format:** M13 and C-bit parity
- **Line rate:** 44.736 Mbps
- **Line interface:** Dual 75 ohm BNC coax female connectors

#### 10/100Base-T Ethernet Interface(s)

- IEEE 802.3

#### DSX-1 Interface(s)

- **Line build out:** 0 to 655 feet
- **Line rate:** 1.544 Mbps
- **Line code:** AMI or B8ZS
- **Line interface(s):** Dual 64-pin clamp connectors

#### E1 Interface(s)

- **Line build out:** 0 to 655 feet
- **Line rate:** 2.048 Mbps
- **Line code:** HDB3
- **Line interface(s):** Dual 64-pin clamp connectors

### Diagnostics

#### DS3 Network

- ANSI T1.107 compatible loopbacks
- Line loopbacks

#### DSX-1 Ports

- Local and network loopbacks
- CSU and NIU loopbacks

### Mechanical

- **Dimensions:** 1.7H x 8.6D x 17W (in.)  
44H x 218D x 436W (mm)
- **Weight:** 5.5 lbs (2.5 kg)  
— for a fully redundant configuration

### Clocking

#### DS3 Network

- **Network:** Receive from DS3 network
- **Local:** Internally generated

#### Bonded DS1s

- **Line:** Referenced from selected DS1
- **Local:** Internally generated
- **Loop:** Receive from DS1

### Alarms

- External alarm contacts
- Normally open pinout
- Front panel alarm cutoff switch

### Electrical

- **Power:** ±24 VDC or -48 VDC, 36 W

### Regulatory Standards

- NEBS Level 3
- UL 50850 and ETL
- IEC/EN 60950 RoHS compliance

### Management

#### VT100 Terminal Interface

- EIA-232 compatible, female DB-9 adaptor

#### MX3 4-Port 10/100Base-T Ethernet Module

- 4-Port Ethernet Module
- Deployed with redundant or non-redundant MX3112 Controller Cards
- Interfaces the MX3112 Controller Card with the four client 10/100Base-T signals
- The four Ethernet ports located on the MX3ETH4 Module provide the protection and physical interface for the MX3112 Controller Card
- The ports can be accessed using standard CAT 5 cable with an RJ-45 connector

### Environmental

- Operating temperature: -40°C to 65°C
- Storage temperature: -40°C to 85°C
- Relative humidity: GR-63-CORE

### Product Includes

- Mounting ears for 19-in. and 23-in. racks

## Ordering Information

Equipment	Part #
MX3 Chassis	1189901L1
MX3 Fan Module *	11895007L1
MX3112 Controller	1189901L1
MXETH4	1189902L1

\* Fan Module Required

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