

# OptiQmax 4388

## Multipurpose Fiber Optical Multiplexer



SFP Module for aggregation



E1/T1 Interface Module

The OptiQmax 4388 Fiber Optical Multiplexer provides point-to-point broadband connectivity for enterprise and carrier network. It MUX/DEMUX all the tributaries payload to/from dual pairs of single mode fiber for 1+1 auto protection switching with excellent performance up to BER  $1 \times 10^{-12}$ . The 1 RU compact size can stack on desktop or mount on EIA/ETSI 19/23-inch rack.

Considering the fault redundancy, we design the optical aggregation of OptiQmax 4388 with 1+1 Auto Protection Switch mechanism less than 60ms, and incorporates the pluggable SFP module for the aggregation to easy replacement. Moreover, the received power intensity of optical aggregation is readable for monitoring the healthy.

There are 4 interface slots for installing E1/T1 interface module. Every E1/T1 Module provides 4 tributaries. The system can accommodate 4/8/12/16 E1/T1 tributaries, provide an extendable capability for the future capacity growing. Each E1/T1 module can provision to E1 or T1 type and each tributary is able to be configured parameters individually. Hot swappable feature is also supported for E1/T1 module, replacement or new adding E1/T1 module won't interrupt or bring error bit to the the other module service to ensure service independence and continuity.

The frequency traceability of each E1/T1 tributary at the output port is excellent less than  $1 \times 10^{-11}$ ns versus to the frequency at the input port. That means the two linked OptiQmax 4388s synchronizes extremely stable without the possibility of clock slip.

With build-in LCD panel and keypad control, system operators perform the OAMP jobs to the MFOM without need of any tool or testing equipment. And the SNMP supporting make it can be managed by OptiQview EMS (Element Management System). The OptiQview EMS provides full-featured OAM&P function and user friendly GUI interface to minimize on-siting efforts.

In order to detect the line degradation premierly, the MFOM performs real-time line quality inspection to each individual link via performance monitoring (PM) statistics accordingly. The PM information includes ES, SES, UAS for optical links and each E1/T1 tributary. The system records the PM statistics in every 15-min, last 24-hour and last 7 days, and it can be set up crossover value for Threshold monitoring. In addition, for easy remote deployment and troubleshooting, the PRBS BERT function has built-in for line testing.

The power supply system of OptiQmax 4388 is dual modules design with 1+1 load-sharing redundancy and hot-swappable supporting, plug-out one of the two module won't interrupt the system service.

- System Capacity : up to 16 E1/T1 ports .
- Stable E1 clock recovery excellent than  $1 \times 10^{-11}$ , with low wander and jitter.
- Pluggable SFP Module for optical aggregation, with Auto Laser Shutdown and Power Intensity Reading.
- 1+1 Optical Link protection, switch time is less than 60ms.
- 4 interface slots for expanding interface module.
- Per E1/T1-compound interface module with 4 tributaries, each tributary can be setup parameters individually.
- Front LCD panel and keypad control.
- Craft console interface with VT-100 Terminal control.
- Full featured SNMP based EMS.
- Support Performance Monitoring for optical aggregation and each E1/T1 tributary. ES, SES, and UAS statistics for optical link ; CV, ES, SES, and UAS statistics for E1/T1 tributary.
- The time interval for PM statistics supports 15-min, 24 hours and 7 days and be able setup threshold crossing.
- Build-in PRBS, local and remote loop back testing for E1/T1 and optical aggregation.
- Dual pluggable power module with 1+1 Load-sharing redundancy. -48Vdc or 90~270Vac types for option.
- Dying Gasp for remote power failure detection and indication.
- Office alarm relay contacts.

# OptiQmax 4388

## Specifications

### System

Optical Interface	SFP(Small Form-Factor Pluggable) Module. Dual-Cord SFP or Single-Cord SFP(BiDi)
Optical Source	MLM Laser Diode
Wave Length	1310 ± 50nm; 1550 ± 50nm for order option.
System Gain	≥ 15dB (Error Free), Maximum up to 24dB.
Fiber Type	Single mode fiber(SMF).
Redundancy Mechanism	1+1 Auto protection Switch, less than 60ms.
Power Reading	Equipped
Auto Laser Shutdown	Equipped

### E1 Interface

Line Rate	2.048MHz ± 50ppm.
Line Code	HDB3.
Frame Format	Structured and Unstructured, field selectable.
Impedance	120ohm ± 5%, Resistive, Symmetrical pair.
Standard Compliance	ITU-T G.703, G.704, G.823.
Connector Type	DB25 with Wire-Wrap Adaptor.

### T1 Interface

Line Rate	1.544MHz ± 50ppm.
Line Code	B8ZS or AMI.
Frame Format	SF, ESF and Unframed, field selectable.
Impedance	100ohm ± 5%, Resistive, Balanced.
Standard Compliance	ITU-T G.703, G.704, G.824.
Connector Type	DB25 with Wire-Wrap Adaptor.

### Performance Monitoring

For Aggregation	ES, SES, UAS.
For each E1/T1	CV, ES, SES, UAS.
Log Interval	Current 15-Min, 96*15-Min in 24H and 7*24H in 7D.
Threshold Crossing	15-min, 1-Hour and 1-Day

### User Interface

LCM	2L x 24C LCD Display with Key Control.
Console	RS-232C.
SNMP	10/100 BASE-T Ethernet.
SNMP Agent	Support SNMP V1 and V2C.
Remote Login	Telnet, SNMP
Single-ended provisioning	Embedded Operating Channel available for LCM, Console and SNMP control.

### Maintenance

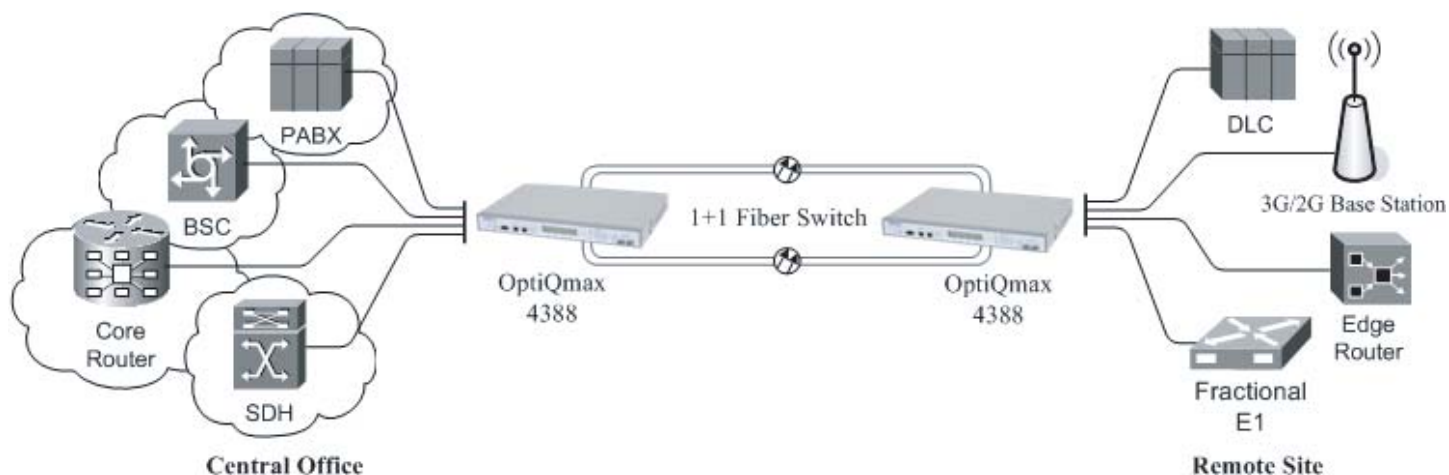
Loopback Support	Aggregation, T1, E1.
Loopback Type	Local and Remote Loopback.
Office Alarm Output	Audible Critical/Major/Minor, Visible Critical/Major/Minor.
PRBS Test	2 <sup>15</sup> -1 PRBS

### Operation Environment

Power Requirement	Dual Power Modules, 1+1 Redundancy. DC: -36 ~ -72Vdc, -48V Nominal. AC: 90 ~ 270Vac, 47 ~ 63Hz. Support Dying Gasp
Power consumption	< 28 Watts (Full capacity).
Operating Temperature	0 ~ 65°C.
Humidity	10 ~ 95%, non-condensed.
Dimension	W438 mm x H48 mm x D300 mm.
Weight	3kg.
Mounting	EIA 19- or 23-inch wide of shelf or cabinet.

### Miscellaneous

EMI	CISPR EN55022, Class A.
ESD	IEC 61000-4-2 Level 2.
Surge Immunity	IEC 61000-4-5 Class 3 for both Power system and E1/T1 tributary
MTBF	50,000 hours.



### Fiber Logic Communications, Inc.

5F-3, No.9 Prosperity Road One,  
Science-Based Industrial Park,  
Hsinchu, Taiwan.  
<http://www.fiberlogic.com>

Headquarter  
TEL:+886-3-5638889  
FAX:+886-3-5638899  
E-mail:sales@fiberlogic.com

Taipei Office  
TEL:+886-2-23560588  
FAX:+886-2-23568678