

# CWDM Transponder (LR), 850 Interfaces, Data Rate and Protocol Independent up to Gigabit Ethernet

## WSH 510



### Key Features

- Client interface supports IEEE SX interface
- CWDM reach extension
- 3R and 2R operation, 3R operation at OC3/OC12 and GE rates
- Remote hardware management
- Low power consumption, convection cooled
- Data rate independent: 125 Mb/s to 1250 Mb/s
- Simple to install and use

### Applications

- CWDM reach extension
- Wavelength services
- Metro optical access overlay
- Point-to-point Gigabit Ethernet services

### Compliance

- NEBS Level 3
- FDA Class 1 laser device
- FCC Class A device
- UL 60950 Third Edition

### CWDM Reach Extension

The WSH-51024LX module is a four-port plug-and-play Coarse Division Multiplexing (CWDM) optical transponder. The module is used with the WaveReady™ 3000 series platforms to enable CWDM multiplexing applications such as fiber relief, wavelength services and metro optical CWDM access overlay on existing optical infrastructure. It translates optical signals from an 850 nm multimode interface to a long-reach single-mode CWDM interface. Eight of these modules can be used in conjunction with an 8-channel mux/demux to support 8 CWDM channels per fiber.

### Smart Adaptability

The WSH-51024LX has been designed with the latest multi-rate clock and data recovery (CDR) technology, enabling smart adaptability for bit rate and protocol independent services. Transparent data rate and typical protocols transported include SONET/SDH, Gigabit Ethernet (GE), SAN (Fibre Channel, ESCON, FICON).

The module supports both 2R and 3R operation (reshape, retime and regenerate). In 3R mode, the module will lock to standard OC-3, OC-12 and GE interface. If this rate is not present the module will revert to 2R operation.

### Demarcation

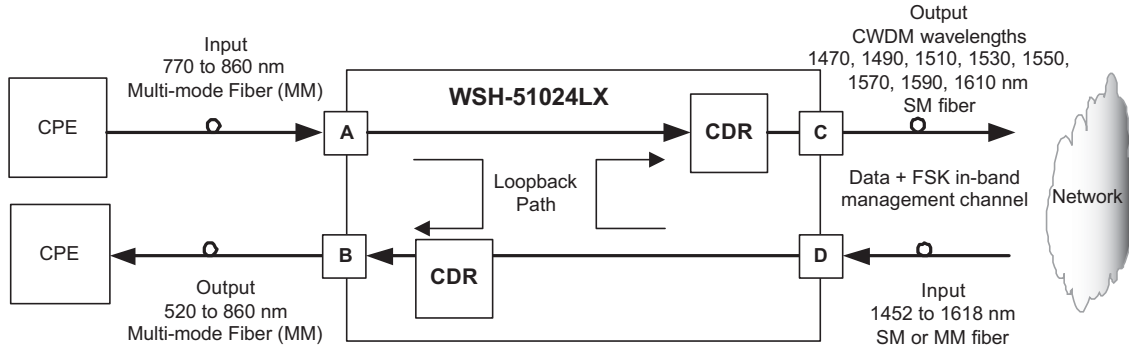
The WSH-51024LX also has the capability for loopback testing and service demarcation. These functions facilitate fault location and correction, enabling proper service management.

### Remote In-Band Management

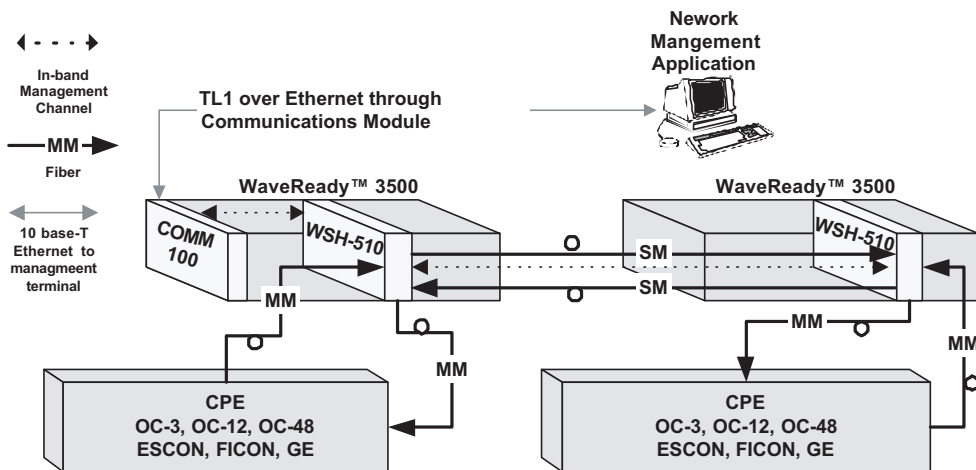
The WSH-51024LX series modules can be managed locally or remotely. The module has a very cost effective supervisory channel which allows carriers to manage the system and module from the central office. This supervisory channel allows secure remote management per customer and is transparent and protocol independent to the data path.

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Functional Diagram



WaveReady 3000™ Series for  
 Long-reach Extension Application



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#### Optical Specifications

Parameter	Minimum	Typical	Maximum
<b>Transport and Customer Interface Side</b>			
Input and output data rate	125 Mb/s	-	1250 Mb/s
FSK in-band management channel	-	9.2 KHz	-
<b>Transport Side</b>			
Input wavelength, port D	1462 nm	-	1618 nm
Output wavelength, eight CWDM frequencies, port C	1470, 1490, 1510, 1530, 1550, 1570, 1590, 1610 nm		
3R operation	OC3, OC12, GE		
2R operation	125 Mb/s	-	1250 Mb/s
Input sensitivity at BER 10 <sup>-10</sup> at 100 Base-F to GE	-30 dBm	-32 dBm	-
Input overload power at BER 10 <sup>-10</sup>	-	-	-10 dBm
Wavelength / Temperature coefficient	-	0.1 nm/°C	-
Dispersion penalty (100 km at GE and BER 10 <sup>-9</sup> )	-	-	1 dB
Output power level	-1 dBm	1 dBm	3 dBm
Output wavelength stability	-	±7.5 nm	-
<b>Customer Interface Side</b>			
Input wavelength, port A	770 nm	-	860 nm
Output wavelength, port B	770 nm	-	860 nm
Input sensitivity at BER 10 <sup>-10</sup> at 100 Base-F to GE	-17 dBm	-	-
Input overload power at BER 10 <sup>-10</sup>	-	-	-3 dBm
MM output power	-9.5 dBm	-	-4 dBm

#### Electrical Specifications<sup>1</sup>

Parameter	Minimum	Typical	Maximum
DC supply voltage	-	-48 V	-
Power dissipation	-	4.5 W	6 W
Alarm relay signals	Dry contacts. Relays closed when alarm is active.		

1. All specifications are guaranteed over the life, operating temperatures, wavelength range, and input voltage specified.

#### Physical Specifications<sup>1</sup>

Parameter	Minimum	Typical	Maximum
Size (H x W x L)	-	6.8 x 1.0 x 8.8 inches (17.27 x 2.54 x 22.35 cm)	-
Weight (approximate)	-	1.4 lbs (0.635 kg)	-

1. All specifications are guaranteed over the life, operating temperatures, wavelength range, and input voltage specified.

**Environmental Specifications<sup>1</sup>**

Parameter	Minimum	Typical	Maximum
Operating ambient temperature	-5 °C	-	55 °C
Storage temperature	-40 °C	-	85 °C
Relative humidity (non-condensing)	5 %	-	95 %

1. All specifications are guaranteed over the life, operating temperatures, wavelength range, and input voltage specified.

**Interface Specifications**

Parameter	Specification
Optical	SC/PC bulkhead, single-mode fiber (SMF) on network side, multimode fiber (MM) on CPE side.
Electrical	96-pin connector (power, alarms, craft/remote interface).
Craft and network management	Requires WaveReady™ Shelf and at least one Communications Module. Menu and TL1 interfaces through RS-232/DB9 connector on front panel of a Communications Module or 10Base-T Ethernet connector on the rear of WaveReady™ Shelf.
Alarms	Relay, dry contact. Major (MAJ), Minor (MIN) Loss of Input (LOS A and LOS D) and Management (MGT). Relay closed when alarm is active.
Front panel	Seven LEDs: Power (CARD); Major Alarm (MAJ); Minor (MIN) Loss of Input (LOS A and LOS D), Management (MGT) and Loopback (LP-BK)

**Ordering Information**

For more information on this or other products and their availability, please contact your local JDSU account manager or JDSU directly at 1-800-498-JDSU (5378) in North America and +800-5378-JDSU worldwide or via e-mail at [customer.service@jdsu.com](mailto:customer.service@jdsu.com).

**Sample: WSH-51024LX470**

# WSH-51024LX



Code	Channel Wavelength
470	1470 nm
490	1490 nm
510	1510 nm
530	1530 nm
550	1550 nm
570	1570 nm
590	1590 nm
610	1610 nm

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