OPTICAL
SYSTEMS
DESIGN

OPERATOR MANUAL

OSD2010

FIBER MODE

CONVERTER

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1 TECHNICAL SUMMARY

1.1 BRIEF DESCRIPTION

1.1.1 OVERVIEW

The OSD2010 series is an industrially rated fiber mode converter. The unit can be used in a number of different applications such as a repeater, fiber mode converter or to add CWDM to existing fiber networks. The OSD2010 requires two SFP modules per unit to operate. It also has convenient LED status indicators and alarm outputs. The OSD2010 is powered by non-critical dual power supply inputs

The OSD2010 is available as a module and require an external power source.

1.1.2 APPLICATIONS

- Any network utilizing a mix of singlemode and multimode fiber
- Adding CWDM to an existing fiber network
- Extending optical transmission distances by operating as an optical repeater
- Networks using Ethernet devices such as cameras, intercoms, access control, telephones, etc.

1.1.3 FEATURES AND BENEFITS

- Protocol transparent SFP to SFP mode converter
- Operates with multimode or singlemode fiber simply by selecting the SFP used
- Operates with SFPs of up to 10Gbps
- Plug and play operation: no user settings needed
- Works with SDH, Ethernet, CPRI, and Fiber Channel
- Can be used with 1 or 2 fibers on either singlemode or multimode fibers over a variety of link budgets
- Provides wavelength conversion for CWDM or DWDM applications
- Powered by non-critical 10 to $36V_{DC}$ or $24V_{AC}$ supplies
- Dual power supply inputs
- Operates over the temperature range of -20 to +75°C
- Alarm outputs for loss of input power and for laser failure
- SFP modules sold separately

1.2 TYPICAL CONFIGURATION

Figure 1 below indicates the typical set-up for an OSD2010 system.

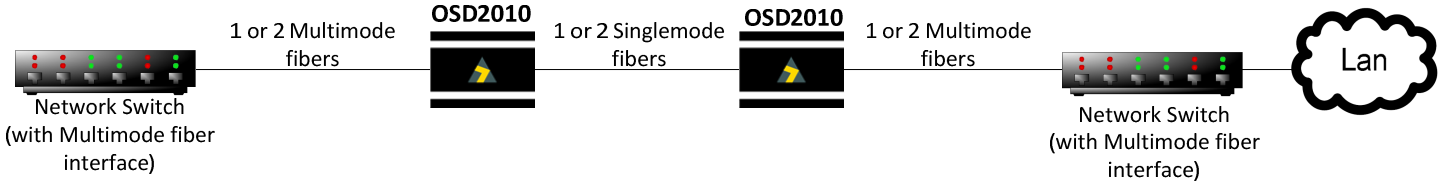

FIGURE 1: OSD2010 TYPICAL CONFIGURATIONS

1.3 ECHNICAL SPECIFICATIONS

TABLE 1: TECHNICAL SPECIFICATIONS

SPECIFICATION	PERFORMANCE
Optical Data Interface	Protocol transparent
Optical Data Rate	10Mbps to 10Gbps
Optical Port Connectors	SFP
SFP Options	Short haul, Long haul, CWDM, single fiber operation, etc. Please consult OSD SFP datasheets or contact OSD
Alarms	SFP #1 Laser Fail SFP #1 Loss of Received Optical Signal SFP #2 Laser Fail SFP #2 Loss of Received Optical Signal
Alarm Interface	4 Open drain outputs rated at 500mA @ 24V maximum; Short to Ground when OK Open Circuit when not OK or power off
Operating Temperature	-20°C to +75°C
Relative Humidity	0 to 95% non-condensing
Power Requirements	+10V to +36V_{DC} or 22V to 28V_{AC} @ 4VA
Power Connector	4 way 5.08mm terminal block
Alarm Connector	6 way 3.5mm terminal block
Indicators	2 x Laser OK/Not OK 2 x Received Optical Power OK/Not OK
Dimensions (mm)	60W x 94D x 26H (excluding flanges and connectors)
Weight	0.4kg

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2 INSTALLATION AND OPERATION

2.1 INTRODUCTION

This section outlines the methods required to install and operate the OSD2010 successfully. It should be studied carefully if damage to the equipment or poor results are to be avoided.

This equipment has been fully tested prior to dispatch and is ready for immediate operation. However it is advisable to check for external transportation damage before operation. If damage is evident, return the unit with the packaging to your supplier immediately.

2.2 INSTALLATION

2.2.1 WARNING AND PRECAUTIONS

▲ **ELECTROMAGNETIC COMPATIBILITY**

WARNING: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

▲ **OPTICAL OUTPUT OPERATION**

WARNING: **Laser Safety:** Class 1 Laser Product per IEC/EN 60825-1:2014 standard.

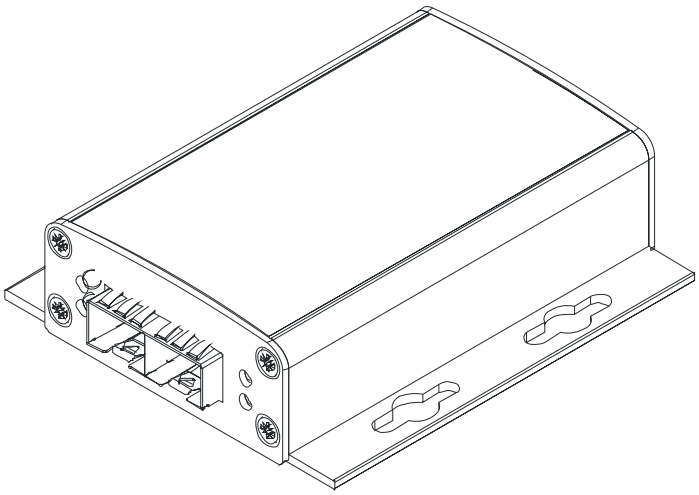
Class 1
The OSD2010 is a **Class 1 laser product** when SFP is fitted

PRECAUTIONS

- ▲ All service personnel should be provided training as to the hazards of direct viewing of laser radiation and of the precautionary measures during servicing of equipment
- ▲ Areas where laser products are installed should be restricted in access to trained service personnel only and appropriate warning signs posted in the work area.
- ▲ All laser apertures should be covered by protective covers when not connected to optical fibers. Never leave outputs uncovered.
- ▲ Laser equipment should be positioned above or below eye level where possible. Apertures should be positioned away from personnel.
- ▲ Protective eyewear should be worn in the vicinity of laser equipment.

2.2.2 OSD2010 DRAWINGS AND DIMENSIONS

The OSD2010 is designed to be mounted on an even surface and to be secured by means of M4 or smaller screws.



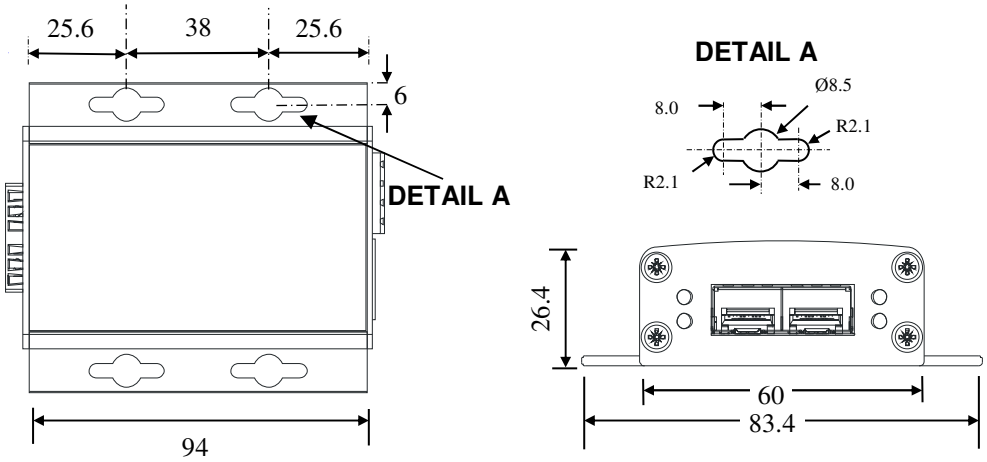


FIGURE 2: OSD2010 MOUNTING DIMENSIONS

2.3 CONNECTIONS

2.3.1 POWER SUPPLY CONNECTIONS

The OSD2010 module has dual power supply inputs which requires external +10 to +36V_{DC} or 22 to 28V_{AC} power @ 4VA. Power should be connected to the power socket located at the back of the case. DC power should be connected as indicated in Table 2.

TABLE 2: DC OR AC POWER CONNECTION

Power Pin	Specification
Pin 1	+10V to +36V_{DC} or 22V to +28V_{AC}
Pin 2	0V
Pin 3	+10V to +36V_{DC} or 22V to +28V_{AC}
Pin 4	0V

FIGURE 3: OSD2010 POWER SUPPLY CONNECTIONS

2.3.2 ALARM CONNECTIONS

The alarm contact closure output on the OSD2010 can be connected to the relay coil. Maximum ratings the OSD2010 can drive is 0.5A @ 24$V_{(max)}$.

FIGURE 4: ALARM PINOUT

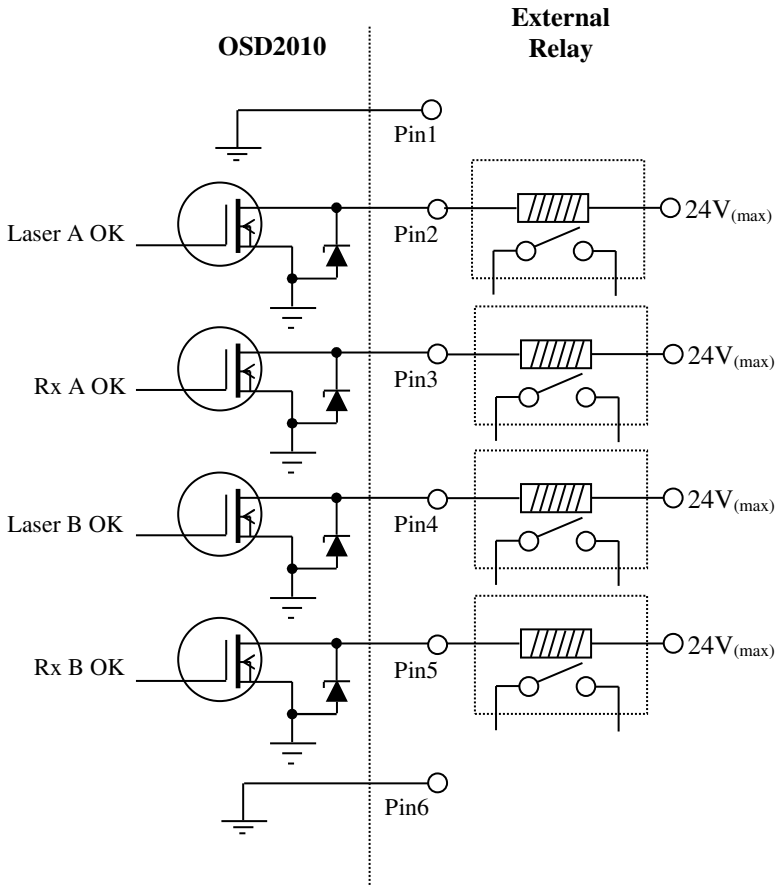


FIGURE 5: ALARM OUTPUT EQUIVALENT CIRCUIT

Pin assignments for the 6 way 3.5mm terminal block Alarm connectors (Figure 4) are shown in Table 3 below. Use the below table in conjunction with the LED indicator.

TABLE 3: PIN ASSIGNMENT

Alarm Pin	Specification	Parameter
Pin 1	0V	Ground
Pin 2	Laser Ch A Fail	Ch A Short to GND (Pin 1) when OK Ch A Open Circuit when not OK or Power off
Pin 3	Rx Ch A Fail	Ch A Short to GND (Pin 1) when OK Ch A Open Circuit when not OK or Power off
Pin 4	Laser Ch B Fail	Ch B Short to GND (Pin 1) when OK Ch B Open Circuit when not OK or Power off
Pin 5	Rx Ch B Fail	Ch B Short to GND (Pin 1) when OK Ch B Open Circuit when not OK or Power off
Pin 6	0V	Ground

2.3.3 INDICATORS

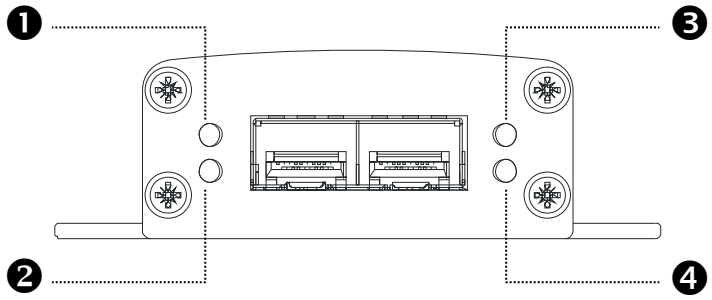


FIGURE 6: LED INDICATORS

TABLE 4: INDICATOR FUNCTION

LED	Specification	Parameter	
❶	Ch A Receive Signal OK	Red	No Received Signal
		Green	Received Signal OK
❷	Ch A Laser OK	Red	Transmit Laser Fail
		Green	Transmit Laser OK
❸	Ch B Receive Signal OK	Red	No Received Signal
		Green	Received Signal OK
❹	Ch B Laser OK	Red	Transmit Laser Fail
		Green	Transmit Laser OK

2.3.4 FITTING SFP CONNECTORS

Care should be taken when inserting/removing the SFP connectors from the SFP port as SFP modules are Electrostatic (ES) sensitive and Electrostatic Discharge (ESD) precautions should be taken when installing. Ensure that the SFP is fully engaged and latched into position.

Inserting SFP – Ensure that the SFP lever is in the locked position and insert into appropriate SFP port. Gently push the SFP until it locks into place. Remove plastic/rubber dust cap and fit appropriate fiber cable.

Removing SFP – Remove fiber connector. Pull the SFP lever down to unlock SFP from housing. Using the lever, gently pull the SFP out.

Fiber SFP

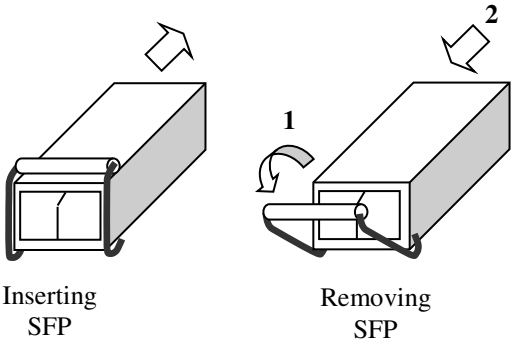


FIGURE 7: FITTING/REMOVING SFP CONNECTORS

3 MAINTENANCE

3.1 INTRODUCTION

The following section outlines the fault-finding procedure for the OSD2010 modems. Please take note of the following:

- Personnel without appropriate training should not attempt any maintenance except that outlined below.
- If further maintenance is attempted you are warned that every care should be taken to ensure that internal measurements made while the equipment is operational are taken carefully as some components within the unit are expensive and may be damaged by failure of any portion of their support circuitry.
- Some components within the unit are Electrostatic (ES) sensitive and Electrostatic Discharge (ESD) precautions should be taken when performing maintenance upon the unit.

3.2 EXTERNAL INSPECTION

Visually check for the following:

- Check that the correct power source is connected to the power socket.
- Check that the SFPs are connected to the modem correctly.
- Inspect the optical connectors for any contamination and clean using isopropyl alcohol and a lint free tissue if any contamination is detected.
- Check that any external termination resistors are connected if the system configuration requires them.

3.3 ROUTINE MAINTENANCE

- There is no routine maintenance required with the OSD2010.

4 WARRANTY

Thank you for purchasing equipment designed, manufactured and serviced by Optical Systems Design (OSD). OSD warrants that at the time of shipment, its products are free from defects in material and workmanship and conforms to specifications. Our Warranty conditions are outlined below:

4.1 WARRANTY PERIOD

For warranty period, please call your local OSD distributor.

4.2 REPAIRS

Optical Systems Design reserves the right to repair or replace faulty modules/units. Please obtain a "Return Material Authorisation" (RMA) form and number before returning goods.
Goods must be returned in adequate packing material to Optical Systems Design, Warriewood or its nominated authorised representative, for all repairs.

4.2.1 WARRANTY REPAIRS

Return shipments to OSD shall be at customer's expense and freight back to the customer will be at OSD expense.

4.2.2 OUT-OF-WARRANTY REPAIRS

OSD reserves the right to repair or replace any faulty goods. Freight costs and insurance for both journeys are met by the user. All equipment repaired by OSD will have a 3-Month Warranty from the date of dispatch.

4.2.3 SITE REPAIRS

By agreement site repairs may be undertaken for which out of pocket, hotel and travel expenses will be charged.

4.2.4 EXCLUSIONS

This warranty does not apply to defects caused by unauthorized modifications, misuse, abuse or transport damage to the equipment. All modifications to OSD's standard product will need written authorization and will be charged at normal repair rates. All modifications are to be carried out by OSD Technicians. Warranty is void if unauthorized removal and/or tampering with serial number and/or labels is evident.

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