
OPTICAL

SYSTEMS

DESIGN

OPERATOR MANUAL

OSD158T / OSD158R

FIBER OPTIC ALARM

TRANSMISSION SYSTEM

OPTICAL SYSTEMS DESIGN

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1. TECHNICAL SUMMARY

1.1 BRIEF DESCRIPTION

The OSD158 is a transmitter/receiver pair system consisting two parts, the OSD158T (transmitter) and the OSD158R (receiver). The OSD158T has 8 inputs, and communicates the state of these inputs (either open or closed circuit) via a single optical fiber, to an OSD158R, which replicates the states on the input of the OSD158T at it's output.

The OSD158 system is optionally available to operate over singlemode fiber. These models are designated the OSD158TL and the OSD158RL.

1.1.1 APPLICATIONS

- ▲ Security and fire panel monitoring
- ▲ Simple remote control systems
- ▲ Transmission of open/closed contacts

1.1.2 FEATURES AND BENEFITS

- ▲ Enables up to eight alarm conditions to be transferred several kilometres via a single optical fiber
- ▲ Immune to electrical interference
- ▲ Complete end-to-end isolation
- ▲ Safe transmission in hazardous environments
- ▲ Small size, robust and reliable

1.2 TYPICAL CONFIGURATION

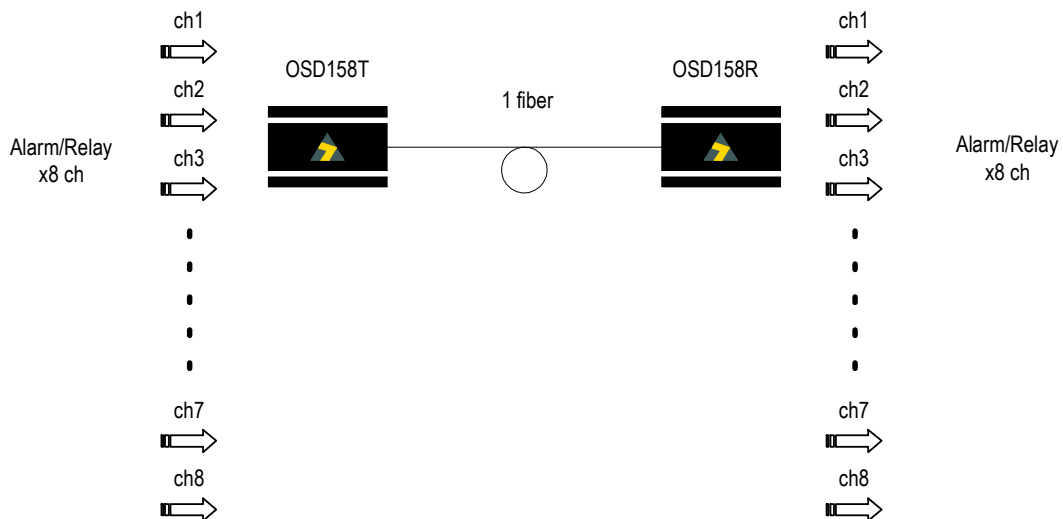


FIGURE 1: TYPICAL OSD158 SYSTEM CONFIGURATION

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1.3 TECHNICAL SPECIFICATIONS

TABLE 1: TECHNICAL SPECIFICATIONS

SPECIFICATION	PERFORMANCE
Capacity	8 Channels
Sampling Rate	6kHz
Input Interface (OSD158T)	Buffered and protected, open/closed sensing, contact closure from IN to RTN will close alarm receiver N/O.
Input Loop Resistance	External closed loop, 400Ω max. Each input RTN has 330Ω internal resistance to chassis ground
Output Interface (OSD158R)	Changeover contact (1Amp @ 24V _{DC})
Electrical Connector	25 pin D subminiature female connector
Optical Wavelength	850 ± 40nm (1310nm optional with OSD158TL)
Optical transmit power	> -17 to -14dBm into multimode fiber > -20 to -12dBm into singlemode fiber (OSD158TL)
Receiver sensitivity	< -45dBm for 1x10 ⁻⁹ BER
Optical Link Budget	> 28dB @ 850nm (>8km of multimode fiber) > 25dB @ 1310nm (>65km of singlemode fiber)
Receiver saturation	> -11dBm
Indicators	Power On Link Fail (OSD158R only)
Optical Connectors	ST standard
Dimensions (mm)	Small Module: 104W x 144D x 25H Card: 208D x 100W x 25H
Weight	250g (module), 150g (card)
Power Requirements	9-40V _{DC} and 20-28V _{AC} @ 200mA maximum via 3pin connector
Operating temperature	-20 to 75°C
Relative humidity	0 to 95% non-condensing
Chassis Current Consumption (CCC)	0.20Amp

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1.4 PRODUCTS AND OPTIONS

TABLE 2: PRODUCTS AND OPTIONS

ITEM	DESCRIPTION
OSD158T/R	FIBER OPTIC RELAY CONTACT TRANSMITTER AND RECEIVER CARD
OSD158T/RC	CASE VERSION OF THE OSD158T/R
OPTION L	SINGLEMODE OPTION FOR EITHER OF THE ABOVE

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1.5 PIN ASSIGNMENTS

TABLE 3: D-CONNECTOR PIN ASSIGNMENTS

OSD158T	INPUT PINS	OSD158R	COMMON	NORMALLY OPEN	NORMALLY CLOSED
Relay 1	14,2	Relay 1	2	14	15
Relay 2	3,16	Relay 2	16	3	4
Relay 3	17,5	Relay 3	5	17	18
Relay 4	6,19	Relay 4	19	6	7
Relay 5	20,8	Relay 5	8	20	21
Relay 6	9,22	Relay 6	22	9	10
Relay 7	23,11	Relay 7	11	23	24
Relay 8	12,25	Relay 8	25	12	13

Figure 2 identifies the pin assignments of the 25 pin D Connector of the OSD158 T/R. The two D-Connectors represent the OSD158T and OSD158R modems that would be connected by means of a fiber optic cable link.

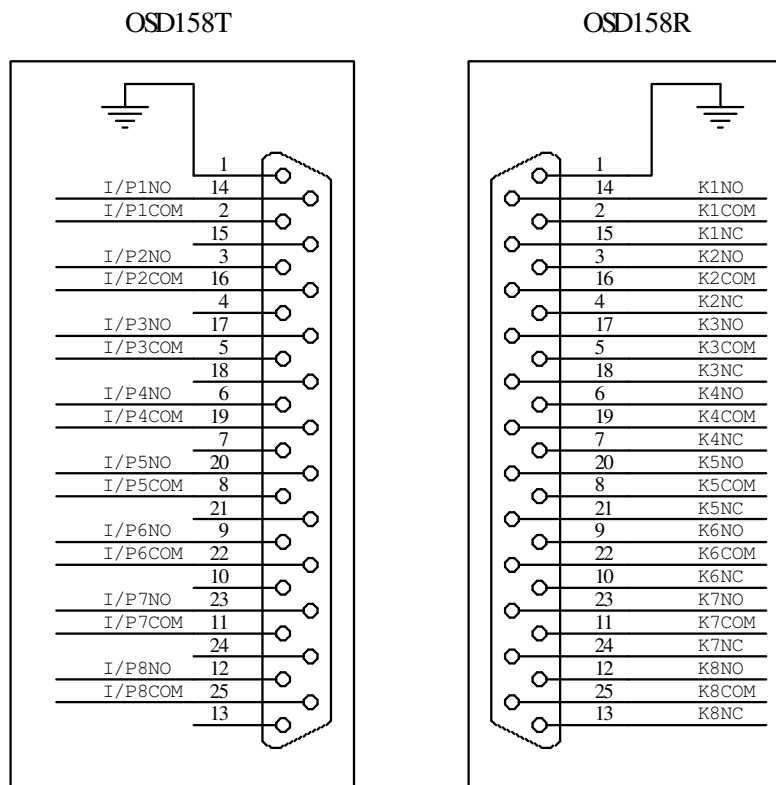


FIGURE 2: D CONNECTOR PIN ASSIGNMENTS

2. INSTALLATION AND OPERATION

2.1 INTRODUCTION

This section outlines the methods required to install and operate the OSD158T and OSD158R 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

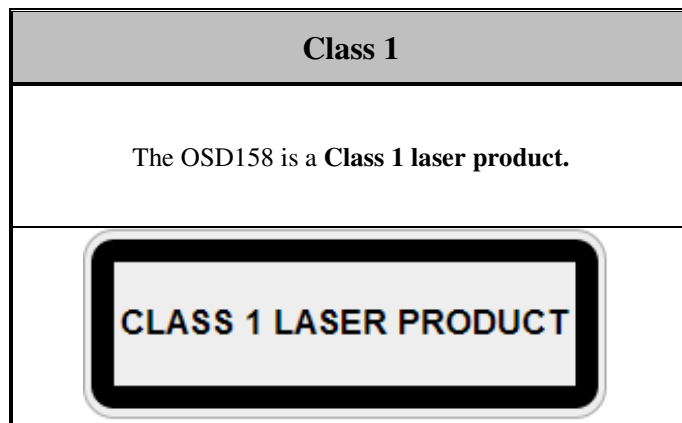
2.2.1 WARNING AND PRECAUTIONS

▲ 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 60825-1:20011 standard.



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.

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2.2.2 PACKAGING

The OSD Standard Card version (OSD158) is designed to be placed in an OSD370 or OSD350 chassis. Figure 3 below provides the outer dimensions of the unit. The module version (OSD158C) is shown in Figure 4.

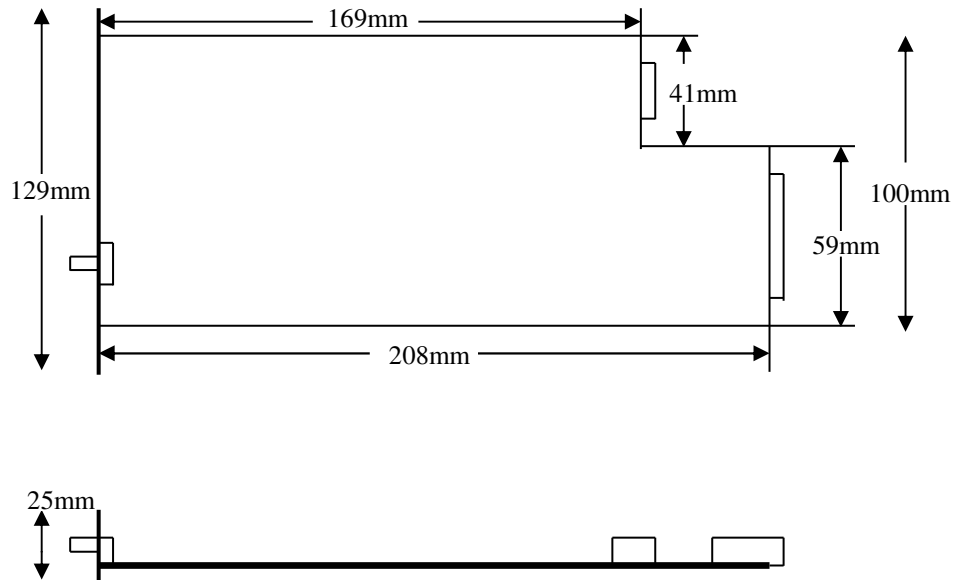


FIGURE 3: OSD158 DIMENSIONS

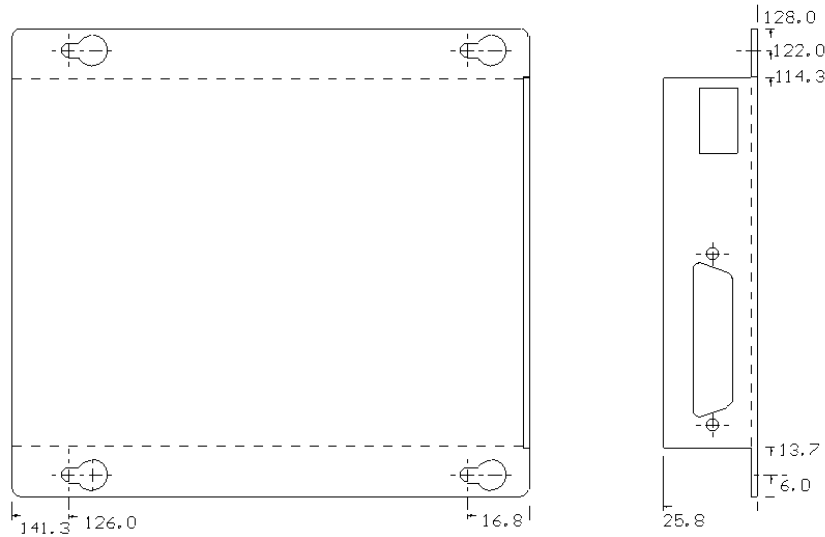


FIGURE 4: OSD158C DIMENSIONS

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2.2.3 POWER SUPPLY CONNECTIONS

For the OSD158 card, power is supplied via pin 3 of the 9 pin D connector. Pins 6,7,8 of the 9 pin D connector are ground. Power is supplied by the OSD370N or OSD350N chassis.

For the OSD158C module, 9-40V_{DC} and 20-28V_{AC} is supplied via pin 2 of the 3 way connector, Pin 3 is ground. Pin 1 of the 3 way connector is not used.

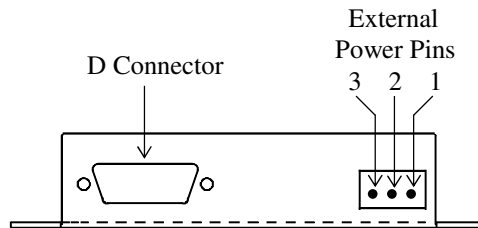


FIGURE 5: OSD158C POWER SUPPLY CONNECTION

2.2.4 OTHER CONNECTIONS

The relay closure signals are connected to or from external equipment by the 25 pin D connector according to Figure 6.

The optical fiber must be terminated by the appropriate optical connector. Before connection, inspect the end of the connectors to ensure that no dust or dirt is present as it could contaminate the modem connector and result in poor performance.

If it is necessary to clean the cable connectors use isopropyl alcohol and lint free tissue to remove contamination.

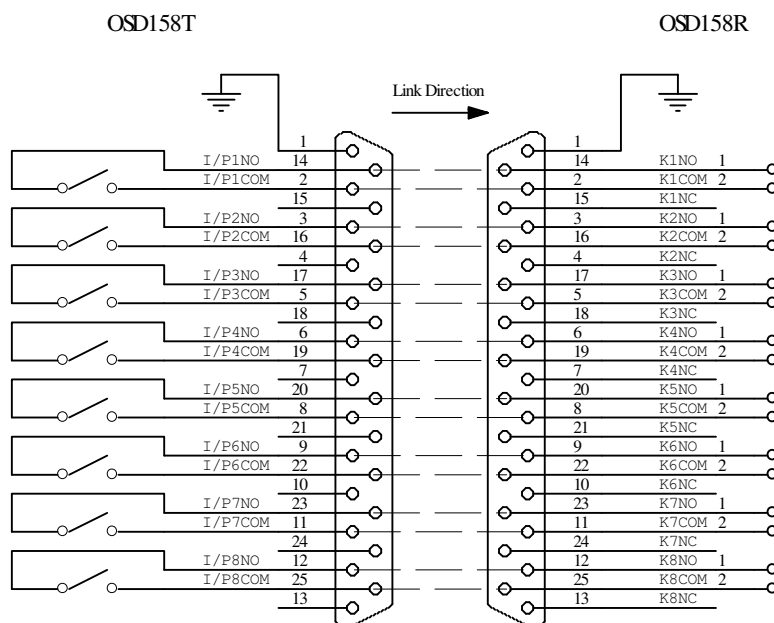


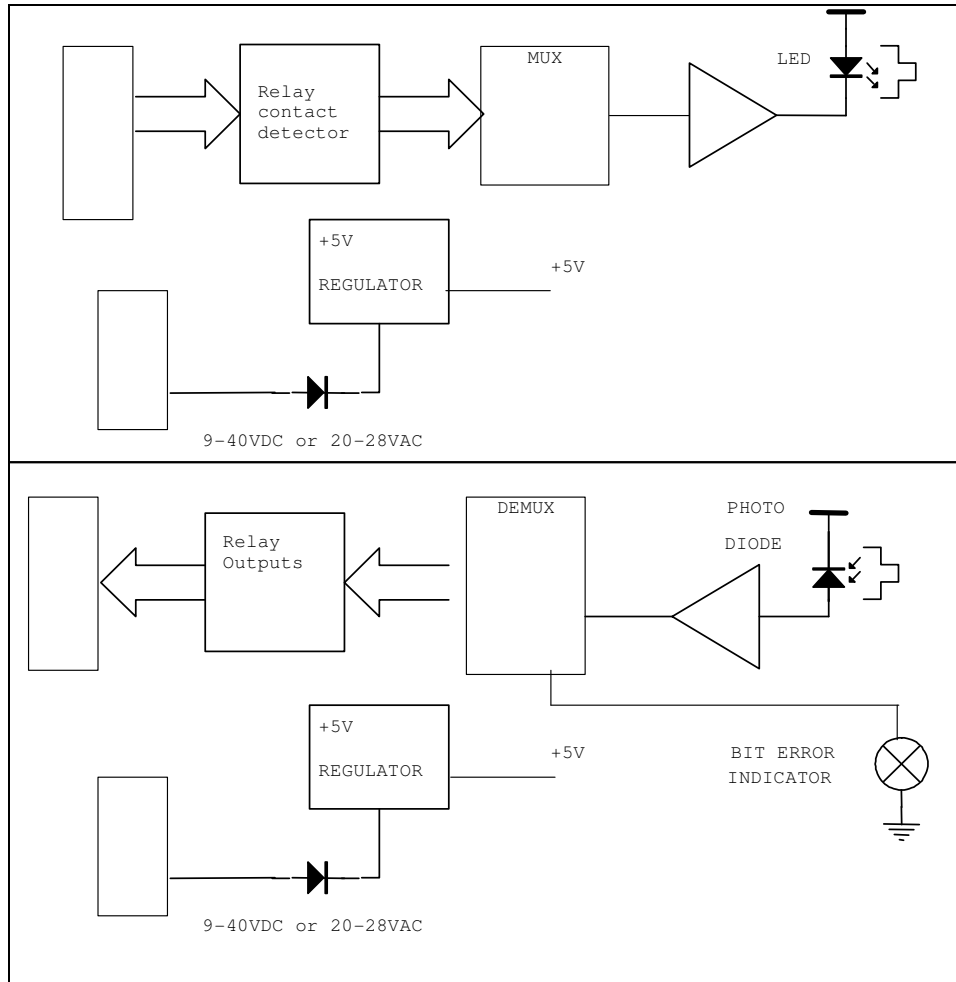
FIGURE 6: RELAY CONTACT CONNECTION

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2.3 OPERATION

2.3.1 BLOCK DIAGRAM

FIGURE 7: BLOCK DIAGRAM



2.3.2 INDICATORS

The OSD158T has an LED indicator to indicate that power is supplied to the device. The OSD158R has a bicolour LED indicating the link status as set out in Table 5.

TABLE 5: OSD158 INDICATORS

SYSTEM	INDICATOR	COLOUR	FUNCTION
OSD158T	POWER	Green	Power ON
OSD158R	LINK	Green Red	DATA Link OK DATA Link Fail

3. MAINTENANCE

3.1 INTRODUCTION

The following section outlines the fault-finding procedure for the OSD158 system. 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. 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 ES sensitive and 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 data signals are connected to the modem correctly and that the distant OSD158 modem has been terminated correctly to any external equipment.
- ▲ Inspect the optical connectors for any contamination and clean using isopropyl alcohol and a lint free tissue if any contamination is detected.

3.3 ROUTINE MAINTENANCE

There is no routine maintenance required with the OSD158 system.

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 ALL REPAIRS

Optical Systems Design reserves the right to repair or replace faulty modules/units. Please obtain a "Return Material Authorisation" number form and number before returning goods.

Goods must be returned to Optical Systems Design, Warriewood or its nominated authorised representative, for all repairs in adequate packing material.

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 ON-SITE REPAIRS

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

4.3 EXCLUSIONS

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