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**OPTICAL**

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**SYSTEMS**

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**DESIGN**

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**OPERATOR MANUAL**

**OSD381**

**FIBER OPTIC CCTV**

**TRANSMITTER MODULE**

OPTICAL SYSTEMS DESIGN

**OSD381**

**FIBER OPTIC CCTV**

**TRANSMITTER MODULE**

Document No. 10100902

# OPTICAL SYSTEMS DESIGN

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## 1 TECHNICAL SUMMARY

### 1.1 BRIEF DESCRIPTION

#### 1.1.1 OVERVIEW

The OSD381 is a small, self-contained, fiber-optic video transmitter module. Two basic configurations are available: the OSD381 is designed for use with multimode fiber and transmits at 850nm, while the OSD381L is designed for use with singlemode fiber and transmits at 1310nm. A one-way fiber-optic video transmission link formed by using the OSD381 with one of the OSD300 series fiber-optic receiver modules will provide CCTV or better quality video transmission at distances of over 5km using standard low cost multimode optical fiber. Using the OSD381L and singlemode fiber, distances of over 30km can be spanned.

An optical power attenuator switch is included on both models that allows operation with different fiber types over various distances without the need for optical attenuators. Applications include video links where distance, electrical noise or security considerations render conventional coaxial links impractical.

#### 1.1.2 APPLICATIONS

- ▲ Very high performance surveillance systems where high resolution or long transmission distances are required
- ▲ Industrial process monitoring
- ▲ Medical imaging transmission

#### 1.1.3 FEATURES AND BENEFITS

- ▲ Bandwidth of 10MHz
- ▲ Complete end to end isolation
- ▲ Extends wideband video transmission to over 5km of multimode fiber
- ▲ More secure than copper cables
- ▲ Higher quality video than with coax or twisted pair
- ▲ Small size, low cost, robust and reliable
- ▲ Immune to electrical interference
- ▲ Safe transmission in hazardous environments

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## 1.2 TYPICAL CONFIGURATION

Figure 1 below indicates a typical set-up for an OSD381.

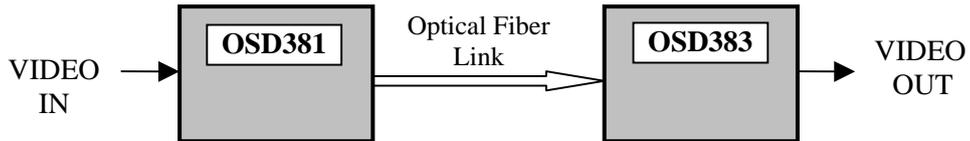


FIGURE 1: TYPICAL CONFIGURATION

## 1.3 PRODUCTS AND OPTIONS

There are various options available for the OSD381 as identified in Table 1 below:

TABLE 1: PRODUCTS AND OPTIONS

ITEM	DESCRIPTION
OSD381	STANDARD FIBER OPTIC CCTV TRANSMITTER MODULE
OSD381L	1300nm SINGLEMODE OPERATION CCTV TRANSMITTER MODULE
OSD902PP	MAINS INPUT PLUG PACK TO SUIT OSD381 PRODUCTS

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## 1.4 TECHNICAL SPECIFICATIONS

Table 2 below provides Technical Specifications for the OSD381.

TABLE 2: TECHNICAL SPECIFICATIONS

NO	SPECIFICATION	PERFORMANCE
1	Input Impedance	75Ω
2	Input Level	1Vp-p
3	Video Connector	BNC Socket
4	Power Connector	2-pin socket
5	Bandwidth	10Hz to 10MHz +1/-3dB
6	Weighted Signal to Noise Ratio	>50dB at -30dBm peak received optical power
7	Transmitter Wavelength	850 ± 40nm (multimode) 1300 ± 40nm (singlemode)
8	Transmitter Coupled Power	>-13dBm peak into 62.5/125um multimode fiber >-16dBm peak into 10/125um singlemode fiber (OSD381L only)
9	Transmitter Power Adjustment	5dB nominal, user selectable
10	Optical Connectors	ST standard, others optional
11	Power Requirements	+9V <sub>DC</sub> to +18V <sub>DC</sub> 6V <sub>AC</sub> to 15V <sub>AC</sub> at 100mA max
12	Enclosure	Strong metal case
13	Indicators	Power On, Video Input
14	Controls	TX output power level (toggle switch)
15	Dimensions (mm)	93D x 54W x 28H (excludes flanges and optical connectors)
16	Weight of Module (kg)	0.25
17	Operating Temperature	-20 to 75°C
18	Relative Humidity	0 to 95% non-condensing

## 2 INSTALLATION AND OPERATION

### 2.1 INTRODUCTION

This section outlines the methods required to install and operate the OSD381 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.

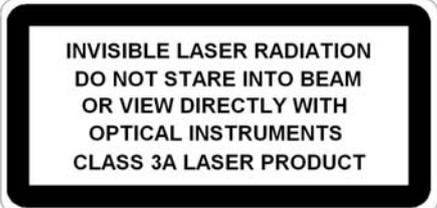
### 2.2 INSTALLATION

#### 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

Class 1	Class 3A
<p>The multimode version of the OSD381 is a <b>Class 1 LED product</b>. Wavelength of 850nm and &lt;-8dBm power output.</p>	<p>The singlemode version of the OSD381 is a <b>Class 3A laser product</b>. Wavelength of 1310nm and &lt;+5dBm power output or wavelength of 1550nm and &lt;+7dBm power output.</p>
	

#### 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 OSD381 DRAWINGS AND DIMENSIONS

The OSD381 should be mounted on an even surface and secured by means of M4 or smaller screws. Figure 2 is an outer case drawing showing the required mounting dimensions.

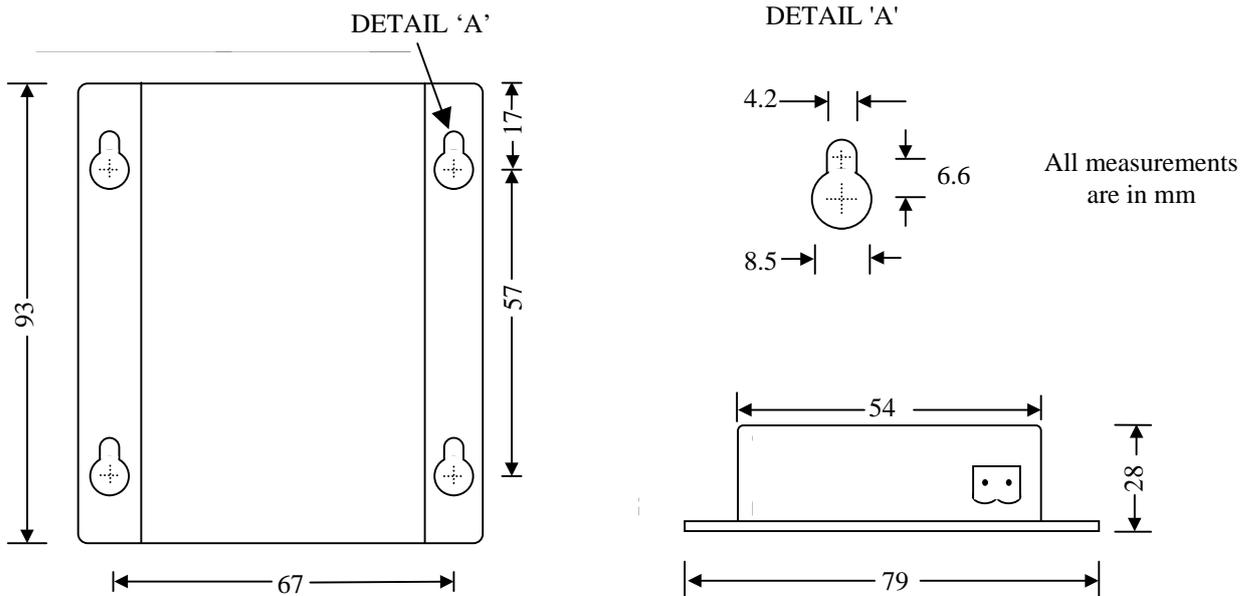


FIGURE 2: OSD381 CASE DIMENSIONS

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### 2.2.3 POWER SUPPLY CONNECTIONS

The OSD381 requires external DC or AC power. The acceptable DC voltage range is +9 to +18V DC, and the allowed AC voltage range is 6 to 15V AC, with maximum current draw of 100mA. Power should be connected to the 2-way socket located at the back of the case. Take care to connect DC power with the correct polarity: Pin 2 is ground and Pin 1 is positive power. For AC supplies the polarity is not applicable.

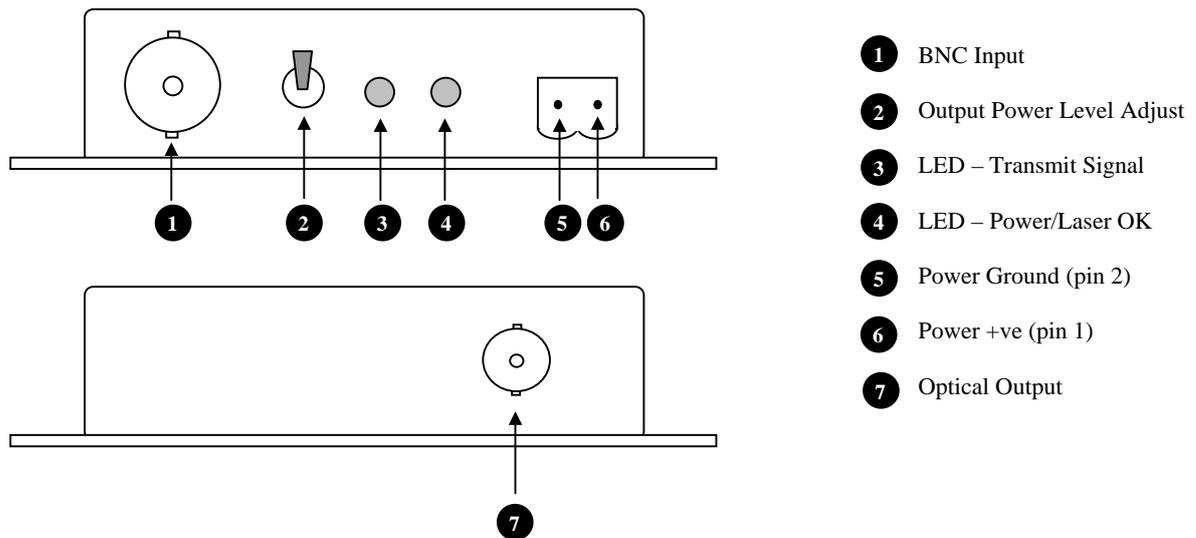


FIGURE 3: OSD381 SIDE VIEWS

### 2.2.4 SIGNAL CONNECTIONS

Video input signal should be connected to the female BNC connector on the OSD381 using 75Ω cable terminated to a male BNC connector.

The optical fiber cable must be terminated with the appropriate optical connector. Before connection, inspect the ends 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.

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## 2.2.5 CONTROLS

The OSD381 has only one control: a switch for optical power output adjustment. The switch has two settings;

- High – Maximum optical output power setting
- Low – Attenuates the optical output power by 6dB and should only be used for short link lengths where the reduced attenuation of such links could result in saturation of the receiver input.

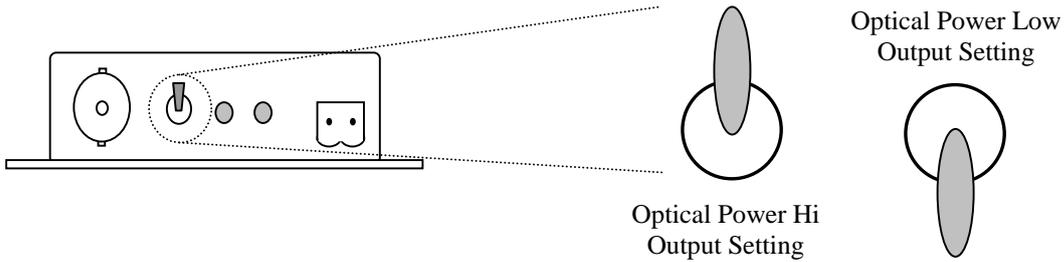


FIGURE 4: SWITCH SETTING

Table 3 provides a rough guide for optimum switch settings when the OSD381 is being used in conjunction with the OSD383 receiver module.

TABLE 3: SWITCH SETTING GUIDE FOR VARIOUS LINK DISTANCES

FIBER TYPE	PRODUCT	LOW	HIGH
		Switch Position Down	Switch Position Up
50/125 multimode	OSD381	0-2km	2-5km
62.5/125 multimode	OSD381	0-3km	3-5km
10/125 singlemode	OSD381L	0-10km	10-30km

## 2.2.6 INDICATORS

The OSD381 has two LED indicators. The function of each is described in Table 4.

TABLE 4: OSD381 INDICATOR FUNCTION

INDICATOR	COLOUR	STATUS
Power On	Green	Power applied / Laser OK
	Red	Power applied / Laser Failure
Transmit Signal	Green	Video input signal present
	Red	Video input signal not present

## 3 MAINTENANCE

### 3.1 INTRODUCTION

The following section outlines the fault-finding procedure for the OSD381 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 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 video signals are connected to the modem correctly and that the distant 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.
- ▲ 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 OSD381.

## 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 repair labels is evident.



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Optical Systems Design Pty. Ltd.  
7/1 Vuko Pl. Warriewood 2102  
P.O. Box 891 Mona Vale  
N.S.W. Australia 2103  
Telephone: +61 2 9913 8540  
Facsimile: +61 2 9913 8735  
Email: [osdsales@osd.com.au](mailto:osdsales@osd.com.au)  
Web Site: [www.osd.com.au](http://www.osd.com.au)

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