
OPTICAL

SYSTEMS

DESIGN

OPERATOR MANUAL

OSD860S SERIES

**REDUNDANT LINK DIGITAL 4/8
CHANNEL VIDEO/AUDIO/DATA/IP**

FIBER OPTIC MULTIPLEXER

OPTICAL SYSTEMS DESIGN

1	TECHNICAL SUMMARY	2
1.1	PRODUCT DESCRIPTION	2
1.1.1	APPLICATIONS	3
1.1.2	FEATURES AND BENEFITS	3
1.2	TYPICAL CONFIGURATION	3
1.1	PRODUCTS AND OPTIONS	4
1.2	TECHNICAL SPECIFICATIONS	5
1.3	OSD860S DRAWINGS AND DIMENSIONS	6
2	INSTALLATION AND OPERATION	7
2.1	INTRODUCTION	7
2.2	INSTALLATION	7
2.2.1	WARNING AND PRECAUTIONS	7
2.3	POWER SUPPLY CONNECTIONS	8
2.4	DATA CONNECTIONS	9
2.4.1	BASIC OPTION CONNECTOR	9
2.4.2	CONTACT CLOSURE CONNECTIONS	11
2.4.3	OPTIONAL DATA/AUDIO CONNECTOR	11
2.5	OPTIONAL ETHERNET CONNECTOR (10/100 BASE-T ETHERNET)	14
2.6	VIDEO CONNECTIONS	14
2.7	SFP OPTICAL PORT CONNECTIONS	15
2.8	OSD860S OPERATION	17
2.8.1	OSD860S INDICATORS	17
3	MAINTENANCE	19
3.1	INTRODUCTION	19
3.2	EXTERNAL INSPECTION	19
3.3	ROUTINE MAINTENANCE	19
4	WARRANTY	20
4.1	WARRANTY PERIOD	20
4.2	REPAIRS	20
	TABLE 1: PRODUCTS AND OPTIONS	4
	TABLE 2: POSSIBLE CONFIGURATIONS	4
	TABLE 3: TECHNICAL SPECIFICATIONS	5
	TABLE 4: CARD POWER SUPPLY PINOUT	8
	TABLE 5: POWER CONNECTION	8
	TABLE 6: BASIC OPTION DB15 FEMALE CONNECTOR AND PIN ASSIGNMENTS	9
	TABLE 7: OPTIONAL 44 PIN FEMALE CONNECTOR PIN ASSIGNMENT	12
	TABLE 8: RS-485 TIMING DELAYS	13
	TABLE 9: INDICATORS	18
	FIGURE 1: TYPICAL CONFIGURATION	3
	FIGURE 2: DIMENSIONS	6
	FIGURE 3: CARD POWER SUPPLY PINOUT	8
	FIGURE 4: POWER SUPPLY CONNECTIONS	8
	FIGURE 5: BASIC DATA CONNECTIONS	9
	FIGURE 6: DB15F DATA CONNECTOR	9
	FIGURE 7: STANDARD CHANNEL 1 CONFIGURATION	10
	FIGURE 8: CONTACT CLOSURE INPUT	11
	FIGURE 9: CONTACT CLOSURE OUTPUT	11
	FIGURE 10: OPTIONAL DATA/AUDIO CONNECTOR	11
	FIGURE 11: OPTIONAL DB44 - FEMALE CONNECTOR PIN OUT	12
	FIGURE 12: DIP SWITCH SETTING	13
	FIGURE 13: 10/100 BASE-T ETHERNET RJ45 CONNECTOR	14
	FIGURE 14: VIDEO CONNECTIONS	14
	FIGURE 15: FITTING/REMOVING SFP CONNECTORS	15
	FIGURE 16: SFP MODE SWITCH	16
	FIGURE 17: INDICATORS	17

1 TECHNICAL SUMMARY

1.1 PRODUCT DESCRIPTION

The OSD860S series is a high-quality digital video, data, audio and IP optical fiber transmission system incorporating a dual redundant fiber SFP. The system consists of an OSD860S transmitter and OSD860S receiver which are designed to be used as a pair. The OSD860S standard product provides forward transmission of four or eight channels of PAL, NTSC or SECAM video and one way transmission of four data channels. The OSD860S can also be configured with the following options;

- Full duplex data operation.
- Transmission of four audio and/or four additional high speed data channels.
- Reverse path transmission configured to provide any combination of four audio channels and/or four data channels.
- Alternatively, the system may transmit eight audio only or eight data only signals either one way or full duplex.
- 10/100 Base-T Ethernet connections via an RJ45 connector.

The basic OSD860S transmitter has up to eight analogue composite video inputs which are converted to a digital signal with 9-bit resolution. The four digital data inputs can be RS232 on two channels, TTL or RS422 on the other two channels, with RS485 available on one channel, and operate from DC to 150kbps. Another added option allows a further 4 or 8 high speed data channels operating up to 400kbps. User adjustable turnaround times are provided for the RS485 on the optional data channels and a fixed 100us turnaround time for the standard channel. Optional duplex contact closure channels are available utilizing one or two data channels.

The OSD860S transmitter can be optionally supplied with up to eight analogue audio channels where the audio signals are converted using 24-bit resolution. The audio channels can be balanced or unbalanced at 775mV nominal level and operate over a 15kHz bandwidth.

10/100 Base-T Ethernet connection is also a fitted option.

The resulting digital signals are multiplexed and transmitted as a digital bit-stream through the fiber via one or two SFP ports. The OSD860S offers dual redundant full duplex transmission utilizing two SFPs as laser light source operating at 1310nm or at 1550nm including the eighteen CWDM wavelengths between 1270 and 1610nm. Various SFP transmitter power levels and receiver sensitivities are available providing cost effective operation over up to 120km. Two fibers are normally employed per SFP, one for each direction of transmission. Single fiber full duplex operation per SFP is possible by employing wavelength division multiplexing (WDM) SFPs.

The OSD860S transmitter also includes an optical receiver section that decodes the digital signal transmitted by the OSD860S receiver, to provide data, optional audio and Ethernet output signals.

The OSD860S receiver incorporates a high performance optical receiver for the incoming digital bit-stream. The received digital signal is then decoded into video, data and audio signals, which are available at the unit's outputs. The OSD860S receiver also includes a transmitter that outputs a digital optical signal consisting of the return path channels for audio and/or data and IP. The unit provides constant analogue composite video output level which is independent of link loss, and the audio and data sections of the OSD860S receiver are also adjustment free over all link lengths.

The OSD860S is available in three physical configurations: 10T card, stand-alone modem case and 2RU rack mounting chassis. The 2RU version allows two OSD860S units effectively doubling the video, audio and data available in a single unit. The card versions are designed to fit the 3RU-high 19" OSD370 or OSD350 chassis allowing multiple OSD card products to be conveniently powered from and located in the one chassis. The module versions are intended for isolated use and require an external power source of +10 to +30V_{DC}. The 2RU rack mounting chassis is a fully independent mains or -48V powered unit.

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1.1.1 APPLICATIONS

- ▲ Ultra high reliability CCTV networks
- ▲ Transportation networks
- ▲ Video conferencing
- ▲ Industrial monitoring systems

1.1.2 FEATURES AND BENEFITS

- ▲ Uncompressed 9 bit video, 24 bit audio encoding, giving professional quality transmission.
- ▲ Available with dual SFP transceivers for redundant optical link operation
- ▲ Fiber optic transmission of four or eight video signals on one fiber with four RS232 and RS422 data signals (two of each) which may be one way with the video or, optionally, full duplex.
- ▲ Optional 10/100 Base-T Ethernet bridging through the link.
- ▲ Optional transmission of four audio and/or four additional high speed data channels which may be one way or full duplex. Alternatively, the user may transmit eight audio or eight extra data signals, again either one way or full duplex.
- ▲ Optional duplex operation over one fiber.
- ▲ Optional duplex contact closure channels
- ▲ Operates over singlemode fiber. Very short distance operation over multimode fiber is possible. Contact OSD for details
- ▲ Video bandwidth of 6MHz, SNR >63dB
- ▲ Audio bandwidth of 15kHz, SNR >100dB
- ▲ Range of up to 160km is possible with optional 1550nm operation and high sensitivity optical receiver
- ▲ Video inputs have 3dB overload capability.

1.2 TYPICAL CONFIGURATION

Figure 1 below shows a typical set-up for an OSD860S pair.

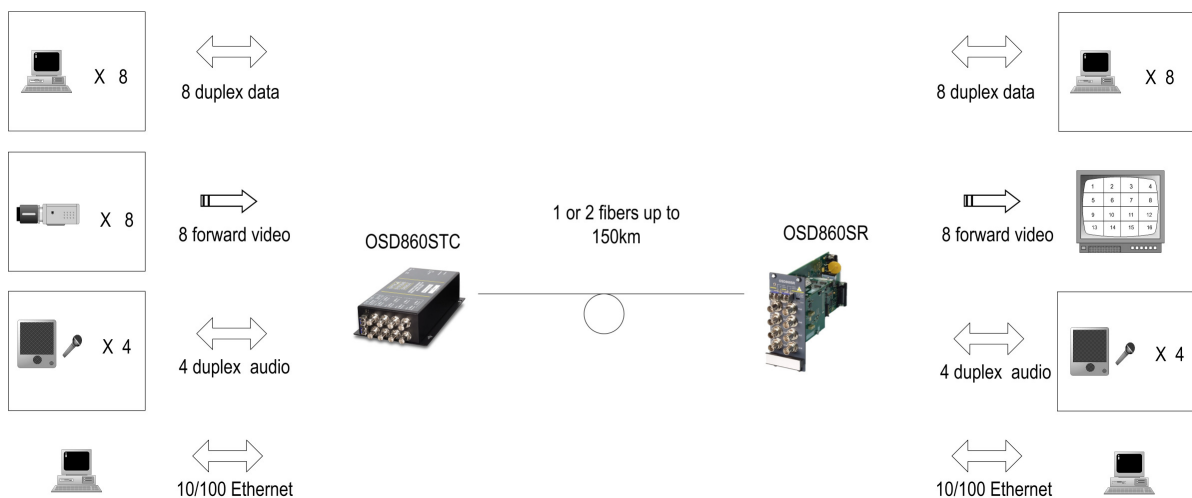


FIGURE 1: TYPICAL CONFIGURATION

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1.1 PRODUCTS AND OPTIONS

There are various options available for the OSD860S as identified in Table 1 below:

TABLE 1: PRODUCTS AND OPTIONS

ITEM	DESCRIPTION
NV	N video channels (where N = 4, or 8)
A	Forward path audio
a	Reverse path audio
D	Forward path data
d	Reverse path data
Cc	Duplex contact closure
W	Single fiber operation (WDM)
E	10/100BaseT Ethernet Interface
NMS	Network Management System

TABLE 2: POSSIBLE CONFIGURATIONS

	OPTION	OSD860ST			OSD860SR		
		VIDEO	DATA	AUDIO	VIDEO	DATA	AUDIO
F	Basic	4V/8V	4D	-	4V/8V	4D	-
	B+Audio & Data	4V/8V	8D	4A	4V/8V	8D	4A
	B+Audio	4V/8V	4D	4A or 8A	4V/8V	4D	4A or 8A
	B+Data	4V/8V	8D or 12D	-	4V/8V	8D or 12D	-
F + R	Basic	4V/8V	4Dd	-	4V/8V	4Dd	-
	B+Audio & Data	4V/8V	8Dd	4Aa	4V/8V	8Dd	4Aa
	B+Audio	4V/8V	4Dd	4Aa or 8Aa	4V/8V	4Dd	4Aa or 8Aa
	B+Data	4V/8V	12Dd	-	4V/8V	12Dd	-
	Ethernet	Can be added to all options in F + R			Can be added to all options in F + R		

*F- Forward path

*F+R - Forward + Reverse path

*B- Basic option

*A- Forward Audio

*D- Forward Data

*a- Reverse audio

*d- Reverse data

OPTICAL SYSTEMS DESIGN

1.2 TECHNICAL SPECIFICATIONS

TABLE 3: TECHNICAL SPECIFICATIONS

SPECIFICATION	PERFORMANCE	
	VIDEO	AUDIO
Input/Output Impedance	75Ω	10kΩ/200Ω Balanced/Unbalanced
Input/Output Levels	1.0 V _{pp} nominal	0dBu nominal, 15dBu maximum
Bandwidth (±0.5dB)	10Hz to 6MHz	10Hz to 15kHz
Signal to Noise Ratio	> 63dB (weighted)	>100dB (A weighted at max level)
Linearity	<0.7% Differential Phase (DP) <0.7° Differential Gain (DG)	< 0.05% Total Harmonic Distortion (THD)
Standard Data Interface	2 x RS232 and 2 x RS422	
Standard Data Rates	DC to 150kbps	
Optional Data Interface	RS232 or RS422 with RS485 also available on Channel 1	
Optional Data Rate	DC to 400kbps	
Optional Ethernet Interface	10/100BaseT via RJ45 connector with system rate of 3.5Mbps	
Data Bit Error Rate	< 1x10 ⁻⁹	
Optional Contact Closure Interface	One or two which replaces one RS422 and one RS232 data channels	
Connectors	BNC	
Standard Data Connectors	Female 15 pin D connector	
Optional Audio/Data Connector	Female 44 pin high density D connector	
Transmitter Wavelength	1310nm or 1550nm (including CWDM devices from 1470 to 1610nm)	
Transmitter Coupled Power	Several options are available from -7dBm to +4dBm	
Receiver Sensitivity	<-22dBm (PIN) <-34dBm (APD)	
Reverse Path Sensitivity	<-24dBm	
Link Budget	From 17dB to 36dB at 1310nm or 1550nm depending on optical devices	
Optical Connectors	Refer to OSD860 SFP datasheet #102860SFP04	
Dimensions (mm)	100W x 208D x 50H card, powered from OSD370/350 chassis 105W x 210D x 55H module 483W x 210D x 88H 2RU case	
Weight	0.2kg (card), 1.0kg (module), 3.1kg (2RU case)	
Power Requirements (version dependable)	10 to 30V _{DC} @ 12VA (modem case) 90 to 265 V _{AC} @ 20VA (2RU), -48V _{DC} power is optional (2RU enclosure)	
Operating Temperature	-20 to +75°C	
Relative Humidity	0 to 95% non-condensing	
Chassis Current Consumption (CCC)	0.50 Amp for 4-channel video version 0.70 Amp for 8-channel video version Add 0.30 Amp for additional audio, data and/or Ethernet channels	

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1.3 OSD860S DRAWINGS AND DIMENSIONS

The OSD860S are designed to be mounted on an even surface and to be secured by means of M4 or smaller screws. The card versions are designed to be inserted into a chassis and secured by means of captivated screws.

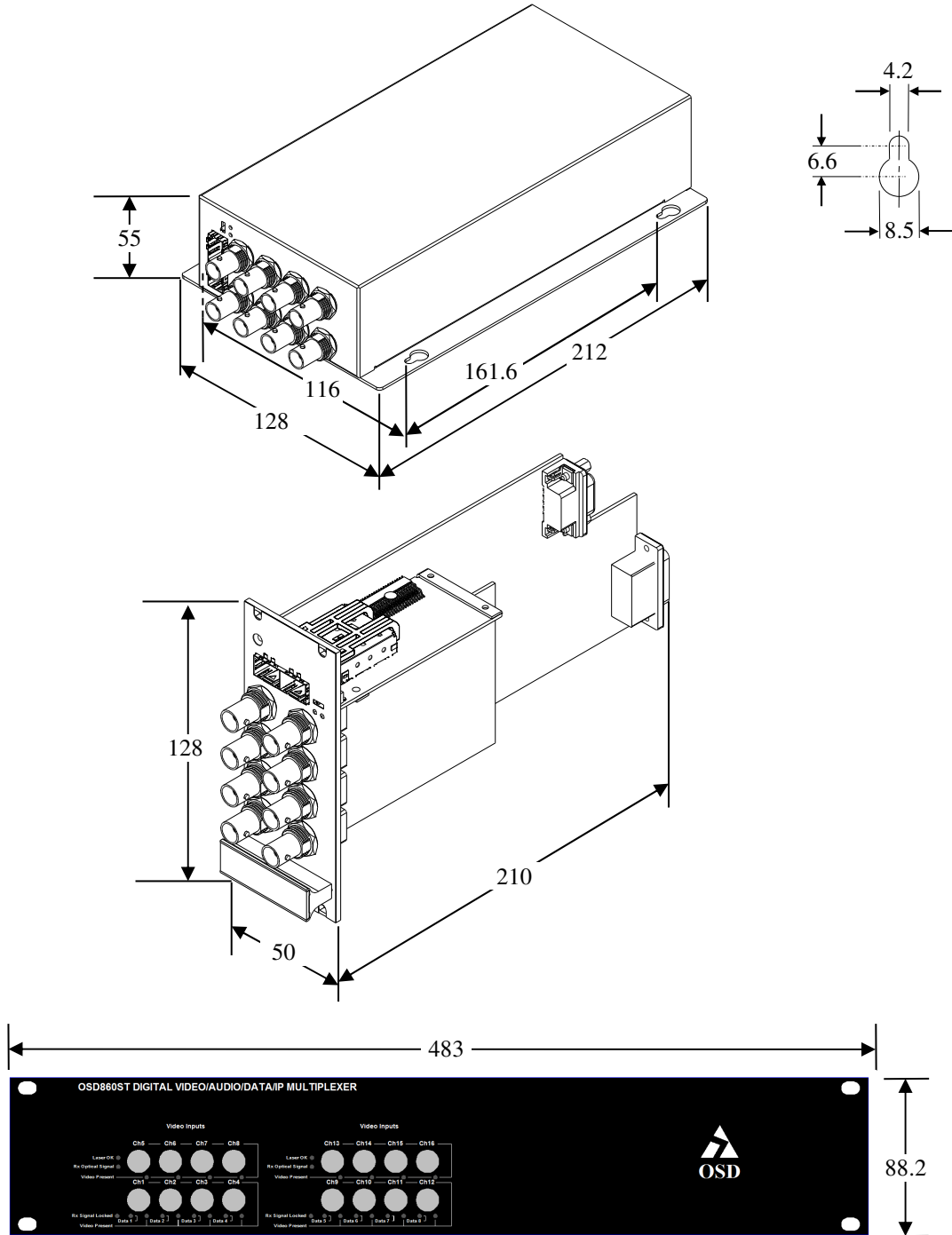


FIGURE 2: DIMENSIONS

2 INSTALLATION AND OPERATION

2.1 INTRODUCTION

This section outlines the methods required to install and operate the OSD860S system 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

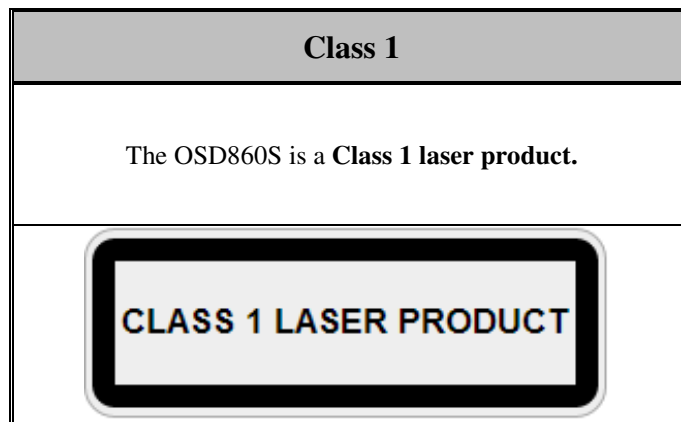
2.2.1 WARNING AND PRECAUTIONS

▲ 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 60825-1:2014 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.

OPTICAL SYSTEMS DESIGN

2.3 POWER SUPPLY CONNECTIONS

The OSD860S card version requires DC power which is connected via a DB9 connector and supplied by the OSD370N or OSD350N chassis. The card should be fixed into the chassis using the captivated screws. The cards can be plugged in or out of the chassis with power on or off.

TABLE 4: CARD POWER SUPPLY PINOUT

DB9 Power Pin	Specification
Pin 3	+12V _{DC} (±1V) – supplied by OSD921
Pin 6,7	0V

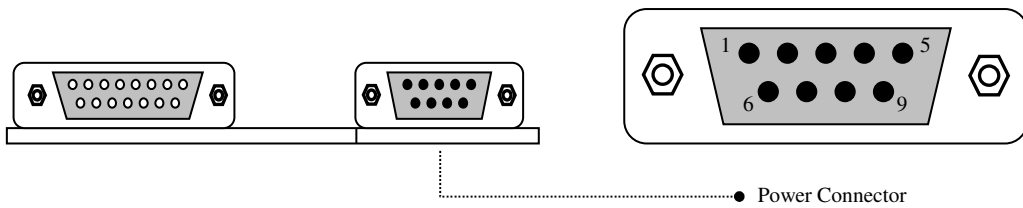


FIGURE 3: CARD POWER SUPPLY PINOUT

The OSD860S module version requires external DC power and is connected to the power socket located at the back of the case. Power should be connected as indicated in Table 5.

The 2RU rack version requires AC mains power supplied by standard IEC mains plug of 90V_{AC} to 265V_{AC} @ 20VA. Fuse: 1A Antisurge.

TABLE 5: POWER CONNECTION

OSD860 Version	Specification	Power	Connection
Card	12V _{DC}	Supplied by OSD370N or OSD350N chassis	DB9
Module	10 to 30V _{DC}	Power Pack 12VA	2 way terminal connector
2RU	90 V _{AC} to 265 V _{AC} @ 20VA	Mains Power	IEC mains plug

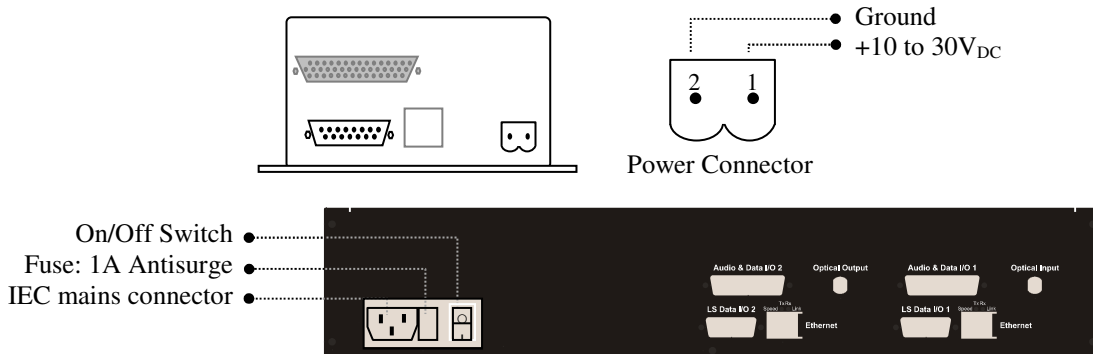


FIGURE 4: POWER SUPPLY CONNECTIONS

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2.4 DATA CONNECTIONS

The OSD860S basic option provides four full duplex data channels capable of accepting RS232 on two channels, TTL or RS422 on the other two channels, with RS485 available on one channel with a fixed 100us turnaround time. Data is connected to the OSD860S via the DB15 female connector located on the rear panel.

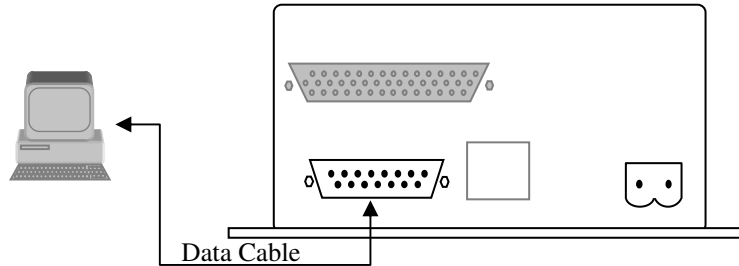


FIGURE 5: BASIC DATA CONNECTIONS

2.4.1 BASIC OPTION CONNECTOR

TABLE 6: BASIC OPTION DB15 FEMALE CONNECTOR AND PIN ASSIGNMENTS

PIN	DATA CONNECTION	PIN	DATA CONNECTION
1	RS422 INPUT 1 + / RS485 INPUT + (4W)	15	RS232 INPUT 1
9	RS422 INPUT 1 - / RS485 INPUT - (4W)	8	RS232 INPUT 2 (or CC INPUT 2)
2	RS422 INPUT 2 +	6	RS232 OUTPUT 1
10	RS422 INPUT 2 - / CC INPUT 1	14	RS232 OUTPUT 2 (or CC OUTPUT 2)
11	RS422 OUTPUT 1 - / RS485 OUTPUT -(4W) / RS485 IN/OUT - (2W)	3	CC OUTPUT 1
4	RS422 OUTPUT 1+ / RS485 OUTPUT +(4W) / RS485 IN/OUT +(2W)	13	GROUND
12	RS422 OUTPUT 2 +	7	GROUND
5	RS422 OUTPUT 2 -	-	-

RS485 is available on one channel only.

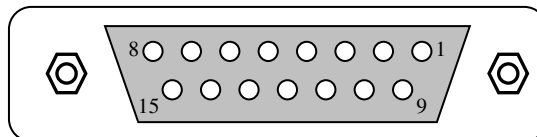


FIGURE 6: DB15F DATA CONNECTOR

OPTICAL SYSTEMS DESIGN

RS485 2-Wire half duplex is used to connect several devices to the same bus when only one unit transmits data at a time. All units are normally in high impedance receive mode waiting for data. When transmission of data is requested, the device waits for a protocol specific turn-around time delay before transmitting after which it returns to receive mode.

RS485 4-Wire full duplex is used for master/slave arrangement. Devices are polled and respond faster with no turn-around time delay required between request/response. The receiver is always enabled allowing the devices to receive data even while responding to a request.

Note: If a link doesn't seem to be working correctly, try swapping the polarity of the data lines on both ends. Some devices are marked opposite the RS485 standard.

2.4.1.1 RS485 OPERATION

The standard OSD860S is configured for RS422 operation. Typically, the unit will be set to RS485 2-Wire or 4-Wire at time of ordering as the access to the jumper settings is limited (particularly the module version). If however there is a requirement for changing to RS485 2-Wire or 4-Wire, modifications should be carried out by OSD or an authorised OSD distributor by setting the jumper links as follows;

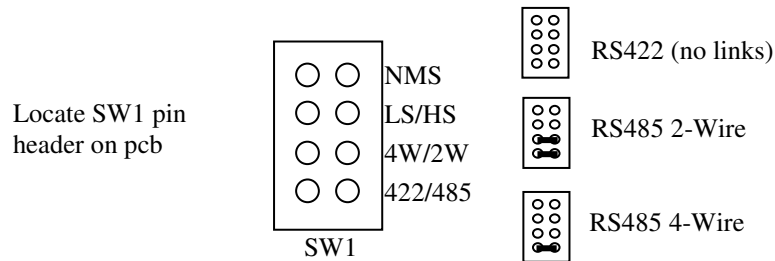


FIGURE 7: STANDARD CHANNEL 1 CONFIGURATION

OPTICAL SYSTEMS DESIGN

2.4.2 CONTACT CLOSURE CONNECTIONS

The OSD860S has one duplex Contact Closure (CC) channel and a second optionally fitted CC channel. The standard CC channel uses the RS422 Input 2- (Pin 10) for the input. The second optionally fitted CC (fitted at time of order) makes use of the second RS232 channel (Pin 8) for the input.

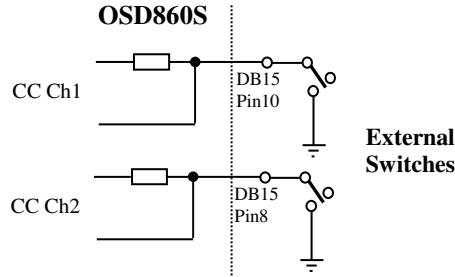


FIGURE 8: CONTACT CLOSURE INPUT

The CC outputs (Pin 3 & Pin 14 on the DB15 connector) is to be connected to the relay coil. Maximum ratings the OSD860S can drive is 1.5A @ 24V_(max). With the unit off, the CC output is Normally Open/High Impedance.

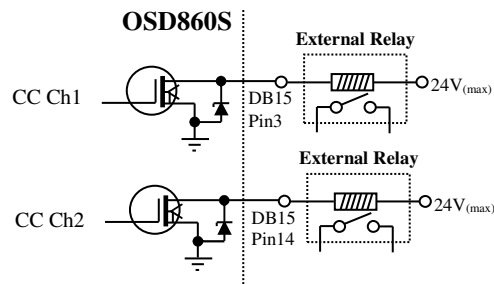


FIGURE 9: CONTACT CLOSURE OUTPUT

2.4.3 OPTIONAL DATA/AUDIO CONNECTOR

The OSD860S provides an option for adding the following combinations;

- 4 or 8 data channels
- 4 or 8 audio channels
- 4 data and 4 audio channels

The data channels are capable of accepting RS232, TTL or RS422 and RS485. Data is connected to the OSD860S via the DB44 female connector located on the rear panel. Table 7 outlines the pin connections for the available configurations.

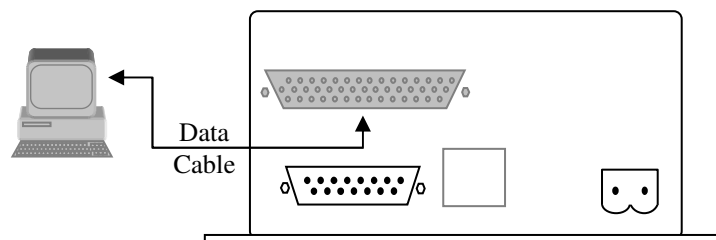


FIGURE 10: OPTIONAL DATA/AUDIO CONNECTOR

OPTICAL SYSTEMS DESIGN

TABLE 7: OPTIONAL 44 PIN FEMALE CONNECTOR PIN ASSIGNMENT

DB44 HD PIN-OUT	FUNCTION 4Aa4Dd	FUNCTION 8Aa	FUNCTION 8Dd
1, 8, 15, 16, 30, 38, 41	Ground	Ground	Ground
31	Not Connected	Not Connected	Not Connected
19	CH1 Data Input +	CH5 Audio Input +	CH1 Data Input +
20	CH1 Data Input -	CH5 Audio Input -	CH1 Data Input -
32	CH2 Data Input +	CH6 Audio Input +	CH2 Data Input +
33	CH2 Data Input -	CH6 Audio Input -	CH2 Data Input -
2	CH3 Data Input +	CH7 Audio Input +	CH3 Data Input +
3	CH3 Data Input -	CH7 Audio Input -	CH3 Data Input -
17	CH4 Data Input +	CH8 Audio Input +	CH4 Data Input +
18	CH4 Data Input -	CH8 Audio Input -	CH4 Data Input -
5	CH1 RS232 Output		CH1 RS232 Output
35	CH2 RS232 Output		CH2 RS232 Output
4	CH3 RS232 Output		CH3 RS232 Output
34	CH4 RS232 Output		CH4 RS232 Output
23	CH1 RS422 Output +	CH5 Audio Output +	CH1 RS422 Output +
24	CH1 RS422 Output -	CH5 Audio Output -	CH1 RS422 Output -
36	CH2 RS422 Output +	CH6 Audio Output +	CH2 RS422 Output +
37	CH2 RS422 Output -	CH6 Audio Output -	CH2 RS422 Output -
6	CH3 RS422 Output +	CH7 Audio Output +	CH3 RS422 Output +
7	CH3 RS422 Output -	CH7 Audio Output -	CH3 RS422 Output -
21	CH4 RS422 Output +	CH8 Audio Output +	CH4 RS422 Output +
22	CH4 RS422 Output -	CH8 Audio Output -	CH4 RS422 Output -
27	CH1 Audio Input +	CH1 Audio Input +	CH5 Data Input +
28	CH1 Audio Input -	CH1 Audio Input -	CH5 Data Input -
42	CH2 Audio Input +	CH2 Audio Input +	CH6 Data Input +
43	CH2 Audio Input -	CH2 Audio Input -	CH6 Data Input -
13	CH3 Audio Input +	CH3 Audio Input +	CH7 Data Input +
14	CH3 Audio Input -	CH3 Audio Input -	CH7 Data Input -
29	CH4 Audio Input +	CH4 Audio Input +	CH8 Data Input +
44	CH4 Audio Input -	CH4 Audio Input -	CH8 Data Input -
9	CH1 Audio Output +	CH1 Audio Output +	CH5 RS422 Output +
10	CH1 Audio Output -	CH1 Audio Output -	CH5 RS422 Output -
39	CH2 Audio Output +	CH2 Audio Output +	CH6 RS422 Output +
40	CH2 Audio Output -	CH2 Audio Output -	CH6 RS422 Output -
25	CH3 Audio Output +	CH3 Audio Output +	CH7 RS422 Output +
26	CH3 Audio Output -	CH3 Audio Output -	CH7 RS422 Output -
11	CH4 Audio Output +	CH4 Audio Output +	CH8 RS422 Output +
12	CH4 Audio Output -	CH4 Audio Output -	CH8 RS422 Output -

Notes:

- RS232 operation (when data option fitted);
 - Data Input: Pins 20, 33, 3, 18 (Ch 1-4) & 28, 43, 14, 44 (Ch 5-8)
 - Data Output: Pins 5, 35, 4, 34 (Ch 1-4) & 10, 40, 26, 12 (Ch 5-8)
- Single channel RS485 is available on pin 23 (+) and pin 24 (-) when data option fitted
- Use column Function 4Aa4Dd for 4-Audio and 4-Data channel option
- Use column Function 8Aa for 8-Audio channel option
- Use column Function 8Dd for 8-Data channel option

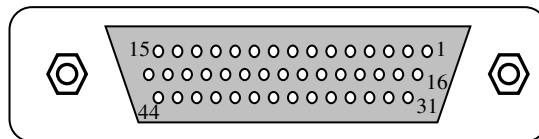


FIGURE 11: OPTIONAL DB44 - FEMALE CONNECTOR PIN OUT

OPTICAL SYSTEMS DESIGN

The optionally fitted data provides a number of control settings. These are pre-set at time of ordering as the access to the switch mode settings are limited (particularly the module version). If however there is a requirement for changing settings, the data control switch is located on the OSD8914 Data Interface Daughter board inside the unit. Generally, settings should be carried out by OSD or an authorised OSD distributor by setting the switch positions as indicated on Table 8 and Figure 12.

Switch 4 sets the data mode: RS422/232 or RS485. Switches 1, 2 and 3 set the RS485 Turnaround Delay to the delay appropriate to your system (Table 8). If you are not sure of the correct delay value, leave all Turnaround Delay switches “On”, ie down.

All ‘two wire’ RS485 devices are by default in receive mode, and only change to transmit mode for data transmission. All RS485 protocols use a transmit delay to ensure successful transmissions to the ends of the network. The delay is data rate and protocol dependent.

TABLE 8: RS-485 TIMING DELAYS

SWITCH COMBINATIONS				FUNCTION	DELAY (μ s) (\pm 3%)
1	2	3	4		
OFF	OFF	OFF	OFF	RS-422	N/A
OFF	OFF	OFF	ON	RS-485	100000
OFF	OFF	ON	ON	RS-485	30000
OFF	ON	OFF	ON	RS-485	10000
OFF	ON	ON	ON	RS-485	3000
ON	OFF	OFF	ON	RS-485	1000
ON	OFF	ON	ON	RS-485	300
ON	ON	OFF	ON	RS-485	100
ON	ON	ON	ON	RS-485	30

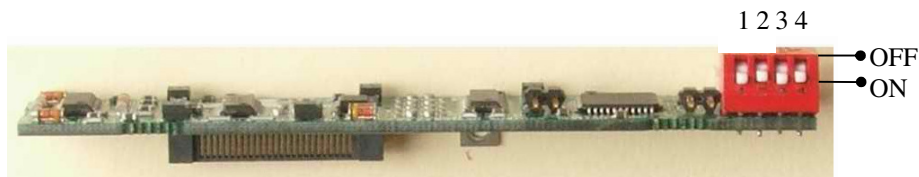


FIGURE 12: DIP SWITCH SETTING

OPTICAL SYSTEMS DESIGN

2.5 OPTIONAL ETHERNET CONNECTOR (10/100 BASE-T ETHERNET)

The OSD860S can also provide 10/100 BASE-T Ethernet connection as an option. Standard CAT5e or higher Ethernet connections are required. RJ45 connector is located on the rear panel of the unit.

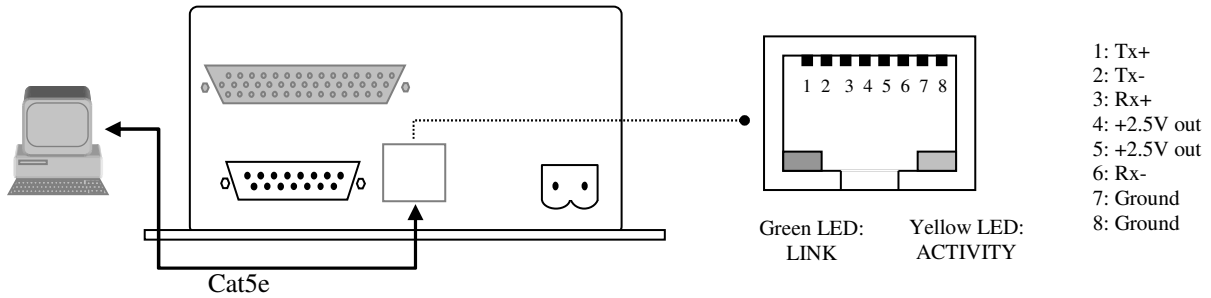


FIGURE 13: 10/100 BASE-T ETHERNET RJ45 CONNECTOR

2.6 VIDEO CONNECTIONS

The OSD860S provides transmission of up to 8 video channels (up to 16 on 2RU version). The video-input signal (eg. from camera) is connected to the video input BNC connectors on the OSD860S transmitter. The video output signal (eg. to monitor) is connected from the corresponding video channel output BNC connectors on the OSD860S receiver. Video channel allocation is shown on the product label.

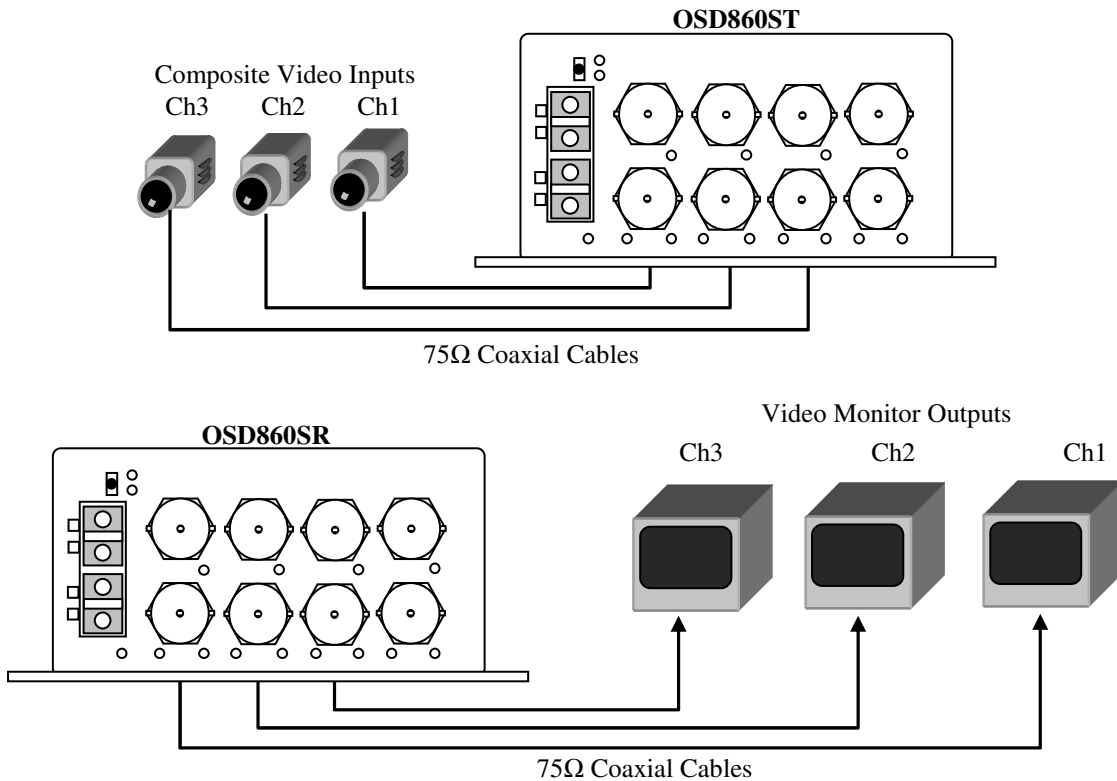


FIGURE 14: VIDEO CONNECTIONS

OPTICAL SYSTEMS DESIGN

2.7 SFP OPTICAL PORT CONNECTIONS

Care should be taken when inserting/removing the SFP connectors from SFP ports 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 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.

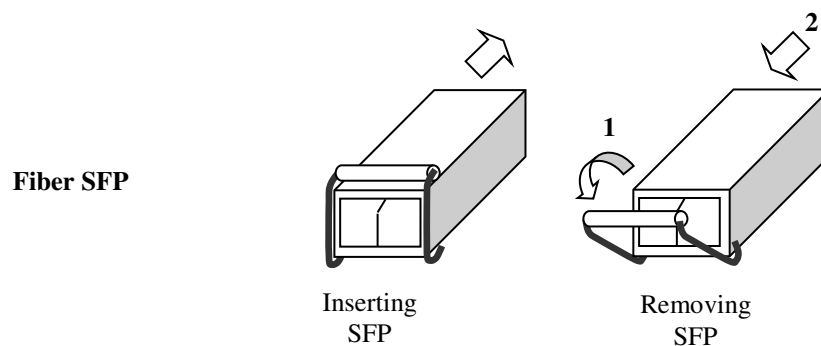


FIGURE 15: FITTING/REMOVING SFP CONNECTORS

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.

OPTICAL SYSTEMS DESIGN

The OSD860S offers a dual redundant fiber transmission system. Two SFP ports are utilized to transmit/receive the same digital stream on each separate fiber. Both transmitted signals are then received into the OSD860S receiver.

The OSD860S has one micro switch located on the front panel allowing the user to manually select the incoming optical signal from either the Primary (A) channel, Secondary (B) channel, or Auto.

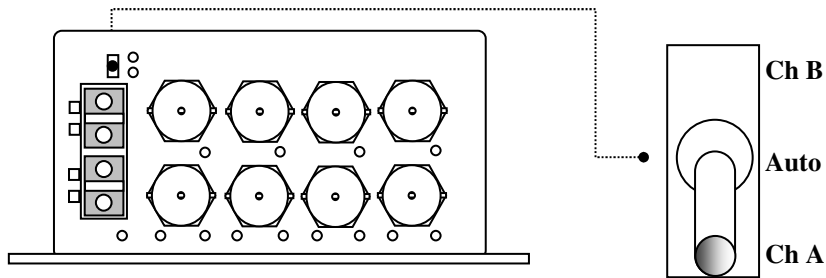


FIGURE 16: SFP MODE SWITCH

Ch A Mode

Sets the incoming optical signal from Channel A transmission only to be received. Note: Auto Detect mode is disabled.

Ch B Mode

Sets the incoming optical signal from Channel B transmission only to be received. Note: Auto Detect mode is disabled.

Auto Mode

Sets the unit to auto-detect mode. The OSD860S detects the presence of both Ch A and Ch B input signal (see LED indicator section for more information). If both Ch A and Ch B signals are present, the OSD860S defaults to the Ch A input. If the signal from Ch A is not present, the OSD860S will switch the optical signal to Ch B optical input.

OPTICAL SYSTEMS DESIGN

2.8 OSD860S OPERATION

If a card version is used, insert it in an appropriate slot on the OSD chassis and check that the indicators illuminate correctly on power up. If a module version is used, connect the unit to an appropriate power source and check that the indicators illuminate correctly on power up.

In either case take special note of the “Laser A” or “Laser B” indicators, it should be green. If it is red there may be a problem with the laser device on the SFP. Disconnect power and have the unit/SFP checked as soon as possible.

Connect the appropriately terminated fiber cable to the OSD860S receiver SFP, checking that correct fiber channel is connected ie. SFP Ch A from OSD860ST to SFP Ch B to the OSD860SR (and vice versa). "LoS A" and “LoS B” (Loss of Signal) LED will change from Red to Green.

To connect composite video signals, connect 75Ω BNC terminated coaxial cable from the camera to the OSD860ST video inputs. Connect 75Ω BNC terminated coaxial cable from the OSD860SR video outputs to the video monitor/switcher.

Plug the digital signal source (data) into the DB15 (or data/audio to the optional DB44) connector on the rear of the module. Ensure that the correct signals are connected to the correct pins of Audio/Data Input/Output connector as specified in Table 6 or Table 7.

2.8.1 OSD860S INDICATORS

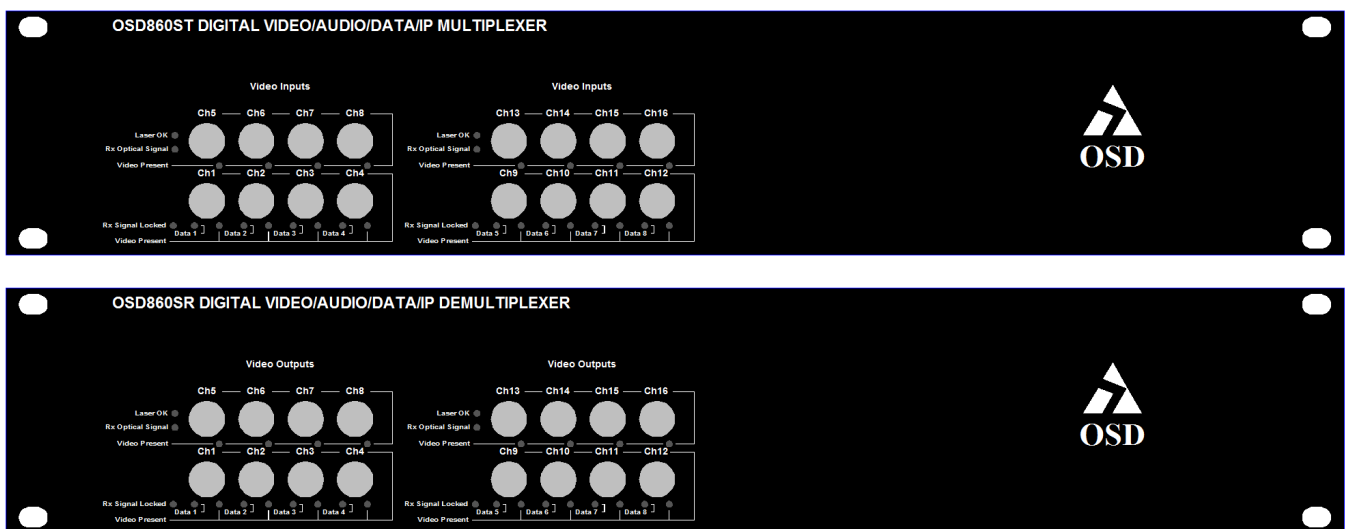
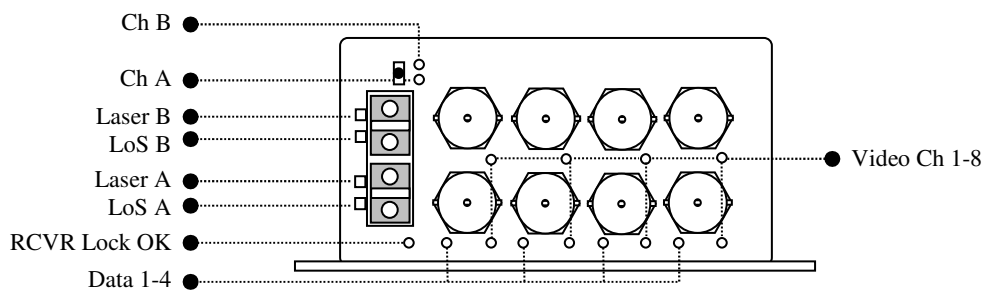


FIGURE 17: INDICATORS

OPTICAL SYSTEMS DESIGN

TABLE 9: INDICATORS

INDICATOR	COLOUR	FUNCTION
Ch B	Off	Ch B fiber channel not used/present
	Green	Ch B fiber channel is used for transmission/reception
Ch A	Off	Ch A fiber channel not used/present
	Green	Ch A fiber channel is used for transmission/reception
Laser B	Red	Laser faulty
	Green	Laser OK
LoS B	Red	No or low signal detected
	Green	Received optical signal OK
Laser A	Red	Laser faulty
	Green	Laser OK
Data 1-4, 5-8	Red	Data output signal detected on appropriate data channel
	Green	Data input signal detected on appropriate data channel
Video 1-8, 9-16	Off	No video signal detected on appropriate video channel
	Amber	Video signal detected on appropriate video channel
Rx Signal Lock	Red	No fiber link connected
	Green	Fiber link established
LoS A	Red	No or low signal detected
	Green	Received optical signal OK

3 MAINTENANCE

3.1 INTRODUCTION

The following section outlines the faultfinding procedure for the OSD860S 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 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, data and audio signals are connected to the modem correctly and that the distant OSD860S 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 OSD860S.

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.

Warranty Repairs

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

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.

Site Repairs


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

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.

OPTICAL SYSTEMS DESIGN

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A.B.N. 83 003 020 504

Printed in Australia