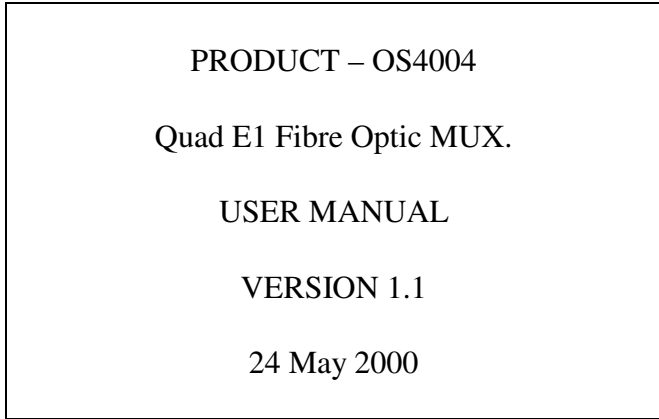


OS4004\_U.DOC  
 Author : W.D.  
 Issue 1.0



<b>Product: OS4004 \</b>		<b>Model:</b>	
<b>Serial Number:</b>		<b>JOB No :</b>	
<b>TEST</b>	<b>CRITERIA</b>	<b>RESULT</b>	
Power Supply	+5, +12 & -12		
Free Running Rate	16,896MHz ±10Hz		
PLL Voltage	Vdc @16,896MHz		
Jitter Acceptance	5UI @ 100Hz		
Frequency Tolerance	80 PPM		
LED Indicators	Functional		
Alarm	Functional		
B.E.R	No Errors in 8 Mins		
Optic TX Level	- dB		
Optic RX Level	- dB		
Power Budget	dB		

Date: ..... Tested By: .....

**USER MANUAL**

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## 1 PRODUCT DESCRIPTION

### 1.1 General

The OS4004 is a quad E1 Fibre optic multiplexer \ demultiplexer.  
The unit conforms to the ITU multiplexing format.

The unit is housed in a small metal enclosure.

The unit is compact and can fit two aside on a '19" rack' shelf with a height of 1U.

### 1.2 Basic System Description

The purpose of the unit is for multiplexing four tributary channels into a single high speed data stream that is encoded and transmitted over a high speed fibre optic link and also for demultiplexing of the decoded data received from the high speed fibre optic link back to four tributary channels.

The unit conforms to the (ITU) G.742 multiplexing format defined by the International Telecommunications Union. (Formerly known as CCITT)

#### Features

- Compact.
- No external framing devices required.
- 75E and 120E I/O (selectable)
- External Equipment supply of 12V @ 0.5Amp
- Potential free Alarm Contact

### 1.3 Indications

Traffic In Fail #1 - Loss of Input Signal Channel 1 Alarm  
 Traffic In Fail #2 - Loss of Input Signal Channel 2 Alarm  
 Traffic In Fail #3 - Loss of Input Signal Channel 3 Alarm  
 Traffic In Fail #4 - Loss of Input Signal Channel 4 Alarm  
 Optic RX Fail - Loss of Optic Receive Signal Alarm  
 Frame Loss - Demultiplexer Loss of Frame Alarm

## 2 PRODUCT STOCK CODES

**OS4004** - Quad E1 Fibre Optic MUX with 850nm optics and ST optic connectors

## 3 PREPARATION FOR USE

### 3.1 Unpacking

Each OS4004 is shipped factory tested, and packed in a protective packaging.

Inspect the packaging for any visual damage.

The manufacturer is not liable for damage during shipment.

### 3.2 Configuration of the Links

The links are provided to configure the unit for the type of connector the user requires.

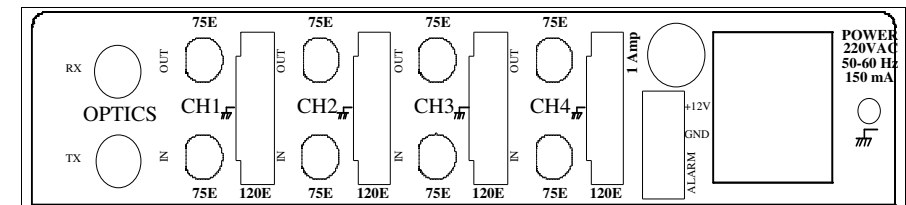


Figure 1

On Figure 1 the back of the unit is shown. For every channel a choice of two connectors are provided. (75E or 120E)

To configure the links it is necessary to remove the top of the enclosure.

On Figure 2 the connector board is shown. The First Link would be on this board at the back of the unit.

Figure 2

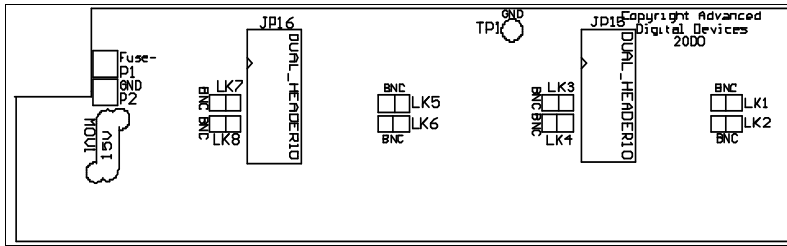
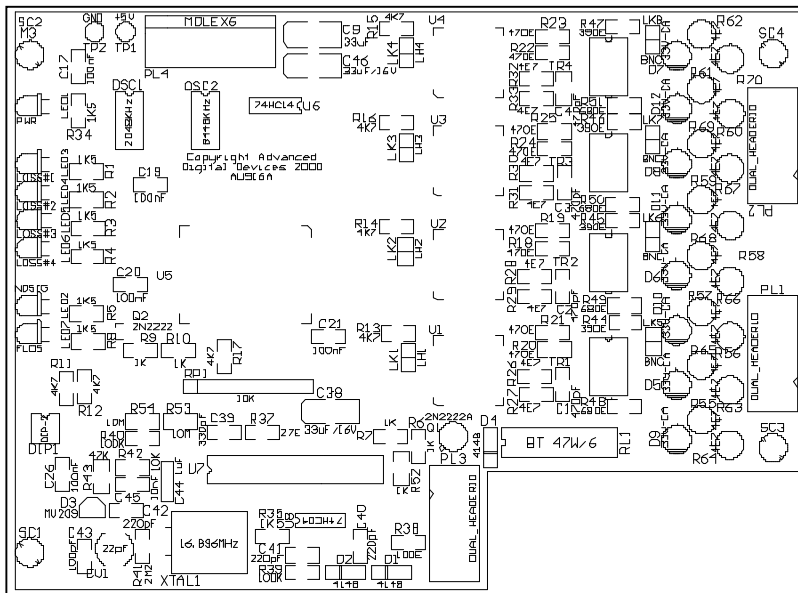


Figure 3



On Figure 3 the Main board is shown. This board is mounted flat inside the enclosure. The Second link is on this board.

Use Table 1 to configure the links for the type of connector required.

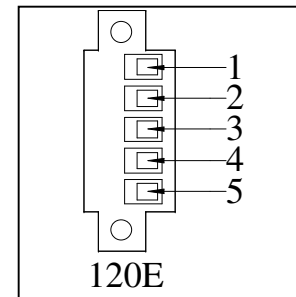
Table 1

Channel	Direction	120E		75E	
		Connector Board	Main Board	Connector Board	Main Board
1	In	LK2 Out	LK5 Out	LK2 In	LK5 In
	Out	LK1 Out		LK1 In	
2	In	LK4 Out	LK6 Out	LK4 In	LK6 In
	Out	LK3 Out		LK3 In	
3	In	LK6 Out	LK7 Out	LK6 In	LK7 In
	Out	LK5 Out		LK5 In	
4	In	LK8 Out	LK8 Out	LK8 In	LK8 In
	Out	LK7 Out		LK7 In	

### 3.3 Connecting to Copper Cables

When connecting cables make sure of the configuration of the links. If the links for a specific channel is configured for 75E, connect the BNC connector to the appropriate connector on the back of the unit.

If the links for a specific channel is configured for 120E connect the wires as described in the following description using the drawing as a reference:



**Input** - Connect the positive wire to no.5 of the connector and the negative wire to no.4 of the same connector.

**Output** - Connect the positive wire to no.2 of the connector and the negative wire to no.1 of the same connector.

**Screen** - connect the screen wire to no.3 of the 120E connector.

**3.4 Connecting External Supply Output**

To connect the supply to the external equipment, switch off the unit. Unplug the connector marked “PSU”. Connect the external equipment wires to the connector making sure of the polarity. Then switch on the unit.

**3.5 Fibre Connection**

Carefully remove the optic connector covers and connect the fibre cables to the “TX” and “RX” connections as illustrated on the back of the unit. Be careful not to bend the fibre to sharp.

**3.6 Installation**

Ensure that the link loss over the fibre cable is within the power budget of the equipment.

**4 OPERATOR’S INSTRUCTION**

The unit needs no operator intervention to function. If a fault arises, it is necessary to observe the alarm indications and to perform such procedures as first line maintenance as described in the proceeding chapter.

**5 MAINTENANCE INSTRUCTIONS**

No routine maintenance is required on this equipment.

**5.1 First Line Maintenance****5.1.1 Instrument and tools required**

Optic power meter  
Multi-meter.

**5.1.2 Maintenance Procedure**

When arriving at a suspect unit it is always necessary to ensure that the unit has been correctly coupled and to note the alarm conditions of the equipment.

First observe the power indicator.

If the power indicator is off, check the supply voltage.

Then check the mains fuse at the back of the unit underneath the mains plug. Replace a faulty fuse with those of the correct value only.

Check to see if the external equipment running from the 12V supplied by the unit is operational. If not check the external supply fuse. Replace a faulty fuse with those of the correct value only.

Check the alarm indicators.

If one or more of the “Traffic In Fail” indicators are lid, that corresponding E1 input channel are not connected or are the data are not present.

If the “Optic RX Fail” indicators are lid the high-speed optic fibre receiver is receiving no data. Disconnect the fibre from the optic receiver connector and connect it to the optic power meter. If the input level is low the external equipment are not working or the fibre has been damaged.

If the “Frame Loss” indicator are lid the demultiplexer are not detecting a frame word from the data coming from the high-speed fibre optic receiver. This might be because of no or bad signal reception from the external equipment.

If all these tests have been done and the unit is still not operational the supplier must be notified.

## 6 ORDERING INFORMATION

OS4004 [Optic Option][Optic Connector Option]

Optic Option	Wavelength	Range	Budget distance	Connector
AB	850nm	Short	3.5km	ST or SMA
BB	1300nm	Medium	12km	ST or SMA

## 7 SPECIFICATIONS

### 7.1 Electrical Characteristics

#### Power Supply

Power Connector -	3 Pin Mains Plug
Supply Voltage -	220VAC
Supply Current -	150mA
Power Dissipation -	35Watt (max)

#### External Equipment Supply

Connector -	2 pin screw connector
Supply Voltage -	12V Unregulated
Supply Current -	500mA (max)

#### Data Specifications

E1 Data Connectors -	120E (5 Pin Screw Connector) or 75E BNC Female Connector
E1 Industry Specification -	G.703 ITU Recommendation
E2 Frame Format -	ITU G742 multiplexing format
E2 Encoding Format -	CMI Encoded

### 7.2 Optical Characteristics

Connector -	ST or SMA
-------------	-----------

### Transmition

Wavelength -	850nm or 1300nm
Reception Wavelength -	850nm or 1300nm
Responsivity -	7 mV/μW Typical or 13mV/μW
Fibre Compatibility -	50/125 μm diameter
Minimum Receive Level -	-30dB

### 7.3 Physical Characteristics

Overall Unit Dimensions -	Depth - 190 mm Width - 205 mm Height - 48 mm
Weight -	1 kg (max)

## 8 NOTES

Other Optic Options for single mode fibre available on request.

**NOTES (Continue)****9 Contact Details**

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