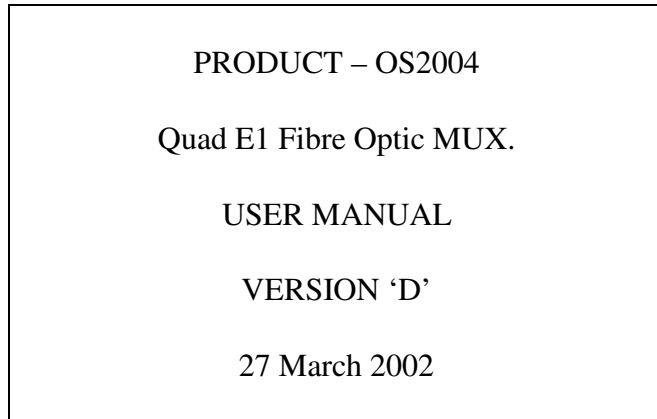


OS2004U
Author : W.D.



Product: OS2004 \	Model:	
Serial Number:	JOB No :	
TEST	CRITERIA	RESULT
Power Supply	+5, +12 & -12	
Free Running Rate	16,896MHz \pm 50Hz	
PLL Voltage	Vdc @ 16,896MHz	
E1 Jitter Acceptance	5UI @ 100Hz	
E1 Frequency Tolerance	50 PPM	
LED Indicators	Functional	
Local loop back	Functional	
Remote loop back	Functional	
Alarm	Functional	
B.E.R	No Errors in 8 min.	
Optic TX Level	- dB	
Optic RX Level	- dB	
Power Budget	dB	

Date: **Tested By:**

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1 PRODUCT DESCRIPTION

1.1 General

The OS2004 is a quad E1 Fibre optic multiplexer \ demultiplexer.
The unit conforms to the ITU specifications.

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)
- Connector options include BNC , Phoenix and RJ45
- External Equipment supply of 12V @ 0.25Amp
- 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
Remote Req. Loopback	- Remote unit Requesting Loopback from Local unit.
Loopback Selected	- Local Loopback Selected
Remote Loopback	- Local unit Requesting Loopback from Remote unit.
Remote in Loopback	- Remote unit is in Local Loopback.

2 PRODUCT HISTORY.

Product code OS2004

Ver_A	- First version.
Ver_B	- 'E1in' and 'E1 out' connections standardised.
Ver_C	- RJ45 connector option introduced. RS232 low baud rate option available on RJ45.
Ver_D	- Latest version with new diagnostic indicators and loopback functions implemented.

3 PREPARATION FOR USE

3.1 Unpacking

Each OS2004 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

Links are provided to configure the unit for the type of connector and impedance the user requires .

The factory setting for these units are 120 Ohm balanced unless otherwise specified at the time of order.

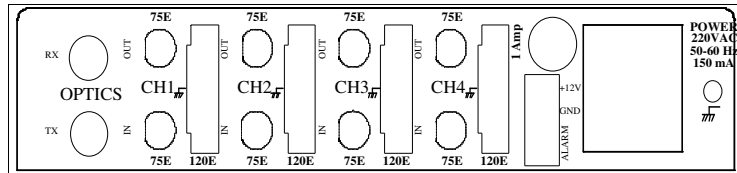


Figure 1

On Figure 1 the 75Ω BNC and 120Ω screw terminal backplate option is shown. For every channel a choice of two connectors are provided. (75 ohm or 120 ohm)

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

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

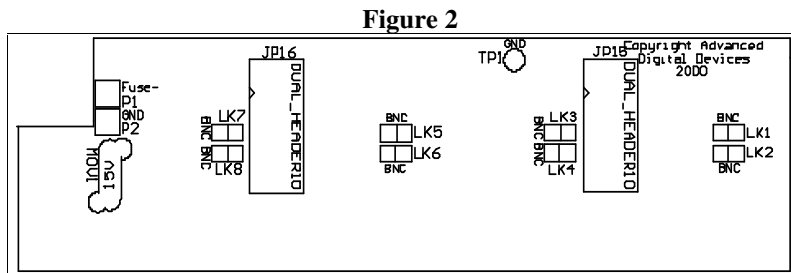
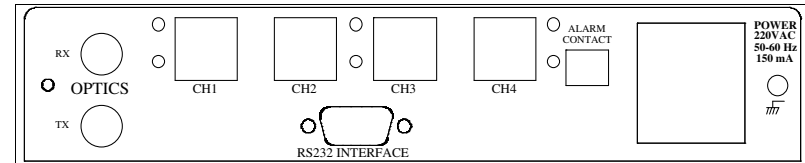


Figure 2

On Figure 3 the 120Ω RJ45 option is shown. On this option no configuration on the links are required.

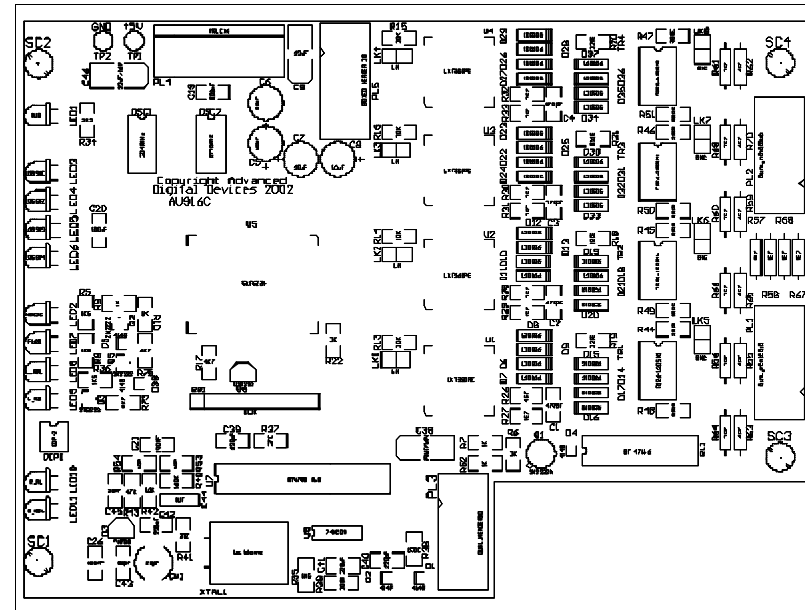
Figure 3



On Figure 4 the Main board is shown. This board is mounted flat inside the enclosure. The Second link is on this board.

When configuring the links on this board take precautions for protection against electrostatic discharge.

Figure 4



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

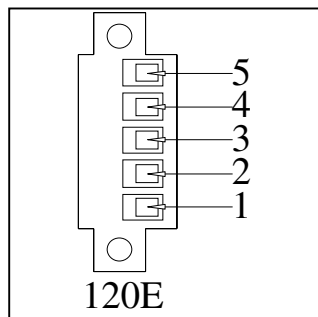
Table 1

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 rear view of the connector drawing as a reference:



Input to unit - Connect the positive wire to no.1 of the connector and the negative wire to no.2 of the same connector.

Output of unit – Connect the positive wire to no.4 of the connector and the negative wire to no.5 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. Remember to swap the connections. The local TX goes to the remote RX.

Be careful not to bend the fibre beyond its tolerances.

3.6 Installation

Ensure that the link loss over the fibre cable is well within the power budget of the equipment. Allow 3 dB for link deterioration. When the link is good the ‘optic fail’ and ‘frame loss’ indicators will extinguish.

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 lit, that corresponding E1 input channel is not connected or the data not present.

If the “Optic RX Fail” indicators are lit 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 is not working or the fibre has been damaged.

If the “Frame Loss” indicator is lit the demultiplexer is 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 return the equipment to the supplier for repair.

6 ORDERING INFORMATION

OS2004 [Optic Option][Optic Connector Option][Power supply option]/[version]

Optic Option	Fibre Type	Wavelength	Optic Budget	Range
A	Multi Mode	850 nm	10dB	3 km
B	Multi Mode	1300 nm	10 dB	10 km
C	Single Mode	1300 nm	15 dB	30 km

Connector Option	Type
A	SMA
B	ST
C	FCPC

Power supply option.	Supply
A	220 VAC
B	110 VAC
C	48 VDC
D	24 VDC
E	110/220 VAC
F	110 VDC

7 SPECIFICATIONS

7.1 Electrical Characteristics

Power Supply

220VAC

Power Connector -	3 Pin Mains Plug
Supply tolerance -	15%
Supply Current -	100mA (Max)
Power Dissipation -	22Watt (max)

24VDC, 48VDC & 110VDC

Power Connector -	2 Way screw connector.
Supply tolerance -	25%
Supply current -	300mA (max)
Power Dissipation -	15Watt (max)

External Equipment External power feed.

Connector -	2 pin screw connector
Supply Voltage -	12V Unregulated
Supply Current -	250mA (max)

Data Specifications

E1 Data Connectors -	120Ω (5 Pin Screw Connector) or 75Ω BNC Female Connector or 120Ω RJ45 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
Transmission Wavelength -	850nm or 1300nm
Reception Wavelength -	850nm or 1300nm
Responsivity -	7 mV/μW Typical or 13mV/μW

Fibre Compatibility multi mode -	50/125 μm diameter
Fibre Compatibility single mode -	9/125
Minimum Receive Level -	-30dB
Transmit level Multi mode -	-20dB worse case
Transmit level Single mode -	-15dB worse case

7.3 Physical Characteristics

Overall Unit Dimensions - Depth -	190 mm
Width -	205 mm
Height -	48 mm
Weight -	1,5 kg (max)

8 NOTES

Other options available on request.

9 Contact Details

Email: support@addvid.co.za

Web: www.addvid.co.za

Manufactured by:

Advanced Digital Devices

A division of Intervid Technologies (Pty) Ltd

**557 15th Road
Randjiesfontein
Midrand
Johannesburg
South Africa
2125**

**P.O. Box 3051
Halfway House 1685
Johannesburg
South Africa**

Tel: +27 11 314-3150

Fax: +27 11 314-7484