

OS8xxu2
 Author : W.D.
 Issue 1.1

PRODUCT – OS800 Sub Frame System

Consisting of:
 OS800, OS803T, OS803R, OS806, OS8422

USER MANUAL
 Version 1.1
 24 May 2000

Product: OS8	\					Model:	
Serial Num:						Job No:	
TEST	CRITERIA					RESULTS	
	OS800	OS803T	OS803R	OS806	OS8422		
Power Supply	+12/-12V	+8V	+5V/-5V	+5V	+5V		
Supply Current	50W	250mA	250mA	500mA	180mA		
Power Indicator	Functional	Functional	Functional	Functional	Functional		
Lock Indicator				Functional			
Digital Inputs				1-6 OK			
Relay Outputs				1-6 OK			
Video Indicator		Functional	Functional				
RS422/RS485					Functional		
T/RX Indicators					Functional		
Optic TX Level		- dB		- dB	- dB		
Optic RX Level			- dB	- dB	- dB		
Power Budget				dB	dB		

Date: **Tested By:**

USER MANUAL

1 OS800 - SUB FRAME 5

1.1 PRODUCT DESCRIPTION 5

- 1.1.1 General 5
- 1.1.2 Features 5
- 1.1.3 Uses 5

1.2 POWER SUPPLY 5

- 1.2.1 Description 5
- 1.2.2 Specifications 6
 - 1.2.2.1 Electrical 6
 - 1.2.2.2 Physical 6
 - 1.2.2.3 Environmental Conditions 6

1.3 ORDERING INFORMATION 7

2 OS803T - 3 CHANNEL VIDEO ON FIBRE TRANSMITTER 7

2.1 PRODUCT DESCRIPTION 7

- 2.1.1 General 7
- 2.1.2 Basic System Description 7
- 2.1.3 Indications 8

2.2 PRODUCT STOCK CODES 8

2.3 PREPARATIONS FOR USE 8

- 2.3.1 Unpacking 8
- 2.3.2 Configuration of the links. 8
- 2.3.3 Installation 8

2.4 OPERATORS INSTRUCTIONS 8

2.5 MAINTENANCE INSTRUCTIONS 9

- 2.5.1 First Line Maintenance 9
 - 2.5.1.1 Instruments and Tools Required 9
 - 2.5.1.2 Maintenance Procedure 9

2.6 ORDERING INFORMATION 10

2.7 SPECIFICATIONS 10

- 2.7.1 Electrical Characteristics 10
- 2.7.2 Optical Characteristics 10
- 2.7.3 Physical Characteristics 11

3 OS803R - 3 CHANNEL VIDEO ON FIBRE RECEIVER 11

3.1 PRODUCT DESCRIPTION 11

- 3.1.1 General 11
- 3.1.2 Basic System Description 11

- 3.1.3 *Indications 12*
- 3.2 PRODUCT STOCK CODE 12
- 3.3 PREPARATION FOR USE 12
 - 3.3.1 *Unpacking 12*
 - 3.3.2 *Configuration of the Links 12*
 - 3.3.3 *Installation 13*
- 3.4 OPERATORS INSTRUCTIONS 13
- 3.5 MAINTENANCE INSTRUCTION 13
 - 3.5.1 *First Line Maintenance 13*
 - 3.5.1.1 Instruments and tools required 13
 - 3.5.1.2 Maintenance Procedure 14
- 3.6 ORDERING INFORMATION 14
- 3.7 SPECIFICATIONS 15
 - 3.7.1 *Electrical Characteristics 15*
 - 3.7.2 *Optical Characteristics 15*
 - 3.7.3 *Physical Characteristics 15*

4 OS806 - CONTACT ECHO SYSTEM ON FIBRE 16

- 4.1 PRODUCT DESCRIPTION 16
 - 4.1.1 *General 16*
 - 4.1.2 *Basic System Description 16*
 - 4.1.3 *Indications 17*
- 4.2 PRODUCT STOCK CODES 17
- 4.3 PREPARATION FOR USE 17
 - 4.3.1 *Unpacking 17*
 - 4.3.2 *Configuration of the links 17*
 - 4.3.3 *Installation 17*
- 4.4 OPERATORS INSTRUCTIONS 18
- 4.5 MAINTENANCE INSTRUCTIONS 18
 - 4.5.1 *First Line Maintenance 18*
 - 4.5.1.1 Instruments and Tools Required 18
 - 4.5.1.2 Maintenance procedure 18
- 4.6 ORDERING INFORMATION 19
- 4.7 SPECIFICATIONS 19
 - 4.7.1 *Electrical Characteristics 19*
 - 4.7.2 *Optical Characteristics 20*
 - 4.7.3 *Physical Characteristics 20*

5 OS8422 - 2 CHANNEL RS422 INTERFACE ON FIBRE 21

- 5.1 PRODUCT DESCRIPTION 21
 - 5.1.1 *General 21*

- 5.1.2 *Basic System Description 21*
- 5.1.3 *Indications 22*
- 5.2 PRODUCT STOCK CODES 22
- 5.3 PREPARATION FOR USE 22
 - 5.3.1 *Unpacking 22*
 - 5.3.2 *Configuration of the links 22*
 - 5.3.2.1 Dip Switch Settings 22
 - 5.3.2.2 Using the Unit in RS422 Mode 22
 - 5.3.2.3 Using the Unit in RS485 Mode 23
 - 5.3.2.4 Party Line Operation 23
 - 5.3.2.5 Termination 23
 - 5.3.2.6 Connecting to Copper Cables 24
 - 5.3.2.7 Fibre Connection 24
 - 5.3.3 *Installation 24*
- 5.4 OPERATORS INSTRUCTIONS 24
- 5.5 MAINTENANCE INSTRUCTIONS 24
 - 5.5.1 *First Line Maintenance 24*
 - 5.5.1.1 Instruments and Tools Required 24
 - 5.5.1.2 Maintenance Procedure 24
- 5.6 ORDERING INFORMATION 25
- 5.7 SPECIFICATION 25
 - 5.7.1 *Electrical Characteristics 25*
 - 5.7.2 *Optical Characteristics 25*
 - 5.7.3 *Physical Characteristics 26*

6 NOTES 26

7 CONTACT DETAILS 28

1 OS800 - Sub Frame

1.1 Product Description

1.1.1 General

The OS800 is a multi purpose card frame system. It comes complete with backplane and power supply. This system is suitable for a combination of different interfaces.

The card frame comes in two options: Single (OS800S) or Dual power supply (OS800D). The single rack will accept up to 6 cards.

List of cards which are compatible with this system.

- OS803T - 3 -Channel video transmitter cards.
- OS803R - 3 -Channel video receiver cards.
- OS8422 - 2 -Channel RS422-RS485 data transceiver cards.
- OS806 - 8 -Channel contact echo on fibre cards.

1.1.2 Features

Fits into 19" rack.

Built in power supply operates from 110/220VAC or 48VDC.

Exchangeable card options.

Each card operates autonomously.

Interfaces directly to single channel remote units.

1.1.3 Uses

It is mainly used in large video security systems to monitor and control movement in remote areas.

1.2 Power Supply

1.2.1 Description

Note the power supply fits only into its designated positions. Plugging it into a wrong position will damage the back plane.

The 220VAC input power supply used is a linear system and provides two voltages. When using a 48VDC power supply use is made of a switch mode unit.

When using a 12 card rack two power supplies are fitted. These are connected in parallel and will thus share the load. The power supplies are fitted with indicating leds. Each output has a separate indicating led.

Fault finding on the power supply is easy. First observe the indicating Leds should any be extinguished then the power supply is obviously faulty. Each output has its own fuse. Check the fuse and replace if necessary. The power supplies are diode isolated from each other thus the one will not affect the performance of the other. All outputs are unregulated.

Output voltages can be measured on the back plane.

1.2.2 Specifications

1.2.2.1 Electrical

Input Voltages:

220VAC 50/60Hz. 35Watt.

110VAC 50/60Hz. 35Watt.

-48VDC. 25Watt.

Output Voltages:

Pins: Ground on 6-10, 16-20

12V 2 Amp Pos on 2,3,4,5,12,13,14,15

12V 2 Amp Neg on 1,11

Indicators:

Indicators for power.

1.2.2.2 Physical

Depth: 160mm

Height: 100mm

Width: 60mm

Weight: 0.9Kg

1.2.2.3 Environmental Conditions

Temperature: 0-45 °C

Humidity: 0-95% non-condensing.

1.3 Ordering Information

Model Number: **OS800_A** - Single Power Supply unit suitable for 6 cards 220VAC operation.

OS800_C - Single Power Supply unit suitable for 6 cards 48VDC operation.

2 OS803T - 3 Channel Video on Fibre Transmitter

2.1 Product Description

2.1.1 General

The OS803T is a three channel Video to Fibre Transmitter unit.

This unit converts an composite video signal that is received from a BNC connector into an optical signal that is transmitted into a the Fibre. When the optic signal is present an led indicator will light up. Each card uses 3 Optic Transmitters

This unit is designed to fit into a OS800 19" sub rack system. The card is a standard eurocard size.

This unit operates autonomously.

2.1.2 Basic System Description

The unit consists out of 3 video to fibre transmitters and one voltage regulating circuit.

The power for this unit comes in trough an edge connector at the back of the unit. This edge connector plugs into a OS800 frame that is fitted with the correct backplane edge connectors.

Only one of the video to fibre transmitters is described due to the fact that the other two are exactly the same.

The Video signal is received by an BNC connector on the back of the card. The video input is 75Ω terminated.

This signal is the fed into a video to fibre converter.

On the output stage the video signal is converted to an optical signal and transmitted into the fibre on the front of the card.

Features

- Compatible with standard composite video.
- Compact design allows large concentration of video signals.
- Up to 3 channels per card.
- Multiple cards fit into OS800 - 19" rack system.
- Interface directly to the OS802 Single channel video receiver on fibre.

Uses

- Security systems.
- Long distance noise free video transmission.

2.1.3 Indications

Video signal - Indicates Video signal present.

2.2 Product Stock Codes

OS803TAB 3 Channel Video on Fibre Transmitter with 850nm optics and ST optic connectors.

2.3 Preparations for use

2.3.1 Unpacking

Check for physical damage caused during transportation. Return any damaged equipment.

2.3.2 Configuration of the links.

No links to be configure.

2.3.3 Installation

It is not necessary to remove the cards from the sub rack.

Connect the fibres to the front of the card taking care not to bend the fibres.

Connect the BNC connectors to the back of the card.

2.4 Operators Instructions

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 described in the first line maintenance chapter.

2.5 Maintenance Instructions

No routine maintenance is required on this equipment.

2.5.1 First Line Maintenance

2.5.1.1 Instruments and Tools Required

- Optic power meter
- Multi-meter.
- Oscilloscope.

2.5.1.2 Maintenance Procedure

When arriving at a suspect unit it is necessary to check that all connections are correctly made.

Check that all fibre connectors are plugged in correctly and that the fibre is undamaged.

The first thing to check after that is the power supply. Check that the power to the OS800 is switched on. Then check the OS800 Power Supply for the voltage indicators(+V and -V) on the frontpanel. If none of the voltage indicator are working check the fuse on the back of the OS800. If the fuse is replaced and the unit is still not working even without an load the OS800 power supply is faulty and must be replaced.

Check that the Video signal source is switched on and connected properly and that the video signal is present.

The next thing to check is the signal coming into the unit. Do this by connecting the ground of your oscilloscope to the GND testpin on the suspect unit. Then connect the probe to the Video input testpin on the back of the suspect channel. Measure this video signal to see if the signal is OK. This test pin is just below the BNC connector.

Use the optic power meter and measure the optic level coming out of the unit by connecting a short fibre to the output and to the Optic power meter and check the optic emission level. If this level is low or not present the unit is faulty and must be replaced.

If all these tests have been done and the system is still not operational the unit must be returned to the supplier for repair.

2.6 Ordering Information

Stock Code selection:

OS803 T [x][x]/[ver] Version.(not specifically required for ordering)

_____ Optic Connector Option.

_____ Optic option.

OPTIC OPTION	WAVE-LENGTH	RANGE	BUDGET DISTANCE	OPTIC CONNECTOR OPTION	
A	850nm	Short range multi mode	3.5km	A	SMA
B	1300nm	Medium range multi mode	12km	B	ST
G	1300nm	Short range multi/single mode	8/12km		

2.7 Specifications

2.7.1 Electrical Characteristics

Power Supply

- Power Connector - 20 Pin Double Sided Edge Connector
- Supply Voltage - 12V ± 10% DC
- Supply Current - 250mA (max)
- Power Dissipation - 3 Watt (max)

Video Input

- Video Input Connector - BNC Female
- Output Impedance - 75 Ohms
- System Bandwidth - 100 Hz to 10 MHz
- Signal/Noise Ratio - 52 dB minimum
- Differential Gain - 2 % typical
- Differential Phase - 2° typical

2.7.2 Optical Characteristics

- Connector - ST or SMA
- Reception Wavelength - 820 nm or 1300nm

Output Power -	-18dB With video signal connected.
Fibre Compatibility -	50/125 μ m diameter

2.7.3 *Physical Characteristics*

Space Consumption in 19" rack -	rack height x 25 mm
Overall Unit Dimensions -	Length - 171 mm
	Width - 128.5 mm
	Height - 25 mm
	Weight - 150 g (max)

3 OS803R - 3 Channel Video on Fibre Receiver

3.1 Product Description

3.1.1 *General*

The OS803R is a three channel Fibre to Video Receiving unit with AGC.

This unit converts an optical signal received from the fibre into a composite video signal that is transmitted into a BNC connector. When the optic signal is present an led indicator will light up. Each card uses 3 Optic Receivers.

This unit is designed to fit into a OS800 19" sub rack system. The card is a standard eurocard size.

This unit operates autonomously.

3.1.2 *Basic System Description*

The unit consists out of 3 fibre to video receivers and one voltage regulating circuit.

The power for this unit comes in trough an edge connector at the back of the unit. This edge connector plugs into a OS800 frame that is fitted with the correct backplane edge connectors.

Only one of the fibre to video receivers is described due to the fact that the other two are exactly the same.

The optical signal from the fibre is received by an optic receiver on the back of the card.

This signal is the fed into a video amplifier.

The amplifier checks the amplitude of this input signal and employs AGC to set the correct gain for the signal. A jumper can be set to override the AGC and the gain can be set manually.

On the output stage the signal is send out on a BNC connector on the back of the card with an output impedance of 75 Ω .

Features

- Compatible with standard composite video.
- Compact design allows large concentration of video signals.
- Up to 3 channels per card.
- Multiple cards fit into OS800 - 19" rack system.
- Interface directly to the OS801 Single channel video transmitter on fibre.

Uses

- Security systems.
- Long distance noise free video transmission.

3.1.3 *Indications*

Video signal - Indicates Video signal present.

3.2 Product Stock Code

OS803RAB 3 Channel Video on Fibre Receiver with 850nm optics and ST optic connectors.

3.3 Preparation For Use

3.3.1 *Unpacking*

Check for physical damage caused during transportation. Return any damaged equipment.

3.3.2 *Configuration of the Links*

Each channel has its own associated link.

To set the circuit to AGC mode Link 1,2 and 3 must be set in position. For manual gain mode the links must be out.

OPTION	LENGTH		DISTANCE	OPTION	
A	850nm	Short range multi mode	3.5km	A	SMA
B	1300nm	Medium range multi mode	12km	B	ST
G	1300nm	Short range multi/single mode	8/12km		

3.7 Specifications

3.7.1 Electrical Characteristics

Power Supply

Power Connector -	20 Pin Double Sided Edge Connector
Supply Voltage -	12V \pm 10% DC
Supply Current -	250 mA (max)
Power Dissipation -	3 Watt (max)

Video Input

Video Output Connector -	BNC Female
Output Impedance -	75 Ohms
System Bandwidth -	100 Hz to 10 MHz
Signal/Noise Ratio -	52 dB minimum
Differential Gain -	2 % typical
Differential Phase -	2° typical

3.7.2 Optical Characteristics

Connector -	ST or SMA
Reception Wavelength -	820 nm or 1300nm
Responsivity -	7 mV/ μ W Typical or 13mV/ μ W
Fibre Compatibility -	50/125 μ m diameter
Minimum Receive Level-	-30dB

3.7.3 Physical Characteristics

Space Consumption in 19" rack -	rack height x 25 mm
Overall Unit Dimensions -	Length - 171 mm
	Width - 128.5 mm
	Height - 25 mm

Weight - 150 g (max)

4 OS806 - Contact Echo System on Fibre

4.1 Product Description

4.1.1 General

The OS806 is a eight channel contact echo card.

This unit operates in sets of two. The two cards are echoing the contacts of eight relays over an optical fibre.

This unit is designed to fit into a OS800 19" sub rack system. The card is a standard eurocard size.

4.1.2 Basic System Description

Inputs: The opto isolated inputs will sense the status of the potential free relay contacts connected to it. It will then convert this into a serial data stream that is routed to a connector that can house a variety of interfaces. (Usually a fibre optic interface). A fibre optic interface will send the information to the remote unit on optical fibre.

Outputs: The information that is received on the fibre is converted from an optical to an electrical data stream. This data stream is decoded and the remote side information it contains is used to drive the local relay outputs. Each relay has a LED that will light up when the relay is activated.

Alarm Relay: The alarm relay contacts will indicate.

Power fail

Receive data fail.

The output relays will switch off when:

1. no data is received (100mS after data link breaks) or
2. when a local error condition is detected for longer than 100 mS.

4.1.3 Indications

The 'link OK' LED will indicate the status of the link both local and remote side.

No data in or data corrupt:	LED OFF
Valid data in but remote unit receive error:	LED flashes
Link in good condition:	LED ON

Power indicator: Red LED will light up when power is connected.

4.2 Product Stock Codes

OS806 8 Channel Contact Echo Card with Copper and Fibre option.

4.3 Preparation For Use**4.3.1 Unpacking**

Check for physical damage caused during transportation. Return any damaged equipment.

4.3.2 Configuration of the links

No links to be configured.

4.3.3 Installation

Connect the optic fibres to the unit. The local unit's transmit interface connects to the remote units receive interface and the local units receive interface to the remote units transmit interface.

The "Link OK" LED should light up when this connection is made.

The opto isolated input connections have a common bus connected to Pins 1 & 2 of the Bottom rear connector. The inputs can use either the internal power supply which are on pins 3 & 6 of the bottom rear connector or external power supply.

To activate an input it must be shorted to the OGND connection. The inputs can sense a relay contact closure. The relay contact must be connected between the relevant inputs and OGND. OGND is common and used by all six of the opto isolated inputs.

The outputs consist of voltage free normally open relay contacts. The contact is between the front and rear connector rows.

These contacts correspond to the optic inputs on the remote unit input0 to input7, etc. The outputs are potential free contacts and are not polarity sensitive.

Connection is via a plug in module for miniature PHOENIX connectors.

The alarm contacts are voltage free normally open when no alarm exists.

4.4 Operators Instructions

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 described in the first line maintenance chapter.

4.5 Maintenance Instructions

No routine maintenance is required on this equipment.

4.5.1 First Line Maintenance**4.5.1.1 Instruments and Tools Required**

Optic power meter
Multi-meter.
Oscilloscope.

4.5.1.2 Maintenance procedure

When arriving at a suspect unit it is necessary to check that all connections are correctly made.

Check that all fibre connectors are plugged in correctly and that the fibre is undamaged.

The first thing to check after that is the power supply. Check that the power to the OS800 is switched on. Then check the OS800 Power Supply for the voltage indicators(+V and -V) on the frontpanel. If none of the voltage indicator are working check the fuse on the back of the OS800. If the fuse is replaced and the unit is still not working even without an load the OS800 is faulty and must be replaced.

Check to see if the "Link OK" indicator is on if not do the next test.

Use the optic power meter and measure the optic level coming out of the fibre at the suspect channel. Do this by disconnecting the ST connector and connect the fibre to an Optic power meter and check the optic emission level. If this level is to low or not present the fibre or the remote unit could be damaged or is not working

If the “Link OK” indication is on do the next test.
Use the optic power meter to check the optic emission from the local unit. Do this by connecting a short fibre to the unit and plug the other end into an optic power meter.

If all these tests have been done and the system is still not operational the unit must be returned to the supplier for repair.

4.6 Ordering Information

Stock Code selection:

OS806 [x][x]/[ver] Version.(not specifically required for ordering)
 _____ Optic Connector Option.
 _____ Optic option.

OPTIC OPTION	WAVE-LENGTH	RANGE	BUDGET DISTANCE	OPTIC CONNECTOR OPTION	
A	850nm	Short range multi mode	3.5km	A	SMA
B	1300nm	Medium range multi mode	12km	B	ST
G	1300nm	Short range multi/single mode	8/12km		

4.7 Specifications

4.7.1 Electrical Characteristics

Power Supply

Power Connector - 20 Pin Double Sided Edge Connector
 Supply Voltage - 12V ± 10% DC
 Supply Current - 500 mA (max)

Power Dissipation - 6 Watt (max)

Inputs

Input Connector - Phoenix Miniature Screw Type
 Number of Inputs - 8 Inputs
 Type of Input - Optical Isolated
 Isolation - 2500V isolation voltage

Outputs

Output Connector - Phoenix Miniature Screw Type
 Number of Outputs - 8 Outputs
 Type of Output - Relay Contacts (normally open with no power)
 Rating - 220VAC, 5A
 Switch Time - 10mS - On, 10mS - Off (Worst Case)

Controller

Type: 80C31
 Link Baudrate: 19200
 Sampling time: Sampled every 2.5milli-seconds
 Response time: 2.5milli-seconds + relay response time
 Interlocks: None, But software interlocks can be supplied on request

4.7.2 Optical Characteristics

Connector - ST or SMA
 Wavelength - To be determined by application distance

4.7.3 Physical Characteristics

Space Consumption in 19” rack - rack height x 50 mm
 Overall Unit Dimensions - Length - 171 mm
 Width - 128.5 mm
 Height - 50 mm
 Weight - 250 g (max)

5 OS8422 - 2 Channel RS422 Interface on Fibre

5.1 Product Description

5.1.1 General

The OS8422 is a RS422 or RS485 low speed data communication interface used in the video systems to operate over fibre. It is compatible with LL232 which is a RS232 to fibre interface and the LL422 which is a RS422 or RS485 to fibre interface.

This unit is designed to fit into a OS800 19" sub rack system. The card is a standard eurocard size.

This unit operates autonomously.

5.1.2 Basic System Description

The unit consists out of 2 RS422 or RS485 fibre interfaces and one voltage regulating circuit.

The power for this unit comes in through an edge connector at the back of the unit. This edge connector plugs into a OS800 frame that is fitted with the correct backplane edge connectors.

The unit has a fully duplex operation in RS422 mode and requires a transmit and a receive fibre. In the RS485 mode the unit will operate in half duplex mode and use a time out circuit to do turn around of the data signals.

The unit can be used in a feed through or party line fashion where data is sent to several units in a ring network then allowing any unit in the ring to answer.

Further the unit can be coupled directly to a LL232 which is a RS232 interface making a very versatile system allowing the master controller to communicate at RS232 level and the peripheral equipment to communicate at RS485 level.

Only one of the interfaces is described due to the fact that the two are exactly the same.

Features

- Repeat data without interference.
- Compact.
- Economical RS485 operation.
- Multiple cards fit into OS800 - 19" rack system.
- Interface directly to the LL422 Single channel RS422 or RS485 unit.

Uses

- Ideally suited for Pan tilt zoom systems in video applications.
- Access control.

5.1.3 Indications

Power	- Indicates Power to the PCB
TX	- Data being Transmitted to optics.
RX	- Data being Received from optics.

5.2 Product Stock Codes

OS8422 - 2 Channel RS422 or RS485 to Fibre Interface with 850nm optics and ST optic connectors.

5.3 Preparation For Use

5.3.1 Unpacking

Check for physical damage caused during transportation. Return any damaged equipment.

5.3.2 Configuration of the links

5.3.2.1 Dip Switch Settings

Dip Switch	Off	On
SW 1	Termination on TX off.	Termination on TX on.
SW 2	Termination on RX off.	Termination on RX on.
SW 3	Party Line Off	Party Line On
SW 4	RS485 - 2 wire operation	RS422 - 4 wire operation.

5.3.2.2 Using the Unit in RS422 Mode

Dip switch 4 on.

RS422 usually has a 4 wire connection. 2 wires are used for receive and two wires are used for transmit. The data driver to the equipment

is usually permanently in a 'driver on' condition. This connection is usually used in an point to point connection.

5.3.2.3 Using the Unit in RS485 Mode

Dip switch 4 off.

RS485 normally operates on a 2 wire mode thus only connections 1 and 2 are used. Data now has to flow in two directions on these two wires, thus the receive and transmit data is separated, and only one is active at any moment. The unit is usually in a receive condition. When data is received on the optic side the unit will go into a transmit condition and drive the RS485 bus. After the data stops the unit will time out and switch the driver off and revert back to receive condition. It is now ready to send an answer back. This time out period is usually referred to as the turn around time and could vary in length depending on the pattern of the data sent. Normally this period adds up to approximately 8 bit lengths. Should the peripheral equipment try to answer the master in less than this period then a data clash will occur. Software in the peripheral equipment must be modified not to violate this period.

5.3.2.4 Party Line Operation

Dip switch 3 on.

With this switch in the on position the data received by the unit will be echoed back to the Fibre transmitter. This will enable several units to be connected in a ring network. The data sent from the master will be echoed to all units in the ring and will return back to the master which must not be set for party line otherwise the message will go around the ring again. Any unit which now answers the message will send its message along the ring and then return to the master. This is a simple data ring network and is used in access control etc.

5.3.2.5 Termination

Dip switch 1 and 2.

When RS422 or RS485 data is sent on a copper pair one can always expect some data reflections from the cable ends. To eliminate this problem and to reduce the capacitive effect of the copper cable, one needs to put terminating resistors on each end of the copper link - even if the link is very short. The LL422 has built in terminating resistors, which can be selected by dip switch 1 and 2. Further the input circuitry has bias resistors which prebiases the copper line to ensure that the data in the non active condition would be zero. If a problem occurs then it is possible that the equipment used has an

opposite bias condition. This can be rectified by swapping the data wires at both the controller and the master.

5.3.2.6 Connecting to Copper Cables

Connect the + Positive wire to the Right hand pin of the connector and the negative wire to the second pin. A screen wire or an earth can be connected to pin 5.

5.3.2.7 Fibre Connection

Carefully remove the optic connector covers and connect the fibre cables to the transmit and receive connections as illustrated on the unit. Be careful not to bend the fibres to sharp.

5.3.3 *Installation*

Ensure that the link loss over the fibre cable is within the power budget of the equipment. See the model number and optic option.

5.4 **Operators Instructions**

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.

5.5 **Maintenance Instructions**

No routine maintenance is required on this equipment.

5.5.1 *First Line Maintenance*

5.5.1.1 Instruments and Tools Required

Optic power meter
Multi-meter.

5.5.1.2 Maintenance Procedure

When arriving at a suspect link 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 then check if the supply voltage is correct for that particular unit. Replace a faulty fuses with those of the correct value only.

Next observe the data indications. Should this be in order then the fault is further down the link and most likely a broken fibre link is to

Notes (Continue)**7 Contact Details**

Advanced Digital Devices cc
Unit 17 Bond Street Business Park
Cnr. Bond and Kent Str.
Randburg
Johannesburg
2125

P.O. Box 2549
RANDBURG
2125

Johannesburg
South Africa

Tel: +27 11 789-4420

Fax: +27 11 789-4309