

OS8422_U.DOC
Author : W.D.
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PRODUCT - OS8422
2 CHANNEL RS422 to FIBRE
Interface.
USER MANUAL
VERSION 1.0
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USER MANUAL

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1. PRODUCT DESCRIPTION

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.

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.

1.3 Indications

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

2. PRODUCT STOCK CODES

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

3. PREPARATION FOR USE

3.1 Unpacking

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

3.2 Configuration of the links.

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.

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.

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.

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.

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.

3.2.6 Connecting to Copper cable.

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.

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.

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.

4. OPERATOR'S 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. MAINTENANCE INSTRUCTIONS

No routine maintenance is required on this equipment.

5.1 First line maintenance.

5.1.1 Instruments and tools required

Optic power meter
Multi-meter.

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.

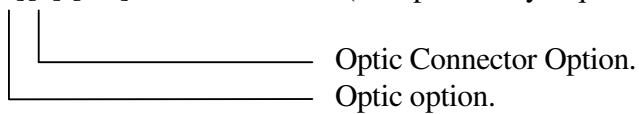
First observe the power indicator. If the power indicator is off then check if the supply voltage is correct for that particular unit. Replace a faulty fuses with those of the correct value only.

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 blame. Optic power could be measured from the unit but this is only possible when sending constant data. A Level of approximately - 20dB could be expected.

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

6. Ordering Information:

OS8422 [x][x]/[ver] Version.(not specifically required for ordering)



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

7. SPECIFICATIONS

7.1 Electrical Characteristics

Power Supply

Power Connector -	20 Pin Double Sided Edge Connector
Supply Voltage -	12V \pm 10% DC
Supply Current -	180 mA (max)
Power Dissipation -	2.5 Watt (max)

Data Connection

Connector -	5 pin screw connector
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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

7.3 Physical Characteristics

Space Consumption in 19" rack -	rack height x 25 mm	
Overall Unit Dimensions -	Length -	171 mm
	Width -	128.5 mm with frontplate for frame
	Height -	25 mm with frontplate for frame
	Weight -	120 g (max)