

# User Manual

## For

### Dual Video Receiver and Data Transmitter

# PRODUCT - LL8023

<b>Unit Serial Number:</b>		<b>Model:</b>	<b>LL8422AB/B</b>
<b>Tested By:</b>		<b>Date:</b>	
<b>Measurement Test</b>	<b>Criteria</b>	<b>Result</b>	
<b>Power Supply</b>	5V, -5V dc		
<b>Optic TX Level CH1</b>	Functional		
<b>Optic RX Level CH1</b>	-30dBm		
<b>Optic TX Level CH2</b>	Functional		
<b>Optic RX Level CH2</b>	-30dBm		
<b>Power Budget</b>	12dB		
<b>Functional Tests</b>	<b>Criteria</b>	<b>Results</b>	
<b>POWER Indication</b>	Light up with Power connected		
<b>Data TX Indications</b>	Light up with TX data		
<b>Video RX Indications</b>	Light up with RX Video		

Model: LL8023

Serial Number:.....

Job Number:.....

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# 1 Introduction

## 1.1 General

The LL8023 is a Dual Data Transmitter and Video Receiver.

The Data Transmitter is used in Video Systems for low speed data communication interfaces over Fibre. It is compatible with LL232, which is a RS232 to fibre interface and the LL422 or LL8422, which is a RS422 or RS485 to fibre interface.

The Video Receiver 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 a led indicator will light up.

This unit is designed to fit into a LL800 19" sub rack system. The card is a standard eurocard size.

This unit operates autonomously.

## 1.2 Features

- Slots into existing LL800 Rack.
- Interface directly to the LL8021 Single channel RS422 Receiver and Video Transmitter.
- Compatible with standard composite video.
- Economical.

## 1.3 Uses

- Ideally suited for Pan Tilt Zoom systems in video applications.
- Multi-point Access Control Systems.
- Other Security & Control Systems.

## 1.4 Basic System Description

The Data Transmitter is used to control the camera. It converts the RS422, one directional data signal into an optical signal and transmits it into the fibre. The Video Receiver converts the optical signal into a composite video signal. The AGC circuit then checks the amplitude and corrects the signal before transmitting it into the 75Ω BNC connector

LL8023 – Dual Video Transmitter and Data Receiver



Fiber Optic Interface

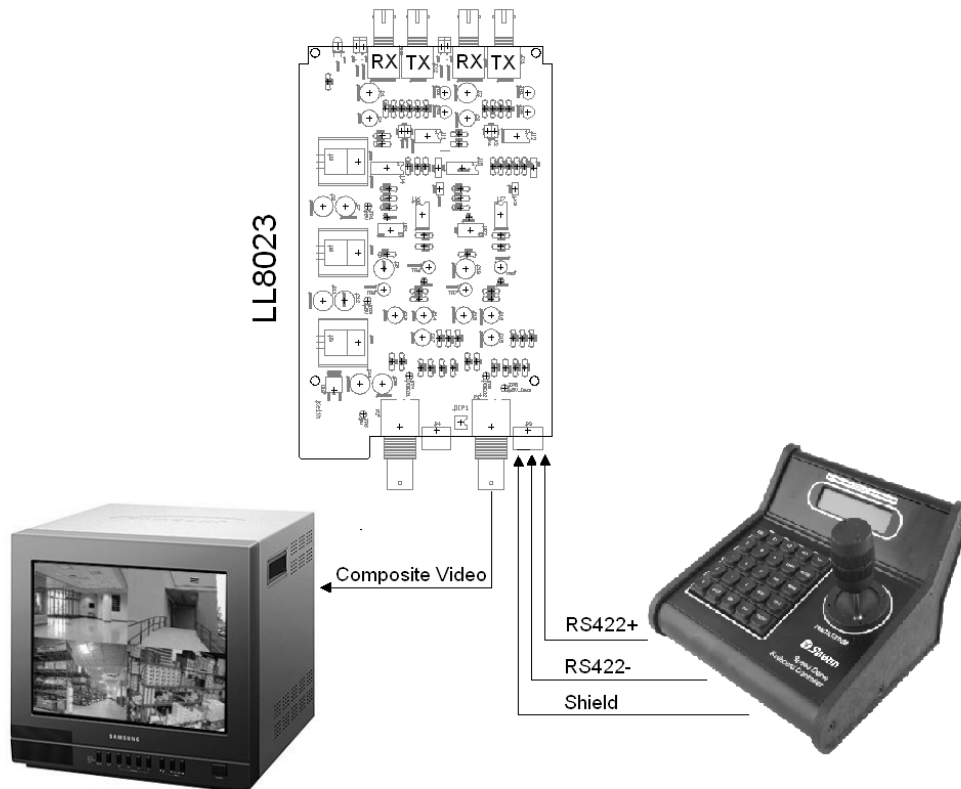


Figure 1: Connection Diagram

The main purpose of this unit is to provide a compact Rack mount interface to a PTZ Camera (Pan Tilt Zoom) see Figure 1.

## 1.5 Package Items

When the box is opened make sure of the contents by checking it using the Order Number. Also check for any damage caused during shipping. The manufacturer checked all equipment before packing and packed it in protective packaging and thus cannot be held responsible for damage during shipment.

## 1.6 Ordering Information

**Table 1: Optics**

	Stock Code	Options	Type	TX	RX	Budget
<b>OPTICS</b>						
	<b>A</b>	<b>850sr</b>	<b>M/M</b>	<b>-18dBm</b>	<b>-30dBm</b>	<b>12dBm</b>
	<b>B</b>	<b>1300mr</b>	<b>M/M</b>	<b>-20dBm</b>	<b>-32dBm</b>	<b>12dBm</b>

**Table 2: Connectors**

<b>CONNECTOR</b>	<b>A</b>	<b>SMA</b>	<b>Screw</b>
	<b>B</b>	<b>ST</b>	<b>Bayonet</b>
	<b>C</b>	<b>FC/ PC</b>	<b>Screw</b>
	<b>D</b>	<b>SC</b>	<b>Snap</b>

**Table 3: Attenuation**

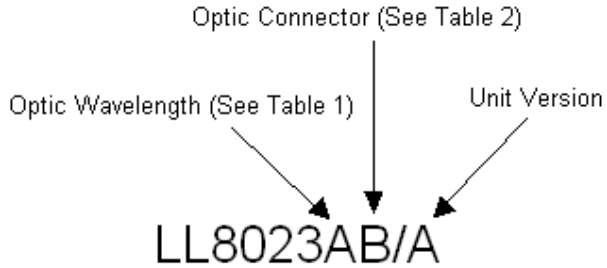
<b>Attenuation Per Kilometre</b>		
<b>TYPE</b>	<b>Typical</b>	<b>Practical</b>
<b>850M/M</b>	<b>3dB/km</b>	<b>2.8dB/km</b>
<b>1300M/M</b>	<b>1dB/km</b>	<b>0.7dB/km</b>

This unit must be ordered by using the following Order Number Selection table this the example.

<b>B</b>	ST Optic Connection	Optic Connector Option
<b>A</b>	850nm Optic Wavelength, Multi Mode	Optic Wavelength Option
<b>8023</b>	Dual Video Receiver and Data Transmitter	
<b>LL</b>	LightLink	

EG : **LL8023AB/A** – Dual Video Receiver and Data Transmitter, with 850nm Optics (3km), ST Connectors, Version A.

## LL8023 – Dual Video Transmitter and Data Receiver



## 2 Installation Procedure

### 2.1 Unpacking

The system is factory tested and packed in protective packaging. Inspect the interface for any visual damage.

### 2.2 Configuration of the Links

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

Link 1, 2 selects normal or invert Video signal. This link is factory set and depends on the optic type used. Usually when 1300nm optics is used then links 1 and 2 must be set horizontal and when 850nm optics is used links 1 and 2 must be set vertical.

### 2.3 Power Connection

No power connection is required as the unit obtains power from the back plane of the LL800 Rack System that it slots into. The Power Indicator should light up when there is power to the system.

### 2.4 Fibre Connection

First ensure that the fibre is of good quality, and that the loss across the length of fibre is within the power budget specification of the equipment. When mounting the fibres, make sure not to bend the fibre too sharply. Connect one fibre from the TX Optic Port of the one unit to the RX Optic Port of the other unit, and then vice versa with the other fibre. The TX and RX LED's indicate any data or video activity present.

## 2.5 Connecting to Copper Cables

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

The data connector is numbered from Left to Right when looking into the open wire clamp with screws on top. For the data link connect the 3 pin screw connector with the positive data line to the right hand of the connector, and the negative data to the next pin. The screen for the cable can be connected to the left hand side of the connector.

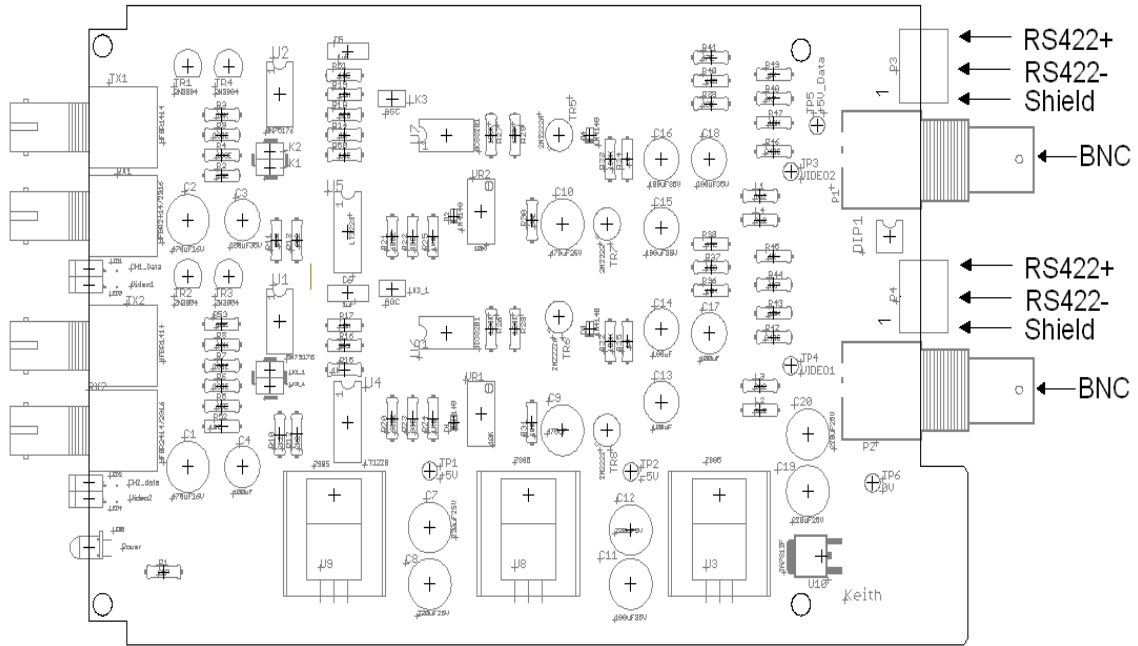


Figure 2: LL8023 Connector

Option	Data Connector		
	Pin 1	Pin 2	Pin 3
RS422 RX	Screen/ Shield	RS422-	RS422+

For the video link connect the BNC connectors to the back of the card.

If the links are selected (by removing link3) for manual gain adjustment then the following procedure is followed. Each channel has its own adjustment for gain. This gain adjustment is not reachable from the front of the unit. By connecting the ground lead of the oscilloscope to the card frame the signal on each channel can be tested by connecting to the video test pin. The gain is normally adjusted using a standard reference signal from a pattern generator at the Optic transmitter. The received Video signal is then monitored on the oscilloscope. The gain is now adjusted by using the variable resistor to get a 300mV sync signal. The oscilloscope must be set to line sync.

If the links are selected (by inserting Link3) for AGC the unit can be used as it is. Note if you have changed the manual setting it is necessary to readjust the AGC setting by following the above procedure in AGC mode.

## 3 Maintenance Procedure

No routine maintenance is required on this equipment. The unit needs no operator intervention to function.

If a fault arises, it is necessary to observe the nature of the fault and to perform such procedures in first line maintenance as described in the proceeding chapter.

### 3.1 First Line Maintenance

#### 3.1.1 Instrument and tools required

Optic power meter

Multi-meter

Oscilloscope.

#### 3.1.2 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 LL800 is switched on. Then check the LL800 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 LL800. If the fuse is replaced and the unit is still not working even without an load the LL800 is faulty and must be replaced.

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 transmitter could be damaged or is not working

The next thing to check is the signal coming out of the unit. Do this by replacing the fibre and connecting the ground of your oscilloscope to the indicated GND testpin on the suspect unit. Then connect the probe to the Video Out testpin on the suspect channel. Measure this video signal to see if the signal is OK. If the signal is too small or to big check if the unit is set for Manual or AGC. If the unit is set for AGC adjustment is unnecessary.

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

## 4 Specifications

### 4.1 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

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

#### Data

Data Input Connector-	3Pin Screw Connector
Data Reception Standard-	RS422 (one direction)

### 4.2 Optical Characteristics

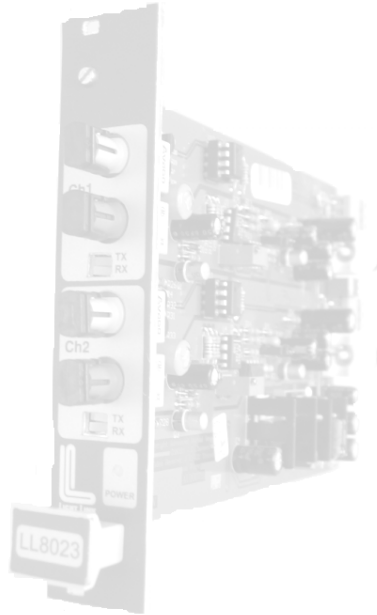
Connector -	ST or SMA
Reception Wavelength -	820 nm or 1300nm
Responsivity -	7 mV/ $\mu$ W Typical or 13mV/ $\mu$ W
Fibre Compatibility -	50/125 $\mu$ m diameter
Minimum Receive Level-	-30dB

### 4.3 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)

LL8023 – Dual Video Transmitter and Data Receiver

Notes.



## 5 Contact Details

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