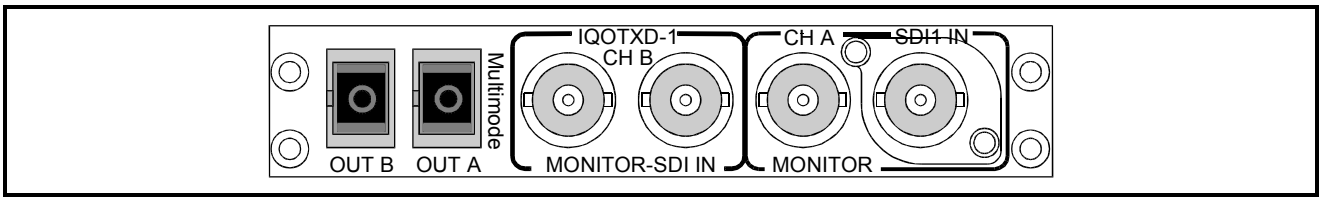
IQOTXD Dual-Channel Multimode Fibre Optic Transmitter for SDI

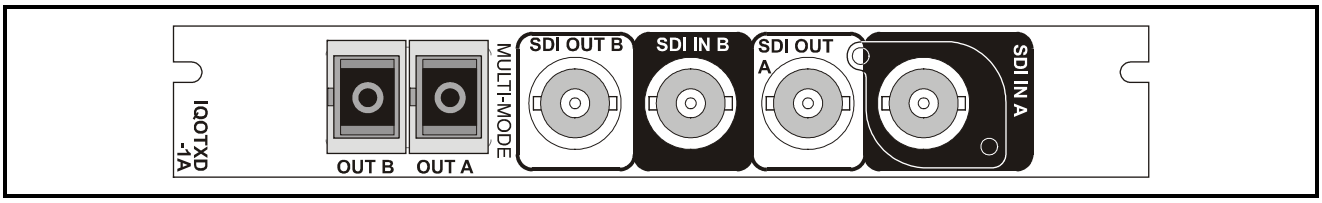
Module Description

The IQOTXD is a dual-channel multimode fibre optic transmitter for SDI. The unit takes two inputs of SDI at 270 Mbits/s and provides multimode optical output for each input in accordance with SMPTE297M. An equalized monitor output for each of the SDI inputs is also provided.

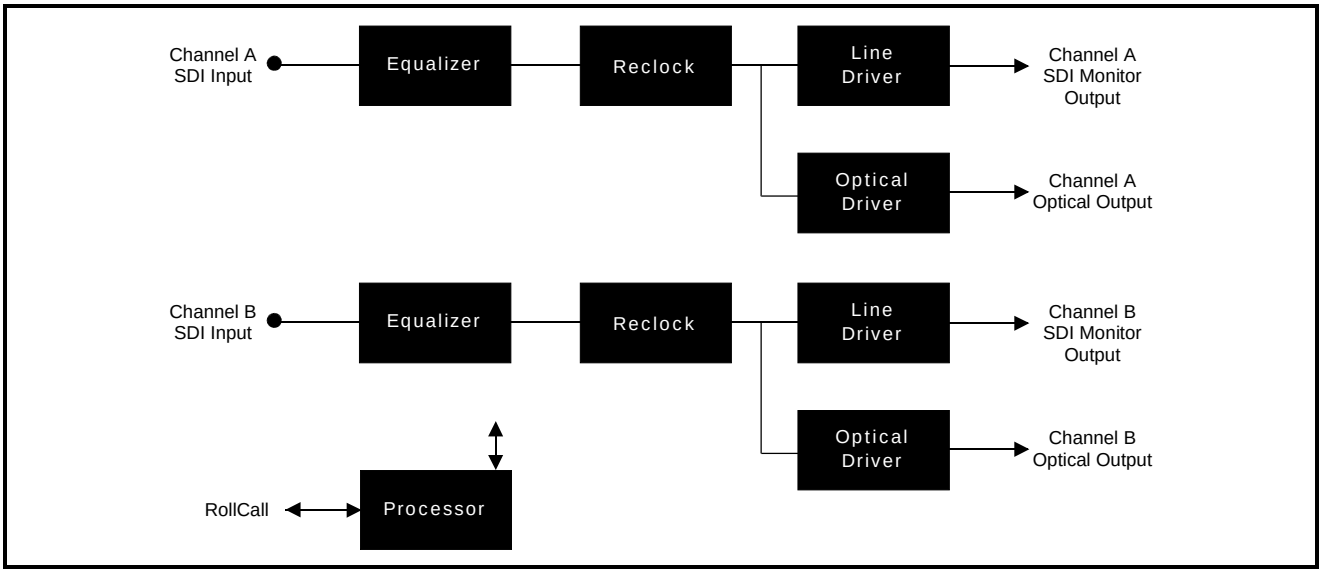
RollCall provides remote input monitoring and unit identification.

REAR PANEL VIEW





BLOCK DIAGRAM



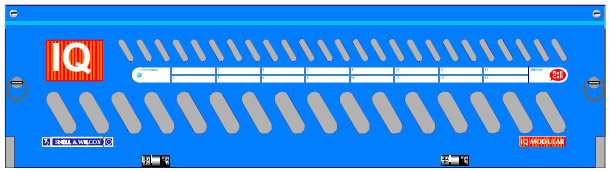
Versions of the module cards available are:

IQOTXD-1	SDI dual-channel fibre optic transmitter -Multimode	Single width module
IQOTXD-1A	SDI dual-channel fibre optic transmitter -Multimode	Single width module

Note that there are two styles of rear panels available. They are not interchangeable between the two styles of enclosures. However, the cards may be fitted into any style of enclosure.

'A' Style Enclosure

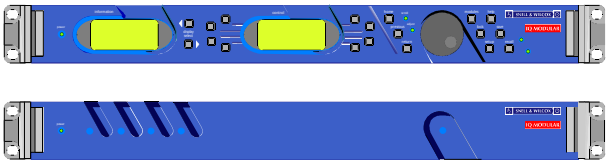
Rear panels ***with*** the suffix A may only be fitted into the 'A' style enclosure shown below.



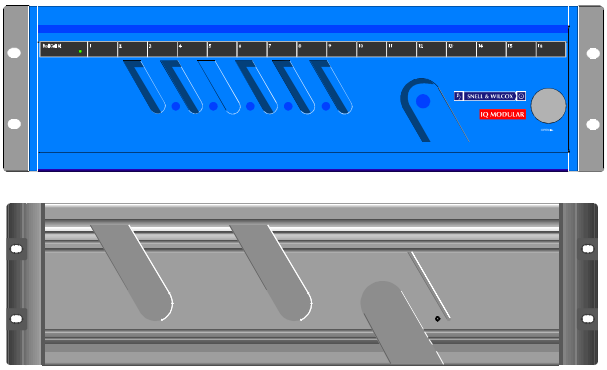
(Enclosure order codes IQH3A-E-O, IQH3A-E-P, IQH3A-N-O, IQH3A-N-P)

'O' Style Enclosures

Rear panels ***without*** the suffix A may only be fitted into the 'O' style enclosures shown below.



(Enclosure order codes IQH1S-RC-O, IQH1S-RC-AP, IQH1U-RC-O, IQH1U-RC-AP, Kudos Plus Products)



(Enclosure order codes IQH3N-O, IQH3N-P)

Features

- Dual Multi-mode fiber optic transmitter for serial 4:2:2/ASI Signals.
- Multi-mode Optical outputs in accordance with SMPTE297M
- Monitor output for each of the serial 4:2:2 inputs.
- RollCall reporting of status
- Freedom from electromagnetic interference
- Freedom from crosstalk
- Complete electrical isolation
- Absence of ground loops
- Increased bandwidth and lower losses than coaxial cables
- Lower weight and higher density compared with copper cables

Technical Profile

Features

Signal Inputs

SDI Channel A ..... Via BNC Connector

SDI Channel B..... Via BNC Connector

Signal Outputs

Optical Channel A..... Via Multi-mode SC Connector with Shutter

Optical Channel B..... Via Multi-mode SC Connector with Shutter

SDI Monitor Channel A ..... Via BNC Connector

SDI Monitor Channel B ..... Via BNC Connector

Controls

None

Additional Controls via RollCall™ Remote Control System

Logging..... Input Loss

Indicators

Power Supplies

Input Loss

Specifications

Optical Output Power..... -16 dBm Typical

Optical Output Wavelength 1310 nm ±40 nm

SDI Output ..... 270 Mbits/s

SDI Output Return Loss..... Better than –15 dB to 270 MHz

Operating Distance..... 3.5 km typical with high quality 62.5/125 µm cable.
Please enquire for details

Note:

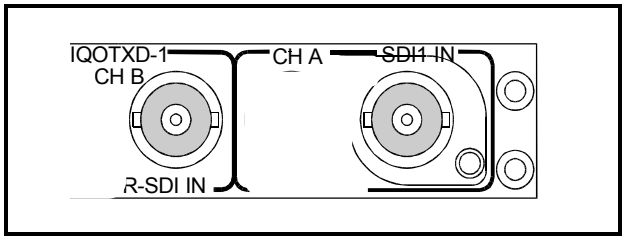
SMPTE 297M states 50/125 µm multi-mode fiber may be used resulting in a loss budget reduction of approximately 3 dB over values calculated for 62.5/125 µm fiber. From practice the loss budget reduction can be as large as 6 dB. It is recommended 62.5/125 µm multi-mode fiber is used.

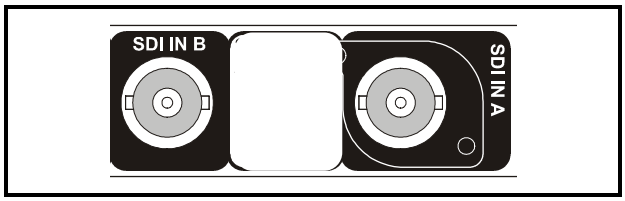
For details of the operating distance please see the Appendix on page 7.

INPUTS AND OUTPUTS

CHANNEL A AND CHANNEL B INPUTS

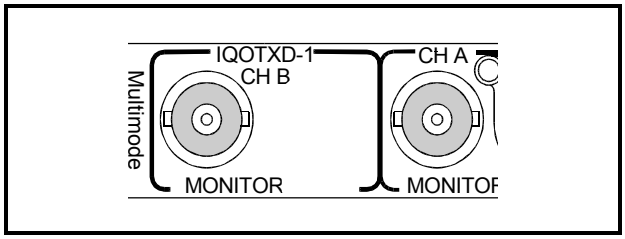
These are the two inputs of SDI for each of the two channels via BNC connectors.





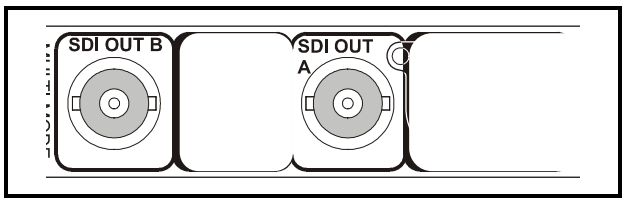
CHANNEL A AND CHANNEL B MONITOR

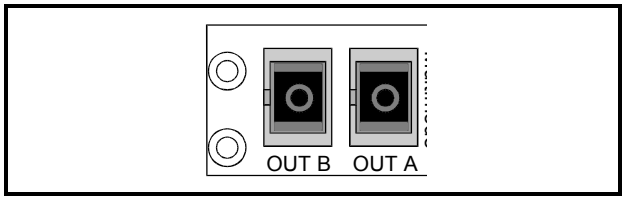
These are the channel A and channel B monitor outputs which provide equalized monitor outputs for each of the SDI input channels via BNC connectors.



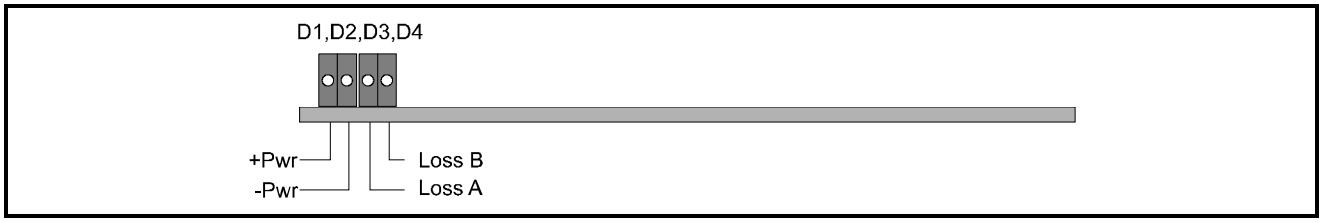
OUTPUT A AND OUTPUT B

These are the channel A and channel B optical outputs from the unit that are made via SC Connectors with Shutters.

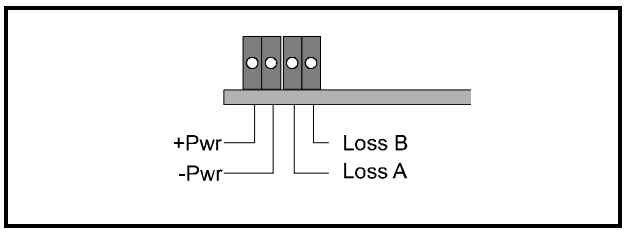




CARD EDGE CONTROLS



LED INDICATORS



+Pwr and -Pwr

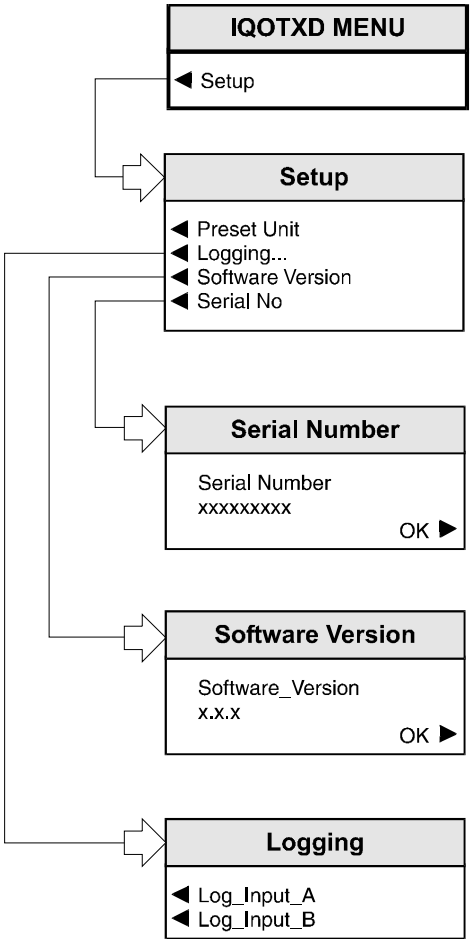
When illuminated these LED's indicate that the positive and negative power supplies are present.

Loss A

This LED will be continuously illuminated when Input A is not receiving an input signal.

Loss B

This LED will be continuously illuminated when Input B is not receiving an input signal.



IQOTXD
Menu System

OPERATION FROM AN ACTIVE CONTROL PANEL

The card may be operated with an active control panel via the RollCall™ network.
The menus available for this card are shown opposite and will appear in the Control display window.

Operational details for the remote control panel will be found in SECTION 1 of the Modular System Operator's Manual.

MENU DETAILS
(see IQOTXD Menu System on previous page)

MAIN MENU

The main, or top level menu allows various sub-menus to be selected by pressing the button adjacent to the required text line.

Note that where a menu item is followed by three dots (...) this indicates that a further sub-menu may be selected.

Whenever a menu item is selected the parameters of that selection will be displayed in the **Information** window of the front panel. Where the selection is purely a mode selection and does not enable a sub-menu, the text will become reversed (white-on-black) indicating that the mode is active. If the mode is not available for selection the text will remain normal.

◄ Setup

This selection reveals a sub-menu that allows various functions to be set.

◄ Preset Unit

Selecting this item sets all adjustment functions that include a preset facility, to their preset values.

Note that this is a momentary action and the text will not become reversed

◄ Logging

If a logging device is attached to the RollCall™ network, information about various parameters will be reported to the logging device assigned in the Remote Control Interface system. (See Section 1, The RCIF Menu System)

The parameters that may be selected for logging are as follows:

◄ Log_Input_A
◄ Log_Input_B

When activated, a loss of input signal condition for the two inputs will be available for the logging device.

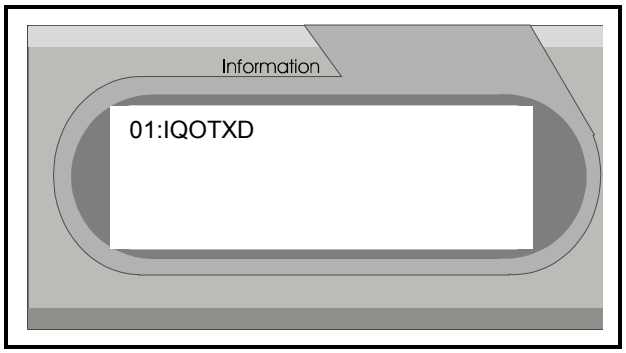
◄ Software Version

Selecting this item reveals a display showing the version of the software fitted in the module. Select OK to return to the Setup Menu.

◄ Serial Number

Selecting this item reveals a display showing the serial number of the module. Select OK to return to the Setup Menu.

THE INFORMATION WINDOW



The Information window has four lines of text indicating current selections and various information messages.

The first line will contain the name of the module that is currently being controlled.

The second, third and fourth lines provide specific information about the operating conditions of the module.

Example of text displayed

Line 1 01:IQOTXD
Line 2 INPUT_A:OK or **
Line 3 INPUT_B:OK
Line 4 Not used

Text Line Details

Line 1

This line contains the name of the module and Gateway code data.

Line 2

This line gives information about the state of the input channel A.

INPUT_A : OK *Input Signal Present*
or
INPUT_A : ** *Input Signal not Present*

Line 3

This line gives information about the state of the input channel B.

INPUT_B: OK *Input Signal Present*
or
INPUT_B: ** *Input Signal not Present*

Line 4

This line is not used and will be blank.

Appendix

Operating Distance

The limiting factors for successful transmission of digital video data include not only the reception of the specified light energy (which in turn depends on the specified link budget), but also the throughput BANDWIDTH. Hence, the choice of wideband fibre cable especially in case of the MULTIMODE FIBRE, is paramount.

The approximate minimal bandwidth could be found from a practical rule of "2 Hz per bit/s". So, for 270 Mbit/s streams the link bandwidth should be at least 135 MHz and for 360 Mbit/s it should be at least 180 MHz.

Another "rule of thumb" allows you to derive the approximate through put bandwidth from the cable length and the specified bandwidth. It says that every time you double the cable length you half the bandwidth.

Example: Suppose the selected type of 62.5/125 cable has a specified bandwidth of 800 MHz/km and a specified attenuation of 0.5 dB/km.

Suppose the link budget is equal to 29 (RX) -16 (TX) = 13 dB.
Allowing about 3 dB loss on optical connectors surfaces the total cable loss could be up to 13 – 3 = 10 dB.
From this point of view the maximum cable length could be10/0.5 = 20 km.
However, for this type of cable the bandwidth of 2 km link will be 800/2 =400 MHz, for 4 km link it will be 800/4 =200 MHz, and for 8 km link it will be 800/8 =100 MHz. The last figure is far below the required value of 135 MHz, hence realistic maximum length for the cable of this type will be about 6 km.
Note that this example applies to the top-of-the-range fibre. Typical 62.5/125 cables have a specified bandwidth of 400 or 500 MHz/km.
This means that reliable transmission of 270 Mbit/s streams via fibre cables of such quality is possible only for distances up to 3.5 km.

Manual Revision Record

Date	Version No.	Issue No.	Change	Comments
250899	1	1		First Issue
210200	1	2	Channel to A B + rear panel	New issue released
031000	1	3	Spec ref 62.5/125µm fibre	New issue released
271100	1	4	Tech Spec change 6km to 3.5km	New issue released
220402	1	5	Now includes information for the 3A enclosure modules	New manual issued