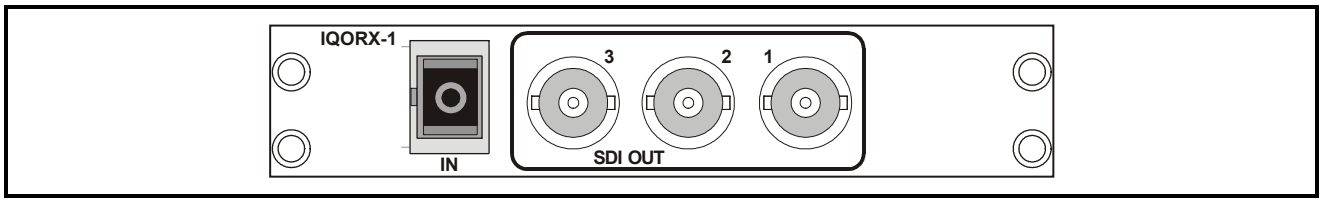
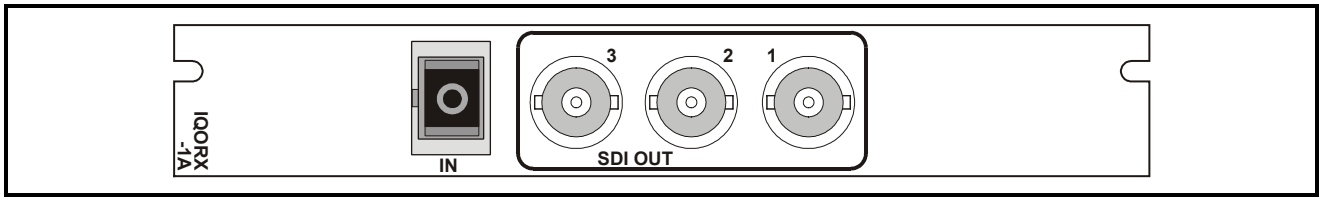
IQORX Single-Channel Fiber Optic Receiver for SDI

Module Description

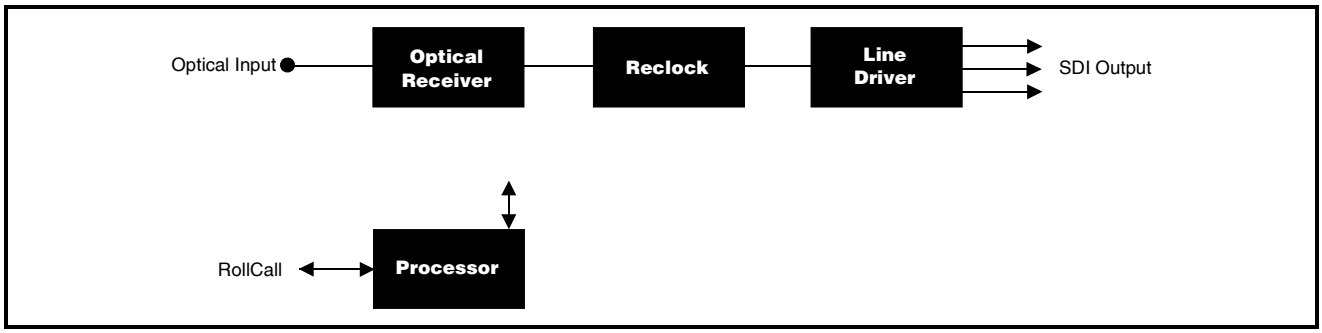
The IQORX is a single channel fiber optic receiver for SDI/ASI video signals. The unit accepts a single or multi-mode optical input and provides 3 reclocked SDI outputs, 2 of which are ASI compatible. RollCall provides remote input monitoring and unit identification.

REAR PANEL VIEW



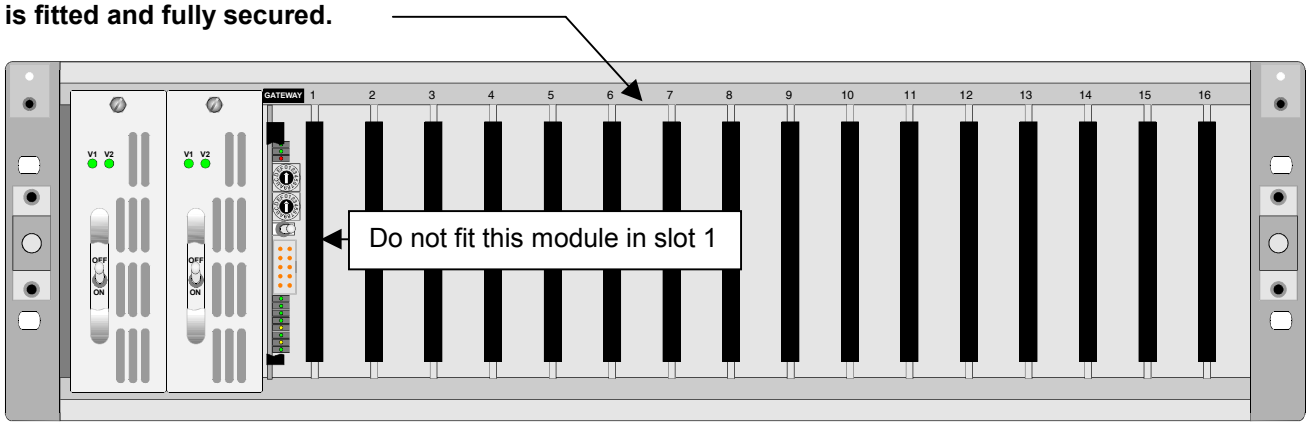


BLOCK DIAGRAM



IMPORTANT NOTICE

When this module is fitted into a 3U enclosure it is very important to ensure that the card-retaining bar is fitted and fully secured.



This will make sure that the fiber optic connections at the rear of the module are made correctly.

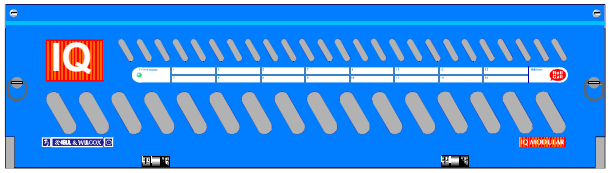
Versions of the module cards available are:

IQORX-1	SDI single-channel fiber optic receiver	Single width module
IQORX-1A	SDI single-channel fiber optic receiver	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 3U enclosure.
Note also that this module (IQORX) cannot be fitted into slot 1 of the 'O' Style Enclosures

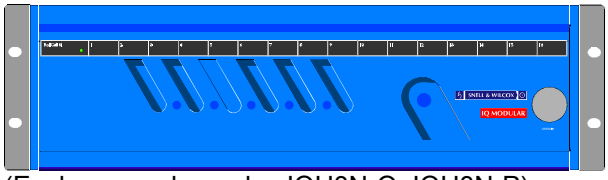
'A' Style Enclosure

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



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

(Enclosure order codes IQH3U-RC-O, IQH3U-RC-P)

Features

- Single and multi-mode fiber optic receiver for serial 4:2:2/ASI Signals
- 2 serial 4:2:2/ ASI outputs in accordance with SMPTE259M level C and DVB ASI
- 1 serial 4:2:2 output in accordance with SMPTE259M level C
- 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

Optical Channel ..... Via SC Connector with Shutter

Signal Outputs

SDI / ASI Channels 1 & 2 . 2 x via BNC Connectors
Specification ..... SMPTE 259M-C, DVB ASI
SDI Channel 3 ..... 1 x via BNC Connector
Specification ..... SMPTE 259M-C.

Card Edge Controls (also available via RollCall)

None

Functions Available via RollCall™ Only

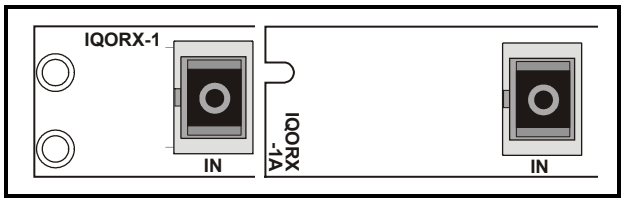
Logging ..... Input Loss
Indicators
Power Supplies
Input Loss

Specifications

Optical Input Power ..... -6 dBm to better than –20 dBm
Optical Input Wavelength... 1310 nm ±40 nm
SDI Output ..... 270 Mbits/s
Output Return Loss..... Better than –15 dB to 270 MHz

For details of the operating distance please see the Appendix on page 9.

INPUTS AND OUTPUTS

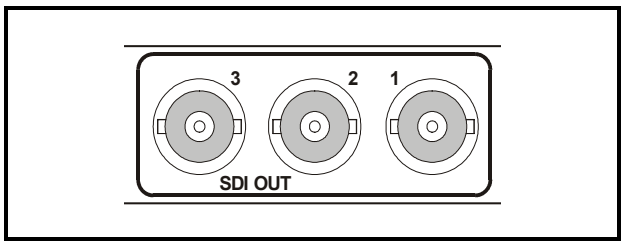


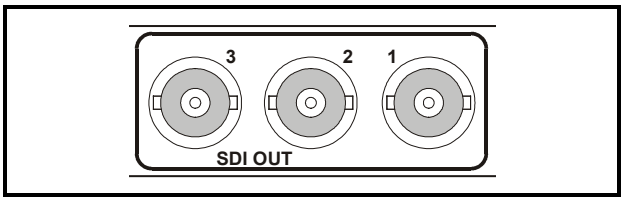
OPTICAL INPUT

This is the optical input to the unit that is made via a SC connector with a Shutter.

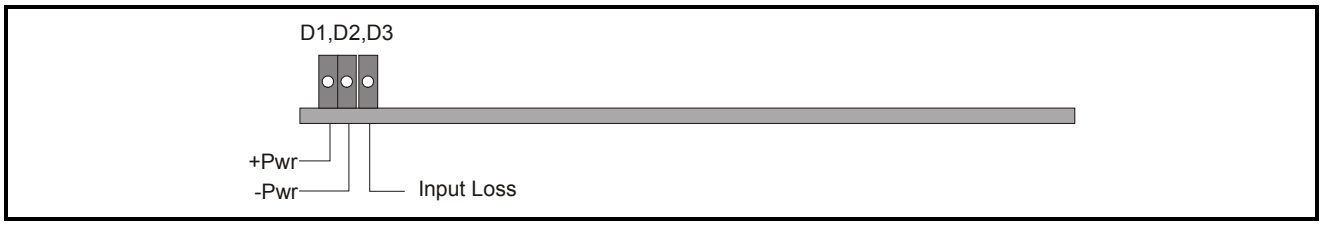
SDI OUTPUTS

There are three SDI outputs via BNC connectors. Only outputs 1 & 2 are compatible with ASI.





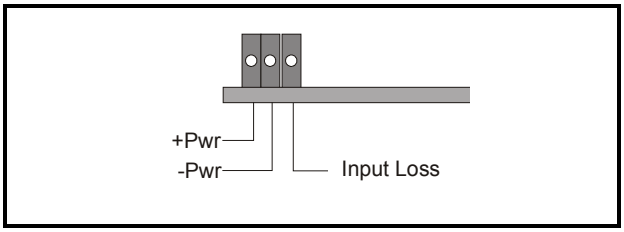
CARD EDGE CONTROLS



LED INDICATORS

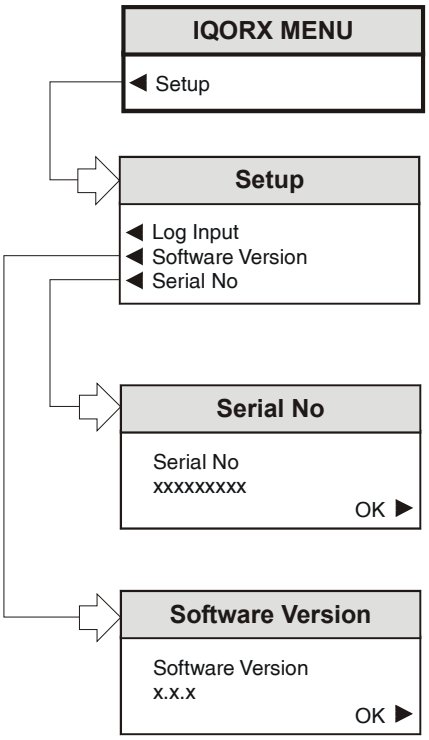
+Pwr and -Pwr

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



Input Loss

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



IQORX
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 IQORX Menu System on previous page)

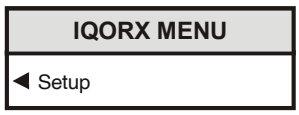
MAIN MENU

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.

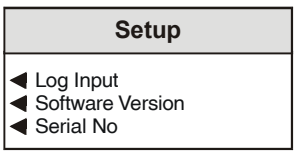
Whenever a menu item is selected the parameters of that selection will be displayed in the **Information** window of the front panel. Where the selection is purely a mode selection and does not enable a sub-menu, the text will become reversed (white-on-black) indicating that the mode is active. If the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

MAIN MENU



◀ Setup

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

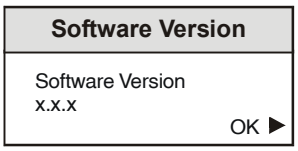


◀ Log Input

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.

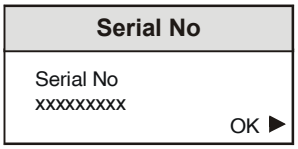
When activated, a loss of input signal condition will be available for the logging device.

◀ 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 No



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

RollCall Control Templates for the IQORX

There is only one screen for the IQORX.

Information

This area provides basic information about the status of the unit.

Input

This item shows the status of the input signal.

It may show:

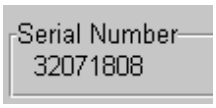
OK The unit is receiving a valid input signal

*** *** The unit is not receiving a valid input signal

Software Version

This shows the version of the software fitted.

Serial Number



This item shows the serial number of the module.

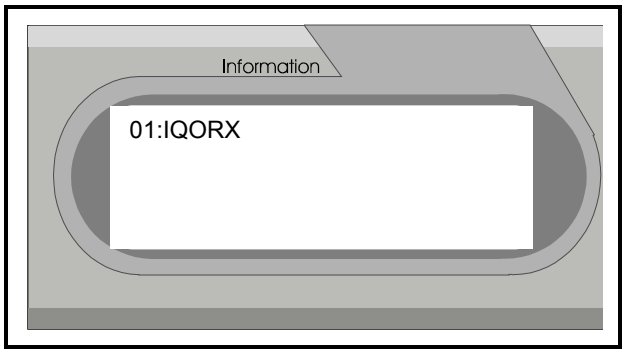
Logging

If a logging device is attached to the RollCall™ network, information about various parameters can be made available to such a device.

Input Status

When checked this allows information about the **Input Status** to be made available for logging.

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:IQORX
Line 2 INPUT OK/* *

Text Line Details

Line 1

This line contains the name of the module and the slot position of the module in the enclosure.

Line 2

This line gives information about the state of the input.

INPUT OK *Input Signal Present*
or
INPUT ** *Input Signal not Present*

Appendix

Operating Distance

The limiting factors for the 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 fiber 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 20.5 (RX) –7.5 (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 fiber. 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 fiber cables of such quality is possible only for distances up to 3.5 km.

Manual Revision Record

Date	Version No.	Issue No.	Change	Comments
250703	1	1		First Issue
010803	1	2	Note ref slot 1	New issue released
130803	1	3	New rear panel drawings added	New issue released