

# Crystal Vision

## FTX 3G and FRX 3G

### 3G/HD/SD fibre optic transmitter and receiver

The FTX 3G fibre optic transmitter and FRX 3G fibre optic receiver have been designed to transmit 3Gb/s, HD or SD signals over large distances in a robust, reliable and space-saving way.

The FTX 3G and FRX 3G are ideal for use together. These 100mm x 266mm boards are both dual channel, which brings financial and rack space savings with up to 48 channels possible in a 4U frame. The FTX 3G has two independent 3Gb/s, HD or SD inputs, each with one optical output. It can transmit a serial digital signal down a fibre optic cable to the FRX 3G receiver, which offers two optical inputs and two relocked 3Gb/s, HD or SD outputs per channel – meaning it doubles as a DA and reduces the need, rack space and cost of having distribution amplifiers after the receiver. The FRX 3G recognises whether the standard is 3G/HD or SD and switches the slow rate automatically.

Both boards meet the SMPTE 297-2006 short-haul specification, allowing operation with the more popular single-mode fibre, as well as multi-mode fibre. This makes them suitable for a wide range of applications – from moving signals around in large installations to passing signals between Outside Broadcast vehicles.

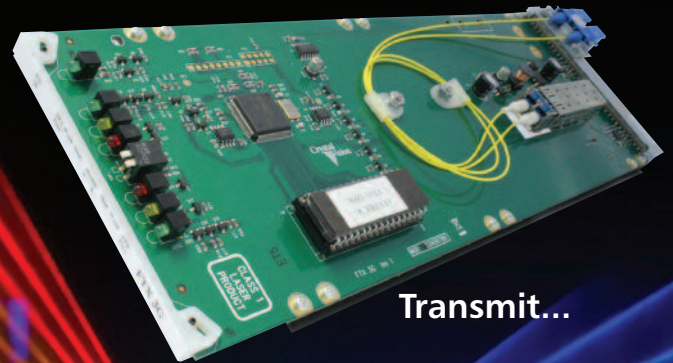
The FTX 3G comes with the safety features you would expect. These include a Class I laser that will automatically switch off if there is no video input or if any of the laser's critical parameters are exceeded. The laser can also be shut down manually. A warning is given when the laser is approaching the end of its expected lifetime.

The boards include other useful features too. Sometimes factors such as dirty connectors or damaged fibre cables can cause light to be passed less effectively. On the FRX 3G you can therefore monitor the received power in both microwatts and dBm, allowing you to judge the amount of headroom you have and guarantee that your signal will be transmitted successfully. Specially modified laser modules on the FTX 3G allow the boards to cope successfully with pathological signals – with this challenging test pattern useful for testing your serial link. Board edge LEDs provide status reporting and can provide visual assistance when fault finding.

As part of the normal Crystal Vision range, the FTX 3G and FRX 3G modules are housed in the standard frames (in a choice of four sizes, from 4U to desk top box) making it remarkably easy to transmit signals to or from any of the company's interface, keying or picture storage modules. The inputs and outputs are accessed by using the RM56 frame rear module with the FTX 3G and the RM55 with the FRX 3G.

Status monitoring and basic control can be performed using either board edge switches, an active front panel on the frame, a remote control panel, SNMP or the Statesman PC software. The FTX 3G has one Statesman menu tab providing status information, while the FRX 3G has two Statesman menus: one showing the status, the other indicating the received power.

With the FTX 3G and FRX 3G you can easily meet the challenges created by the limited range of coaxial cable with HD and 3Gb/s video – without an increase in the cost or complexity of your system.



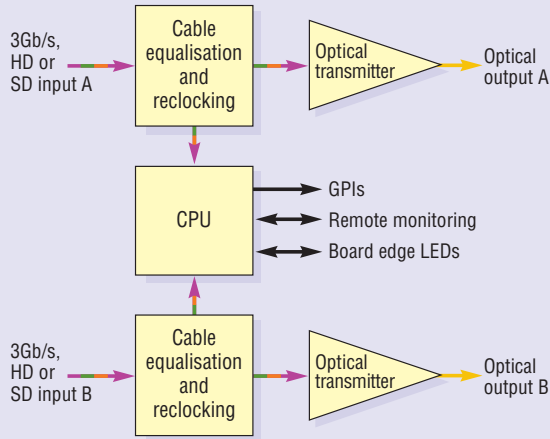
Transmit...



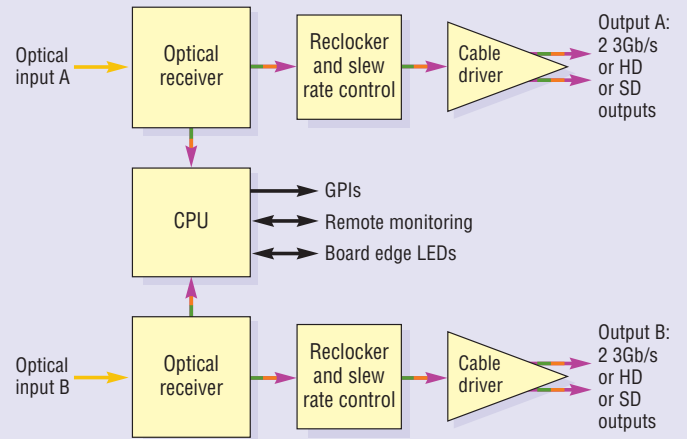
...and receive  
3Gb/s, HD or SD  
fibre optic signals!

- ✦ Dual channel fibre optic transmitter (FTX 3G) and dual channel fibre optic receiver (FRX 3G)
- ✦ Send 3Gb/s, HD or SD signals (with embedded audio) over long distances – ideal for use within a large building or for passing signals between OB vehicles
- ✦ Meet the SMPTE 297-2006 short-haul specification, allowing operation with single-mode and multi-mode fibre
- ✦ Reduce the need for additional distribution amplifiers: FRX 3G gives two outputs per channel
- ✦ Effortless integration: fitting in the standard frames makes it easy to use them with Crystal Vision's interface, keying and picture storage modules
- ✦ Fit up to 48 channels in 4U: space-saving 100mm x 266mm modules allow 12 FTX 3G or FRX 3G in 2U (24 in 4U, six in 1U and two in desk top box)
- ✦ Flexible monitoring, including PC software and SNMP

## FTX 3G



## FRX 3G



## SPECIFICATION

### FTX 3G

#### MECHANICAL

Standard Crystal Vision module 266mm x 100mm  
Weight: 200g  
Power consumption: 3 Watts

#### VIDEO INPUTS

270Mb/s or 1.5Gb/s or 3Gb/s serial compliant to EBU 3267-E, SMPTE 259M, SMPTE 292M and SMPTE 424M  
3Gb/s cable equalisation up to 80m using Belden 1694A. HD cable equalisation up to 140m with Belden 1694A or equivalent (approx. 100m with Belden 8281). SD cable equalisation >250m Belden 8281 or equivalent  
Input return loss: -15dB for 50MHz to 1.5GHz and -10dB for 1.5GHz to 3GHz  
Auto 50/59.94/60Hz and video format selection  
Passes all 3Gb/s, HD and SD signals transparently, including pathological signals

#### VIDEO OUTPUTS

One optical output per channel using RM56 frame rear module  
Meets the SMPTE 297-2006 short-haul specification. This allows operation with single-mode and multi-mode fibre  
Laser safety classification: Class 1 (EN 60825), Class I (21CFR1040.10)  
Optical power: Max -0.0dBm, min -5.0dBm (typical -2.0dBm or 630uW)  
Fibre pigtail: Single-mode 8/125uM  
Optical wavelength: 1290-1330nm (1310 typical)  
Extinction ratio: 7.5dB  
Connector type: SC/PC

#### POSITION IN FRAME

The FTX 3G can be housed in any frame slot position but due to its extra height it is not possible to place Standard Definition or audio boards directly above it when the FTX 3G is in even numbered slot positions. 3Gb/s and HD boards do not share this restriction

#### DELAY THROUGH BOARD

Link delay less than 100ns

#### LED INDICATION OF:

Power supplies okay  
HD or SD input present  
Laser near end of life  
Laser error/disabled

#### GPI OUTPUT LEVELS

Electrically: Open collector transistors 30V, 270 ohm current limit resistors. Pulled up to +5V through 6800 ohm

#### GPI OUTPUTS

Six GPI outputs  
Input present for each channel  
Laser nearing end of life for each channel  
Laser shutdown for each channel

#### LOCAL CONTROL

DIP switch manually enables/disables laser

#### REMOTE CONTROL

RS422/485  
19200 baud, 8 bits, 1 stop no parity  
Monitoring from frame active front panel and remote panel  
Statesman allows monitoring from any PC on a network. One Statesman menu tab available: status panel (shows input presence, laser on, laser level warning, laser enabled at board edge status and

power supplies condition)  
SNMP monitoring and control available as a frame option

### FRX 3G

#### MECHANICAL

Crystal Vision module 266mm x 100mm  
Weight: 200g  
Power consumption: 3.5 Watts

#### VIDEO INPUTS

Two optical inputs  
Meets the SMPTE 297-2006 short-haul specification. This allows operation with single-mode and multi-mode fibre  
Optical wavelength: 1260-1620nm  
Input level maximum: -1dBm  
Input level minimum: Typical -20dBm (-18dBm 3Gb/s pathological)  
Connector type: SC/PC

#### VIDEO OUTPUTS

Two reclocked 3Gb/s, HD or SD outputs per channel using RM55 frame rear module  
Will drive 270Mb/s or 1.5Gb/s or 3Gb/s serial compliant to EBU 3267-E, SMPTE 259M, SMPTE 292M and SMPTE 424M  
Passes all 3Gb/s, HD and SD signals transparently, including pathological signals  
Recognises whether the standard is 3G/HD or SD and switches the slew rate automatically

#### POSITION IN FRAME

The FRX 3G can be housed in any frame slot position but due to its extra height it is not possible to place Standard Definition or audio boards directly above it

when the FRX 3G is in even numbered slot positions. 3Gb/s and HD boards do not share this restriction

#### DELAY THROUGH BOARD

Link delay less than 100ns

#### LED INDICATION OF:

Power supplies okay  
Optical input present

#### GPI OUTPUT LEVELS

Electrically: Open collector transistors 30V, 270 ohm current limit resistors. Pulled up to +5V through 6800 ohm

#### GPI OUTPUTS

Two GPI outputs  
Input present for each channel

#### LOCAL CONTROL

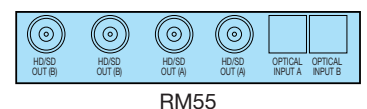
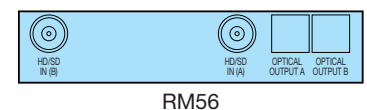
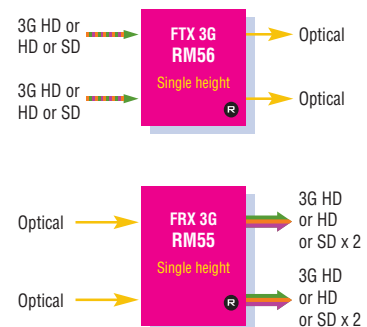
Selectable HD/SD slew rate

#### REMOTE CONTROL

RS422/485  
19200 baud, 8 bits, 1 stop no parity  
Monitoring from frame active front panel and remote panel  
Statesman allows monitoring from any PC on a network. Two Statesman menu tabs available: status panel (shows input presence, slew rate setting and power supplies condition) and received power panel  
SNMP monitoring and control available as a frame option

## ORDERING INFORMATION

FTX 3G	Dual channel 3Gb/s, HD or SD to fibre optic transmitter
FRX 3G	Dual channel fibre optic to 3Gb/s, HD or SD receiver
Indigo 4	4U frame with passive front panel for up to 24 Crystal Vision modules
Indigo 4SE	4U frame with passive front panel fitted with Statesman CPU for up to 24 Crystal Vision modules
Indigo 2	2U frame with passive front panel for up to 12 Crystal Vision modules
Indigo 2AE	2U frame with active front panel for up to 12 Crystal Vision modules
Indigo 2SE	2U frame with passive front panel fitted with Statesman CPU for up to 12 Crystal Vision modules
Indigo 1	1U frame with passive front panel for up to six Crystal Vision modules. Power supply redundancy available with Indigo 1-DP
Indigo 1AE	1U frame with active front panel for up to six Crystal Vision modules. Power supply redundancy available with Indigo 1AE-DP
Indigo 1SE	1U frame with passive front panel fitted with Statesman CPU for up to six Crystal Vision modules. Power supply redundancy available with Indigo 1SE-DP
Indigo DT	Desk top box with passive front panel for up to two Crystal Vision modules
Indigo DTAE	Desk top box with active front panel for up to two Crystal Vision modules
Indigo DTSE	Desk top box with passive front panel fitted with Statesman CPU for up to two Crystal Vision modules
RM56	Single slot frame rear module used for FTX 3G. Allows maximum number of boards in frame (24 in 4U, 12 in 2U, six in 1U, two in desk top box). Gives access to two 3Gb/s, HD or SD inputs and one optical output per channel
RM55	Single slot frame rear module used for FRX 3G. Allows maximum number of boards in frame (24 in 4U, 12 in 2U, six in 1U, two in desk top box). Gives access to two optical inputs and two 3Gb/s, HD or SD outputs per channel
REMIN	19" remote control panel
REMIN-E	19" Ethernet remote control panel
Statesman	PC Control System
SNMP	SNMP monitoring and control



Performance and features are subject to change. Figures given are typical measured values. FTX3GFRX3G0711