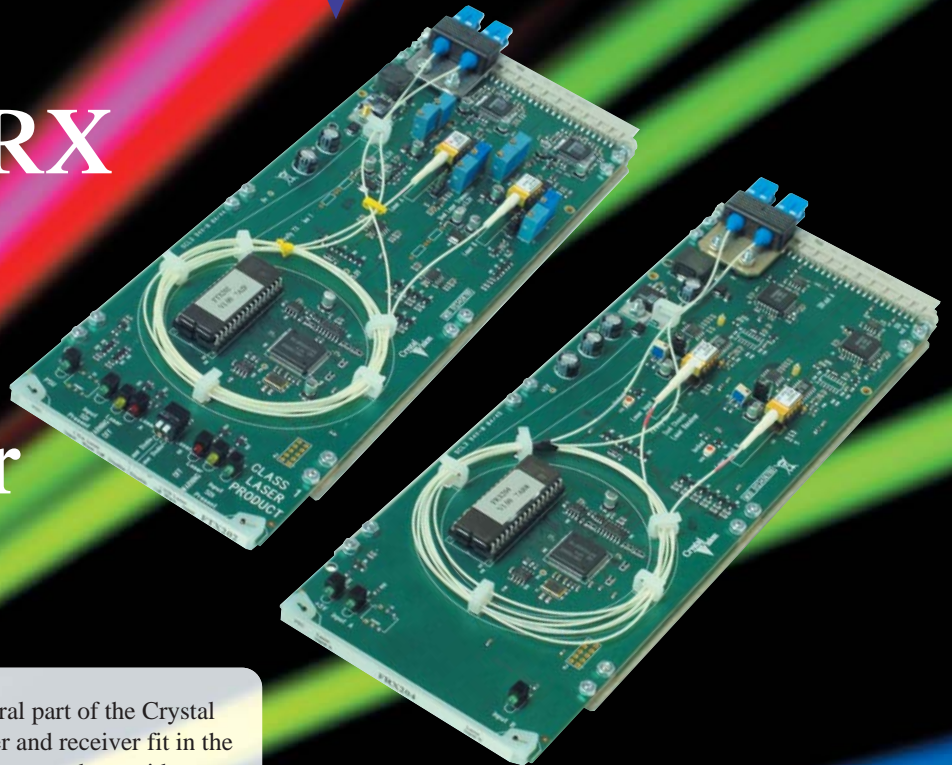# Crystal Vision

FTX and FRX fibre optic transmitter and receiver

The FTX and FRX fibre optics form a natural part of the Crystal Vision interface range. The fibre transmitter and receiver fit in the standard frames making it remarkably easy to use them with any interface or keying board. Providing a very robust and reliable transport medium for transmitting SDI over large distances, these dual channel modules have the flexibility to work with both multi-mode and single-mode fibre - making them suitable for your application whether you need to send your signals under 1km or over 20km.

The FTX202 SDI to fibre optic transmitter has two independent SDI inputs, each with one optical output. It can transmit a serial digital signal down a fibre optic cable to the FRX204: a fibre to SDI receiver offering two optical inputs and two reclocked SDI outputs per channel. Having two outputs reduces the need for distribution amplifiers after the receiver - bringing further cost and rack space savings.
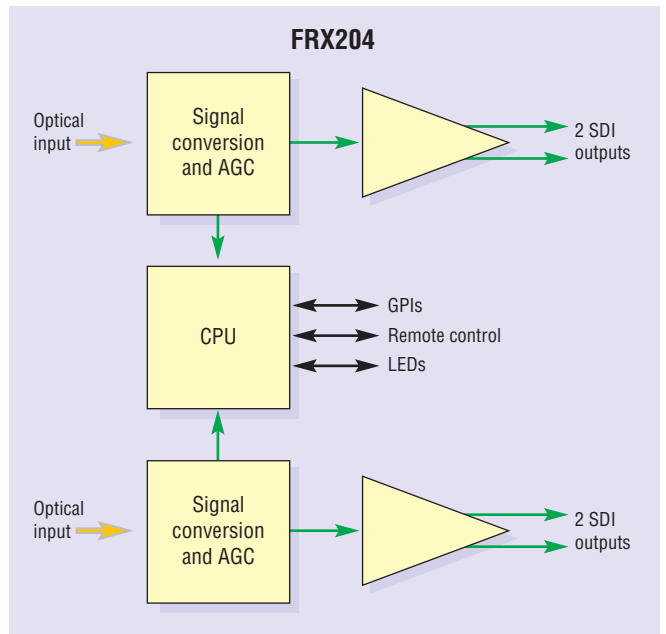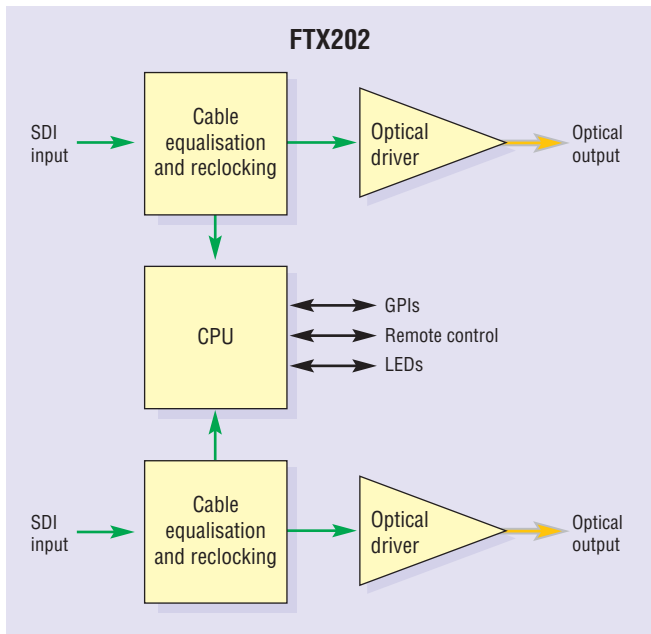
Conforming to SMPTE 297M, the 100mm x 266mm modules pass all SDI and DVB-ASI transparently. They use a Class 1 laser and follow the SMPTE recommendation by allowing for up to 12dB of loss from output to input. Useful features include the laser switching off if there is no SDI input, and a warning being given if the laser is approaching the end of its life.

There's a choice of three different frame sizes (4U, 2U and 1U), while the inputs and outputs are accessed by using the RM31 frame rear module with the FTX and the RM28 with the FRX. The flexible control options include board edge, an active front panel on the frame, a remote control panel or the Statesman PC Control System.

Ideal applications include moving signals in large installations or passing signals between OB vehicles.

With the FTX and FRX Crystal Vision once again proves it can provide a product for every broadcast environment.

- Dual channel fibre optic transmitter and dual channel fibre optic receiver
- Send digital signals (with embedded audio) over long distances
- Easy to use them with Crystal Vision's interface and keying modules: fit in latest versions of standard frames
- Work with both multi-mode and single-mode fibre
- Conform to SMPTE 297M
- Pass all SDI and DVB-ASI transparently
- Allow for up to 12dB of loss from output to input
- Space-saving: 100mm x 266mm modules allow 12 FTX or FRX in 2U (24 in 4U and six in 1U)
- Flexible control, including PC software

FTX202

FTX202 block diagram:
SDI input → Cable equalisation and reclocking → Optical driver → Optical output
CPU → GPIs, Remote control, LEDs
SDI input → Cable equalisation and reclocking → Optical driver → Optical output

FRX204

FRX204 block diagram:
Optical input → Signal conversion and AGC → 2 SDI outputs
CPU → GPIs, Remote control, LEDs
Optical input → Signal conversion and AGC → 2 SDI outputs

S P E C I F I C A T I O N

BOTH MODULES

MECHANICAL
Crystal Vision modules 266mm x 100mm
Weight: 200g
Power consumption: 3 Watts

POSITION IN FRAME
The fibre boards can be housed in any frame slot position but due to their extra height it is not possible to place Standard Definition or audio cards directly above them in even numbered slot positions. HD cards do not share this restriction

FTX202

VIDEO INPUTS
Two SDI inputs
SDI 270Mbit to EBU 3267-E and SMPTE 259M
Cable equalisation >200m Belden 8281 or equivalent
Passes all SDI and DVB-ASI signals transparently, including pathological signals
NB. Cannot pass HD signals

VIDEO OUTPUTS
One optical output per channel using frame rear module RM31
To SMPTE 297M
Fibre: Single-mode or multi-mode
Laser safety classification: Class 1 (EN 60825), Class I (21CFR1040.10)
Optical power: Max -8.5dBm, min -9.5dBm, nominal -9.0dBm/0.125mW
Fibre pigtail: Single-mode 8/125uM

Optical wavelength: 1292-1325nm
Extinction ratio: 7:1 nominal
Connector type: SC/PC

LED INDICATION OF:
Power supplies okay
SDI input present
Laser near end of life
Laser error/disabled

GPI OUTPUT LEVELS
Electrically: Open collector transistors 30V, 270Ohm current limit resistors. Pulled up to +5V through 6kOhm

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

LOCAL CONTROL
Dip switch enables/disables laser

REMOTE CONTROL
Control from frame active front panel and remote panel
Statesman allows control from any PC on a network

FRX204

VIDEO INPUTS
Two optical inputs
To SMPTE 297M
Fibre: Single-mode or multi-mode
Optical wavelength: 1200-1600nm, 1300 nominal
Input level maximum: -3dBm
Input level minimum: -22dBm
Connector type: SC

VIDEO OUTPUTS
Two reclocked SDI outputs per channel using RM28 frame rear module
Will drive SDI 270Mbit to EBU 3267-E and SMPTE 259M
Passes all SDI and DVB-ASI signals transparently, including pathological signals
NB. Cannot pass HD signals

LED INDICATION OF:
Power supplies okay
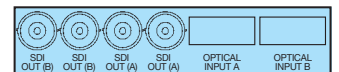Optical input present

GPI OUTPUT LEVELS
Electrically: Open collector transistors 30V, 270Ohm current limit resistors. Pulled up to +5V through 6kOhm
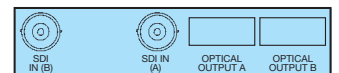
GPI OUTPUTS
Input present for each channel
Input video valid for each channel

REMOTE CONTROL
Control from frame active front panel and remote panel
Statesman allows control from any PC on a network

RM28

RM31

O R D E R I N G   I N F O R M A T I O N

FTX202	Dual SDI to fibre optic transmitter
FRX204	Dual fibre optic to SDI receiver
Indigo 4	4U frame with passive front panel for up to 24 Crystal Vision modules
Indigo 4S	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 2A	2U frame with active front panel for up to 12 Crystal Vision modules
Indigo 2S	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
Indigo 1A	1U frame with active front panel for up to six Crystal Vision modules
Indigo 1S	1U frame with passive front panel fitted with Statesman CPU for up to six Crystal Vision modules
RM28	Single slot frame rear module. Allows maximum number of FRX204s in frame (24 in 4U, 12 in 2U, six in 1U). Gives access to two optical inputs and two SDI outputs per channel
RM31	Single slot frame rear module. Allows maximum number of FTX202s in frame (24 in 4U, 12 in 2U, six in 1U). Gives access to two SDI inputs and one optical output per channel
REMIND	19" remote control panel
Statesman	PC Control System

Performance and features are subject to change. Figures given are typical measured values. FTXFRX0605