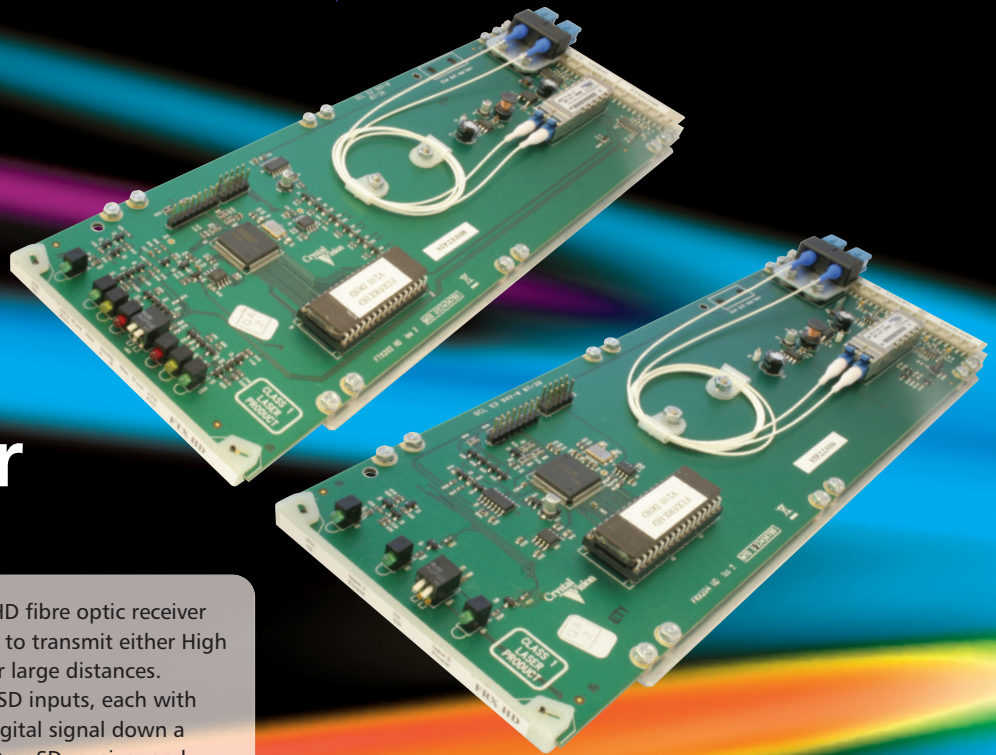


Crystal Vision

FTX HD and FRX HD fibre optic transmitter and receiver



The FTX HD fibre optic transmitter and FRX HD fibre optic receiver together provide a robust transport medium to transmit either High Definition or Standard Definition signals over large distances.

The FTX HD has two independent HD or SD inputs, each with one optical output. It can transmit a serial digital signal down a fibre optic cable to the FRX HD: a fibre to HD or SD receiver and distribution amplifier offering two optical inputs and two reclocked HD or SD outputs per channel. The fact that these single height 100mm x 266mm boards are dual channel brings both financial and rack space savings with up to 48 channels possible in a 4U frame. In addition, having two outputs reduces the need for distribution amplifiers after the receiver, bringing further savings.

The FTX HD and FRX HD meet the SMPTE 297-2006 short-haul specification. This allows operation with single-mode and multi-mode fibre, over distances of up to 22km with single-mode (SMPTE 297-2006 annex D). This makes them suitable for a wide range of applications – from moving signals in large installations to passing them between OB vehicles. The boards will pass all HD, SD and DVB-ASI transparently.

Crystal Vision has taken care to ensure your safety – with a Class I laser that will automatically switch off if there is no HD or SD input or if the laser's working parameters become out of specification. A warning is also given when the laser is approaching the end of its life. Specially modified laser modules allow the FTX HD to cope successfully with pathological test pattern signals. Wouldn't it be useful to know how much power is getting through to the receiver so you can judge the amount of headroom you have? On the FRX HD you can monitor the received power.

The FTX HD and FRX HD form a natural part of the Crystal Vision interface range – and this is one of their greatest strengths. They are housed in the standard frames (in a choice of four sizes: 4U, 2U, 1U and desk top box) which makes it remarkably easy to use them with any interface or keying board. The inputs and outputs are accessed by using the RM31 frame rear module with the FTX HD and the RM28 with the FRX HD. The flexible status monitoring options include an active front panel on the frame, a remote control panel or the Statesman PC Control System.

- Dual channel fibre optic transmitter and dual channel fibre optic receiver
- Work with both HD and SD
- Send digital signals (with embedded audio) over long distances
- Easy to use them with Crystal Vision's interface and keying modules – fit in standard frames
- Meet the SMPTE 297-2006 short-haul specification, allowing operation with single-mode and multi-mode fibre, over distances of up to 22km with single-mode
- Space-saving: 100mm x 266mm modules allow 12 FTX HD or FRX HD in 2U (24 in 4U, six in 1U and two in desk top box)

FTX HD

MECHANICAL

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

VIDEO INPUTS

Two HD or SD inputs
270Mbit to 1.485Gbit serial compliant to EBU 3267-E, SMPTE 259M and SMPTE 292M
HD cable equalisation up to 140m with Belden 1694 or equivalent (approx. 100m with Belden 8281). Cable lengths are for new HD version of frames. SD cable equalisation >250m Belden 8281 or equivalent
Input return loss: -15dB for 50MHz to 1.5GHz
Passes all HD, SD and DVB-ASI signals transparently, including pathological signals

VIDEO OUTPUTS

One optical output per channel using RM31 frame rear module
Meets the SMPTE 297-2006 short-haul specification. This allows operation with single-mode and multi-mode fibre, over distances up to 22km with single-mode (SMPTE 297-2006 annex D)
Laser safety classification: Class 1 (EN 60825), Class I (21CFR1040.10)
Optical power: Max -3.0dBm, min -9.0dBm (typical -5.0dBm or 300uW)
Fibre pigtail: Single-mode 8/125uM
Optical wavelength: 1290-1330nm (1310 typical)
Extinction ratio: 9dB
Connector type: SC/PC

POSITION IN FRAME

The FTX HD can be housed in any frame slot position but due to its extra height it is not possible to place Standard Definition or audio cards directly above it in even numbered slot positions. HD cards 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 6 kohm

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

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)

FRX HD

MECHANICAL

Crystal Vision module 266mm x 100mm
Weight: 200g
Power consumption: 2.5 Watts

VIDEO INPUTS

Two optical inputs
Meets the SMPTE 297-2006 specification. This allows operation with single-mode and multi-mode fibre over distances depending on the transmitter power, up to 22km with single-mode fibre in conjunction with the FTX HD (SMPTE 297-2006 annex D)
Optical wavelength: 1270-1610nm
Input level maximum: -1dBm
Input level minimum: -20dBm
Connector type: SC/PC

VIDEO OUTPUTS

Two reclocked HD or SD outputs per channel using RM28 frame rear module
Will drive 270Mbit to 1.485Gbit serial compliant to EBU 3267-E, SMPTE 259M and SMPTE 292M
HD cable equalisation up to 140m with Belden 1694 or equivalent (approx. 100m with Belden 8281). Cable lengths are for new HD version of frames. SD cable equalisation >250m Belden 8281 or equivalent
Passes all HD, SD and DVB-ASI signals transparently, including pathological signals

POSITION IN FRAME

The FRX HD can be housed in any frame slot position but due to its extra height it is not possible to place Standard Definition or audio cards directly above it in even numbered slot positions. HD cards 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 6 kohm

GPI OUTPUTS

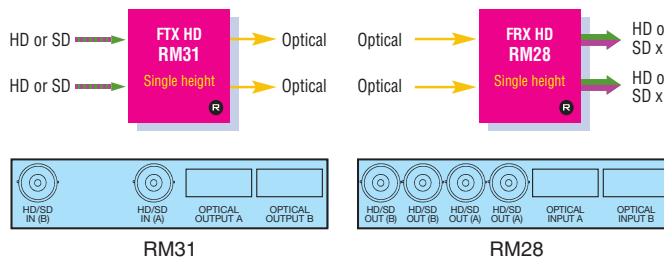
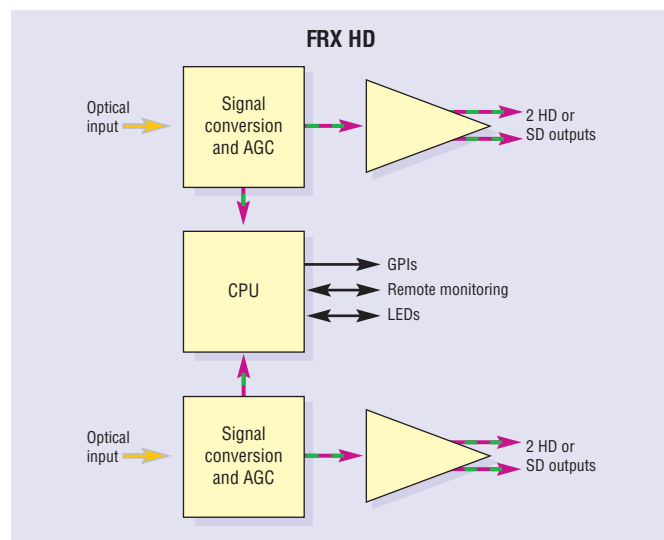
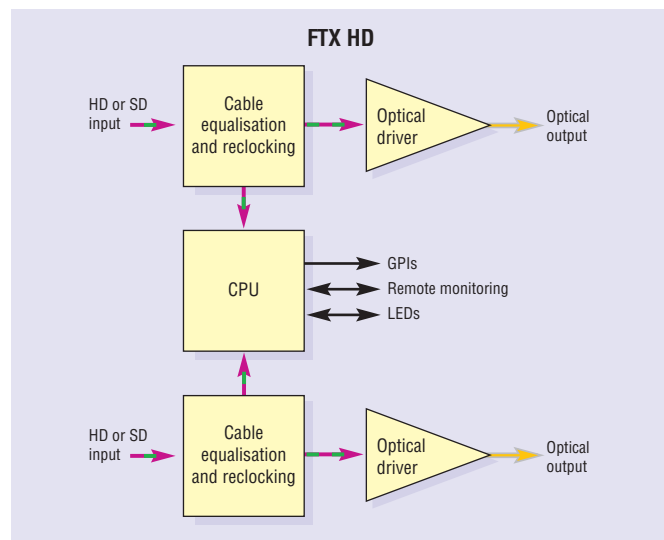
Input present for each channel

LOCAL CONTROL

Selectable HD/SD slew rate

REMOTE CONTROL

Monitor 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



ORDERING INFORMATION

FTX HD	Dual HD or SD to fibre optic transmitter
FRX HD	Dual fibre optic to 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
RM28	Single slot frame rear module. Allows maximum number of FRX HD in frame (24 in 4U, 12 in 2U, six in 1U, two in desk top box). Gives access to two optical inputs and two HD or SD outputs per channel
RM31	Single slot frame rear module. Allows maximum number of FTX HD in frame (24 in 4U, 12 in 2U, six in 1U, two in desk top box). Gives access to two HD or SD inputs and one optical output per channel
REMIND	19" remote control panel
REMIND-E	19" Ethernet remote control panel
Statesman	PC Control System

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