

## 3G/HD/SD-SDI/ASI Fibre Optic Transceiver

## FEATURES

- Transports 3G-SDI, HD-SDI, SD-SDI or ASI signal rates.
- Single or bi-directional operation possible with independent transmit and receive functions on the one card.
- Path lengths up to 30 dB<sup>1</sup> optical path loss using 9/125µm single mode fibre.
- Automatic changeover switching of input for signal redundancy on Tx.
- LED indicators and external alarm contacts.
- Fibre, video and alarm connections at rear.
- Remote monitoring via SNMP.
- Optional on-board WDM<sup>2,3</sup> optical combiner for use on a single common fibre.

## GENERAL

The IRT DTR-4630 is a transmit/receive (transceiver) module designed principally for use as a serial data fibre optic transmission link for 3G-SDI, HD-SDI or SD-SDI applications conforming to SMPTE standards 424M, 292M and 259M-C using 9/125 µm single mode fibre. This enables the use of space saving fibre optic cable for reliable transmission of digital video signals over lengths greater than can be achieved with coaxial cable.

In addition, the link may be used for ASI transport streams for use with MPEG compressed video streams or other 270 Mb/s type data.

The transmitter section features automatic input cable equalisation. LED indicators are provided for digital signal presence and rate, DC power and LASER failure.

A “keep link alive” signal is available to maintain optical link operation when no electrical input is present.

Two inputs are provided with automatic changeover to input 2 on loss of input 1 for input signal redundancy.

The receiver section uses a choice of either a PIN photodiode or APD detector with signal conditioning and reclocking circuits. The data rate is automatically set to match the 3G-SDI, HD-SDI or SD-SDI/ASI rates dependent on the actual input data rate to the transmitter.

Two serial digital outputs are provided. LED indicators are provided for digital signal presence & type, optical loss and power.

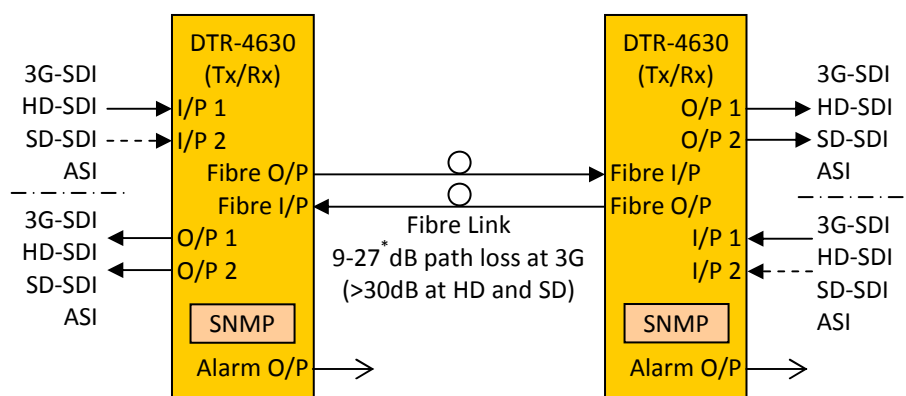
Relay contact outputs are also provided for external use of alarm signals.

The DTR-4630 can be used as an independent transmitter and receiver at the same time allowing bi-directional operation over two single mode fibres. Being independent from each other, the transmit and receive signals can be of mixed signal types.

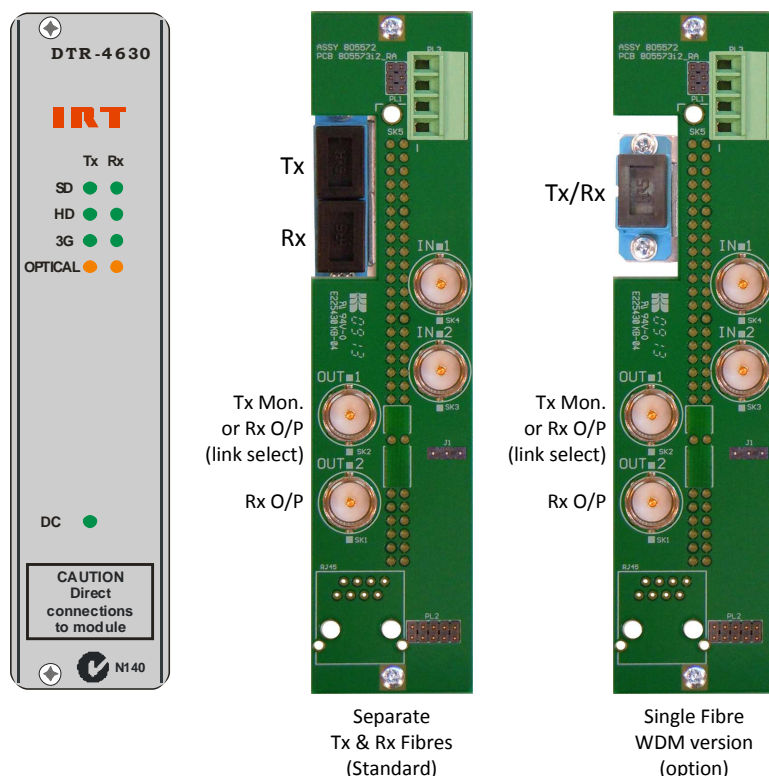
Optionally a 1310/1550nm WDM<sup>2,3</sup> optical combiner can be fitted to allow for combined use on a single fibre.

SNMP (Simple Network Management Protocol) is available for remote monitoring when used in conjunction with an IRT frame fitted with SNMP capability.

## BLOCK DIAGRAM DTR -4630 SIGNAL PATH



NOTE: \* Fitted with APD detector. 3-18dB when fitted with PIN detector.



- NOTE 1** 27dB path loss at 3G. Typically >30dB at HD and SD. Fitted with APD detector.
- 2** With WDM option fitted for combined use on a single fibre, optical path loss is reduced by approximately 2dB.
- 3** With WDM option fitted, when operating as a pair, one DTR-4630 must be fitted with a 1310nm laser and the other a 1550nm laser.

Due to our policy of continuing development, these specifications are subject to change without notice.

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## TECHNICAL SPECIFICATIONS

## Transmitter:

Input serial data signal	2.97 Gb/s (3G-SDI) to SMPTE 424M; 1.485 Gb/s (HD-SDI) to SMPTE 292M; 270 Mb/s (SD-SDI) to SMPTE 259M-C and DVB-ASI.
Input impedance	75 $\Omega$ .
Input return loss	> 15 dB 5 MHz to 1.5 GHz; > 10 dB 1.5 GHz to 2.97 GHz.
Automatic cable compensation	> 100 m at 2.97 Gb/s (3G-SDI) with Belden 1694A (typ. 110m); > 100 m at 1.485 Gb/s (HD-SDI) with Belden 1694A (typ. 160m); > 250 m at 270 Mb/s (SD-SDI/ASI) with Belden 8281 (typ. >300m).
Input connector	2 x BNC on rear panel, with I/P 1 taking priority & I/P 2 automatically switching in on loss of I/P 1.
Output connector	1 x BNC (OUT 1) on rear panel, link selectable Tx input monitor, or nil if set as a second Rx output.

## Receiver:

Number of outputs	2 data reclocked, AC coupled.
Output level	800 mV $\pm$ 10%.
Output impedance	75 $\Omega$ .
Output return loss	> 15 dB 5 MHz to 1.5 GHz; > 10 dB 1.5 GHz to 2.97 GHz.
Output rise and fall time	< 135 ps at 2.97 Gb/s and 1.485 Gb/s; > 0.4 ns and < 1.5 ns at 270 Mb/s.
Intrinsic jitter	< 0.3 UI at 2.97 Gb/s reclocked; < 0.2 UI at 1.485 Gb/s reclocked; < 0.1 UI at 270 Mb/s reclocked.
Output connector	2 x BNC on rear assembly, or 1 x BNC if OUT 1 has been link selected as an input monitor.

## Optical:

Optical output	0 dBm +4.5/-0 dB CWDM DFB laser.
Optical input	APD detector, -9 to -27 dBm input level at 3G-SDI, typically < -30 dBm at HD/SD-SDI. PIN detector, -3 to -18 dBm input level at 3G-SDI, typically < -20 dBm at HD/SD-SDI.
Available wavelengths	1310nm or 1550nm. Other wavelengths available upon request.
Optical path loss <sup>4, 5</sup>	9 to 27 dB at 3G-SDI, typically >30 dB at HD/SD-SDI, APD detector; 3 to 18 dB at 3G-SDI, typically >20 dB at HD/SD-SDI, PIN detector. (Optical path loss = Laser O/P power – Detector I/P power)
Optical fibre	Designed for use with 9/125 $\mu$ m single mode fibre.
Optical connector	2 x SC/PC (standard) on rear – direct connection to main card, 1 Tx and 1 Rx; 1 x SC/PC (standard) with WDM option fitted.

## Power Requirements:

Voltage	28 Vac CT (14-0-14) or $\pm$ 16 Vdc.
Power consumption	< 5.0 VA.

## Other:

Temperature range	0 - 50° C ambient.
Mechanical	For mounting in IRT 19" rack chassis with input, output and power connections on the rear panel.
Finish	Grey, black lettering & red IRT logo.
Front panel	Detachable silk-screened PCB with direct mount connectors to Eurocard and external signals.
Rear assembly	
Dimensions	6 HP x 3 U x 220 mm IRT Eurocard.
Optional accessories	On-board 1310/1550nm WDM <sup>6</sup> combiner.
WDM order codes	DTR-4630/1310/WDM & DTR-4630/1550/WDM.

NOTE:	4	Typical values based using DFB laser. Optical attenuator supplied for when optical path loss is less than 3dB for PIN detector and 9dB for APD detector.
	5	With WDM option fitted for combined use on a single fibre, optical path loss is reduced by approximately 2dB.
	6	With WDM module fitted, when operating as a pair, one DTR-4630 must be fitted with a 1310nm laser and the other a 1550nm laser.