

12G/6G/3G/HD/SD-SDI/ASI Fibre Optic Transceiver

FEATURES

- Transports 12G-SDI, 6G-SDI, 3G-SDI, HD-SDI, SD-SDI or ASI signal rates.
- Suitable for 4K/UHD video.
- Single or bi-directional operation possible with independent transmit and receive functions on the one card.
- Path lengths up to 16 dB¹ optical path loss using 9/125µm single mode fibre.
- DashBoard™ software monitoring and control.

GENERAL

With the advent of 4K/UHD television, distribution of higher data rate video signals up to 11.88 Gb/s (12G-SDI) has become necessary which can't always be achieved via coaxial cable.

The IRT-6640-DTR is a transmit/receive (transceiver) module designed principally for use as a serial data fibre optic transmission link for 12G-SDI, 6G-SDI, 3G-SDI, HD-SDI or SD-SDI applications conforming to SMPTE standards 2082-1, 2081-1, 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 IRT-6640-DTR can be used as an independent transmitter and receiver at the same time allowing bi-directional operation over a single mode fibre. Transmit and receive functions are combined via a 1310/1550nm WDM optical combiner².

Optionally the WDM optical combiner may be omitted³ to allow for two separate fibres each terminated with an LC/PC style of connector.

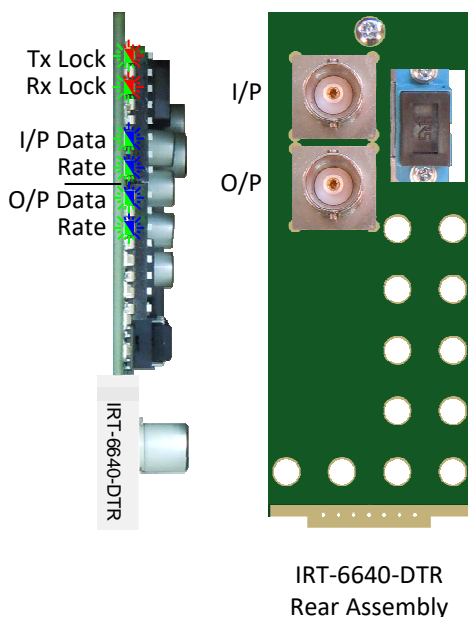
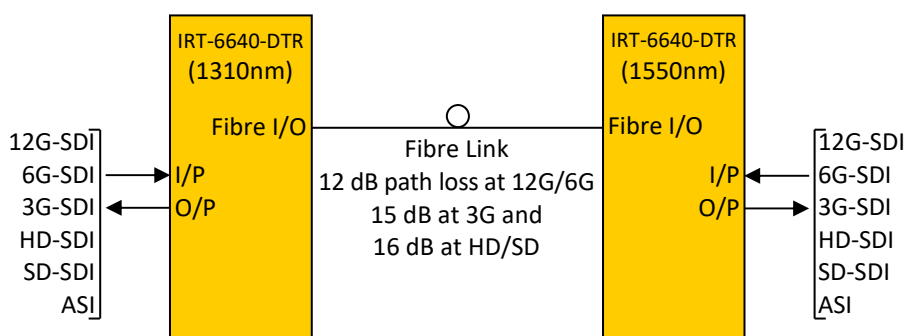
Being independent from each other, the transmit and receive signals can be of mixed signal types.

The receiver uses a PIN detector with a signal conditioning and reclocking circuit. The data rate is automatically set to match the 12G-SDI, 6G-SDI, 3G-SDI, HD-SDI or SD-SDI/ASI rate dependent on the actual input data rate to the transmitter.

The IRT-6640-DTR is designed to fit the openGear® standard 2RU frames which allow a mixture of cards from various manufacturers to be mounted within the same frame.

Remote monitoring is possible via openGear's DashBoard™ control software, which is available as a free download.

BLOCK DIAGRAM IRT-6640-DTR SIGNAL PATH



- NOTE 1** 16 dB path loss at HD/SD, 15 dB at 3G and 12 dB at 12G/6G. Fitted with PIN detector.
- NOTE 2** With WDM option fitted (standard), when operating as a pair, one IRT-6640-DTR must be fitted with a 1310nm laser and the other a 1550nm laser.
- NOTE 3** With WDM option omitted, the optical path loss increases by approximately 2 dB. Optical I/O connector replaced with a dual LC/PC connector.

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

TECHNICAL SPECIFICATIONS

(Preliminary)

Transmitter:

Input serial data signal	11.88 Gb/s (12G-SDI) to SMPTE 2082-1; 5.94 Gb/s (6G-SDI) to SMPTE 2081-1; 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 Ω.
Input return loss	> 15 dB 5 MHz to 1.5 GHz; > 10 dB 1.5 GHz to 2.97 GHz.
Automatic cable compensation	> 50m at 11.88 Gb/s (12G-SDI) with RG6/U; > 100m at 5.94 Gb/s (6G-SDI) with RG6/U; > 150 m at 2.97 Gb/s (3G-SDI) with Belden 1694A; > 150 m at 1.485 Gb/s (HD-SDI) with Belden 1694A; > 300 m at 270 Mb/s (SD-SDI/ASI) with Belden 8281.
Input connector	1 x BNC on rear assembly.

Receiver:

Number of outputs	1 data reclocked, AC coupled.
Output level	800 mV ± 10%.
Output impedance	75 Ω.
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	1 x BNC on rear assembly.

Optical:

Optical output	0 dBm +5/-0 dB CWDM DFB laser.
Optical input	PIN detector, (0dBm to) -12 dBm at 12G/6G-SDI, -15 dBm at 3G-SDI and -16 dBm at HD/SD-SDI.
Available wavelengths	CWDM DFB laser- 1310nm or 1550nm.
Optical path loss	0 to 12 dB at 12G/6G-SDI, 15 dB at 3G-SDI and 16 dB at HD/SD-SDI. (Optical path loss = Laser O/P power – Detector I/P power)
Optical fibre	Designed for use with 9/125 µm single mode fibre.
Optical connector	1 x SC/PC (standard) on rear – direct connection to main card. (Optical output and optical input combined via on-board WDM).

Power Requirements:

Voltage	+ 12 Vdc.
Power consumption	< 5 VA.

Other:

Temperature range	0 - 50° C ambient.
Mechanical	Suitable for mounting in an openGear® 2RU rack chassis.
Dimensions (openGear® standard)	33.6 mm x 2U x 325 mm.

Supplied accessories	Rear connector assembly.
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Ordering:

IRT-6640-DTR/1310	IRT-6640-DTR fitted with 1310nm/PIN transceiver and optical combiner module, programmed with DashBoard™ control.
IRT-6640-DTR/1550	IRT-6640-DTR fitted with 1550nm/PIN transceiver and optical combiner module, programmed with DashBoard™ control.