

- Fiber re-use between hubs and headends
- Conversion of analog to digital returns signal at a hub location
- High-speed Internet communications
- Pay-per-view
- Video-on-Demand
- Telephony

The RDT4049 series of DWDM digital return path transmitters allows operators to maximize optical fiber re-use between hubs and headends in a hybrid fiber/coaxial (HFC) cable television network.

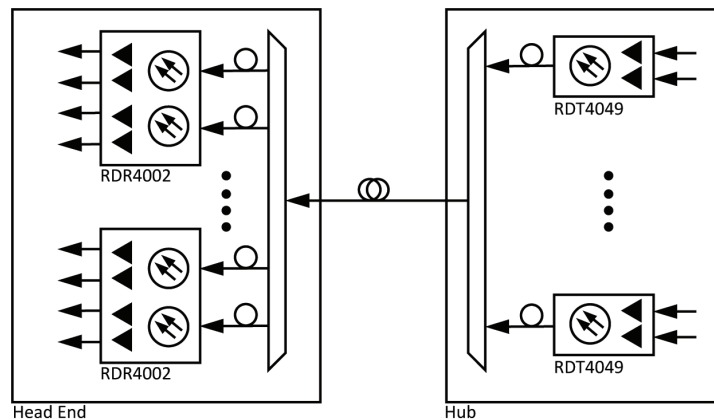
A RDT4049A or RDT4049E return transmitter digitizes two 5-42 MHz or 5-65 MHz analog streams, respectively, using two 12-bit analog-to-digital converters, and multiplexes them into a single digital stream. The digital return receiver in the head end de-multiplexes the single stream into its two constituent digitized streams and converts them back to analog signals.

Advantages of this type of transmission system are:

- The user can multiplex up to 40 wavelengths onto one fiber, thereby maximizing the fiber re-use between a hub location and the headend and minimizing the construction cost of new fiber routes
- The cost of the laser in the transmitter is shared between two analog inputs, making such systems more economical than two comparable analog links
- The link performance is independent of the fiber distance and link loss (up to the maximum specified values)
- Such systems are easier to set up than analog optical links

The key features of the RDT4049 transmitters are:

- Two model types optimized for different return bandwidths: RDT4049A for 5-42 MHz and RDT4049E for 5-65 MHz
- Compatible with HLP4200 or HLP4800 Indoor Optics Platforms via the HMC4008 Module Carrier
- Up to 10 transmitters (optical outputs) in 3-RU;
- Up to 40 wavelengths;
- +7 dBm optical output power;
- 12-bit sampling resolution for excellent signal-to-noise performance



Typical Application Block Diagram

OPTICAL OUTPUT

Output Power	7 dBm
Wavelengths	
RDT4049A/E-C59-AS	1530.33 nm
RDT4049A/E-C58-AS	1531.12 nm
RDT4049A/E-C57-AS	1531.90 nm
RDT4049A/E-C56-AS	1532.68 nm
RDT4049A/E-C55-AS	1533.47 nm
RDT4049A/E-C54-AS	1534.25 nm
RDT4049A/E-C53-AS	1535.04 nm
RDT4049A/E-C52-AS	1535.82 nm
RDT4049A/E-C51-AS	1536.61 nm
RDT4049A/E-C50-AS	1537.40 nm
RDT4049A/E-C49-AS	1538.19 nm
RDT4049A/E-C48-AS	1538.98 nm
RDT4049A/E-C47-AS	1539.77 nm
RDT4049A/E-C46-AS	1540.56 nm
RDT4049A/E-C45-AS	1541.35 nm
RDT4049A/E-C44-AS	1542.14 nm
RDT4049A/E-C43-AS	1542.94 nm
RDT4049A/E-C42-AS	1543.73 nm
RDT4049A/E-C41-AS	1544.53 nm
RDT4049A/E-C40-AS	1545.32 nm
RDT4049A/E-C39-AS	1546.12 nm
RDT4049A/E-C38-AS	1546.92 nm
RDT4049A/E-C37-AS	1547.72 nm
RDT4049A/E-C36-AS	1548.51 nm
RDT4049A/E-C35-AS	1549.32 nm
RDT4049A/E-C34-AS	1550.12 nm
RDT4049A/E-C33-AS	1550.92 nm
RDT4049A/E-C32-AS	1551.72 nm
RDT4049A/E-C31-AS	1552.52 nm
RDT4049A/E-C30-AS	1553.33 nm
RDT4049A/E-C29-AS	1554.13 nm
RDT4049A/E-C28-AS	1554.94 nm
RDT4049A/E-C27-AS	1555.75 nm
RDT4049A/E-C26-AS	1556.56 nm
RDT4049A/E-C25-AS	1557.36 nm
RDT4049A/E-C24-AS	1558.17 nm
RDT4049A/E-C23-AS	1558.98 nm
RDT4049A/E-C22-AS	1559.79 nm
RDT4049A/E-C21-AS	1560.61 nm
RDT4049A/E-C20-AS	1561.42 nm
Optical Connector Type	SC/APC, E2000
Line Data Rate at Laser Output	2.1 Gbps (for RDT 4049A) 3.2 Gbps (for RDT 4049E)
Laser Type	Isolated cooled DFB

RF INPUT

Number of analog channel inputs	2
Pass band	5-42 MHz (RDT 4049A) 5-65 MHz (RDT 4049E)
Input return loss	>16 dB over the pass band
Nominal RF input level to achieve 41 dB NPR	-65 dBmV/Hz (at full gain)

LINK PERFORMANCE (INCLUDING RDR4002A OR RDR4002E)

Link gain	>37 dB with pad set to 0 dB in both transmitter and receiver
Frequency response flatness	< 2 dB (peak to valley)
Dynamic range at 41 dB NPR	5-40 MHz noise loading >13 dB for RDT 4049A 5-65 MHz noise loading >9 dB for RDT 4049E
Dispersion-limited fiber reach (for SMF-28 without dispersion compensation)	90 km maximum for RDT 4049A 60 km maximum for RDT 4049E

USER INTERFACE

RF attenuation range	0 to 14 dB in 2-dB steps
RF test point	-20 dBc (relative to each RF input)
RF test point connector	GSK male
Module LED	Green: normal Red: module alarm

NETWATCH™ ELEMENT MONITORING SYSTEM

Output Power	Monitored via EMS
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POWER REQUIREMENTS

Maximum power consumption	22 W
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ENVIRONMENTAL

Operating temperature range	32° to 122°F (0°C to 50°C)
Storage temperature range	-40°F to 185°F (-40°C to 85°C)
Operating humidity	90% RH (non-condensing)

PHYSICAL

Dimensions (HxWxD)	1.25" x 4.4" x 11.5" 3.2 cm x 101.32 cm 29.2 cm
Weight	3.3 lbs. (1.5 kg)
Mounting	HLP 4200 or HLP 4800 Indoor Optics Platform via the HMC 4008 carrier (ten transmitters [optical outputs] in 3 RU)