

## Laser Link<sup>®</sup> Return Digital Receiver with Ethernet

### Description

The Laser Link<sup>®</sup> Return Digital Receiver with Ethernet is a digital, return path receiver that has the capability of adding an Ethernet module that can provide point-to-point 10 Mbps and 100 Mbps Ethernet drops. This product must be used in conjunction with the Proteus<sup>™</sup> Node Return Digital Transmitter with Ethernet.

The base shelf receiver module (left half of photo shown) converts an optical signal to a digitized, electrical signal. It de-multiplexes the serial bit stream and then converts the digital signal back to the two original 5-42 MHz RF signals. The Ethernet shelf transmitter module attaches to the base module and provides up to five full duplex 10Base-TL and one 100Base-TX Ethernet drops.



### Features

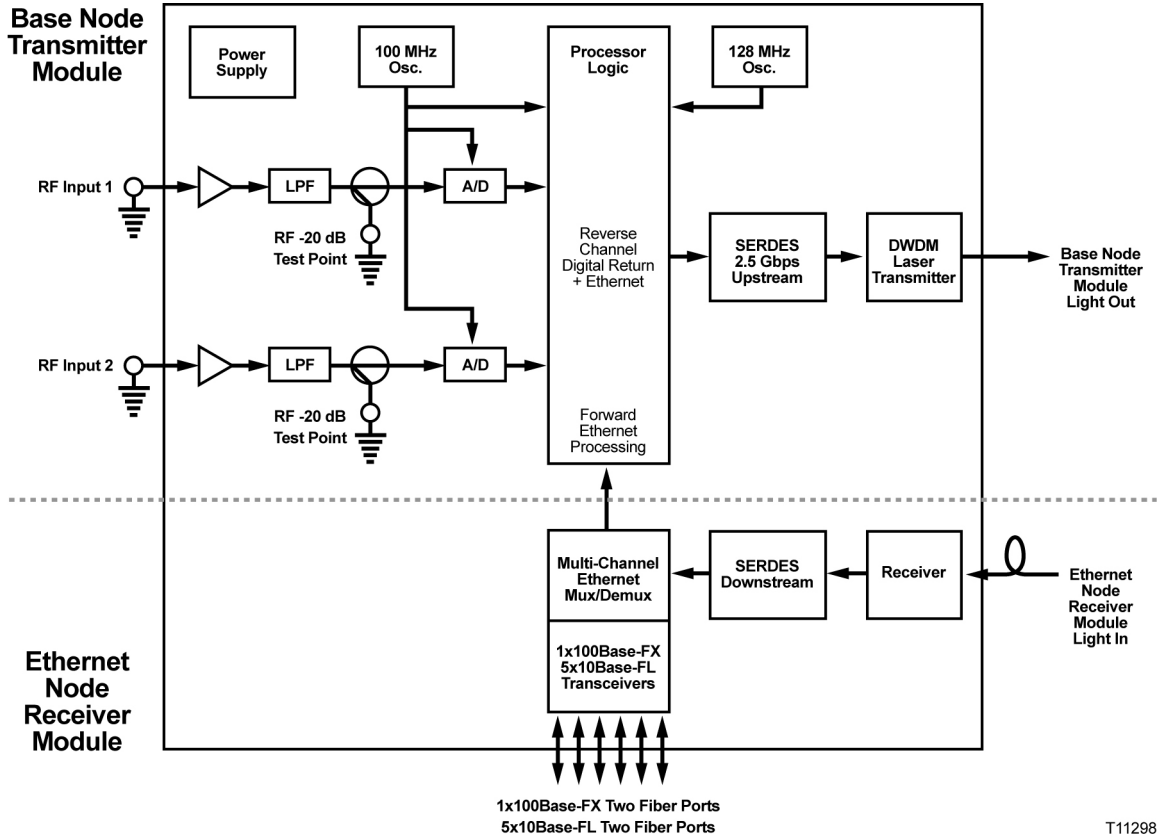
- Multiple point-to-point Ethernet drop capability
- More efficient use of fiber
- More efficient use of rack space in the headend/hub
- Two separate RF signals per base shelf receiver module
- Cost-effective; two return RF signals per base shelf receiver module
- Enhanced security through digital transmission
- Up to 20 optical wavelengths over a single fiber
- Up to five 10 Mbps and one 100 Mbps Ethernet drops per Ethernet shelf transmitter module
- Individual RJ-45 connectors for each Ethernet drop
- Up to 40 return path signals over a single fiber
- 14 base shelf receiver modules per shelf
- Network management (status monitoring) ready
- -20 dB RF output test points



# Return Digital Receiver with Ethernet



## Block Diagram

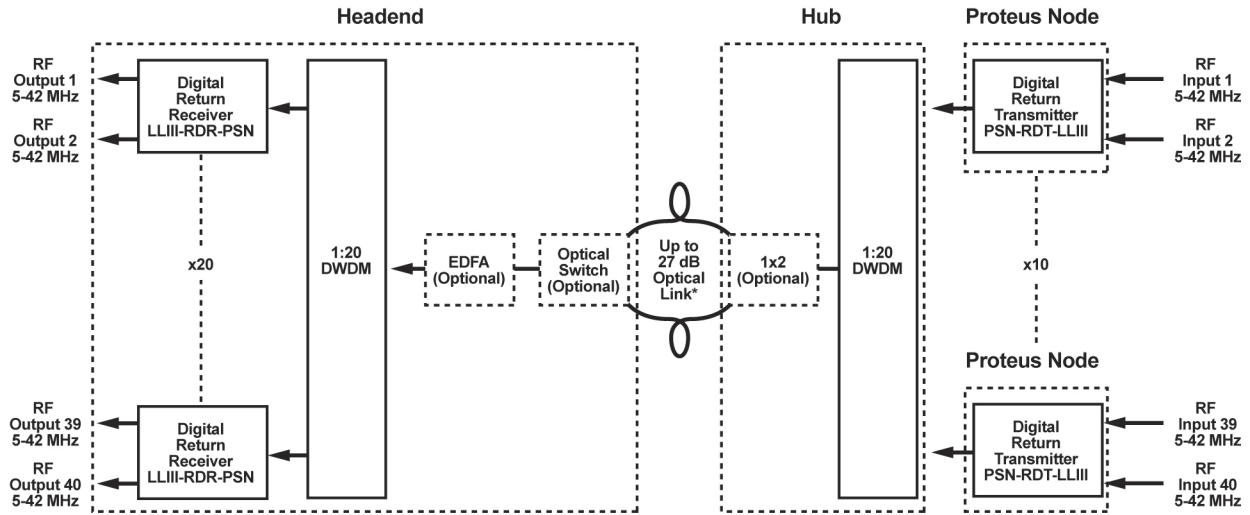


# Return Digital Receiver with Ethernet



## Network Diagrams

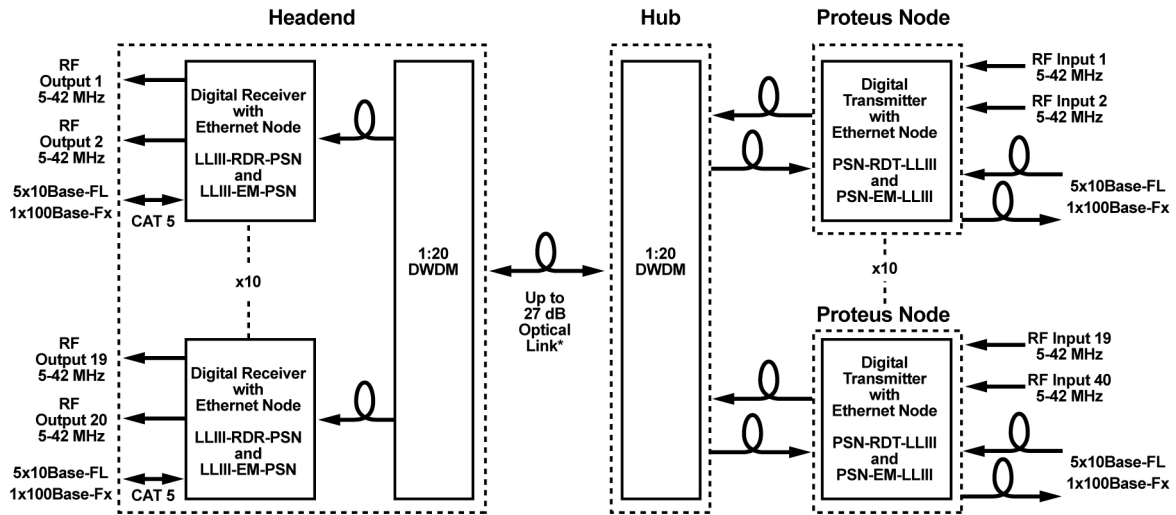
### Ethernet Capable Digital Return without Ethernet Modules Deployed, Optional 1:1 Fiber Link Protection



\*Note: 27 dB Includes DWDM, Optical Switch and Fiber Link Losses  
It Does Not Include Any Additional Amplification From the EDFA

T11300

### Ethernet Capable Digital Return with Ethernet Modules Deployed, Point-to-Point over Single Fiber Configuration



\*Note: 27 dB Includes DWDM and Fiber Link Losses  
It Does Not Include Any Additional Amplification From the EDFA

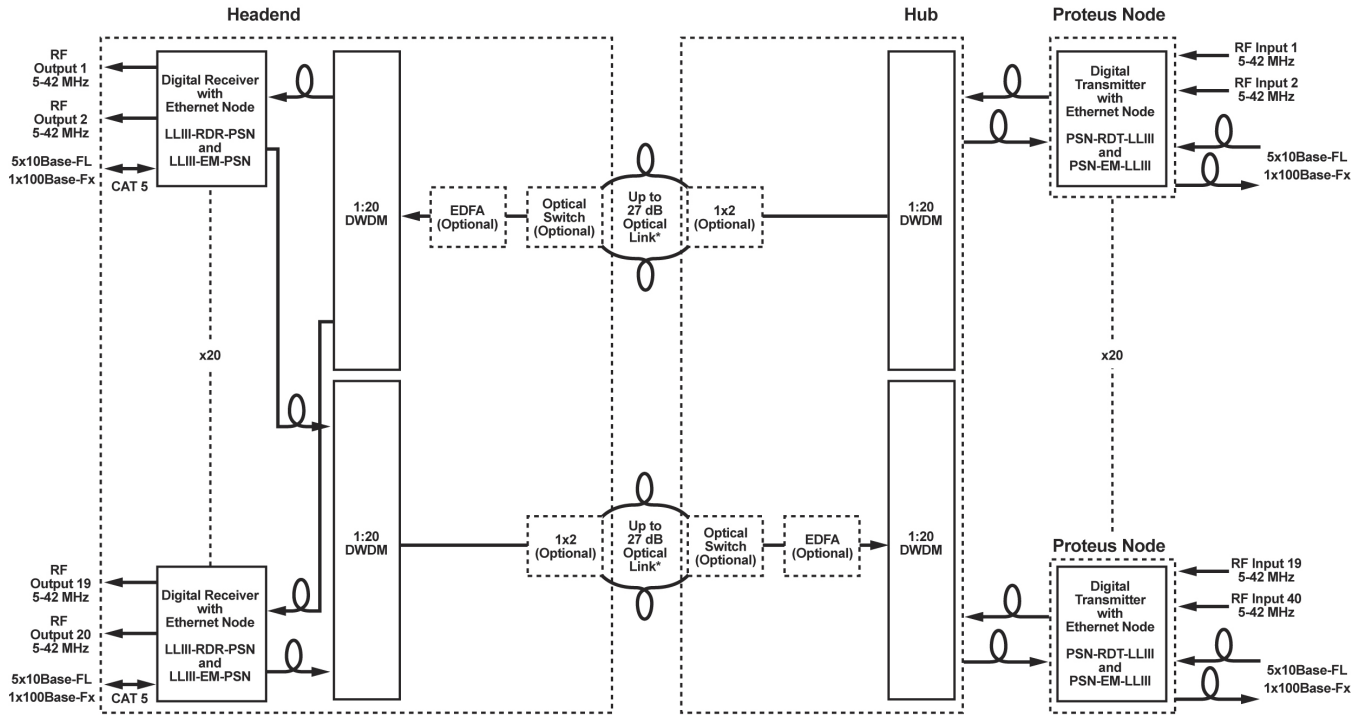
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# Return Digital Receiver with Ethernet



## Network Diagrams, continued

### Ethernet Capable Digital Return with Ethernet Modules Deployed, Optional 1:1 Fiber Link Protection



\*Note: 27 dB Includes DWDM and Fiber Link Losses  
It Does Not Include Any Additional Amplification From the EDFA

T11302

# Return Digital Receiver with Ethernet



## Specifications

Electrical Specifications	Units	Value	Notes
RF Output Level	dBmV/Hz	-21 nominal > -28 minimum	1
RF Output Level	dBmV	45 nominal 38 minimum	1
RF Input Return Loss	dB	18	
Base Shelf Receiver Module Optical Input	dBm	-3 to -20	
Ethernet Shelf Transmitter Module Optical Output	dBm	7 to $\pm 0.5$	
Base Shelf Receiver Module Current Draw	mA	500 maximum 438 typical	
Ethernet Shelf Transmitter Module Current Draw	mA	500 maximum 354 typical	
Ethernet Throughput	minimum	99.95%	

Physical Specifications	Units	Value	Notes
Operating Temperature	$^{\circ}$ F $^{\circ}$ C	-40 to 140 -40 to 60	2
Base Shelf Receiver Module Dimensions (H x W x D)	in. cm	5.25 x 1.07 x 13.5 13.3 x 2.72 x 34.3	
Ethernet Shelf Transmitter Module Dimensions (H x W x D)	in. cm	5.25 x 1.07 x 13.5 13.3 x 2.72 x 34.3	
Base Shelf Receiver Module Weight	lbs. kg	2 0.91	
Ethernet Shelf Transmitter Module Weight	lbs. kg	2 0.91	
Base Node Transmitter Module Optical Connector		SC/APC	
Ethernet Node Receiver Module Optical Connector		SC/APC	
Ethernet Drop Connectors x 6		RJ-45	3

### Notes:

1. Minimum RF output -28 dBmV/Hz (38 dBmV) for a 40 dB NPR
2. External Chassis temperature
3. In compliance with 802.3 Ethernet specification.

# Return Digital Receiver with Ethernet



## Ordering Information

Model Number	Description	Part Number
LLIII-RDR-PSN-SCA	Base Laser Link Shelf Receiver Module, SC/APC	263640
LLIII-EM-PSN-1560.61-SCA	Laser Link Shelf Ethernet Tx Module, 1560.61 nm, Ch. 21, SC/APC	263643
LLIII-EM-PSN-1558.98-SCA	Laser Link Shelf Ethernet Tx Module, 1558.98 nm, Ch. 23, SC/APC	263645
LLIII-EM-PSN-1557.36-SCA	Laser Link Shelf Ethernet Tx Module, 1557.36 nm, Ch. 25, SC/APC	263647
LLIII-EM-PSN-1555.75-SCA	Laser Link Shelf Ethernet Tx Module, 1555.75 nm, Ch. 27, SC/APC	263649
LLIII-EM-PSN-1554.13-SCA	Laser Link Shelf Ethernet Tx Module, 1554.13 nm, Ch. 29, SC/APC	263651
LLIII-EM-PSN-1552.52-SCA	Laser Link Shelf Ethernet Tx Module, 1552.52 nm, Ch. 31, SC/APC	263653
LLIII-EM-PSN-1550.92-SCA	Laser Link Shelf Ethernet Tx Module, 1550.92 nm, Ch. 33, SC/APC	263655
LLIII-EM-PSN-1549.32-SCA	Laser Link Shelf Ethernet Tx Module, 1549.32 nm, Ch. 35, SC/APC	263657
LLIII-EM-PSN-1547.72-SCA	Laser Link Shelf Ethernet Tx Module, 1547.72 nm, Ch. 37, SC/APC	263659
LLIII-EM-PSN-1546.12-SCA	Laser Link Shelf Ethernet Tx Module, 1546.12 nm, Ch. 39, SC/APC	263661
LLIII-EM-PSN-1544.53-SCA	Laser Link Shelf Ethernet Tx Module, 1544.53 nm, Ch. 41, SC/APC	263663
LLIII-EM-PSN-1542.94-SCA	Laser Link Shelf Ethernet Tx Module, 1542.94 nm, Ch. 43, SC/APC	263665
LLIII-EM-PSN-1541.35-SCA	Laser Link Shelf Ethernet Tx Module, 1541.35 nm, Ch. 45, SC/APC	263667
LLIII-EM-PSN-1539.77-SCA	Laser Link Shelf Ethernet Tx Module, 1539.77 nm, Ch. 47, SC/APC	263669
LLIII-EM-PSN-1538.19-SCA	Laser Link Shelf Ethernet Tx Module, 1538.19 nm, Ch. 49, SC/APC	263671
LLIII-EM-PSN-1536.61-SCA	Laser Link Shelf Ethernet Tx Module, 1536.61 nm, Ch. 51, SC/APC	263673
LLIII-EM-PSN-1535.04-SCA	Laser Link Shelf Ethernet Tx Module, 1535.04 nm, Ch. 53, SC/APC	263675
LLIII-EM-PSN-1533.47-SCA	Laser Link Shelf Ethernet Tx Module, 1533.47 nm, Ch. 55, SC/APC	263677
LLIII-EM-PSN-1531.90-SCA	Laser Link Shelf Ethernet Tx Module, 1531.90 nm, Ch. 57, SC/APC	263679
LLIII-EM-PSN-1530.33-SCA	Laser Link Shelf Ethernet Tx Module, 1530.33 nm, Ch. 59, SC/APC	263681

Model Number	Description	Part Number
LLIII-RDRwEM-PSN-1560.61-SCA	Laser Link Digital Return Rx with Ethernet Tx Module, 1560.61 nm, Ch. 21, SC/APC	254943
LLIII-RDRwEM-PSN-1558.98-SCA	Laser Link Digital Return Rx with Ethernet Tx Module, 1558.98 nm, Ch. 23, SC/APC	254945
LLIII-RDRwEM-PSN-1557.36-SCA	Laser Link Digital Return Rx with Ethernet Tx Module, 1557.36 nm, Ch. 25, SC/APC	254947
LLIII-RDRwEM-PSN-1555.75-SCA	Laser Link Digital Return Rx with Ethernet Tx Module, 1555.75 nm, Ch. 27, SC/APC	254949
LLIII-RDRwEM-PSN-1554.13-SCA	Laser Link Digital Return Rx with Ethernet Tx Module, 1554.13 nm, Ch. 29, SC/APC	254951
LLIII-RDRwEM-PSN-1552.52-SCA	Laser Link Digital Return Rx with Ethernet Tx Module, 1552.52 nm, Ch. 31, SC/APC	254953
LLIII-RDRwEM-PSN-1550.92-SCA	Laser Link Digital Return Rx with Ethernet Tx Module, 1550.92 nm, Ch. 33, SC/APC	254955
LLIII-RDRwEM-PSN-1549.32-SCA	Laser Link Digital Return Rx with Ethernet Tx Module, 1549.32 nm, Ch. 35, SC/APC	254957
LLIII-RDRwEM-PSN-1547.72-SCA	Laser Link Digital Return Rx with Ethernet Tx Module, 1547.72 nm, Ch. 37, SC/APC	254959
LLIII-RDRwEM-PSN-1546.12-SCA	Laser Link Digital Return Rx with Ethernet Tx Module, 1546.12 nm, Ch. 39, SC/APC	254961
LLIII-RDRwEM-PSN-1544.53-SCA	Laser Link Digital Return Rx with Ethernet Tx Module, 1544.53 nm, Ch. 41, SC/APC	254963
LLIII-RDRwEM-PSN-1542.94-SCA	Laser Link Digital Return Rx with Ethernet Tx Module, 1542.94 nm, Ch. 43, SC/APC	254965
LLIII-RDRwEM-PSN-1541.35-SCA	Laser Link Digital Return Rx with Ethernet Tx Module, 1541.35 nm, Ch. 45, SC/APC	254967
LLIII-RDRwEM-PSN-1539.77-SCA	Laser Link Digital Return Rx with Ethernet Tx Module, 1539.77 nm, Ch. 47, SC/APC	254969
LLIII-RDRwEM-PSN-1538.19-SCA	Laser Link Digital Return Rx with Ethernet Tx Module, 1538.19 nm, Ch. 49, SC/APC	254971
LLIII-RDRwEM-PSN-1536.61-SCA	Laser Link Digital Return Rx with Ethernet Tx Module, 1536.61 nm, Ch. 51, SC/APC	254973
LLIII-RDRwEM-PSN-1535.04-SCA	Laser Link Digital Return Rx with Ethernet Tx Module, 1535.04 nm, Ch. 53, SC/APC	254975
LLIII-RDRwEM-PSN-1533.47-SCA	Laser Link Digital Return Rx with Ethernet Tx Module, 1533.47 nm, Ch. 55, SC/APC	254977
LLIII-RDRwEM-PSN-1531.90-SCA	Laser Link Digital Return Rx with Ethernet Tx Module, 1531.90 nm, Ch. 57, SC/APC	254979
LLIII-RDRwEM-PSN-1530.33-SCA	Laser Link Digital Return Rx with Ethernet Tx Module, 1530.33 nm, Ch. 59, SC/APC	254981



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