# **RF Solutions**

RF

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**RF over Fiber Transport** 

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### Introduction

Evertz RF over Fiber modules are the most sophisticated and proven products in the industry, delivering reliable RF performance over short and long haul distances for over a decade. With the largest install base worldwide for RF over Fiber products, Evertz RF solutions are trusted and implemented by global leaders such as AT&T, Rogers Network, DirecTV, Singtel, Astro, Thaicomm, Globecast, ESPN, CNN, Doordarshan, Videocon, Dish and many other major broadcasters, DTH, teleports and earth stations around the world.

# Applications

Evertz has a wide range of fiber transport products to support a broad range of applications.





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With satellite bandwidth at a premium, higher order modulation schemes and coding rates afford the ability to pack more data throughput in less RF bandwidth. In order to realize these gains, increased RF signal quality is required for signal demodulation and recovery. Evertz understands the needs of modern facilities to take advantage of the latest modulation technologies and what this means to the importance of signal quality and the impact on recoverability of signals.

High Throughput Satellites (HTS) which provide the highest data rates are operated on Ka-Band frequencies, which are very sensitive to weather conditions. With atmospheric losses up to 30dB due to rainfall or snow, secondary remote sites are typically used to mitigate these effects.

This allows signal transmission to be redirected from the main site to a diverse site in case of adverse weather conditions. These sites typically rely on Dense Wavelength Division Multiplexing (DWDM) RF over Fiber transmission and redundancy switching to ensure maximum system reliability and uptime.

Additional benefits include flexible N+1 Redundancy configurations, Galvanic Isolation between Antennas and Control Room, multiplexing multiple RF signals across a single cable and Manual and Automatic Gain Control.

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# Products

### Outdoor Enclosure

The 24000DU-8 is a compact, IP65 rated weatherproof enclosure that provides a convenient, pre-integrated package for fiber transport. The 24000DU-8 can house up to 8x fiber transmit or receive modules and an 8-channel power supply.

evertz.com/products/24000DU-8





24000DU-8

### Features

- Pre-cabled turnkey solution
- > Integrated lighting surge protectors
- > Padlocking via customer supplied padlock
- Mix & match Tx & Rx modules for bi-directional applications
- Built-in Coarse wavelength division multiplexing (CWDM) Mux, passive splitters, Ethernet and serial transceivers (optional)



### Standalone Modules

The 2408LT & 2406LR RF over Fiber modules are packaged in a compact standalone enclosure, ideal for mounting on or near the antenna structure. For outdoor applications, these modules are available in a weatherproof (-WP) version to protect from water/dust and operating temperatures from -30 to 75° Celsius.



### Features

- > 13/18V + 22kHz LNB powering
- > 5V Antenna powering for GPS antennas
- -10 to 50 dB Manual and Automatic Gain Control (AGC)
- Full power RF output per RF port for monitoring or distribution

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- Eight-channel PSU with redundant AC power supplies (2400PSUA-8)
- ➢ Evertz SmartMON™ technology to remotely monitor Tx without separate data connection when paired with modular receiver



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\*Note: SmartMON<sup>™</sup> allows for remote monitoring of RF Power, gain added, LNB current/status, temperature, laser health, power supply status and more\*



### Bias Tee

The 2406BIAST-2 is a dual channel Bias Tee, suitable for a wide range of satellite antenna applications. Typical applications are seen when the downstream device of the LNB does not supply the 10MHz reference source and/or DC Power.

evertz.com/products/2406BIAST-2



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### Features

- Passive device for high reliability
- Weatherproof, IP65-rated (optional)
- Dual channel to support two LNBs/BUCs
- Internal DC Powering or DC Pass through for Local DC Powering
- Mountable inside Evertz' 24000DU Integrated Fiber Transport System
- > 13/18V DC Power + 22kHz tone on/off LNB local oscillator control, DiSEqC protocol

### Dual Chanel Bias Tee Signal Flow Diagram



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### Multi-Chassis

Evertz' award winning 7800 Series multi-frames offer flexibility in the truest form. These frames are capable of housing a wide range of products such as RF over Fiber, coarse wavelength division multiplexing and dense wavelength division multiplexers, RF and optical protection switches, distribution amplifiers, Ethernet transceivers, RF Matrix, IRDs, Demodulators and much more.

The 7800FR offers 15 slot capacity in a 3RU form factor, whereas the 7801FR offers 4 slot capacity in a 1RU form factor.

### evertz.com/products/7800FR



7801FR

### Features

- > AC & DC powering available
- > Standalone portable frame available
- > Remote Monitoring & Control of critical RF & Optical parameters
- >> Front loading hot-pluggable cards with all cabling at the rear
- Dual 1+1 Redundant PSU and Fans allowing replacement without downtime

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# Rack-Based Modules

Single channel and dual channel Transmit and Receive modules are available in a single slot, hot-swappable form factor. Evertz RF over Fiber modules offer very flat frequency response of +/-1.5dB (worst case) resulting in linear performance and better CNR.

Standard Tx & Rx models offer an optical budget of 16dBm for up to 45km transport. For applications with limited fiber or longer distance transport, these modules are available in coarse wavelength division multiplexing and dense wavelength division multiplexing options for transport over 100km. EDFA options are also available.

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evertz.com/products/7807LT-2 evertz.com/products/7807LR-2 evertz.com/products/7708LT evertz.com/products/7708LR



### Features

Full remote Monitoring & Control via Network Monitoring Service

13/18V + 22kHz LNB powering

Full power RF output per RF port for monitoring or distribution

RF connectors available with BNC 50 or 750hm, F-Type, SMA

- > -10 to 50 dB of Manual and Automatic Gain Control (AGC) in 1 dB step
- Fiber connectors available with SC or FC connectors and UPC or APC finish
- Dense wavelength division multiplexing options available for multiplexing up to 96 RF Signals over a single fiber

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### Direct Fiber Input Module

The 2307LR is a fiber optic receiver in a revolutionary form factor. With the same diameter as a BNC connector and overall length of 3.3" (85mm), the 2307LR is the smallest RF optical receiver in the industry.

The 2307LR attaches to the input of a device without any intermediate cabling or rack space required. This receiver is powered by the DC (LNB) powering of the downstream device such as Evertz' Active Splitter, Demodulator, IRD, etc.

evertz.com/products/2307LR





### 2x1 Protection Switches

Evertz' BPX series offers intelligent 2x1 Bypass Protection Switch for RF and Optical protection.

These protection switches offer Automatic changeover based on input power and multiple control possibilities allowing the user to authorize automatic switchback.

evertz.com/products/7703BPX-DC-RF evertz.com/products/7707BPX

### N+1 Redundancy Modules

The 7808T/R-8RF series is an RF over Fiber N+1 redundancy system up to 8+1. Integrated with Evertz' RF over Fiber system, the 7808 Series provides a redundant RF over Fiber path with automatic switching in the case of a main path failure.

evertz.com/products/7808T/R-8RF



7808T13-8RF

7808R-8RF

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### Features

- $\gg$  Remote Monitoring & Control via Network Monitoring System and WebGUI
- True redundancy with RF & DC pass through of the rear plate
- > Backup 13/18V + 22kHz LNB powering for the main failed channel
- $\gg$  Saves all main channels presets, so the switch over can be as seamless as possible



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# Multiplexing

Evertz has a wide range of multiplexer solutions to fit any application. Coarse wavelength division multiplexing products support up to 16 bi-directional optical channels per system. Dense wavelength division multiplexing products support up to 32, 40 and 96 bi-directional optical channels per ense wavelength division multiplexing system.

evertz.com/products/9000DWDM evertz.com/products/7706CWDM evertz.com/products/7705CWDM evertz.com/products/7705DWDM





### Features

> Passive design for any bit rate

- > Up to 96 dense wavelength division multiplexing channels are available to interface with third party dense wavelength divisionmultiplexer
- Bi-directional coarse wavelength division mux/demux of up to 16 wavelengths in the 1270nm to 1610nm spectrum (ITU-T G.694.2 compliant)
- Bi-directional dense wavelength division mux/demux of up to 32 or 40 wavelengths in the C-Band spectrum (ITU-T G.694.1 compliant)

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### Outdoor Rack Based Enclosure

If outdoor racking is required or preferred, Evertz rack based solution can be housed inside environmentally controlled enclosures. This brings all of the advantages of a control room environment to the antenna location such as high-density, advanced monitoring & control, network switches, etc.

Please contact Evertz for specific ordering options.



ATDBX07



ATDBX07



### Features

- <sub>%</sub> 7RU, 15RU and 26RU Options
- » NEMA 3R, NEMA 4, NEMA 4X options
- > Padlocking via customer supplied padlock

Temperature Controlled Heating & Air Conditioning Options



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### VistaLINK® PRO Network Management System (optional)

VistaLINK® PRO is an advanced end-to-end network management system (NMS) for the broadcast, cable, satellite, and IPTV industry. VistaLINK® PRO provides a single interface to manage the entire operational ecosystem to allow for reduction in operational expenditures (OPEX) and increase in quality of service.

VistaLINK® PRO enables operators to monitor and manage complex systems more effectively than before; offering a wide range of functionality including web access, fault management, configuration management, alarm/event notification, report and log management, intelligent correlation and root cause analysis, user-defined graphic views/dashboards, scheduling and automation, auto-response and much more.

evertz.com/solutions/vistalink/



### Contact Evertz

To discover and learn more about the complete roster of RF solutions from Evertz, visit evertz.com

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International Offices:

Americas Asia Pacific Europe / UK Middle East



### 9000DWDM DWDM 1RU Optical Mux / Demux



#### Features & Benefits

- Bi-directional mux/demux of 32 or 40 wavelengths in the C-Band DWDM spectrum (ITU-T G.694.1 compliant)
- 0.8nm (100GHz) channel spacing
- · Passive design for any bit rate
- · Low insertion loss to conserve system power
- · High optical isolation for low crosstalk
- SC/PC, ST/PC, FC/PC connector options

\*9000DWDM to be used ONLY in Single Mode Fiber applications

#### Applications

- Multi-channel transport of video, audio, data, control in fiber limited applications
- Cost reduction exercises through fewer leased fibers
- Studio and Facility extension/expansion
- · L-Band & IF Link transport
- STL and TSL Links
- Signal aggregation for outdoor and event coverage
   Signal aggregation for security and monitoring



#### ▶ Specifications

-					
Optical Input/Output: Connector:	SC/PC, ST/PC or FC/PC	Fiber Size: Return Loss:	9µm core/125µm overall > 45dB	Physical: Dimensions:	19"W x 1.75"H x 18.75"D
Wavelength:		Max Optical Power:	< 300mW (+25dBm)		(483mm W x 45mm H x 477mm D)
9000DWDM-32:	ITU C28-C59 (1554.94-1530.33nm)			Weight:	8lbs (3.5kg)
9000DWDM-40:	ITU C20-C59 (1561.42-1530.33nm)	Link Loss with Mux	and Demux Combination:		
Channel Spacing:	0.8nm (100GHz)	9000DWDM-M32 & 9	000DWDM-D32:		
Passband @ 0.5dB:	±0.11nm		< 8dB Maximum Loss		
Channel Uniformity:	< 1.5dB	9000DWDM-M40 & 9	000DWDM-D40:		
Isolation			< 10dB Maximum Loss		
Adjacent Channel:	> 25dB				
Non-Adjacent Chan	nel:				
	> 40dB				
Directivity:	> 40dB				
Ordering Infor	mation				
	22 Ch DMDM Muy 100CH = Specing	ITU Channels C20 to C	EQ. Composion Suffix		
9000DWDWDW-1032	SZ GILDWDIVI WUX, TUUGHZ Spacing,	TTO Channels 020 to 0	US CONNECTOR SUITIX		

9000DWDM-M32	32 Ch DWDM Mux, 100GHz Spacing, ITU Channels C28 to C59, 1RU
9000DWDM-D32	32 Ch DWDM De-Mux, 100GHz Spacing, ITU Channels C28 to C59,1RU
9000DWDM-M40	40 Ch DWDM Mux, 100GHz Spacing, ITU Channels C20 to C59, 1RU
9000DWDM-D40	40 Ch DWDM De-Mux, 100GHz Spacing, ITU Channels C20 to C59,1RU
Ordering Options	Fiber Connector must be specified at time of order (Eg: Model +SC)

X32
X40
X32
X40

Accessories

Fiber Optic Patch Cable See CWDM & DWDM Ordering Information Page Consult Evertz<sup>®</sup> for angle polish and additional ITU channel options

**The Complete Solution Provider** 



\*For APC connectors please order with -AP suffix

The 7808T/R-8RF series is a card-based RF over Fiber N+1 redundancy system up to an 8+1 configuration; mountable inside Evertz 7800 series multi-frames. Integrated with Evertz' modular RF over Fiber system, the 7808 Series provides a redundant RF over Fiber path with automatic and/or manual switching in the case of a main path failure (damage of fiber optic cable, transmitter, receiver, LNB power, etc.).

Monitoring and control of card status is provided locally at the card edge and remotely via VistaLINK® PRO NMS software. Advanced features include 13/18V LNB adjustable power and monitoring with 22KHz tone, wide range of manual/IGC/AGC gain, DC and RF passthrough and more.

#### Features & Benefits

- Redundancy up to 8+1
- Wideband 88MHz to 3GHz for IF, L-Band, extended L-Band applications
- RF and DC passthrough using passive rear plate, providing true redundancy
- Local Control/Data port
- The 7808T acts as a redundant LNB powering system in case
- of main LNB path failure; standard selectable 13/18VDC
- LNB current limit and short circuit protection
- LNB current monitoring for advance warning of LNB failure
- 22kHz tone on/off for LNB local oscillator control
- DC passthrough for downstream LNB power, allowing backup LNB power
- Fully hot-swappable from front of frame with all cabling at the rear
- Extended frequency response for extended L–Band and off-air DTV signals
- Protocol independent design transports all modulation formats

The 7808T13 is a dual-slot module which provides redundancy for Evertz' RF over Fiber transmitters. It has 8x RF inputs and a single optical output with a built-in switch and wideband transmitter. With Evertz' proprietary SmartMON™ monitoring software, incoming RF signal strength, LNB current and other data are relayed over the fiber output for monitoring through SNMP/VistaLINK® PRO.

The 7808R is a dual-slot module which provides redundancy for Evertz RF over Fiber receivers. It has a single optical input and 8x RF outputs with a built-in switch and wideband receiver.

- Supports manual, automatic (AGC) and intelligent (IGC) gain control modes
- IGC mode provides simple automatic compensation for fiber loss while output level tracks input level at SmartMON™ capable fiber transmitter
- Wide range adjustable gain in 0.5dB steps for fine tuning signal levels and optimizing CNR
- SmartMON™ capability provides remote status monitoring via SNMP without a separate data connection
- VistaLINK® capable for remote monitoring and control via SNMP (using VistaLINK® PRO) when installed in 7800FR frame with a 7800FC VistaLINK® frame controller
- SmartMON™ capability for display of monitored parameters from redundant transmitter module





### 7808T/R-8RF Series RF over Fiber N+1 Redundancy Series

#### ▶ Specifications

RF:	
Number of Inputs:	8
Number of Outputs:	8
Connector:	BNC per IEC 61169–8 Annex A (F–Type and SMA optional)
Input Impedance:	75Ω (50Ω optional)
Frequency Range:	88–3000MHz
Return Loss:	
88MHz–2.3GHz:	>15dB
2.3–3GHz:	>12dB
Input Power Range:	–10dBm to –60dBm
Gain Range:	
7808T:	0 to +30dBm in 0.5dB steps
7808R:	-10 to +20dBm in 0.5dB steps
IMD:	
7808T:	< –55dBc @ –15dBm input and 0dB gain
7808R:	< –55dBc @ –3dBm output and 25dB gain
Input IP3:	+10dBm
Output IP3:	+28dBm
LNB Power:	
Voltage:	13VDC, 18VDC, off (selectable)
Current:	400mA
Protection:	Short circuit, current limited
LO Control:	22kHz on/off (selectable)

Optical:	
Number of Inputs:	1 (7808R)
Number of Outputs:	1 (7808T)
Connector:	Female SC/UPC, ST/UPC,
	FC/UPC, SC/APC, FC/APC
Operating Wavelength	:
Standard:	1310nm DFB
CWDM:	1270–1610nm
DWDM:	C-Band (ITU G.694.1 compliant)
Output Power:	
Standard 1310nm:	+2dBm
CWDM:	+2dBm
DWDM:	+11dBm
Max. Input Power:	+3dBm
Optical Sensitivity:	
7808R:	–14dBm @ 35dB S/N on
	a 36MHz carrier
RF System Performa	nce:
Frequency Range:	
950–2150MHz:	±1.5dB

88MHz–3GHz: ±2dB ±0.25dB on 36MHz BW to 3GHz

#### Electrical: +18VDC Voltage: 12W max excluding LNB Power Power: Physical (Number of Slots): 350FR: 7800FR: 2 2 7801FR: 2 Compliance: Laser Safety: Class 1 laser product Complies with 24 CFR 1040.10 and 1040.11 IEC 60825-1 Complies with FCC Part 15, Class A EU EMC directive

1

EMI/RFI: Control:

Number of Ports: Connector:

RJ-45, SNMP over Ethernet via frame controller, web browser

#### Ordering Information

7808T13-8RF 7808R-8RF	Wideband RF fiber transmitter for N+1 redundant system configuration for up to 8x RF inputs, one fiber output, 1310nm DFB laser, SmartMON, VistaLINK® PRO Wideband RF fiber receiver for N+1 redundant system with one fiber input, standard sensitivity and up to 8x RF outputs,	Connector Suffix: +SC +AP+SC +FC +AP+FC	SC/UPC SC/APC (Angle polished) FC/UPC FC/APC (Angle polished)
	SmartMON, VistaLINK® PRO	+F75 +B50	5Ω F–Type rear connectors 50Ω BNC rear connectors
*CWDM/DWDM versi Rear plate and fiber of	ons also available upon request. connector must be specified at time of order (eg. Model +3RU +SC)	+\$50	50Ω SMA rear connectors

Rear Plate Suffix:

+3RU 3RU Rear Plate for use with 350FR or 7800FR Multiframes

Enclosures: 7801FR 7800FR

1RU Multiframe, holds up to 4x single-slot modules 3RU Multiframe, holds up to 15x single-slot modules



The 7807LT-2 is a dual fiber optic transmitter for RF signals in the extended L-Band or wider frequency range. It accepts two RF inputs from coaxial cable and provides two outputs for optical transmission. An RF monitor output is provided for each input, which offers a convenient means of obtaining peak satellite signal strength, or additional signal distribution. With two optical transmitters per single-slot card, the 7807LT-2 provides a high density economical solution.

Individual monitoring and control is provided for each signal path. Gain may be adjusted manually or managed automatically via AGC. With SmartMON<sup>TM</sup>, incoming RF signal strength, LNB current and other data are relayed over the fiber outputs for monitoring at the receiver side through SNMP/VistaLINK<sup>®</sup> (requires SmartMON<sup>TM</sup> capable companion fiber receiver). 13/18V DC selectable LNB power with 22kHz tone is also provided on each RF input.

#### Features & Benefits

- Extended frequency response for extended L–Band, off–air DTV and other signals
- Protocol independent design transports all modulation formats
- LNB power with selectable 13/18V DC, per input
- LNB current limit and short circuit protection
- · LNB current monitoring for advance warning of LNB failure
- 22kHz tone on/off for LNB local oscillator control, per input
- RF monitoring output ports for signal peaking and signal distribution
- Manual gain and AGC modes for tuning optimal CNR performance
- Multiple versions of the 7807LT–2 are available to address single–mode/ multi–mode fiber, single/dual fiber and CWDM/DWDM applications
- The 7807LT13/15–2–W is a dual channel card that features an on–board fiber coupler, requiring only a single fiber for the link (companion receiver is the 7807LR–2–W)

- Dual fiber transmitters on a single-slot card provides the industry's highest density solution
- SmartMON™ capability provides remote status monitoring via SNMP without a separate data connection
- VistaLINK<sup>®</sup> capability is available for monitoring and control when modules are used in a 3RU 7800FR frame and a 7700FC VistaLINK<sup>®</sup> frame controller is installed in slot 1 of the frame
- Form–C dry contact GPO alarm contacts for monitoring
- · Fiber link provides electrical isolation between antenna
- and facility, mitigating ground loop and lightning issues Compatible with all 2406LR, 7706LR, 7708LR and
- 7807LR–2 series receivers
- The 7807LT–2 occupies one card slot and can be housed in a 1RU frame that will hold up to four modules, a 7800FR 3RU frame that will hold up to 15 modules, or a standalone enclosure, which holds one module



### **7807LT–2** Dual L–Band/Wideband RF Fiber Transmitter with VistaLINK<sup>®</sup> and SmartMON™

#### ▶ Specifications

RF Input:	0	Optical Output:	0	Electrical	12,1/DC
Connectors:	Z BNC per IEC 61169–8 Annex A (F–Type optional)	Connector:	Female SC/UPC, ST/UPC, FC/UPC, SC/APC, FC/APC	Power:	6W excluding LNB power
Input Impedance:	75Ω	Operating Wavelength	n: 1310nm DFB	Physical (number o	f slots):
Return Loss:	>14dB to 2100MHz		(1550nm and CWDM optional)	7800FR:	1
	>10dB to 2100-2800MHz		DWDM C-Band	7701FR:	1
Frequency Range:	50–2800MHz		(ITU G.694.1 compliant)	S7701FR:	1
Input Power Range:	–10dBm to –60dBm	Output Power:	· · · ·		
AGC Gain Range:	-10dB to +20dB	Dual Fiber:	+2dBm ± 1dBm	Compliance:	
Input IP3:	+10dBm	Single Fiber:	–2dBm ± 1dBm	Laser safety:	Class 1 laser product
		DWDM:	+11dBm		Complies with 24 CFR 1040.10
LNB Power:					and 1040.11
Voltage:	13V DC, 18V DC, off (selectable)	RF System Performa	ance 7807LT–2+7807LR–2 pair:		IEC 60825–1
Current:	500mA	Flatness:		EMI/RFI:	Complies with FCC regulations for
Protection:	Short circuit, current limited	850–2250MHz:	± 1.5dB		Class A devices. Complies with EU
LO Control:	22kHz on/off (selectable)	50–2800MHz:	± 2dB		EMC directive 89/336/EEC
RF Monitor Output:		General Purpose Ou	tputs:		
Number of Outputs:	2	Number of Outputs:	2		
Connector:	BNC per IEC 61169–8 Annex A	Туре:	"Dry Contact" relay contacts —		
Output Impodance:			normally open and normally closed		
Peturn Loss:	>15dB	Connector:	3 nin terminal strin		
Frequency Pange:		Connector.	5-pin terminal strip		
Output Loval:	suithin 2 0dB of input signal				
Output Level.	within -2.00B of input signal				

#### Ordering Information

7807LT13-2	Dual L–Band RF fiber transmitter, 1310nm DFB laser, SmartMON™, VistaLINK <sup>®</sup>	Rear Plate Suffix: +3RU	3RU rear plate for use with 7800FR multiframe
7807LT13/15–2–W	Dual L–Band/Wideband RF fiber transmitter, 1310nm & 1550 DFB laser, onboard coupler with single fiber output, SmartMON™, VistaLINK®: companion receiver is 7807L R–2–W	+1RU +SA	1RU rear plate for use with 7701FR multiframe Standalone enclosure rear plate
7807LTxx/yy–2 7807LTDxxx/yyy–2	Dual L–Band/Wideband RF fiber transmitter, CWDM, DFB laser, SmartMON™, VistaLINK <sup>®</sup> Dual RF fiber transmitter, wideband, with SmartMON™ and VistaLINK <sup>®</sup> , high power ± 10dBm DWDM DFB laser, 75Ω BNC	Enclosures: 7800FR 7701FR S7701FR	3RU multiframe, holds up to 15x single–slot modules 1RU multiframe, holds up to 3x single– or dual–slot modules Standalone enclosure

Rear plate and fiber connector must be specified at time of order (eg: Model+3RU+SC)

Connector Suffix:	
+SC	SC/UPC
+AP+SC	SC/APC (angle polished)
+ST	ST/UPC
+FC	FC/UPC
+AP+FC	FC/APC (angle polished)
+F75	75Ω, F–Type rear connector

Note: 75Ω BNC connectors are standard. Consult factory for 500Ω BNC and SMA connector options. Cards are physically compatible with the 7700FR–C frame, but LNB power will be automatically disabled. For companion receiver see the 7807LR–2 catalog page. Also compatible with the 2406LR, 7706LR and 7708LRA/7708LR–H receivers.





The 7807LR-2 and 7807LR-2-H are dual fiber optic receivers for RF signals in the extended L-Band or wider frequency range. They accept two fiber optic inputs from a companion transmitter(s) and provide two pairs of electrical outputs. With two optical receivers per single-slot card, the 7807LR-2 and 7807LR-2-H provide a high density economical solution.

Individual monitoring and control is provided for each signal path. Gain may be adjusted manually in 0.5dB increments or managed automatically via AGC or IGC modes. SmartMON<sup>™</sup> capability decodes and displays incoming information from the paired SmartMON<sup>™</sup>-enabled companion transmitter. Two versions of the card are available, including the 7807LR-2 which has standard-sensitivity receivers, and the 7807LR-2-H which utilizes highsensitivity receivers for medium/long-haul applications.

#### Features & Benefits

- Extended frequency response for extended L-Band, off-air DTV and other signals
- Protocol independent design transports all modulation formats
- Supports manual, automatic (AGC), and intelligent (IGC) gain control modes IGC mode provides simple automatic compensation for fiber loss while
- output level tracks LNB level input at SmartMON™ capable fiber transmitter 0.5dB gain adjustment granularity for setting manual gain
- or AGC target power levels Dual, full power outputs provided from each input to
- facilitate signal distribution or monitoring
- Dual fiber receivers on a single-slot card provides the industry's highest density solution
- The 7807LR-2-W is a dual channel card that features and on-board fiber WDM, requiring only a single fiber for the link (companion transmitter is the 7807LT13/15-2-W)
- Fully hot-swappable from front of frame

- SmartMON™ capability for display of monitored parameters from companion SmartMON™ capable fiber transmitters
- VistaLINK® capability is available for monitoring and control when modules are used in a 3RU 7800FR frame and a 7700FC VistaLINK® frame controller is installed in slot 1 of the frame
- Form-C dry contact GPO alarm contacts for monitoring
- Fiber link provides electrical isolation between antenna and facility, mitigating ground loop and lightning issues
- Compatible with all 2408LT, 7706LT, 7708LT and 7807LT-2 transmitters
- Wide range optical inputs (1270nm to 1610nm)
- Supports single-mode and multi-mode fiber optic cable
- Available with SC/UPC, ST/UPC, FC/UPC, SC/APC
- and FC/APC connector options
- The 7807LR–2/7807LR–2–H occupy one card slot and can be housed in a 1RU frame that holds up to 3 modules, a 7800FR 3RU frame that holds up to 15 modules, or a standalone enclosure that holds one module



#### Specifications

RF Outputs:		Optical Input:		Electrical	
Number of Outputs:	2 + 2 (two per optical input)	Number of Inputs:	2	Voltage:	12V DC
Connectors:	BNC per IEC 61169–8 Annex A	Connector:	Female SC/UPC, ST/UPC,	Power:	6W
	(F–Type optional)		FC/UPC, SC/APC, FC/APC		
Output Impedance:	75Ω	Operating Wavelengt	h: 1270–1610nm	Physical (number	r of slots):
Return Loss:	> 15dB	Maximum Input Pow	er:	7800FR:	1
Frequency Range:	50–2800MHz	7807LR-2:	+3dBm	7701FR:	1
Output IP3:	+28dBm	7807LR-2-H:	-7dBm	S7701FR:	1
AGC Gain Range:	-10 to +20dB	7807LR-2-W:	-6dBm		
Output Signal Level:		Optical Sensitivity:		Compliance:	
Manual Gain:	-10 to -65dBm	7807LR-2:	-14dBm @ 35dB S/N on	EMI/RFI:	Complies with FCC regulations for
	(depending on input signal level.		a 36MHz carrier		Class A devices. Complies with EU
	gain setting and optical loss)	7807LR-2-H:	-20dBm @ 35dB S/N on		EMC directive 89/336/EEC
AGC Mode:	-10 to -40dBm		a 36MHz carrier		
	(adjustable, within AGC hold range)	7807LR-2-W:	-13dBm @ 35dB S/N on		
	(,,		a 36MHZ carrier		
Ordering Infor	mation				

7807LR-2	Dual Wideband RF Fiber Receiver, SmartMON™, VistaLINK <sup>®</sup>	Connector Suffi	x:
7807LR-2-H	Dual Wideband RF High–Sensitivity Fiber Receiver,	+SC	SC/UPC
	SmartMON™, VistaLINK <sup>®</sup>	+AP+SC	SC/APC (angle polished)
7807LR-2-W	Dual Wideband RF Fiber Receiver, single fiber input	+ST	ST/UPC
	with onboard WDM_SmartMON™_Vistal INK®	+FC	FC/UPC
	Companion transmitter is the 7807LT13/15–2–W.	+AP+FC	FC/APC (angle polished)
		+F75	$75\Omega$ , F–Type rear connector
Rear plate and fiber	connector must be specified at time of order (eq: Model+3RU+SC)	Enclosures:	
··· /· ··· · · · · · · · · · · · · · ·		7800FR	3RU multiframe, holds up to 15x single-slot modules
Rear Plate Suffix:		7701FR	1RU multiframe, holds up to 3x single- or dual-slot modules
+3R11	3RU rear plate for use with 7800EP multiframe	\$7701ER	Standalone enclosure

+1RU

1RU rear plate for use with 7701FR multiframe

Note: 750 BNC	connectors are standard.	For companion transmitte	r. see the 7807LT–2
			,
cataloque page.	. Also compatible with 770	6L1, 7708L1 and 2408L1 s	series transmitters.

# 7800FR, 7800FR–QT, 7800FR–48VDC, 7801FR

**Multiframes** 

**evert**z

Evertz' award–winning 7800 family of multiframes provides flexibility in the truest form. With simultaneous processing capability of RF, Fiber, ASI, IP, 3G, HD/SD and more, these frames are designed to grow with the rapid changing needs of the facility and are available in a wide variety defined in the chart below.

Standard features of all 7800 series multiframes include dual frame genlock providing a stable reference signal across the internal bus to all installed modules that minimizes the cost spent on genlock distribution, global frame status alarming to provide quick alert to operations in the event of a failure, and interchangeable modules between all frames (both processing module and companion rear plate).

Additionally all frames offer hot–swappable dual redundant power supplies that allow for power supply and fan replacement without compromising the integrity of critical signal paths and true remote monitoring of all modules and signals within the chassis via a VistaLINK frame controller. This configuration provides the SNMP network communication interface from the VistaLINK Network Management Software to the chassis over the local or wide area network.

#### Features & Benefits

- 7800FR(–QT) houses up to
   15 processing modules in 3RU
- 7801FR houses up to four processing modules in 1RU
- Dual frame genlock for internal reference distribution
- Front extractable modules, power supplies and fans
- AC, DC and Hybrid AC/DC power supply configurations available
- Auto-ranging power supplies operating between 100–240V AC and 36–60V DC
- Backwards compatible with 7800/7700 series modules
- Frame status contact closure alarm in event of failure

lodel	7800FR	7800FR-QT (Low Noise Option)	7801FR
lize	<ul> <li>Standard rack mountable 19" W</li> <li>3RU</li> </ul>	<ul> <li>Standard rack mountable 19" W</li> <li>3RU</li> </ul>	<ul> <li>Standard rack mountable 19" W</li> <li>1RU (uses 3RU rear plates)</li> </ul>
Capacity	Up to 15 single–slot modules in any combination	Up to 15 single–slot modules in any combination	Up to 4 single- or 2 dual-slot modules in any combination
Control	<ul> <li>True SNMP</li> <li>VistaLINK<sup>®</sup> PRO via 7700FC/7800FC</li> </ul>	<ul> <li>True SNMP</li> <li>VistaLINK<sup>®</sup> PRO via 7700FC/7800FC</li> </ul>	True SNMP     VistaLINK <sup>®</sup> PRO via 7801FC
ir Flow Cooling	<ul><li>Front to rear exhaust</li><li>Rear–mounted fans</li></ul>	<ul> <li>Front to rear exhaust</li> <li>Front- and rear-mounted fans (reduced noise level)</li> </ul>	<ul><li>Front to side exhaust</li><li>Side-mounted fans</li></ul>
Power	Up to 360W     24W of power per slot	<ul><li> Up to 360W</li><li> 24W of power per slot</li></ul>	<ul><li> Up to 125W</li><li> 24W of power per slot</li></ul>

#### Multiframe Comparison

🗅 in @Evertz

# 7800FR, 7800FR-QT, 7800FR-48VDC, 7801FR

Multiframes

# **evertz**

Specification	IS	Ordering Info	rmation
Single PS: Standard with all frames		7800FR	3RU Multiframe Which Holds up to 15 Single Slot Modules with AC Power Supply
	Optional	7800FR-QT	Quiet Multiframe with Intelligent Front Fan Cooling
mets:	Separate miets per PS	7801FR	1RU Multiframe Which Holds up to 4 Single Slot or 2 Dual Slot Modules, Requires
Electrical: /oltage:	Auto-ranging		Rear Plate Option for Modules
:00FR (–QT): 301FR:	100–240V AC, 50/60Hz 100–240V AC, 50/60Hz	7800FR-48VDC	3RU Multiframe with Frame Genlock & 360W 48VDC Input Power Supplies
00FR-48VDC:	36-60V DC	7800FR-ACDC	3RU Multiframe with 360W AC and DC Power Supplies, Holds up to 15 Single Slot 7700 o
x. Operating C	Current: 4 6A @ 100V/60Hz		7800 Series Modules, Includes 1 AC Supply and 1 48VDC Power Supply
1FR <sup>.</sup>	1.85A @ 240V/50Hz 1.3A @ 100V/60Hz		
	0.55A @ 240Hz/50Hz	Ordering Options	
-+0VDO.	sumption/	±78D	Additional Power Supply for 7800EP Frame
dule Loa	d:	17000	
-R (-QT): -R:	450W / 360W 125W / 110W	+/8PQ1	
·ĸ–48VDC:	450W / 360W	+/81PS	Redundant Power Supply for 7801FR
;: R (–QT):	6.3A, 250V ceramic	+78PDC	Redundant Power Supply for 7800FR–48VDC Frame
	time delay, 5x20mm 2 per PS		
FR:	2.0A, 250V time delay, 5x20mm 1 per PS	Accessories	
R–48VDC:	12.0A, 250V ceramic	7800PS	Additional Power Supply for 7800FR Frame
	1 per PS	7800PS-QT	Power Supply for 7800FR–QT
evel:	CE JD A	7801PS	Additional power supply for 7801FR
e	-60dBA	7800PS-48VDC	Additional Power Supply for 7800FR-48VDC Frame
)imensi	ions:	7800RS-15	Rear support kit 15" for 7800 Frame
	19" W x 5.25" H x 14.5" D (483 x 133 x 368mm)	7700FC	Frame controller for 7700FR–C
-QT:	19" W x 5.25" H x 15.75" D (483 x 133 x 400mm)	7800FC	7700FR and 7800FR VistaLINK <sup>®</sup> Frame Controller (Includes VLPRO–C VistaLINK <sup>®</sup> PRO
र:	19" W x 1.75" H x 16" D (483 x 45 x 406mm)		S/W Configuration Tool)
₹–48VDC:	19" W x 5.25" H x 14.5" D (483 x 133 x 368mm)	7801FC	Frame Controller for 7801FR
ght:		7800FR-QT-KIT2	Quiet Front Fan Retrofit Kit
FR: FR-OT	17.4lbs (7.9kg) empty		
-R:	10.0lbs (4.5kg) empty		
R-48VDC:	17.5IDS (7.9Kg) empty		
n Specific ndicators:	Power supply status LED		
Output Conne	Local error failure LED ector:		
	4–pin terminal, relay N/O N/C for status/fault		
v.	1A, 30V DC maximum CSA Listed, C22 2 No		
	60065–03 including Am 1,		
	IEC 60065–(2001–12)		
	7th Edition, Inc Am 1, Complies with CE		
	low voltage directive 2006/95/EC		
:	Complies with FCC part 15 class A.		
	Complies with EU EMC directive 2004/108/FC		
erating Temp.:	0-40°C		
ntilation:	Fan–assisted		
nlock:			
Imper of Inputs:	2 BNC 750 internal		

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The 7708LT is a fiber optic transmitter for RF signals in the extended L-Band or wider frequency range. It accepts a single RF input on coaxial cable and provides a single output for optical transmission. An RF monitor output provides a convenient means of obtaining peak satellite signal strength, or additional signal distribution.

Gain may be adjusted manually or managed automatically via AGC. With SmartMON™, incoming RF signal strength, LNB current and other data are relayed over the fiber output for monitoring through SNMP/VistaLINK® (requires SmartMON™ capable companion fiber receiver) 13/18V DC adjustable LNB power with 22kHz tone is also provided.

#### Features & Benefits

- Extended frequency response for extended L-Band, off-air DTV, and other signals
- Protocol independent design transports all modulation formats LNB power with selectable 13/18V DC
- LNB current limit and short circuit protection
- LNB current monitoring for advance warning of LNB failure
- 22kHz tone on/off for LNB local oscillator control
- RF monitor output for signal peaking and signal distribution
- Manual gain and AGC modes
- Wide range adjustable gain in 0.5dB steps for fine tuning signal levels and optimizing CNR
- Available with 1310nm, CWDM (ITU-T G.694.2) and +11dBm high power DWDM (ITU-T G.694.1) laser options

- SmartMON™ capability provides remote status monitoring via SNMP without a separate data connection
- VistaLINK® capability is available for monitoring and control when modules are used in a 3RU 350FR, 7800FR frame and a 7700FC VistaLINK® frame controller is installed in Slot 1 of the frame
- Fiber link provides electrical isolation between antenna and facility, mitigating ground loop and lightning issues
- The 7708LT occupies one card slot and can be housed in a 1RU frame that will hold up to 3x modules, a 3RU frame that will hold up to 15x modules, a 350FR which will hold up to 7x modules or a standalone enclosure, which holds one module





#### Specifications

#### **RF Input:** Number of Inputs: Connector:

Input Impedance: Frequency Range: Return Loss: 120MHz-2.3GHz 2.3-3GHz:

Input Power Range: Gain Range: IMD:

Input IP3: LNB Power: Voltage: Current: Protection: LO Control:

Connector:

Return Loss:

#### **RF Monitor Output:** Number of Outputs:

BNC per IEC 61169-8 Annex A (F-Type and SMA Optional) Output Impedance:  $75\Omega$  (50 $\Omega$  Optional) > 15dB

BNC per IEC 61169-8 Annex A

(F–Type and SMA Optional)  $75\Omega$  ( $50\Omega$  Optional)

0 to +30dBm in 0.5dB steps

< -55dBc at -15dBm input

13V DC, 18V DC, off (selectable)

Short Circuit, current limited

22kHz on/off (selectable)

50-3000MHz

and 0dB gain

+10dBm

400mA

–10dBm to –60dBm

> 14dB

> 12dB

Frequency Range: Output Level:	50–3000MHz Within –2.0dB of input signal
Optical Output: Number of Outputs: Connector:	1 Female SC/UPC, ST/UPC, FC/UPC, SC/APC, FC/APC
Operating Wavelength Standard: CWDM: DWDM: Output Power: Standard 1310nm: CWDM: DWDM:	: 1310nm DFB 1270-1610nm C-Band (ITU G.694.1 compliant) +2dBm +2dBm +11dBm

#### RF System Performance 7708LT+7708LRA pair: Frequency Response:

- 950-2150MHz: ± 1.5dB ± 2dB 120MHz-3GHz:
- ±0.25dB on 36MHz BW to 2.3GHz

RF System Performance 7708LT+7708LR-H pair:

Frequency Response: 950–2150MHz: ± 1.5dB 120MHz-2.3GHz: ± 2dB ±0.25dB on 36MHz BW

#### 10MHz Performance 7708T13-10MHz+7708R-10MHz pair: Manual Gain Range: -5 to +10dB Input Power Range: +10 to -40dBm OIP3: +29dB Harmonic Rejection: +60dB Electrical: +12V DC Voltage: 6W max excluding LNB Power Power Physical (Number of Slots): 350FR: 7700FR-C: 7800FR Compliance:

Laser safety

EMI/RFI:

Class 1 laser product Complies with 24 CFR 1040.10 and 1040.11, IEC 60825-1 Complies with FCC Part 15, Class A EU EMC directive



7708LT13 7708LTxx	Wideband RF fiber transmitter, 1310nm DFB laser, SmartMON™, VistaLINK <sup>®</sup> Wideband RF fiber transmitter, CWDM DFB laser, SmartMON™, VistaLINK <sup>®</sup>	Enclosures: 7800FR 7801FR Connector and Imp	3RU multiframe, holds up to 15x single–slot modules 1RU multiframe, holds up to 4x single–slot modules edence Options:
7708LTDxxx	Wideband RF fiber transmitter, DWDM DFB laser, BNC connectors, SmartMON™, VistaLINK <sup>®</sup>	Note: standard RF co	onnectors are 75Ω BNC
7708T13-10MHz	10MHz RF fiber transmitter, 1310nm DFP laser	RF Connectors:	
7708Txx-10MHz	10MHz RF fiber transmitter, CWDM DFP laser	+F75	75Ω F–Type connector
		-B50	50Ω BNC connector
For companion receiv	/er, see the 7708LRA/7708LR–H catalogue page	-S50	50Ω SMA connector
Ordering Options:	rear plate and fiber connector must be specified at time of order	Fiber Connectors:	
	(eg. model +3RU +SC)	+SC	SC/UPC
		+AP+SC	SC/APC (angle polished)
Rear Plate Suffix:		+FC	FC/UPC
+3RU	3RU rear plate for use with 7800FR or 7801FR multiframe	+AP+FC	FC/APC (angle polished)





The 7708LRA/7708LR-H are VistaLINK®-capable fiber optic receivers for extended L-Band and other signals. They accept a fiber optic input from a companion transmitter and provide an electrical output signal. Monitoring and control of card status is provided locally at the card edge and remotely via VistaLINK<sup>®</sup>. SmartMON<sup>™</sup> capability allows in–band monitoring data sent by a companion SmartMON<sup>™</sup> –enabled transmitter to be displayed locally or via SNMP/VistaLINK®.

The 7708LRA/7708LR-H occupies one card slot and can be housed in a 1RU frame that will hold up to four modules, a 3RU frame that will hold up to 15 modules, a 350FR portable frame that will hold up to seven modules or a standalone enclosure, which holds one module.

#### Features & Benefits

- Protocol transparent receives all video, audio and data modulation formats
- Supports manual, automatic (AGC), and intelligent (IGC) gain control modes IGC mode provides simple automatic compensation for fiber loss while output level tracks input level at SmartMON<sup>™</sup>-capable fiber transmitter
- Two buffered RF outputs for extra signal distribution or monitoring functions
- RF output independent of optical loss (within AGC/IGC gain range)
- Available with BNC, SMA or F-Type connector options
- Wide range optical input (1270-1610nm)
- Supports single-mode and multi-mode fiber optic cable (contact factory for multi-mode applications)

#### · Available with SC/UPC, ST/UPC, FC/UPC, SC/APC and FC/APC connector options

- Wide range adjustable gain in 0.5dB steps for fine-tuning signal levels
- 7708LR-H with high-sensitivity input for long-haul applications
- Fully hot-swappable from front of frame
- Comprehensive signal and card status monitoring via four digit card edge display or remotely through SNMP and VistaLINK
- VistaLINK® capability is available when modules are used with the 3RU 7800FR or 350FR portable frame and a 7700FC VistaLINK® frame controller module in slot 1 of the frame
- SmartMON<sup>™</sup> capability for display of monitored parameters from companion SmartMON<sup>™</sup>-capable fiber transmitters



#### Specifications

RF Outputs:		Available Gain:	
Number of Outputs:	2	7708LRA:	-10 to +31.5dB in 0.5d
Connector:	BNC per IEC 61169–8 Annex A (F–Type optional)	7708LR–H:	-10 to +28dB in 0.5dE
I/O Impedance:	75Ω (50Ω optional) (see Ordering Information)	See System Performa companion transmitte	nce Specifications of th r for more details.
Frequency Range:	,		
7708LRA:	50MHz–3GHz	Optical Input:	
7708LR–H:	50MHz–2.3GHz	Number of inputs:	1
Return Loss:		Connector:	Female SC/UPC, ST/
88MHz–2.3GHz:	> 15dB		FC/UPC, SC/APC, FC
2.3–3GHz:	> 12dB	Operating Wavelength	: 1270–1610nm
Output IP3:	+28dBm	Maximum Input Powe	r:
IMD:	< –55dBc at –3dBm output	7708LRA:	+3dBm
	and 25dB gain	7708LR–H:	–7dBm
Output Signal Level:		Optical Sensitivity:	
Manual Gain:	–10 to –65dBm (depending on	7708LRA:	-14dBm @ 35dB S/N
	input signal level, gain setting		on a 36MHz carrier
	and optical loss)	7708LR–H:	-20dBm @ 35dB S/N
AGC Mode:	–10 to –40dBm (adjustable, maintainable within available gain range)		on a 36MHz carrier

Specifications of the chosen more details.

> male SC/UPC, ST/UPC, /UPC, SC/APC, FC/APC 70–1610nm dBm

0 to +31.5dB in 0.5dB steps . 0 to +28dB in 0.5dB steps

#### 10MHz Performance

7708T13-10MHz+7708R-10MHz pair: Manual Gain Range: -5 to +10dB Input Power Range: +10 to -40dBm OIP3 +29dB Harmonic Rejection: +60dB

1

#### Electrical:

Voltage: Power: EMI/RFI:

#### +12V DC 6W Complies with FCC Part 15, Class A EU EMC directive

Physical: Number of Slots:

**The Complete Solution Provider** 

### 7708LRA, 7708LR–H L–Band/Wideband RF Fiber Receiver Series

#### Ordering Information

7708LRA 7708LR–H 7708R–10MHz	L–Band/Wideband fiber receiver, SmartMON <sup>™</sup> , VistaLINK <sup>®</sup> High–Sensitivity L–Band fiber receiver, SmartMON <sup>™</sup> , VistaLINK <sup>®</sup> 10MHz fiber receiver, standard sensitivity	Connect Note: sta
Ordering Options:	rear plate and fiber connector must be specified at time of order (eg. model +3RU +SC)	+F75 -B50 -S50
Rear Plate Suffix: +3RU	3RU rear plate for use with 7800FR or 7801FR multiframe	Fiber Co +SC +AP+SC
Enclosures: 7800FR 7801FR	3RU multiframe, holds up to 15x single–slot modules 1RU multiframe, holds up to 4x single–slot modules	+FC +AP+FC

**connector and Impedence Options:** ote: standard RF connectors are  $75\Omega$  BNC

#### Connectors:

75Ω F–Type connector
50Ω BNC connector
50Ω SMA connector

#### oer Connectors: C P+SC

SC/UPC SC/APC (angle polished) FC/UPC FC/APC (angle polished)





The 7707BPX is a wide band 2x1 optical protection switch that provides auto-changeover functionality by detecting changes in the optical input power level.

The 7707BPX has integrated VistaLINK® technology for remote control and monitoring capability via SNMP. This provides the user with the ability to locally or remotely configure and monitor parameters such as module status, selected input, power level and switching threshold.

In the application of auto-changeover, the 7707BPX can be configured to have a MAIN input and a STANDBY input. In this configuration, it will automatically switch to the Standby input when the Main input power is weak or lost. It can also be configured to have auto or manual switch back to the Main input when the signal is re-established.

The 7707BPX occupies one card slot and can be housed in a 1RU frame that will hold up to 3 modules, a 3RU frame that will hold up to 15 modules, a 350FR portable frame that will hold up to 7 modules or a standalone enclosure which holds 1 module

#### Features & Benefits

- Intelligent auto-switching with input power detection and user-definable thresholds
- · Supports automatic or manual control via SNMP or GPI
- Fully hot-swappable from front of frame with no fiber disconnect/reconnect required
- Accepts any wavelength in the 1270nm to 1610nm range

Supports single-mode fiber optic cable

- SC/PC, ST/PC or FC/PC fiber connector options
- Comprehensive signal and card status monitoring via four digit card edge display or remotely through SNMP and VistaLINK<sup>®</sup> capability

\*7707BPX to be used ONLY in Single Mode Fiber applications



#### ▶Specifications

Optical Input/Output	it:	General Purpose I	nputs:	General Purpose C	Outputs:
Number:	3 Bi-directional optical signals	Number of Inputs:	2	Number of Outputs	: 1
Connector:	SC/PC, ST/PC, FC/PC Female Housing	Type:	Opto-isolated, active low with internal	Type:	"Dry Contact" relay contacts -
Insertion Loss:	< 3dB		pull-ups to +5V		normally open & normally closed
Switch Time:	< 30ms	Connector:	2 pins plus ground on 6-pin terminal strip		contact provided
Max. Input Power:	5dBm	Signal Level:		Connector:	3 pins on 6-pin terminal strip
Input Optical Sensit	tivity:	+5V Pullup:	Low: -5 to +2.5V DC		
	-40dBm		High: 3.5 to 10V DC	Electrical:	
Operating Wavelen	gth:	+12V Pullup:	Low: -5 to +9.5V DC	Voltage:	+12V DC
	1270nm to 1610nm		High: 10.5 to 15V DC	Power:	3W
Fiber Size:	9μm core/125μm overall	Max Sink Current:	(input shorted to ground) 15 mA	EMI/RFI:	Complies with FCC Part 15, Class A
		Max Leakage Curr	ent		EU EMC Directive
		for input High:	200μΑ		

#### Physical (number of slots):

350FR:	
7700FR-C:	
7800FR:	

7707BPX	2x1 Optical Bypass Protection Switch	Connector Suffix	
		+AP+SC	SC/APC (Angle Polished)
Ordering Options	Rear Plate and Fiber Connector must be specified at time of order	+SC	SC/PC
	Eg. Model +3RU +SC	+ST	ST/PC
		+FC	FC/PC
Rear Plate Suffix			
+3RU	3RU Rear Plate for use with 350FR, 7700FR-C or 7800FR Multiframe	Enclosures	
+1RU	1RU Rear Plate for use with 7701FR Multiframe	350FR	3RU Portable Multiframe which holds up to 7 single slot modules
+SA	Standalone Enclosure Rear Plate	7700FR-C	3RU Multiframe which holds up to 15 single slot modules
		7800FR	3RU Multiframe which holds up to 15 single slot modules
		7801FR	1RU Multiframe which holds up to 4 single or 2 dual slot modules
		7701FR	1RU Multiframe which holds up to 3 single or dual slot modules
		S7701FR	Standalone Enclosure



#### Features & Benefits

- Bi-directional mux/demux of up to 16 wavelengths in the 1270nm to 1610nm spectrum (ITU-T G.694.2 compliant)
- · Expandable from 8 to16 channel systems
- · Passive design for any bit rate
- · Low insertion loss to conserve system power
- · High optical isolation for low crosstalk
- · Compatible with all Evertz series CWDM Mux and Demux (3400CWDM, 3405CWDM, 7705CWDM)
- · Compact design occupies only one slot in an Evertz 7700/7800 frame per card module
- · LC/UPC and LC/APC connector options
- Fiber protector to prevent connector damage
- \*7706CWDM to be used ONLY in Single Mode Fiber applications

#### Applications

Multi-channel transport of video, audio, data, control in fiber limited applications

Expansion port input (Accepts

Port

Combined

1270 - 1450nm

l h

706CWI -M8LB

everiz

- Cost reduction exercises through fewer leased fibers
- · Studio and Facility extension/expansion
- STL and TSL links
- · Signal aggregation for outdoor and event coverage
- · Signal aggregation for security and monitoring

Function	Ordering Information	Description	Slots Occupied
8 Channel CWDM Mux	7706CWDM-M8	8 Channel CWDM Mux (1470nm-1610nm)	1
8 Channel CWDM Demux	7706CWDM-D8	8 Channel CWDM Demux (1470nm-1610nm)	1
16 Channel CWDM Mux	7706CWDM-M8 & 7706CWDM-M8LB	16 Channel CWDM Mux (1270nm-1610nm)	2
16 Channel CWDM Demux	7706CWDM-D8 & 7706CWDM-D8LB	16 Channel CWDM Demux (1270nm-1610nm)	2





#### ▶ Specifications

<b>Optical Input/Output:</b>		Lin
Connector:	LC/UPC or LC/APC female housing	77(
Wavelength:		77(
7706CWDM-8:	1470-1610nm	Ex
7706CWDM-8LB:	1270-1450nm	77(
Channel Spacing:	20nm	
Passband @ 0.5dB:	> 13nm	
Channel Uniformity:	< 1.5dB	
Isolation Adjacent Char	nnel:	
	> 30dB	
Directivity:	> 50dB	
Fiber Size:	9µm core/125µm overall	
Return Loss:	> 45dB	

#### Link Loss with Mux and Demux Combination: 7706CWDM-8: < 3dB Maximum Loss 7706CWDM-8LB: < 3dB Maximum Loss Expansion Port: < 3dB Maximum Loss 7706CWDM-8 + 7706CWDM-8LB: < 3dB (1270nm - 1450nm) < 6dB (1470nm - 1610nm)

#### Physical (number of slots) 350FR,7700FR-C & 7800FR: 7705CWDM-D8: 1 7706CWDM-D8LB: 1 7706CWDM-M8: 1 7706CWDM-M8LB: 1 n)

7706CWDM-M8 7706CWDM-M8LB 7706CWDM-D8	8 Channel High Band CWDM Mux (1470nm – 1610nm), LC/UPC 8 Channel Low Band CWDM Mux (1270 - 1450nm), LC/UPC 8 Channel High Band CWDM Demux (1470nm – 1610nm), LC/UPC	Rear Plate Suffix +3RU	3RU Rear Plate for use with 350FR, 7700FR-C or 7800FR Multiframe
7706CWDM-D8LB	8 Channel Low Band CWDM Demux (1270 - 1450nm), LC/UPC		
7706CWDM-M8-AP	8 Channel High Band CWDM Mux (1470nm – 1610nm), LC/APC	Fiber Optic Patch	h Cable
7706CWDM-M8LB-	AP	See CWDM & DW	/DM Ordering Information Page
	8 Channel Low Band CWDM Mux (1270 - 1450nm), LC/APC		
7706CWDM-D8-AP	8 Channel High Band CWDM Demux (1470nm – 1610nm), LC/APC	Enclosures	
7706CWDM-D8LB-A	NP	350FR	3RU Portable Multiframe which holds up to 7 single slot modules
	8 Channel Low Band CWDM Demux (1270 - 1450nm), LC/APC	7700FR-C	3RU Multiframe which holds up to 15 single slot modules
Ordering Options	Rear Plate and Fiber Connector must be specified at time of order (Eg: Model +3RU)	7800FR 7801FR	3RU Multiframe which holds up to 15 single slot modules 1RU Multiframe which holds up to 4 single or 2 dual slot modules

#### Features & Benefits

- Cascadeable, bi-directional eight channel mux/demux modules
- ITU-T G.694.1 compliant 0.8nm (100GHz) channel spacing
- · Capable of being inserted into CWDM 1550nm wavelength slot adding an additional 8 or 16 DWDM wavelengths to existing CWDM systems
- · Passive design for any bit rate
- · Low insertion loss to conserve system power
- · High optical isolation for low crosstalk
- · Fully hot-swappable from front of frame with no fiber disconnect/reconnect required
- SC/PC, ST/PC\*, FC/PC\* connector options
- · Fiber protector to prevent connector damage

\*7705DWDM to be used ONLY in Single Mode Fiber applications

#### Applications

- · Multi-channel transport of video, audio, data, control in fiber limited applications
- · Cost reduction exercises through fewer leased fibers
- Studio and Facility extension/expansion
- · L-Band & IF Link transport
- STL and TSL Links
- Signal aggregation for outdoor and event coverage
- · Signal aggregation for security and monitoring



#### Link Loss with Mux and Demux Combination:

7705DWDM-8: < 4.5dB maximum loss

(7705DWDM-25/33) 7705DWDM-16: < 7.5dB maximum loss (7705DWDM-33 + 7705DWDM-25)

#### Ordering Information

> 35dB

Channel Spacing: 100GHz Passband @ 0.5dB: ±0.11nm

Channel Uniformity: < 1.5dB

Adjacent Channel: > 25dB

Non-Adjacent Channel:

Isolation

100GHz (0.8nm nominal)

7705DWDM-25-M8	8 Channel Cascadeable DWDM Mux, 100GHz Spacing, ITU Channel C25-C32
7705DWDM-25-D8	8 Channel Cascadeable DWDM Demux, 100GHz Spacing, ITU Channel C25-C32
7705DWDM-33-M8	8 Channel Cascadeable DWDM Mux, 100GHz Spacing, ITU Channel C33 to C40
7705DWDM-33-D8	8 Channel Cascadeable DWDM Demux, 100GHz Spacing, ITU Channel C33 to C40

\*\*Note: Retention screws have been added to the rear panels of these units. Please note that rear panels from older MUX DEMUX units will not be backwards compatible with newer rear panel units. (See block diagram for rear panel drawings).

Ordering Options	Rear Plate and Fiber Connector must be specified at time of order Eg: Model +3RU + SC $$
Rear Plate Suffix +3RU +1RU	3RU Rear Plate for use with 350FR, 7700FR-C or 7800FR Multifr 1RU Rear Plate for use with 7701FR Multiframe

Suffix	
	3RU Rear Plate for use with 350FR, 7700FR-C or 7800FR Multiframe
	1RU Rear Plate for use with 7701ER Multiframe

Standalone Enclosure (with power supply)

\*Note: ST/PC & FC/PC connectors option is available on 'COMMON' and 'EXPANSION' ports only (SC/PC on remaining fiber I/O ports)

Connector Suffix	
+SC	SC/PC
+ST	ST/PC*
+FC	FC/PC*

#### Accessories Fiber Optic Patch Cable

See CWDM & DWDM Ordering Information Page

Enclosures	
350FR	3RU Portable Multiframe which holds up to 7 single slot modules
7700FR-C	3RU Multiframe which holds up to 15 single slot modules
7800FR	3RU Multiframe which holds up to 15 single slot modules
7801FR	1RU Multiframe which holds up to 4 single or 2 dual slot modules
7701FR	1RU Multiframe which holds up to 3 single or dual slot modules
S7701FR	Standalone Enclosure



+SA

#### Features & Benefits

- Bi-directional mux/demux of up to 16 wavelengths in the 1270nm to 1610nm spectrum (ITU-T G.694.2 compliant)
- Expandable from 4 or 8 to 12 or 16 channel systems
- Passive design for any bit rate
- Low insertion loss to conserve system power
- High optical isolation for low crosstalk
- Fully hot-swappable from front of frame with no fiber disconnect/reconnect required

7705CWDM-M4

- SC/PC, ST/PC\*, FC/PC\* connector options
- Fiber protector to prevent connector damage
- \*7705CWDM to be used ONLY in Single Mode Fiber applications

#### Applications

- · Multi-channel transport of video, audio, data, control in fiber limited applications
- · Cost reduction exercises through fewer leased fibers
- · Studio and Facility extension/expansion
- STL and TSL links
- Signal aggregation for outdoor and event coverage
- Signal aggregation for security and monitoring





Function	Ordering Information	Description	Slots Occupied
4 Channel CWDM Mux	7705CWDM-M4	4 Channel CWDM Mux (1510nm-1570nm)	1
4 Channel CWDM Demux	7705CWDM-D4	4 Channel CWDM Demux (1510nm-1570nm)	1
8 Channel CWDM Mux	7705CWDM-M8	8 Channel CWDM Mux (1470nm-1610nm)	2
8 Channel CWDM Demux	7705CWDM-D8	8 Channel CWDM Demux (1470nm-1610nm)	2
12 Channel CWDM Mux	7705CWDM-M4 & 7705CWDM-M8LB	12 Channel CWDM Mux (1270nm-1570nm)	3
12 Channel CWDM Demux	7705CWDM-D4 & 7705CWDM-D8LB	12 Channel CWDM Demux (1270nm-1570nm)	3
16 Channel CWDM Mux	7705CWDM-M8 & 7705CWDM-M8LB	16 Channel CWDM Mux (1270nm-1610nm)	4
16 Channel CWDM Demux	7705CWDM-D8 & 7705CWDM-D8LB	16 Channel CWDM Demux (1270nm-1610nm)	4



### 7705CWDM Coarse WDM Optical Modules







#### ▶Specifications

Optical Input/Output:				
Connector:	SC/PC, ST/PC or FC/PC* female housing			
Wavelength:				
7705CWDM-4:	1510-1570nm			
7705CWDM-8:	1470-1610nm			
7705CWDM-8LB:	1270-1450nm			
Channel Spacing:	20nm			
Passband @ 0.5dB:	> 13nm			
Channel Uniformity:	< 1.5dB			
Isolation Adjacent C	Channel:			
	> 30dB			
Directivity:	> 50dB			
Fiber Size:	9μm core/125μm overall			
Return Loss:	> 45dB			

< 2.5dB Maximum Loss
< 3.5dB Maximum Loss
< 5.5dB Maximum Loss
< 3.5dB Maximum Loss
07CWDM-8LB:
< 6.0dB (1270nm-1570nm)
05CWDM-8LB:
< 5.5dB (1270nm-1450nm)
< 7.0dB (1470nm-1610nm)
f slots) 350FR,7700FR-C & 7800FR:
1

Link Loss with Mux and Demux Combination:

### Physical (number 7705CWDM-D4:

7705CWDM-D8: 2 7705CWDM-D8LB: 2 7705CWDM-D8LB: 2 7705CWDM-M8: 2 7705CWDM-M8LB: 2

7705CWDM-D4 7705CWDM-D8 7705CWDM-D8LB 7705CWDM-M4 7705CWDM-M8 7705CWDM-M8LB	4 Channel CWDM Demux (1510nm-1570nm) 8 Channel CWDM Demux (1470nm-1610nm) 8 Channel Low Band CWDM Demux (1270nm-1450nm) 4 Channel CWDM Mux (1510nm-1570nm) 8 Channel CWDM Mux (1470nm-1610nm) 8 Channel Low Band CWDM Mux (1270nm-1450nm)	Connector Suffix +SC +ST +FC *Note: ST/PC & FC remaining fiber I/O	SC/PC ST/PC* FC/PC* C/PC connector option is available on 'COMMON' port only (SC/PC on vorts)
**Note: Retention screws have been added to the rear panels of these units. Please note that rear panels from older MUX DEMUX units will not be backwards compatible with newer rear panel units. (See block diagram for rear panel drawings).		Fiber Optic Patch Cable See CWDM & DWDM Ordering Information Page	
Ordering Options	Rear Plate and Fiber Connector must be specified at time of order Eg: Model +3RU +SC	Enclosures 350FR 7700FR-C	3RU Portable Multiframe which holds up to 7 single slot modules 3RU Multiframe which holds up to 15 single slot modules
Rear Plate Suffix +3RU +1RU +SA	3RU Rear Plate for use with 350FR, 7700FR-C or 7800FR Multiframe 1RU Rear Plate for use with 7701FR Multiframe Standalone Enclosure (with power supply)	7800FR 7801FR 7701FR S7701FR	3RU Multiframe which holds up to 15 single slot modules 1RU Multiframe which holds up to 4 single or 2 dual slot modules 1RU Multiframe which holds up to 3 single or dual slot modules Standalone Enclosure



The 7703BPX-DC-RF is a 2x1 RF protection switch for a wide range of frequencies. It provides automatic changeover functionality to provide bypass protection of RF signals from 1-2250MHz, and for DC LNB bias.

The 7703BPX–DC–RF has integrated VistaLINK® PRO technology for remote control and monitoring capability via SNMP. This provides the ability to locally or remotely configure and monitor parameters such as module status, selected input, power level and switching threshold.

When used for automatic changeover, the 7703BPX–DC–RF has a Main input

#### Features & Benefits

- Wide operating frequency range, 1-2250MHz
- Intelligent auto-switching with input power detection
- User-definable threshold levels
- Maintains switch state and RF channel on loss of power to card or frame Supports automatic or manual control via GPI or SNMP
- Switch state indication via GPO
- Card edge LEDs indicate active input channels, output channel and power levels below threshold

and a Standby input. It will automatically switch to the Standby input when the Main input power is weak or lost. Switch back to the Main input when the signal is re-established, may be configured to happen manually or automatically. The 7703BPX–DC–RF may also be configured to operate manually as a 2:1 switch, which may be controlled locally or remotely via GPI or SNMP.

The 7703BPX–DC–RF/LB occupies one card slot and can be housed in a 1RU 7801FR frame that holds up to 4x modules, a 3RU 7800FR frame that holds up to 15x modules, a 350FR portable frame that holds up to 7x modules, or a standalone enclosure that holds one module.

- Passes DC LNB bias and 22KHz tone
- Fully hot-swappable from front of frame
- Comprehensive signal and card status monitoring via four digit card edge display or remotely through SNMP and VistaLINK® PRO
- VistaLINK<sup>®</sup> PRO capability is available with the 3RU 7800FR or 350FR portable frame and a 7800FC/7801FC/7700FC VistaLINK® frame controller module in Slot 1 of the frame

7801FR:



#### Specifications

RF Input/Output:		General Purpose Inputs:		General Purpose Outputs:	
Inputs:	2	Number of Inputs:	2	Number of Outputs:	1
Outputs:	1	Type:	Opto-isolated, active low	Туре:	"Dry contact" relay contacts —
Connector:	1 BNC per IEC 61169–8 Annex A		with internal pull-ups to +5V		normally open and normally
	(F-type and SMA optional)	Connector:	2 pins plus ground on		closed contact provided
I/O Impedance:	75Ω (50Ω optional)		6-pin terminal strip	Connector:	3 pins on 6-pin terminal strip
Frequency Response	•	Signal Level:			
1–2250MHz:	<±1dB	+5V Pullup:	Low: -5 to +2.5V DC,	Electrical:	
Insertion Loss:			High: 3.5 to 10V DC	Voltage:	+12V DC
1–2250MHz:	<2dB	+12V Pullup:	Low: -5 to +9.5V DC,	Power:	4W
Return Loss:	>7dB		High: 10.5 to 15V DC		
Isolation:	>45dB	Max Sink Current:	15mA (input shorted to ground)	Physical (number of	f slots):
Input Power Range:	0dBm to -50dBm	Max Leakage Curren	t for Input High:	350FR:	1
		•	200µA	7700FR-C:	1
				7800FR:	1

7703BPX-DC-RF	2x1 RF protection switch for L–Band frequencies, with VistaLINK <sup>®</sup> PRO monitoring	Rear Plate Suffix: +3RU	3RU rear plate for 350FR, 7700FR–C or 7800FR multiframes
7703BPX-DC-RF	-B50	+1RU	1RU rear plate for 7701FR multiframe
	2x1 RF protection switch for L–Band frequencies, 50Ω BNC connectors with VistaLINK <sup>®</sup> PRO monitoring	+SA	Standalone enclosure rear plate
7703BPX-DC-RF	-\$50	Connector Suffix:	
	2x1 RF protection switch for L–Band frequencies, 50Ω SMA connectors with VistaLINK <sup>®</sup> PRO monitoring	+F75	75Ω F–Type rear connector
Ordering Options of order, eg: Model	: rear plate and optional connector type must be specified at time +3RU — if 75Ω F–type connector required, order optional +F75.	Enclosures: 350FR 7700FR–C 7800FR 7801FR	3RU portable multiframe, holds up to 7x single–slot modules 3RU multiframe, holds up to 15x single–slot modules 3RU multiframe, holds up to 15x single–or 2x dual–slot modules 1RU multiframe, holds up to 4x single– or 2x dual–slot modules
Accessories:		7701FR	1RU multiframe, holds up to 3x single- or dual-slot modules
7800FC	3RU multiframe controller (necessary for 3RU SNMP control)	S7701FR	Standalone enclosure
7801FC	1RU multiframe controller (necessary for 1RU SNMP control)		



The 2408LT is an outdoor fiber optic transmitter for RF signals in the satellite L-Band or wider frequency range. It accepts a single RF input on coaxial cable and provides a single output for optical transmission. Packaged in a compact, standalone enclosure, the 2408LT is ideal for mounting on or near the satellite dish antenna structure. The -WP version features dust and water protection allowing outdoor mounting without a secondary enclosure. A full power RF monitor output provides a convenient means of obtaining peak satellite signal strength, or additional signal distribution.

Gain may be adjusted manually or managed automatically via AGC. With

#### Features & Benefits

- Directly mount to antenna structure or other outdoor locations
- -WP Weatherproof version does not require secondary enclosure
- Wide frequency range for extended L-Band, over the air DTV and other signals
- Protocol-independent design transports all modulation formats
- DC pass-through and 13V DC modes for LNB power
- LNB current limit & short circuit protection
- . LNB current monitoring
- Minimizes coaxial cable length for superior CNR performance .
- 22kHz tone on/off for LNB local oscillator control

SmartMON<sup>™</sup>, incoming RF signal strength, LNB current, status of connected 2400PSU–8 power supply and other data are relayed over the fiber output for monitoring through SNMP/VistaLINK<sup>®</sup> (requires SmartMON<sup>™</sup>–capable companion fiber receiver). The 2408LT also provides a DC passthrough mode for LNB power and comprehensive indicators that provide status information on the input DC power and RF drive level as well as LNB power status.

For GPS applications, 2408LTA13-5V-B50 can be used to power-up GPS antenna with 5V supply and transport GPS signals over fiber.

RF monitor output for signal peaking and signal distribution

- Manually adjustable or AGC gain modes Tri-color LED status indicators for Link RF drive strength,
- LNB voltage and DC input voltage level
- SmartMON<sup>™</sup> capability provides remote status monitoring via SNMP without a separate data connection
- Fiber link provides electrical isolation between antenna and facility mitigating ground loop and lightning issues
- GPS antenna systems



#### Specifications

RF Input:		Optical Output:			
Number of Inputs:	1	Number of Outputs:	1	Power:	2W max excluding LNB Power
Connector:	F–Type (50Ω BNC optional)	Connector:	Female FC/APC	Connector:	F-Type
Conductor Range:	23–18 AWG (0.26–0.82 mm <sup>2</sup> )	Operating Wavelengt	h:	Conductor Range:	23-18 AWG (0.26-0.82 mm <sup>2</sup> )
Input Impedance:	75Ω (50Ω optional)	Standard:	1310nm DFB	g	
Frequency Range:	88–3000MHz	CWDM:	1270–1610nm	Physical:	
Return Loss:		Output Power:		Dimensions (with fland	aes):
88–500MHz:	> 11dB	Standard 1310nm:	+2dBm		5 4"L x 2 4"W x 1 2"H
500MHz–3GHz:	> 15dB	CWDM:	+2dBm		(138mm L x 61mm W x 31mm H)
Input Power Range:	–10dBm to –60dBm				
Manual Gain Range:	+2 to +30dB in 2dB steps	RF System Perform	ance 2408LT+7708LRA pair:	Compliance:	
AGC Hold Range:	-8 to -38dBm ± 2dBm	Flatness:		Laser safety:	Class 1 laser product, complies
Input IP3:	+10dBm	950–2150MHz:	± 1.5dB		with 24 CFR 1040 10 and 1040 11
IMD:	< –55dBc at –15dB input	88MHz–3GHz:	± 2.0dB		IFC 60825–1
	and min.gain		± 0.25dB on 36MHz BW to 2.3GHz	EMI/RFI:	Complies with FCC part 15. Class A
LNB Power:		Gain Variation over Te	emperature:		EU EMC directive
Voltage:	DC input–0.5V DC, 13.5V DC,		± 2dB (from –20°C to +70°C)	Safety:	CSA Listed to CSA C22.2
	off (selectable)				No 60065-03 UL 60065-03
Current:	500mA	10MHz Performance	•		IEC 60065 — (2001–12) 7th edition
Protection:	Short circuit, current limited	2408T13-10MHz+77	08R–10MHz pair:		(,,,
LO Control:	22kHz on/off (selectable)	Manual Gain Range:	-5 to +10dB	Environmental:	
		Input Power Range:	+10 to -40dBm	Temperature:	-30 to 75°C
<b>RF Monitor Output:</b>		OIP3:	+29dB	Dust/Water Protection	IP65 (–WP version only)
Number of Outputs:	1	Harmonic Rejection:	+60dB		
Connector:	F–Type (50Ω BNC optional)				
Conductor Range:	23-18 AWG (0.26-0.82 mm <sup>2</sup> )	DC Input:			
Output Impedance:	75Ω (50Ω optional)	Voltage:	+18V DC nominal, +11 to +20V DC		
Return Loss:	> 15dB		range (>LNB min input voltage		
Frequency Range:			required when powering an LNB)		
Output Level:	Within –2dB of input signal				

Within -2dB of input signal

2408LT13	L–Band/Wideband standalone fiber transmitter, SmartMON <sup>™</sup> ,	Ordering Options:	
	1310nm DFB laser	+PS	External DC power supply brick 100-240VAC
2408T13_10MH-	10MHz standalone fiber transmitter, 1310nm DFB laser		auto, ranging input, indeer mounting with E. Type connector
24001 TA 12 EV DE0	L-Band/Wideband standalone fiber transmitter, 1310nm DFB	WD	Weatherproof ention
2408LTA13-5V-B50	laser, 5VDC powering for GPS antenna, 50 Ohm BNC		weatherproof option
	Connectors		dense Ontiener
	L Bond stand slope fiber transmitter, SmortMON™ CM/DM DED	Connector and impe	dence Options:
2408LTxx	L-Band stand alone liber transmitter, Smartwork, CwDw DFB	Note: standard RF co	nnectors are 75Ω F–Type
	laser	DEO	FOO BNC compositor
2408Txx-10MHz	10MHz standalone fiber transmitter. CWDM DER laser	-650	2017 BINC connector
	TOWINZ Standarone liber transmitter, CWDIM DFD laser		

The 2406LR is a fiber optic receiver for signals in the satellite L-Band and other frequency ranges. It accepts a single fiber optic input on an FC/APC connector and provides a pair of equal power electrical outputs. Packaged in a small, standalone enclosure, the 2406LR is temperaturehardened and ideal for mounting on or near antenna structures, or in any application where modular/rack-mount products are not practical. The -WP version features dust and water protection for direct outdoor mounting without a secondary enclosure. When combined with the 2408LT a bi-directional link can be created, ideal for VSAT and similar applications.

Two gain modes are provided for flexible output level adjustment to suit the requirements of the coaxial distribution system and the connected equipment. Manual gain mode allows a fixed gain level to be applied to the output signal. AGC mode allows the user to set a target output level, and the 2406LR's microprocessor will automatically apply the correct amount of gain to maintain that level. Comprehensive local LED indicators provide instant information relating to optical input, DC power input and RF output levels.

For GPS applications, 2406LR-5V-B50 is used to receive GPS signals over fiber when combined with 2408LT13-5V-B50 transmitter.

#### Features & Benefits

- Mounts directly to the antenna structure or other outdoor locations
- -WP option provides a weatherproof version of the product
- Wide bandwidth allows use with L-Band, over-the-air DTV and other frequency ranges
- Protocol independent design passes all modulation formats
- Dual, full power outputs
- Tri-color LED status indicators for optical input, DC input and RF output levels
- Flexible powering options including power brick (+PS option), 2400PSU-8 or customer's own 11-20V DC source
- Fiber link provides electrical isolation between antenna and facility, mitigating ground loop and lightning issues
- Fiber transport offers increased signal quality over coax at longer distances and is not prone to high-frequency roll-off

#### Applications

- L-Band over fiber transport to L-Band up-converter for uplinks
- VSAT and other bi-directional signals
- Portable antenna deployment
- Any RF fiber receive application requiring a standalone device
- GPS antenna systems



# MODEL 2406LF everlz -BAND/WIDEBAND FIBER RECEIVER 240 OUTPUT LEVEL ADJUST

#### Specifications

RF Outputs:		Optical Input:
Number of Outputs:	2	Number of Inp
Connector:	F–Type (50Ω BNC optional)	Connector:
Conductor Range:	23-18 AWG (0.26-0.82 mm <sup>2</sup> )	Operating Way
I/O Impedance:	75Ω (50Ω optional)	Maximum Inpu
Frequency Range:		2406LR:
2406LR:	88MHz–3GHz	2406LR-H:
2406LR–H:	88MHz–2.3GHz	Optical Sensiti
Return Loss:		2406LR:
88MHz–2.3GHz:	> 15dB	
2.3–3GHz:	> 12dB	2406LR-H:
Output IP3:	+28dBm	
IMD:	< –55dBc at –3dBm output	
	and 25dB gain	10MHz Perfor
Output Signal Level:	•	2408T13-10M
Manual Gain:	0 to -60dBm (depending on	Manual Gain F
	input signal level, gain setting	Input Power Ra
	and optical loss)	OIP3:
AGC mode:	–10 to –40dBm	Harmonic Reje
	(adjustable, maintainable within	
	available gain range)	
Available Gain:	-6dB to +24dB in 2dB steps	

mber of Inputs:	1
nnector:	Female FC/APC
erating Wavelength:	1270nm-1610nm
ximum Input Power:	

II IIIput Fowe	I.
R:	+3dBm
R–H:	–7dBm
Sensitivity:	
R:	-14dBm @ 35dB C/N on
	a 36MHz carrier
R–H:	-20dBm @ 35dB C/N on
	a 36MHz carrier

#### rformance

10MHz+7708R-10MHz pair: -5 to +10dB ain Range:

+10 to -40dBm er Range: +29dB Rejection: +60dB

#### DC Input: Voltage

2406LR-5V-B50: 4.8-5.2V DC (range must be supplied by a regulated 5V source) Other 2406LR models: +18VDC nominal, +11V DC to +20V DC range

F-Type

Connector: Conductor Range:

#### Physical:

Dimensions (with flanges)

5.4"L x 2.4"W x 1.2"H (138mm L x 61mm W x 31mm H)

23-18 AWG (0.26-0.82 mm<sup>2</sup>)

#### Environmental:

-30 to 75°C Temperature: Dust/Water Protection: IP65 (-WP version only)

#### Ordering Information

2406LR	L–Band/Wideband standalone fiber receiver
2406LR-H	High sensitivity L–Band/Wideband standalone fiber receiver

**Ordering Options:** +PS

-WP

External DC power supply brick, 100-240VAC auto-ranging input, indoor mounting with F-Type connector Weatherproof option

**Connector and Impedence Options:** Note: standard RF connectors are 750 F-Type 50Ω BNC connector -B50

The 2406BIAST–2 is a high–performance dual channel Bias Tee, suitable for a wide range of satellite antenna applications. Typical applications are seen when the downstream device of the LNB does not supply the 10MHz reference source and/or DC power. This next generation Bias Tee provides a neat and simple solution to supply the 10MHz and DC power to dual LNBs on the same RF cable as the L–Band outputs of the LNBs.

The 2406BIAST–2 comes equipped with 2x L–Band inputs (LNB 1/2), 2x L–Band outputs (Rx 1/2), a 10MHz reference input and DC input. The L–Band inputs come from the LNB and pass through to the L–Band outputs (Rx 1/2) to the downstream devices. The 10MHz input and DC power is multiplexed and sent to both L–Band inputs (LNB 1/2) to supply 10MHz reference and DC power to both LNBs.

The LNBs can be powered by the downstream device if applicable (i.e. Evertz RF over Fiber transmitter) as the 2406BIAST–2 features DC passthrough. If the downstream devices do not have DC power or if external DC power is preferred, an external DC input is available for a current up to 1000mA.

#### Features & Benefits

- Compact, mountable form factor
- DC passthrough for LNB power
- External DC input
- Weatherproof, IP65-rated (+WP option)
- · Compatable with LNBs, BUCs, modems and more
- Dual channel to support two LNBs



- · 22kHz tone on/off LNB local oscillator control, DiSEqC protocol
- Low insertion loss
- · Passive device for high reliability
- Low passband ripples
- Can be mounted inside Evertz' 24000DU Integrated Fiber Transport System





### **2406BIAST–2** Dual Channel Bias Tee with L–Band/DC Passthrough and 10MHz Reference Mux

#### ▶ Specifications

Connectors: L–Band Inputs:	2	LNB Power Supply a Voltage:	and Control: 13/18V DC, off (selectable)	Physical: Dimensions (with flan	ges):
L-Band Outputs:	2	LO Control:	22kHz on/off (selectable) DiSEqC		5.4" L x 2.4" W x 1.2" H
10MHz Inputs:	1	Max. Current:	1000mA		(138mm L x 61mm W x 31mm H)
DC Inputs:	1	Protection:	Short circuit, overload		
Connectors:	F–Type (SMA, BNC optional)	Conductor Range:	23-18 AWG (0.26-0.82 mm2)	Environmental:	
Impedance:	75Ω (50Ω optional)	-		Operating Temp:	-40 to +80°C
		10MHz Reference (e:	xternal):	Relative Humidity:	Up to 100% condensation and frost
L-Band:		Connector:	50Ω BNC	Dust/Water Protection	n: IP65 (+WP version)
Frequency Range:	100–2500MHz	Input Frequency:	10MHz		
Thru Loss:	0.5dB maximum				
Ripple/Flatness:	±0.5dB maximum	DC Input:			
Input VSWR:	1.5:1 maximum	Voltage:	+18V DC nominal,		
Output VSWR:	1.5:1 maximum		+11 to +18VDC range		
Input Return Loss:	14dB		(> LNB min input voltage required		
Output Return Loss:	15dB		when powering an LNB)		
Ordering Infor	mation				

2406BIAST-2	High performance dual–channel Bias Tee, passes through DC and L–Band with a 10MHz reference multiplexer; external DC input option for built–in LNB powering (external power supply sold separately)	Ordering Options: +WP +PS	Weatherproof option External DC power supply brick, 100–240 VAC auto-ranging input, indoor mounting with F-Type connector
		Connector Options: –S50 –B50	50Ω, SMA connectors 50Ω, BNC connectors

The 2400PSUA-8 is used to supply power for up to eight 2408LT RF fiber optic transmitters including DC power for upstream LNBs. It contains dual, diode-

isolated, redundant DC power supplies and provides eight outputs on F-Type connectors.

#### Features & Benefits

- Provides diode-isolated, redundant DC power for up to eight 2408LT modules and upstream LNBs
- Active short circuit for protection of each DC output
- LED indicators display the status of each power supply and DC output
- PSU status signal output for remote monitoring via connected SmartMON<sup>™</sup> capable fiber transmitter
- Weather proof option available for mounting outdoors



#### ▶ Specifications

Power Input Number of Inputs:	2	Power Output: Number of Outputs:	8	Physical: Dimensions (with flau	nges):
Connector:	IEC320 inlet connectors included	Protection:	Short circuit, current limit		9.9"L x 5.7"W x 2.0"H
Voltage: Frequency: Power:	Auto ranging, 100-240V AC 50/60Hz 1 Amp max	Voltage: Current:	F-Type 18 ±1V DC per output 850mA max per output	Safety:	CSA Listed, complies with EU Safety Directive
			Total of 4 Amps on all outputs	EMI / RFI:	Complies with FCC Part 15 Class A EU EMC directive
				Environmental: Temperature: Dust & Water Protec	-20 to +70°C tion: IP65(-WP versions only)

2400PSUA-8	Eight output power supply for 2408LT
2400PSUA-8-WP	Eight output weatherproof power supply for 2408LT



The 2307LR is a fiber optic receiver in a revolutionary form factor. With the same diameter as a BNC connector, and overall length of 3.3" (85mm), the 2307LR is the smallest RF optical receiver in the industry. It accepts an optical LC connector input on one end, and provides an electrical output on the other.

The 2307LR attaches to the input of a device without any intermediate cabling required. This essentially offers direct optical input to the connected piece of equipment, without incurring the cost and rack space associated with using conventional optical receivers. The primary application is in providing direct optical inputs to XRF series routers, without requiring external fiber receiver cards.

The 2307LR receives its power from the same connector that attaches to the input of the companion device, therefore the 2307LR may also be interfaced to any device that provides LNB voltage at its RF input connector. For example, when connected to a 7703DA16-RF-LNB, a fiber receiver with 16 electrical outputs is created. A 2307LR connected to the input of a 7703PA-LNB results in a fiber receiver with a high-powered output and adjustable slope compensation. The 2307LR may also be connected to the DC-biased inputs of devices such as IRD's, facilitating direct optical input via high-performance optical infrastructure.

#### Features & Benefits

- Compact, efficient form factor provides fiber receiver functionality in zero rack space
- Provides high-quality, direct optical input to XRF series routers and other devices with DC biased RF input ports
- Wide frequency range for L-Band, over-the-air DTV and other applications
- Tri-color LED optical input strength indicator
- Efficient design featuring high reliability and low power consumption
- · Protocol independent passes any modulation format

 Minimizes the use of coax in the infrastructure, providing the highest possible quality signals over longer distances and without high-frequency rolloff

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Compatible with Evertz 2408LT, 7708LT and 7807LT-2 series fiber transmitters

#### Applications

- Direct optical inputs to XRF routers
- · Direct optical inputs to IRD's and other devices with LNB bias
- · Distribution amplifiers with optical input
- · Line amps/slope compensators with optical input



#### Specifications **RF Outputs: Optical Input:** DC Input: Number of Outputs Number of Inputs: Voltage: 13V DC nominal, range 9-21V DC . Female LC/UPC BNC per IEC 61169-8 Annex A Connector: Connector: Connector: BNC per IEC 61169-8 Annex A I/O Impedance: (same connector as RF output) 75Ω Operating 120MHz - 3GHz Frequency Range: Wavelength: 1270nm-1610nm Power < 1 Watt Return Loss: 120MHz to 2.3GHz > 15dB Max Input Power: +3dBm -14dBm @ 35dB C/N on a 2.3GHz to 3GHz > 12dB Optical Sensitivity Physical: Output: IP3 +40dBm 36MHz carrier 3.3" long x 0.57" dia. Dimensions: (84mm long x 15mm dia.) Link Gain: -6dB at 0dBm optical input, and 0dB gain at the fiber transmitter

#### Ordering Information

2307LR

Miniature L-Band/Wideband Fiber Receiver