

# LegacyPlus BTN-x Return Path Transmitter

Replacement/Upgrade Transmitter Modules for Motorola/GI BTN & AM-MBR HFC Nodes

## Features / Benefits

- F-P, DFB (1310 or 1550nm) or CWDM (ITU-grid 1470-1610nm) return path optical transmitters
- For the installed base of Motorola/GI Model BTN-x and AM-MBR HFC optical nodes
- Performs significantly better than or equal to the original Model AM-MB/TC modules
- Reduced laser clipping in VoIP deployments via DFB or CWDM module replacement of FP lasers
- Also ideal for systems undergoing “node splitting” for return path segmentation purposes
- Low cost alternative to DWDM transmitters, digital reverse & other node segmentation methods
- Plug-in pad attenuator facilitates easy adjustment of RF Input drive level
- Convenient DC test point scaled to Optical Output power (10V/mW)
- Low power consumption & good heat dissipation for increased service life and reliability
- Field proven since 1999: Olson TX & RX modules successfully deployed in 1000’s of nodes worldwide

The **OLSON TECHNOLOGY, INC. (OTI) LegacyPlus series of Replacement & Upgrade Modules for Installed HFC Optical Nodes** is a high performance, low cost, field proven group of custom engineered products specifically designed to upgrade the functionality of installed optical nodes from many major manufacturers by dramatically increasing upstream or downstream bandwidth without having to replace optical nodes or deploy extra fiber, 1550nm ITU grid DWDM lasers, baseband digital reverse modules, or other expensive return path segmentation technologies.



**OLSON TECHNOLOGY, INC. (OTI) LegacyPlus BTN-x Return Path Transmitter Modules** have been specifically designed so that node modules can be replaced, if needed, with any module or unit of the same type and the same optical and electrical specifications from Motorola/GI, the original manufacturer of the BTN-x and AM-MBR node families. Hence, the replacement of a node based Return Path Transmitter Module does not require replacement of the corresponding headend optical receiver or vice versa.

**LegacyPlus** products provide outstanding return path performance, system design flexibility and scalability in almost any network architecture from traditional Hybrid Fiber Coax (HFC) to the newer fiber deep Targeted Service Delivery (TSD) area topologies. There are two general types of reverse transmitters available: (1) Fabry-Perot (FP) type, which are lower priced and designed for low traffic data carrier transmission applications with less stringent performance requirements (i.e. element management, set top box communications, etc.), and; (2) DFB/CWDM-type, which support analog video channels and/or high capacity data traffic (i.e. Internet access, telephony, etc.).

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The introduction of VoIP telephony adds even tougher constraints to return path performance. Originally deployed FP transmitter modules tend to exhibit laser clipping. One of the end results of clipping is packet loss, which is very detrimental to VoIP. **LegacyPlus** DFB & CWDM TX modules, with their inherently higher dynamic range, provide cost effective and robust migration alternatives to FP laser reverse transmitters during pre-VoIP plant upgrades.

In addition to the many “standard” **LegacyPlus** modules currently available to system operators, **OLSON TECHNOLOGY, INC. (OTI)** continues to work with MSOs to define, refine, develop and manufacture new solutions custom tailored to their individual system requirements. For the latest information or to discuss possible module availability or design for unlisted nodes, please contact **OLSON TECHNOLOGY, INC. (OTI)** directly.

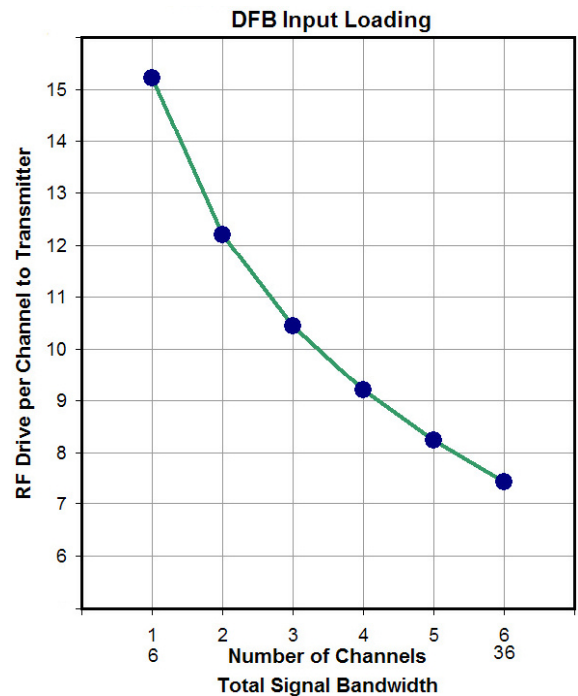
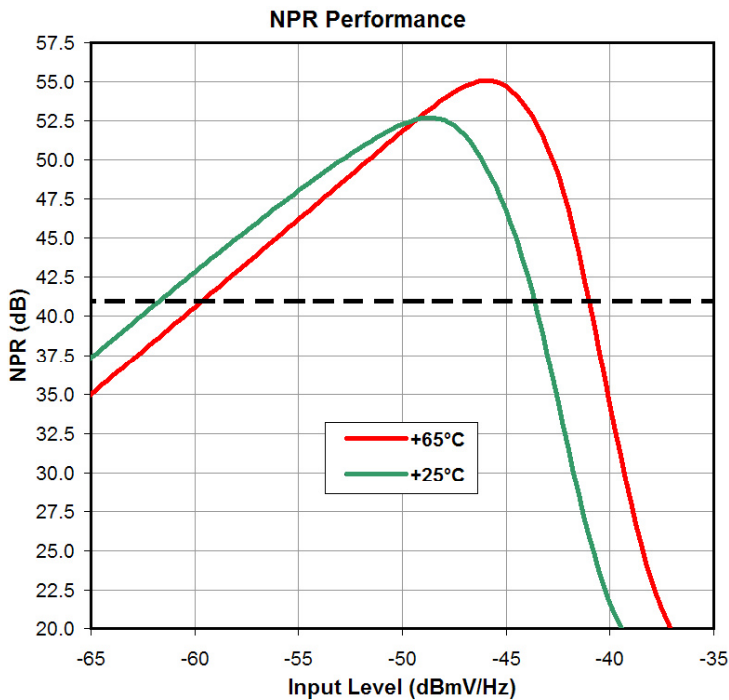
# LegacyPlus BTN-x Return Path Transmitter

## Specifications (Return Path Optical Transmitters: FP, DFB & CWDM)

### RF INPUT & PERFORMANCE PARAMETERS:

Frequency Response Range ( $\pm 1.0$ dB)	5 MHz to 220 MHz	
Return Path NPR (DFB/CWDM) *	> 15dB over 41dB NPR*	@41dB NPR Threshold
Return Path Threshold (DFB/CWDM) *	-57 dBmV/Hz	
Return Path NPR (FP) *	> 15dB over 37 dB NPR*	@37 dB NPR Threshold
Return Path Threshold (FP) *	-57 dBmV/Hz	
Input Return Loss	> 16 dB	
Input Level	(see graph)	

\* NOTE: As measured with 10dB of fiber & Olson Model # OTOR-300 Return Receiver and 6-channel 35MHz loading.



### OPTICAL OUTPUT PARAMETERS:

Optical Output (FP)	2.0 mW (unisolated and isolated versions) @ 1310nm
Optical Output (DFB)	1.0, 2.0 or 3.0 mW @ 1310nm / 2.5 mW @ 1550nm
Optical Output (CWDM)	2.5mW @ 1470, 1490, 1510, 1530, 1550, 1570, 1590 or 1610nm
Return Loss	> 60 dB with APC connector
Optical Connector	SC/APC standard; FC/APC optional (8°APC); SC/UPC optional

### USER INTERFACE

Optical Output Level	10V/mW
Interstage RF Plug-In Pad	0 dB to control Input RF signal path to laser

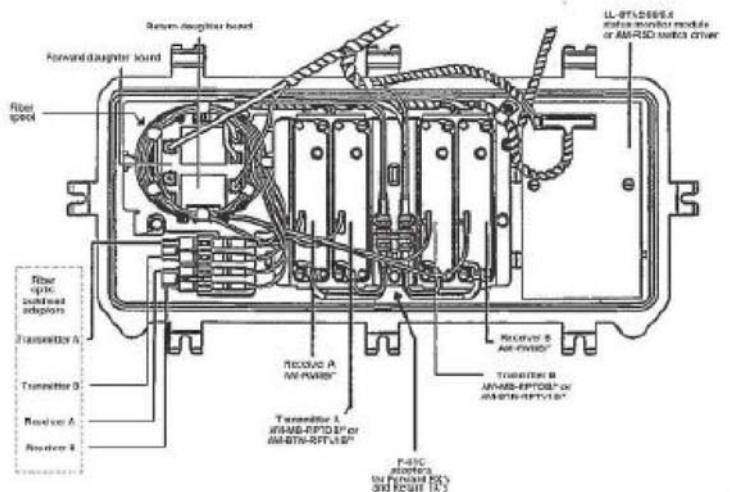
### ELECTRICAL, ENVIRONMENTAL & MECHANICAL PARAMETERS

Dimensions (WxHxD)	5.5" x 1.2" x 1.2"
Weight	0.4 lbs
Operating Temperature Range	-40 to +70°C (temperature at the mounting plate)
Powering	+24 V <sub>DC</sub>
Power Dissipation	< 4 W
Mounting	Inside Motorola/GI BTN-x or AM-MBR optical nodes

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# LegacyPlus BTN-x Return Path Transmitter

## Ordering Information



### Model Number

### Description (Optical Output Power; Wavelength; Laser Type; Optical Connector)

<b>AM-MB-RPTDB/SC/302</b>	R-TX Module; MOT BTN; 5-220MHz; 2mW unisolated 1310nm F-P; SC/APC
<b>AM-TC-RPT/SC/303</b>	R-TX Module; MOT BTN; 5-220MHz; 2mW isolated 1310nm F-P; SC/APC
<b>AM-TC-DFBT/SC/304</b>	R-TX Module; MOT BTN; 5-220MHz; 3mW 1310nm DFB; SC/APC
<b>AM-TC-DFBT/SC/304/1MW</b>	R-TX Module; MOT BTN; 5-220MHz; 1mW 1310nm DFB; SC/APC
<b>AM-TC-DFBT/SC/304/2MW</b>	R-TX Module; MOT BTN; 5-220MHz; 2mW 1310nm DFB; SC/APC
<b>AM-TC-DFBT/SC/505</b>	R-TX Module; MOT BTN; 5-220MHz; 2.5mW 1550nm DFB; SC/APC
<b>AM-TC-DFBT/SC/547</b>	R-TX Module; MOT BTN; 5-220MHz; 1.5mW 1470nm CWDM DFB; SC/APC
<b>AM-TC-DFBT/SC/549</b>	R-TX Module; MOT BTN; 5-220MHz; 1.5mW 1490nm CWDM DFB; SC/APC
<b>AM-TC-DFBT/SC/551</b>	R-TX Module; MOT BTN; 5-220MHz; 1.5mW 1510nm CWDM DFB; SC/APC
<b>AM-TC-DFBT/SC/553</b>	R-TX Module; MOT BTN; 5-220MHz; 1.5mW 1530nm CWDM DFB; SC/APC
<b>AM-TC-DFBT/SC/555</b>	R-TX Module; MOT BTN; 5-220MHz; 1.5mW 1550nm CWDM DFB; SC/APC
<b>AM-TC-DFBT/SC/557</b>	R-TX Module; MOT BTN; 5-220MHz; 1.5mW 1570nm CWDM DFB; SC/APC
<b>AM-TC-DFBT/SC/559</b>	R-TX Module; MOT BTN; 5-220MHz; 1.5mW 1590nm CWDM DFB; SC/APC
<b>AM-TC-DFBT/SC/561</b>	R-TX Module; MOT BTN; 5-220MHz; 1.5mW 1610nm CWDM DFB; SC/APC

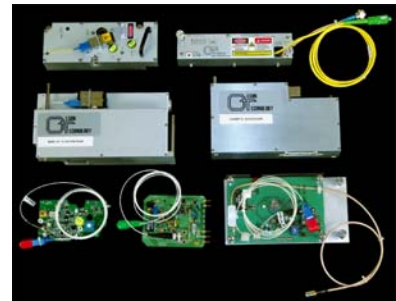
- \* NOTE: Substitute "SU" for "SA" if SC/UPC optical connector is required
- NOTE: Substitute "FA" for "SA" if FC/APC optical connector is required
- NOTE: Substitute "FU" for "SA" if FC/UPC optical connector is required

## Additional HFC Optical Nodes supported by Olson's LegacyPlus

The following is a partial list of HFC optical nodes for which Return Transmitter and/or Forward Receiver Modules are either available or under development.

Please contact **OLSON TECHNOLOGY, INC. (OTI)** regarding availability of units not listed below.

- \* ADC/C-COR ISX-3030/3040 & 3021
- \* Antec/Texscan Gateway II, GlassPal & FlameThrower
- \* Arris/Antec LLRX100, LLRX200, LLRX400 Gemini
- \* Augat Megaflex
- \* Harmonic HLR3830 & HLN3841/3842/3843/3844 PWRBlazer
- \* Motorola/GI BTN-2, AM-MBR & SG2000/2440
- \* Philips/Magnavox 7-OR Diamond Point
- \* Scientific-Atlanta 6920, 6940/6942/6944 & Gainmaker



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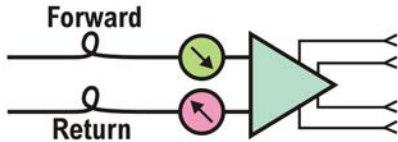
[www.olsontech.com](http://www.olsontech.com)

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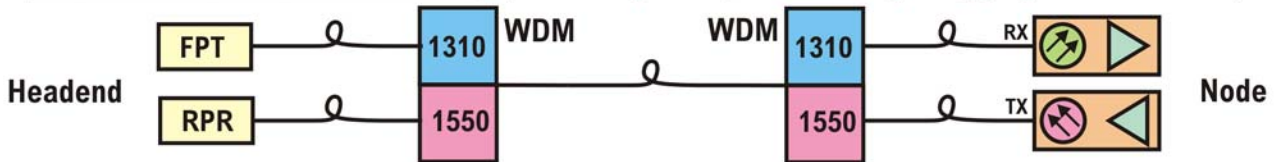
## Typical Applications

### 1. STANDARD 2-WAY CONFIGURATION *(for Node Upgrade, Maintenance and Repair):*

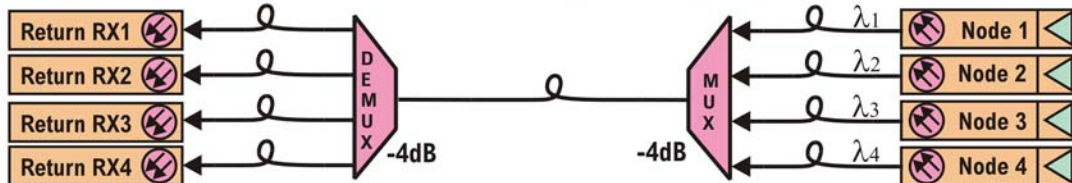


- A. One-way to Two-way Node Upgrade
- B. OEM Module Replacement for Routine Maintenance and Repair
- C. FP to DFB Laser Upgrade for VoIP Telephony System Deployment

### 2. SINGLE FIBER CAPACITY DOUBLING *(WDM in forward/return node splitting for fiber conservation):*



### 3. MULTIPLE NODE RETURN PATH MULTIPLEXING *(CWDM for return path fiber conservation)*



### 4. RETURN PATH SEGMENTATION & REDUNDANCY *(WDM or CWDM for return fiber conservation):*

