

## LegacyPlus ISX-30xx Return Path Transmitter

Replacement/Upgrade Transmitter Modules for ADC/C-COR ISX30xx 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 ADC/C-COR ISX-30xx HFC optical nodes
- Designed to perform significantly better than or equal to the original Model # IX40-RPTX modules
- Reduced laser clipping in VoIP deployments via DFB or CWDM module replacement of F-P lasers
- Also ideal for systems undergoing “node splitting” for return path segmentation purposes
- DUAL LASER OPTION in the module to facilitate return path segmentation and/or redundancy
- Plug-in pad attenuator facilitates easy adjustment of RF Input drive level
- Convenient DC test point scaled to Optical Output power (1V/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 ISX-30xx 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 ADC/C-COR, the original manufacturer of the ISX-30xx node family. 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 (F-P) 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.).

The introduction of VoIP telephony adds even tougher constraints to return path performance. Originally deployed F-P 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 F-P 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 ISX30xx Return Path Transmitter

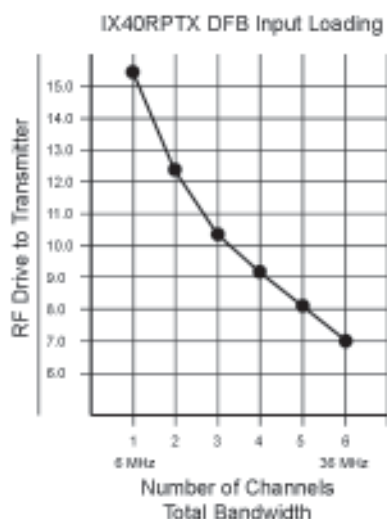
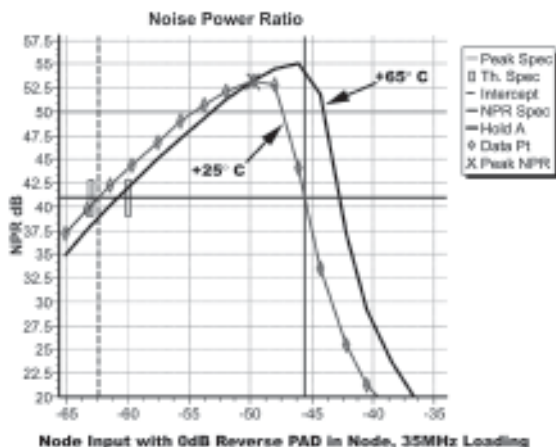
## Specifications (Return Path Optical Transmitters: F-P, DFB & CWDM)

### RF INPUT & PERFORMANCE PARAMETERS:

Frequency Response Range (+/- 1.0 dB)	5 MHz to 220 MHz
Return Path NPR (DFB/CWDM) *	> 15dB over 41dB NPR*
Return Path Threshold (DFB/CWDM) *	-57 dBmV/Hz (@41dB NPR Threshold)
Return Path NPR (F-P) *	> 15dB over 37 dB NPR*
Return Path Threshold (F-P) *	-57 dBmV/Hz (@37 dB NPR Threshold)
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, with +7 dBmV per channel RF Input (to transmitter).

\*\* NOTE: Olson ISX-30xx DFB/CWDM R-TXs have minimum 7dB of additional gain available for CNR improvement in lower channel or bandwidth loading scenarios. For example, if only 2 channels are used, the NPR curve (see graph) allows for an additional 5 dB of RF input level without inducing laser clipping to improve the CNR level accordingly.



### OPTICAL OUTPUT PARAMETERS:

Optical Output (F-P)	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	1V/mW
Optical Power Alarm	Green / Red LED
Interstage RF Plug-In SXP Pad Pad	7 dB to control Input RF signal path to laser

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## Specifications (continued)

### ELECTRICAL, ENVIRONMENTAL & MECHANICAL PARAMETERS

Dimensions (WxHxD)	1.3" x 6" x 3.9" (3.5 cm x 15 cm x 9.75 cm)
Weight	1.37 lbs (0.624 kg)
Operating Temperature Range	-40 to +70°C (temperature at the mounting plate)
Powering	+5 VDC / -5 VDC
Power Dissipation	< 4 W
Mounting	inside ADC/C-COR ISX-30xx optical node

## Ordering Information

<u>Model Number</u>	<u>Description (Optical Output Power; Wavelength; Laser Type; Optical Connector)</u>
<b>IX40RPTX-SA/302</b>	R-TX Module; ADC ISX; 5-220MHz; 2mW unisolated 1310nm F-P; SC/APC
<b>IX40RPTX-SA/303</b>	R-TX Module; ADC ISX; 5-220MHz; 2mW isolated 1310nm F-P; SC/APC
<b>IX40RPTX-SA/304</b>	R-TX Module; ADC ISX; 5-220MHz; 3mW 1310nm DFB; SC/APC
<b>IX40RPTX-SA/304/1MW</b>	R-TX Module; ADC ISX; 5-220MHz; 1mW 1310nm DFB; SC/APC
<b>IX40RPTX-SA/304/2MW</b>	R-TX Module; ADC ISX; 5-220MHz; 2mW 1310nm DFB; SC/APC
<b>IX40RPTX-SA/505</b>	R-TX Module; ADC ISX; 5-220MHz; 2.5mW 1550nm DFB; SC/APC
<b>IX40RPTX-SA/547</b>	R-TX Module; ADC ISX; 5-220MHz; 2.5mW 1470nm CWDM DFB; SC/APC
<b>IX40RPTX-SA/549</b>	R-TX Module; ADC ISX; 5-220MHz; 2.5mW 1490nm CWDM DFB; SC/APC
<b>IX40RPTX-SA/551</b>	R-TX Module; ADC ISX; 5-220MHz; 2.5mW 1510nm CWDM DFB; SC/APC
<b>IX40RPTX-SA/553</b>	R-TX Module; ADC ISX; 5-220MHz; 2.5mW 1530nm CWDM DFB; SC/APC
<b>IX40RPTX-SA/555</b>	R-TX Module; ADC ISX; 5-220MHz; 2.5mW 1550nm CWDM DFB; SC/APC
<b>IX40RPTX-SA/557</b>	R-TX Module; ADC ISX; 5-220MHz; 2.5mW 1570nm CWDM DFB; SC/APC
<b>IX40RPTX-SA/559</b>	R-TX Module; ADC ISX; 5-220MHz; 2.5mW 1590nm CWDM DFB; SC/APC
<b>IX40RPTX-SA/561</b>	R-TX Module; ADC ISX; 5-220MHz; 2.5mW 1610nm CWDM DFB; SC/APC
<b>IX40RPTX-SA/304/505</b>	R-TX DUAL Module; ADC ISX; 5-220MHz; 1310 & 1550nm DFBs; SC/APC
<b>IX40RPTX-SA/5xx/5xx</b>	R-TX DUAL Module; ADC ISX; 5-220MHz; 15xx & 15xxnm CWDM DFBs; 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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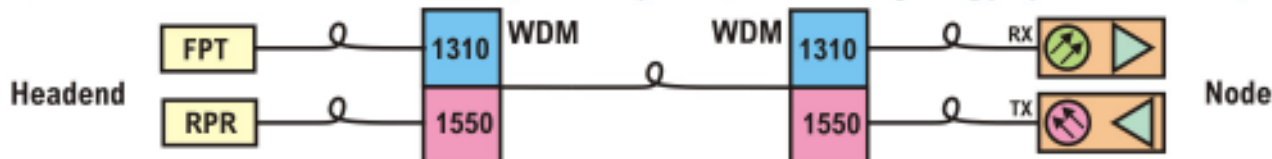
## Typical Applications

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

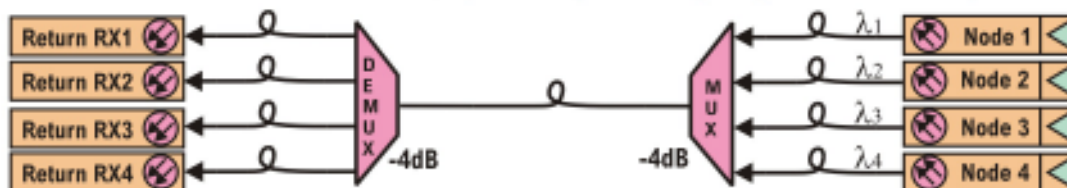


- A. One-way to Two-way Node Upgrade
- B. OEM Module Replacement for Routine Maintenance and Repair
- C. FP to DFB Laser Upgrade for VoIP Telephony System Deployment

### 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):*

