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LegacyPlus TX & RX Modules Overview

Replacement/Upgrade Modules for Installed Nodes from Many Leading Manufacturers

Features / Benefits

- **F-P, DFB or CWDM laser return transmitters and High Sensitivity 870 MHz forward receiver**
- For installed bases of HFC optical nodes from Motorola, S-A, Arris, ADC, Harmonic, etc
- Eliminates wholesale node replacement when the OEM manufacturer obsoletes the product
- **Accommodates many models, including currently available AND "orphaned" legacy nodes**
- Designed to perform significantly better than –OR- equal to the original OEM module
- Increased Return Path fiber utilization by using WDM & CWDM technologies
- **Ideal for systems undergoing "node splitting" for return path segmentation purposes**
- Low-cost alternative to DWDM transmitters, digital reverse & other segmentation methods
- Also provides seamless & cost-effective forward bandwidth expansion beyond 550 or 750MHz
- Low Input to RX (-8 to +2dBm) facilitates 1x2 field-split with no CNR degradation in the link
- **Field-proven since 1999:** Olson modules successfully deployed in 1000's of nodes worldwide
- Low power consumption & Good heat dissipation for increased service life and reliability
- Stable operation over Time, Temperature and Signal Loading
- Convenient test points
- **Low Cost**

The **OLSON TECHNOLOGY, INC. *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 or forward path segmentation technologies.

LegacyPlus products provide outstanding forward and 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. As such, ***LegacyPlus*** products often offer a real alternative to costly field node replacement. A growing number of systems operators have found ***LegacyPlus*** to be the ideal solution to their node splitting and/or upgrade, bandwidth expansion or system maintenance requirements in today's advanced HFC & PON networks.

These units have been designed so that modules can be replaced, if needed, with any module or unit of the same type and the same optical and electrical specifications from the same or different vendor. For example, the replacement of a node-based Return Path Transmitter Module will not require replacement of the optical receiver or vice-versa.. In addition, Olson ***LegacyPlus*** Modules support monitoring and control functions of the node into which they are installed, if the node supports such functions.

In addition to the many "standard" ***LegacyPlus*** modules currently available to MSOs, Olson Technology continues to work with system operators 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. directly.

Typical Specifications (Return Transmitters: F-P, DFB & CWDM)

RF INPUT & PERFORMANCE PARAMETERS:

Frequency Range *(+/- 1.0 dB)*	5 MHz – 225+ MHz
Optical Output *(mW) (F-P / DFB / CWDM)*	1.5 & 2.0 @ 1310nm / 3.0 @ 1310nm / 2.5 @ 1xx0nm
Return Path NPR > 15dB*	F-P: over 37dB NPR; DFB/CWDM over 41dB NPR*
Return Path Threshold	-57 dBmV/Hz (@37 or 41dB, as applicable)

** NOTE: As measured with 10dB of fiber and OTOR-300 High Sensitivity Return Band Receiver*

Typical Specifications (High Sensitivity Forward Receiver)

RF OUTPUT & PERFORMANCE PARAMETERS

Frequency Range *(+/- 1.0 dB)*	54-870 MHz *(NTSC)* or 85-870 MHz *(PAL)*
Output Level *(@ 0 dBm input)*	+25 dBmV
Return Loss	> 14 dBmV
CNR / CSO / CTB *(@ -1dBm input)***	> 54 dB / > 65 dBc / > 68 dBc
RF Gain Adjustment	0-10 dB *(via internal pad)*
Slope	0 dB
RF Test Point *(forward)*	-20 dB; Type F *(external)*

*** NOTE: Typical. 77 NTSC channels to 550MHz & digital loading to 870 MHz (-6dB below analog)*

OPTICAL PARAMETERS

Wavelength	1280 – 1610nm
Optical Input Power Range	-8 to +2 dBm
Optical Input Power Test Point	1V/mW *(external)*

Typical Specifications (Transmitters and Receiver)

OPTICAL PARAMETERS:

Return Loss	> 60 dB with APC connector
Optical Connector	SC/APC standard; FC/APC optional; 8° APC

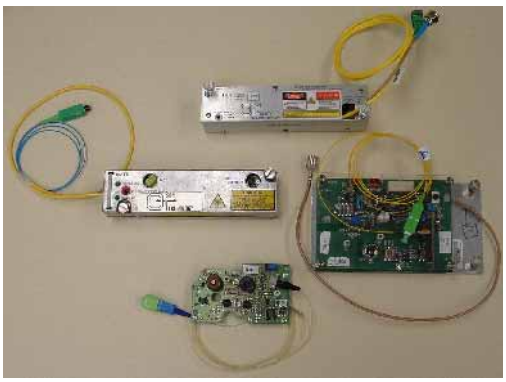
ELECTRICAL, ENVIRONMENTAL & MECHANICAL PARAMETERS

Dimensions	Fit and Form as per the original OEM module
Operating Temperature Range	-40 to +70ºC *(temperature at the mounting plate)*
Powering	+25VDC
Power Dissipation	< 6 W

Supported Optical Nodes

The following ia 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 regarding availability of units not listed below.

* ADC/C-COR	ISX-3040 Node
* Antec/Texscan	Gatekeeper & FlameThrower Nodes
* Arris/Antec	LLRX-400 Gemini Node
* Augat	Megaflex Node
* Harmonic	HLR3830 PWRBlazer Node
* Motorola/GI	BTN-2 , AM-MBR, 6940 & 6944 Nodes
* Philips/Magnavox	7-OR Diamond Point Node
* Scientific-Atlanta	6910, 6920, 6940, 6944 & Gainmaker Nodes



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LegacyPlus TX & RX Modules

Replace/Upgrade modules for the Mot/GI BTN and AM-MBR Nodes

Features / Benefits

- **Customized cost-effective design** that seamlessly replaces Motorola return path transmitter or receiver
- **F-P, DFB –or- CWDM return laser transmitter options**
- TX accommodates **5-200MHz** return bandwidth for the most demanding return path applications
- RX provides **Wide Optical Input Window** (+2dBm to -8dBm) @ 1310/1550nm
- RX accepts full CATV Forward Path Bandwidth to **870MHz** (Analog and QAM Digital)
- Designed to perform better than or equal to the Motorola/GI TX and RX modules
- Increases Return Path potential by using **CWDM** technology

The **OLSON TECHNOLOGY, INC. Motorola/GI TX and RX modules** are designed to replace aging equipment and/or upgrade to 870MHz. The products are cost-effective and full-featured to easily replace the original products and include the very latest optical receiver and transmitter technology to reliably deliver a full slate of multiplexed video, high speed data and telephony services in an HFC or PON broadband CATV environment.

The TX module can provide an extention of reliability in the return path with improved CNR, CTB, and CSO when replacing an F-P laser with a DFB or CWDM laser while the RX module can increase legacy bandwith issues by providing a bandwidth of 50-870MHz.

SPECIFICATIONS *(Forward Optical Receiver)*

RF OUTPUT & PERFORMANCE PARAMETERS:

Frequency Range *(+/- 1.0 dB)*	54-870 MHz *(NTSC)* -or- 85-870 MHz *(PAL)*
Output Level *(@ 0 dBm optical input)*	+25 dBmV
Return Loss	> 14 dB
Impedance	75 Ohm
CNR *(@ -1 dBm optical input)* *	> 54 dB
CSO *(@ -1 dBm optical input)* *	> 65 dBc
CTB *(@ -1 dBm optical input)* *	> 68 dBc
RF Gain Adjustment	0-10 dB *(via internal pad)*
Slope	0dB
RF Test Point *(forward)*	-20 dB *(external);* Type F

** NOTE: Typical. 77 NTSC channel loading to 550MHz & digital loading to 870MHz (-6dB below analog).*

OPTICAL PARAMETERS:

Wavelength	1280 - 1610 nm
Optical Input Power Range	+2 dBm to -8 dBm
Return Loss	> 60 dB with APC connector
Optical Input Power Test Point	1 V/mW *(external)*
Optical Connector	SC/APC standard; FC/APC optional); 8° APC

SPECIFICATIONS *(Return Optical Transmitters: F-P, DFB & CWDM versions)*

RF INPUT & PERFORMANCE PARAMETERS:

Frequency Range *(+/- 1.0 dB)*	5-200 MHz *(NTSC)* -or- 5-200 MHz *(PAL)*
Return Path NPR >15dB **	FP: over 37dB NPR; DFB/CWDM over 41dB NPR **
NPR Threshold *(37dB or 41dB, as applicable)*	-57 dBmV/Hz

*** NOTE: As measured with 10dB of fiber and OTOR-300 High Sensitivity Return Band Receiver*

OPTICAL PARAMETERS: *(also see charts on pages 3 &4)*

Return Loss	> 60 dB with APC connector
Optical Connector	SC/APC standard; FC/APC optional); 8° APC

SPECIFICATIONS *(Forward Optical Receiver and Return Optical Transmitters)*

ELECTRICAL, ENVIRONMENTAL & MECHANICAL PARAMETERS

Dimensions	5.55" L x 1.2" W x 1.2" H
Operating Temperature Range	-40 to +70ºC *(temperature at the mounting plate)*
Powering	+24VDC
Power Dissipation	< 6 W

ORDERING INFORMATION

Model#	Description
AM-RM9/SC	RX MODULE, MOT/GI BTN/AM-MBR NODE, 40-870MHz, -8 to +2dBm, SC APC
AM-MB-RPTDB/SC/302	TX MODULE, MOT/GI BTN/AM-MBR NODE, 5-200MHz, 1.5mW uniso 1310nm F-P, SC/APC
AM-TC-RPT/SC/303	TX MODULE, MOT/GI BTN/AM-MBR NODE, 5-200MHz, 2mW isolated 1310nm F-P, SC/APC
AM-TC-DFBT/SC/304	TX MODULE, MOT/GI BTN/AM-MBR NODE, 5-200MHz, 3mW 1310nm DFB, SC/APC
AM-TC-DFBT/SC/505	TX MODULE, MOT/GI BTN/AM-MBR NODE, 5-200MHz, 2.5mW 1550nm DFB, SC/APC
AM-TC-DFBT/SC/5xx	TX MODULE, MOT/GI BTN/AM-MBR NODE, 5-200MHz, 2.5mW 1xx0nm CWDM, SC/APC

NOTE: xx = 1 of 8 available ITU Grid CWDM wavelengths: (47, 49, 51, 53, 55, 57, 59 or 61)