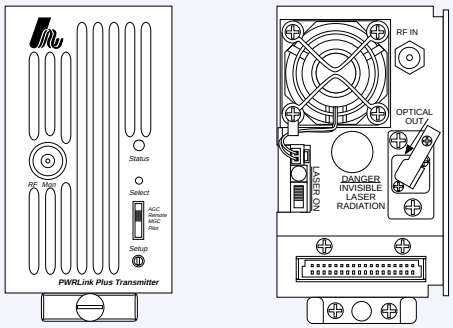
PWRLink™ Plus DFB Transmitter



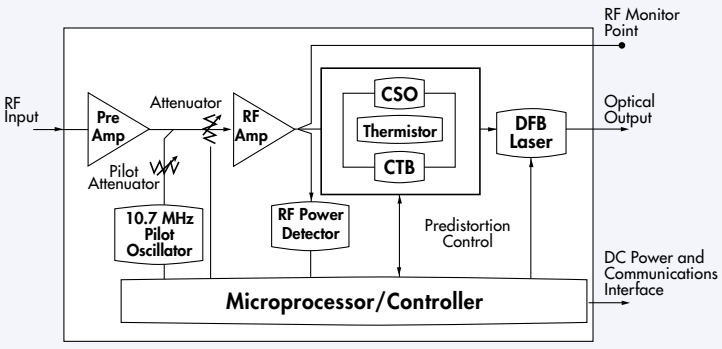
Product Description

Harmonic Lightwaves' PWRLink is a family of high performance DFB laser transmitter modules. Designed for advanced broadband networks, PWRLink Plus transmitters can operate alone in local distribution and narrowcasting applications and in combination with Harmonic Lightwaves' externally modulated transmitter family for complete system solutions.

The PWRLink Plus transmitter modules are compact, intelligent and easily configurable by means of the user-friendly interface, allowing for set-up in minutes. The transmitters can be set up via the HLP 4000/4200 platform front panel menu, the module front panel function slide switch and set-up adjustment, or via the NETWatch™ Element Management System. The PWRLink Plus also incorporates automatic and manual RF level control, maintaining proper laser drive levels, further simplifying installation.

Due to their advanced predistortion circuitry, the state-of-the art PWRLink Plus transmitters deliver high performance with RF distortion suppression.

Standard Configuration



This combination enables system designers to achieve very high carrier-to-noise performance while avoiding receiver overdrive problems. Continuous high performance and reliability of the transmitters are assured by a microprocessor and associated firmware which control and monitor all vital functions. Monitored functions include laser temperature and operating point, optical power, module temperature and composite RF drive level. The transmitter's flat frequency response and wide operating temperature range maximize overall broadband network performance.

The optical components within the PWRLink Plus transmitter module have been designed for ease-of-use and maintenance. The optical output connector is mounted on a removable plate on the back of the unit. This feature facilitates simple cleaning of the connector, ensuring consistently high picture quality.

Advantages

The innovative design of the PWRLink Plus transmitter and Harmonic's complete broadband system offer many advantages to address the needs of today and tomorrow, making it the industry's leading solution for broadband networks:

- Shares common platform with Harmonic's MAXLink™ 1550 nm transmission system.
- Advanced predistortion circuitry and algorithm for both CTB and CSO provide state-of-the-art distortion cancellation over a wide temperature range.
- Integrated element management with SNMP compatibility.
- Microprocessor control of all key parameters provides consistent and optimum product performance and monitoring.
- Offers a wide range of performance levels, providing cost-effective solutions to meet specific system requirements.
- Unparalleled flat frequency response provides high performance and efficient system integration.
- Complements MAXLink 1550 nm transmission system through the unique 10 log rule for adding CTB distortion, maximizing flexibility and cost-savings.
- Automatic or manual RF level control simplifies operation.
- Simple "plug and play" operation reduces time and cost of installation.

Applications

- Combinations of broadcast video and digital narrowcasting
- DFB-1550 nm hybrid cascades for trunking, supertrunking and interconnects
- High performance transport of 750 MHz over links of up to 45 km
- Analog and digital narrowcasting

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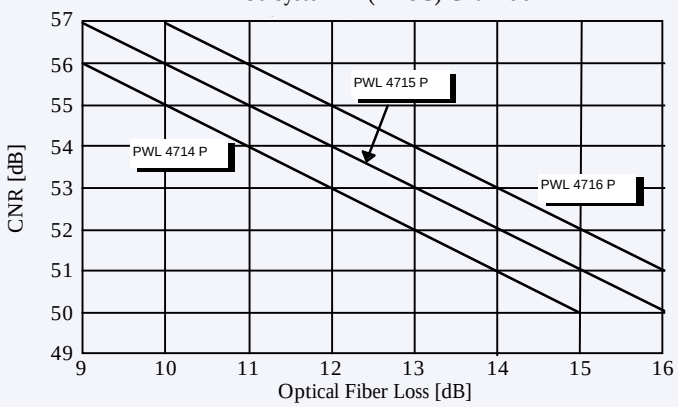
PWRLink Plus CNR vs. Optical Fiber Loss

80 System M (NTSC) Channels[1, 2]



1. Specifications for 80 unmodulated System M (NTSC) channels and 200 MHz digital at –10 dBc.
2. Optical link defined as PWRLink Plus transmitter + 100% fiber link + HRM 3810 receiver.

Link Performance

Carrier-to-noise (CNR): Shown in figure above.
Carrier-to-CSO: > 64 dB
Carrier-to-CTB: > 68 dB
These specifications are typical performance, given for 100% fiber optical links.
Over 90% of PWRLink II transmitters are guaranteed to meet typical performance. Subtract 1 dB from CSO and CTB specifications for worst case performance.
When link includes optical splitter loss add 0.1 dB to CNR for every 1 dB of splitter loss.

Optical Output

Wavelength: 1290-1330 nm
Flatness: < 1 dB peak-to-valley
Laser shutdown: DISABLE/ENABLE switch
Eye protection: Safety shutter

Model	Optical Power (dBm)	Typical Modulation Index[3] (%)
PWL 4714 P	12.0 ± 1.0	4.0 ± 0.25
PWL 4715 P	12.5 ± 1.0	4.0 ± 0.25
PWL 4716 P	13.0 ± 1.0	4.0 ± 0.25

RF Input

Input level range: 18 to 22 dBmV
Operational bandwidth: 50 to 750 MHz
RF attenuator adjustment range: 5 dB
Impedance: 75 Ω
Return loss: > 16 dB
Level control: Auto/manual

User Interface

Front panel
- Bi-state status LED: Normal = Green, Alarm = Red
- Module selection indicator: Yellow LED
- Function slide switch and set-up adjustment
- Monitor point
  - Laser RF drive monitor
  - Flatness: ± 1.5 dB
  - Return loss: > 16 dB
  - Connector type: Male GSK

Rear panel
- Laser ENABLE switch
- Laser enabled: Yellow LED

Element Management System - NETWatch™/HEM

HEM interface: RS-485, RS-232C connectors (in HLP 4000/4200)
HEM carrier: 10.7 MHz (internally generated)

Power Requirements

Nominal: +24 VDC; supplied by HLP 4000/4200 bus
Maximum: +28 VDC
Consumption: 26 Watts maximum

Environmental

Operating temperature range[4]: 0˚ to +50˚ C / +32˚ to 122˚ F
Storage temperature range: –40˚ to +70˚ C / –40˚ to 158˚ F
Automatic three-speed fan adjustment at: 40˚ & 50˚ C / 104˚ & 122˚ F
Relative humidity: Maximum 85% non-condensing
Over temperature laser protection: Software and hardware

Physical

Dimensions: 2.6˝ W x 4.4˝ H x 11.7˝ D /
6.6 cm W x 11.18 cm H x 29.72 cm D
Weight: 3.6 lbs. / 1.63 kg
Mounting: HLP 4000/4200 platform; one module slot
Optical connector type: SC/APC [5]
RF connector type: Standard F, RG-59 cable type
(accepts 0.64 – 0.8 mm center conductor diameter)

3. Modulation index given for 80 System M (NTSC) channels.
4. For operation over entire temperature range, subtract 2 dB from CSO and CTB performance specifications.
5. Other connector types available upon request.

CSA, CE and gs certified.
Harmonic Lightwaves, Inc. continues to improve and update all product designs. Specifications are subject to change without notice.