



GPS RF FIBRE-OPTIC-LINK

PPM's **ViaLite** GPS RF Fibre-Optic-Link provides a high reliability, transparent cross-site connection between a GPS antenna and a GPS receiver.

Using optical fibre, the GPS Antenna may be positioned 10km or more away from the GPS Receiver, whilst overcoming problems due to path loss and electro-magnetic interference etc.



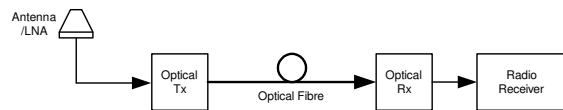
The wide dynamic range of the link results in negligible degradation of satellite signals due to noise or interfering signals.

The use of optical fibre has a number of inherent advantages over conventional coaxial alternatives:

- Low loss - enabling very long path lengths with minimal degradation of carrier-to-noise.
- Lightweight, highly flexible, small diameter cable.
- Frequency response is independent of path length.
- Immunity to electrical interference - the signal is not corrupted by radiated interference.
- Non-conductive - provides electrical isolation.
- Lower cost compared to coaxial cable over long distances

PPM's **ViaLite** product offers particular advantages:

- L1 and L2 GPS frequencies
- Operation from 0m to >10km
- Compact plug-in module – up to 8 in 19” rack case
- Shielded module option for use in high levels of electrical interference or over a wide operating temperature range
- Wide dynamic range for negligible signal degradation
- Front panel status LEDs and rear panel alarm outputs: laser status, received light level
- External LNA/GPS Antenna supply feed option
- Multiple signals on one fibre using CWDM



Complementary PPM ViaLite Products

- OEM module versions
- Alarm concentrator module
- Bi-directional RS422 optical data modules
- 19” Rack Case
- Dual redundant mains & 48V power supplies for maximum availability
- 1:1 RF Redundancy Switch
- RF Splitter / Combiner
- IP66 Environmental Enclosure
- Cross-site fibre optic cables

PPM also offer METRO-GPS, a complete end-to-end installation that comprises antenna, head end transmit unit and BTS receiver for GPS signal transfer in cellular and public radio networks. Contact PPM for more information.

ViaLite GPS RF FIBRE-OPTIC-LINK SPECIFICATIONS

Bandwidth

Bandwidth	L1 and L2 GPS frequencies
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Gain

RF Link Gain at 0dB optical loss	0dB \pm 3dB Subtract [2 x Optical Loss]dB for >0dB optical loss Optical Losses: Fibre = 0.4dB/km typ., Connectors = 0.5dB per connector typ.
Gain Stability over Temperature Tx Rx	< +/-3dB over operating range <0.08dB/°C below 40°C typ., <0.1dB/°C above 40°C typ. <0.05dB/°C typ.

Dynamic Range

Input Third Order Intercept	>0dBm
Input P1dB	>-10dBm
Noise Figure	<18dB, at 0dB optical loss

User Interface

Input/Output Impedance, VSWR	50 Ω , \leq 2:1
Power LED	Indicates DC power is applied to the module
Transmitter Status LED	Green: Transmitter laser functioning Red: Transmitter laser degraded
Receiver Status LED	Green: Received light level above threshold (threshold factory set to nominal 20dB optical / 40dB electrical loss) Red: Received light level below threshold
Transmitter Alarm Output	Current sink "Laser Degraded" Alarm
Receiver Alarm Output & Monitor	Current sink "Light Low" Alarm Analogue Received Light Level (RLL) monitor. RLL monitor voltage = 7.75V for a gain of 0dB and reduces by 0.125V per dB of RF link loss due to losses in the optical path.
RF Connector	50 Ω SMA Female
External LNA Supply Voltage Option on optical transmitter	+5V or +12V @ 80mA
Dummy LNA load on optical receiver	470 Ω resistor to ground, max. 0.25W. This emulates presence of an LNA to a GPS receiver.
Optical Connector options	FC/APC: Suhner FCPC-Z/M-A601 narrow keywidth connector >60dB return loss E2000/APC: Suhner FLSH-2000-A608 >60dB return loss
Monitor & Alarm Interface Rack plug-in module Shielded remote module Converter Sleeve	15pin female D-type on 19" rack case backplane 8pin female Lemo 1B 15pin female D-type
Current Consumption	Transmitter <4.5W, Receiver <4W

Operating Conditions

Absolute Maximum Input (RF in)	>+15dBm \pm 15Vdc (only where no LNA feed is specified, otherwise no DC signal may be applied)
Optical	>60dB return loss. See above for approved connectors. Use with other types may compromise system performance.
Operating Temperature Rack plug-in module Shielded remote module	0°C to +40°C -20°C to +50°C
Storage Temperature	-40°C to +70°C

Optical Characteristics

Wavelength	1310 \pm 20nm
Fibre	Singlemode 9/125, Corning SMF28 or equivalent
Output Power	+4.5dBm/3mW nominal

All parameters specified after 15 minutes warm-up.

Physical Format

Housing Options	Rack Plug-in Module - suitable for 19" Rack Case or Plug-in Converter Sleeve Shielded Remote Module
Supply Voltage Rack Plug-in Module Plug-in Converter Sleeve Shielded Remote Module	+12Vdc from LRK power supply +12Vdc +/-10% from external supply via 2.1mm or D-type connector +12Vdc +/-10% from external supply via Lemo 1B connector
Weight Rack plug-in module Shielded Remote Module Plug-in Converter Sleeve	600g 750g 600g + plug-in module
19" Rack Case Suitability	LRK1S, LRK2S

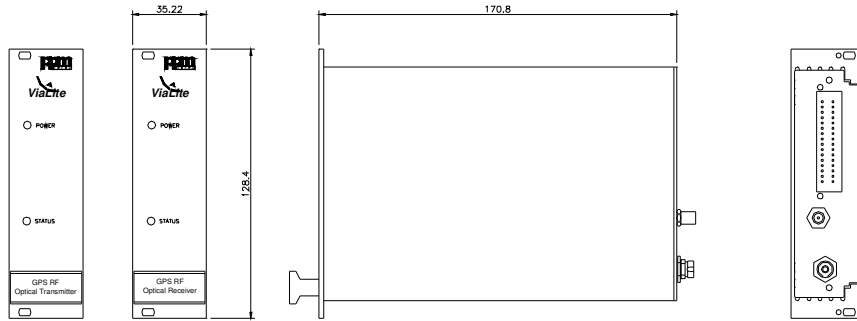


Figure 1: Plug-in Module

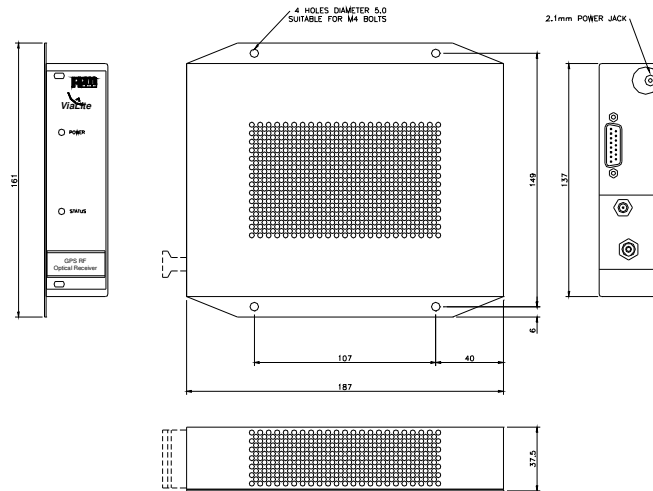


Figure 2: Plug-in Module in Converter Sleeve for standalone operation

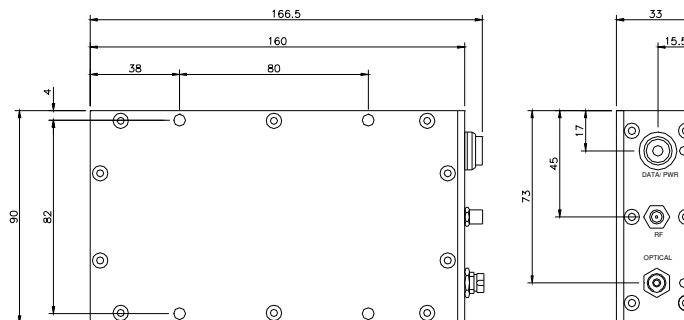
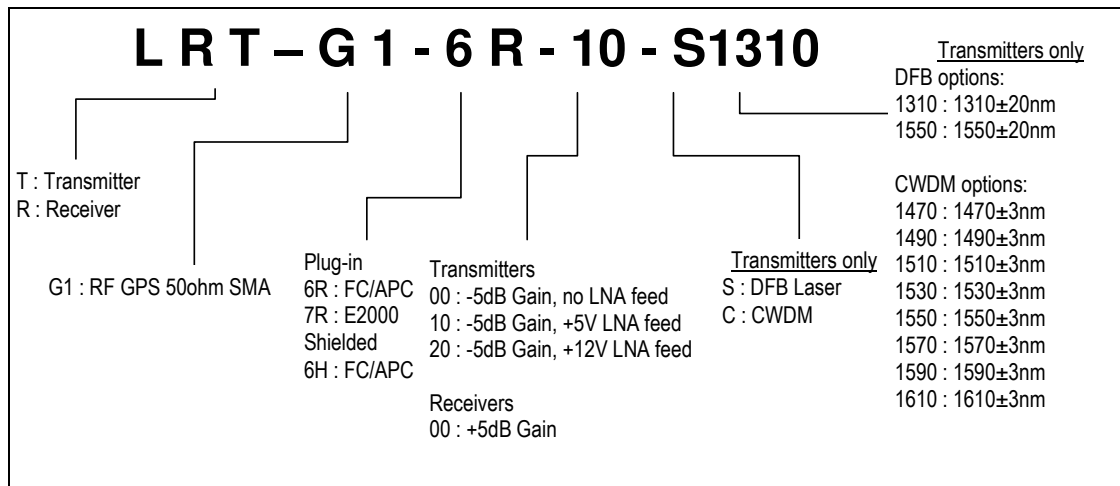


Figure 3: Shielded Remote Module

Ordering Information



Standard parts available on short lead times:

- LRT-G1-6R-10-S1310
- LRT-G1-6R-20-S1310
- LRR-G1-6R-00

19" Rack Case Solutions

Part Number	Description
LRK1S	19" Rack Case 3U for desktop or 19" rack installation. Accommodates up to 8 plug-in modules and 2 mains power supplies.
LRK2S	19" Rack Case 3U for 19" rack installation. Accommodates up to 8 plug-in modules and 2 mains power supplies.
LPS-M, LPS-R	Main, Reserve AC Power Supply plug-in for LRK1S or LRK2S.
LPS-M-48, LPS-R-48	Main, Reserve 48V Power Supply plug-in for LRK1S or LRK2S.
75004	19" Rack Case, 1U for desktop or 19" rack installation, integral AC mains power supply, accommodates 3 plug-in modules.
75004-48	19" Rack Case, 1U for desktop or 19" rack installation, integral 48V power supply, accommodates 3 plug-in modules.

Stand alone Solutions

75003	Converter sleeve. Converts a single plug-in module for standalone operation.
73502	Power Supply, 12Vdc, with 2.1mm connector for Plug-in Converter Sleeve
LPS-CS	Power Supply, flange mounting, 12Vdc, with 15 pin D connector for Plug-in Converter Sleeve

Accessories

Part Number	Description
LRS-10	1:1 Redundancy Switch Module
LRD-1	Broadband Low-loss RF Splitter, 10-2500MHz
LAC-1	Alarm Concentrator Transceiver Fibre Optic Link module
F6R1/x	FC/APC Patchlead, 2.8mm jacket. Length defined in metres by "x" (1m, 2m, 10m)

CONTACT US

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