

## SATCOM TIMING REFERENCE FIBRE-OPTIC-LINK

The **ViaLite** Timing Reference fibre optic link has been designed for the transmission of accurate timing signals. It is optimised for low phase noise, and minimal AM-PM conversion. An OEM version is also available for manufacturers wishing to add a fibre optic interface to their existing equipment (refer to separate datasheet).

The 1MHz to 50MHz bandwidth permits the transmission of a wide range of timing signals including common reference frequencies of 1MHz, 10MHz and 50MHz. It accommodates signal levels of up to +10dBm/2Vp-p.

The Timing Reference link complements PPM's Satcoms fibre links, including the L-Band and 70/140MHz IF bandwidths.



### Typical applications for the OEM Timing Reference fibre optic modules:

- Satellite communications ground station equipment
- Synthesised up/down converters
- Modems
- HPAs, LNBs, LNAs
- VSAT equipment

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

### Benefits of PPM's OEM Timing Reference fibre optic modules:

- Ultra-low jitter and phase noise
- Ultra-low AM→PM conversion
- Wide signal level range
- High reliability
- Compact sub-module design
- Alarm and status outputs
- Compatible 19" **ViaLite** Plug-In product line

### Complementary products also available in the **ViaLite** range:

The OEM Timing Reference modules can be used in conjunction with optical Transmitters and Receivers from PPM's **ViaLite** 19" Plug-In product range, featuring:

- 70/140MHz, L-Band, GPS fibre optic links
- Broadband links to 3GHz
- Bi-directional RS422 optical data modules
- Dual redundant power supplies
- 1:1 RF redundancy switch
- 2-channel RF power splitter
- Remote alarm monitoring over fibre
- Cross site fibre optic cable solutions
- Outdoor enclosure for OEM modules

## ViaLite SATCOM TIMING REFERENCE - SPECIFICATIONS

### Bandwidth

Bandwidth	<1MHz to >50MHz
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### Gain

RF Link Gain at 0dB optical loss	0dB nominal $\pm 3$ dB Subtract [2 x Optical Loss]dB for >0dB optical loss Optical Losses: Fibre = 0.4dB/km typ., Connectors = 0.5dB per connector typ.
Gain Flatness	+/-1dB
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	>+20dBm
Input P1dB @ 1.2GHz	>+10dBm
Noise Figure @ 1.2GHz	<48dB, 0dB optical loss
Max. recommended input	+10dBm, 2Vp-p (refer to Abs. Max. input)

### User Interface

Input/Output Impedance, VSWR	50 $\Omega$ , $\leq 2:1$
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 Outputs & Monitors	Current sink "Laser Degraded" Alarm
Receiver Alarm Outputs & Monitors	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 $\Omega$ BNC female 75 $\Omega$ BNC Female
External LNA Supply Voltage	+5V / +12V @ 80mA may be supplied to an external amplifier via a Bias-Tee. Contact PPM for more details.
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 Converter Sleeve	15pin female D-type on 19" rack case backplane 15pin female D-type
Current Consumption	Transmitter <4.5W, Receiver <4W

### Operating Conditions

Absolute Maximum RF Input (RF in)	>+20dBm, 5Vdc
Optical	>60dB return loss. See above for approved connectors. Use with other types may compromise system performance.
Operating Temperature Rack plug-in module	0°C to +40°C
Storage Temperature	-40°C to +70°C

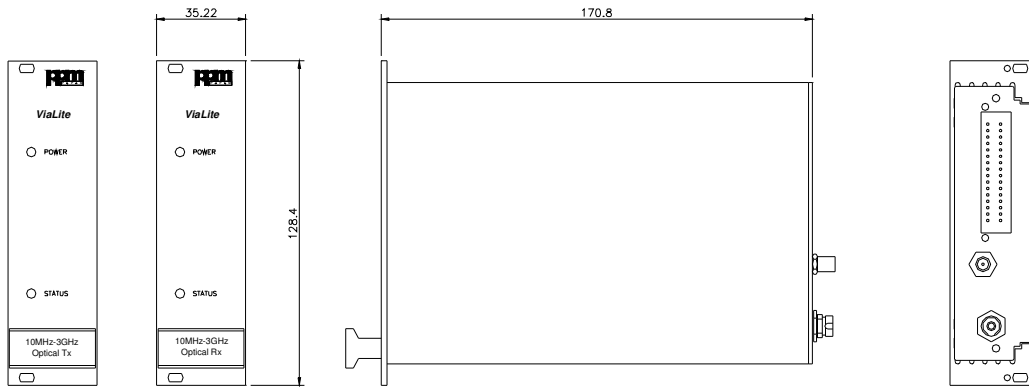
### Optical Characteristics

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.

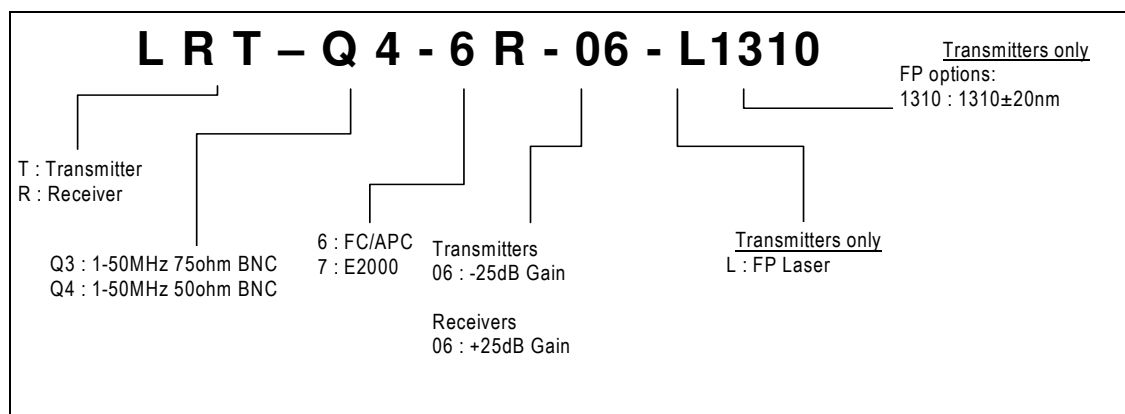
**Physical Format**

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



**Figure 1 : Plug-in Module**

## Ordering Information



Standard parts available on short lead times:

- LRT-Q4-6R-06-L1310
- LRR-Q4-6R-06

## 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	Main Power Supply plug-in for LRK1S or LRK2S.
LPS-R	Reserve Power Supply plug-in for LRK1S or LRK2S.
75004	19" Rack Case, 1U for desktop or 19" rack installation, integral 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
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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