

- **REMOTE 1 PPS**
- **CONTINUOUS CORRECTION FOR SYNCHRONIZED TO LOCAL INPUT PATH LENGTH AND DISPERSION**
- **LONG DISTANCE - UP TO 25 km**
- **HIGH ACCURACY:  $\pm 0.5$  ns MAX**
- **IFL PLATFORM PLUG-AND-PLAY**
- **USER PROGRAMMABLE OFFSET DELAY**

Local Transmitter



Remote Receiver



Linear Photonics' On-Time PPS fiber optic links provide remote locations with a 1PPS output signal, autonomously synchronized to the local transmitter up to 25 km away.

Bidirectional optical signal transfer over a single fiber optic cable allows for accurate correction of path length. The output 1 PPS is continuously locked to the input 1 PPS within an accuracy of 0.5 ns, correcting for thermal and other path length variations.

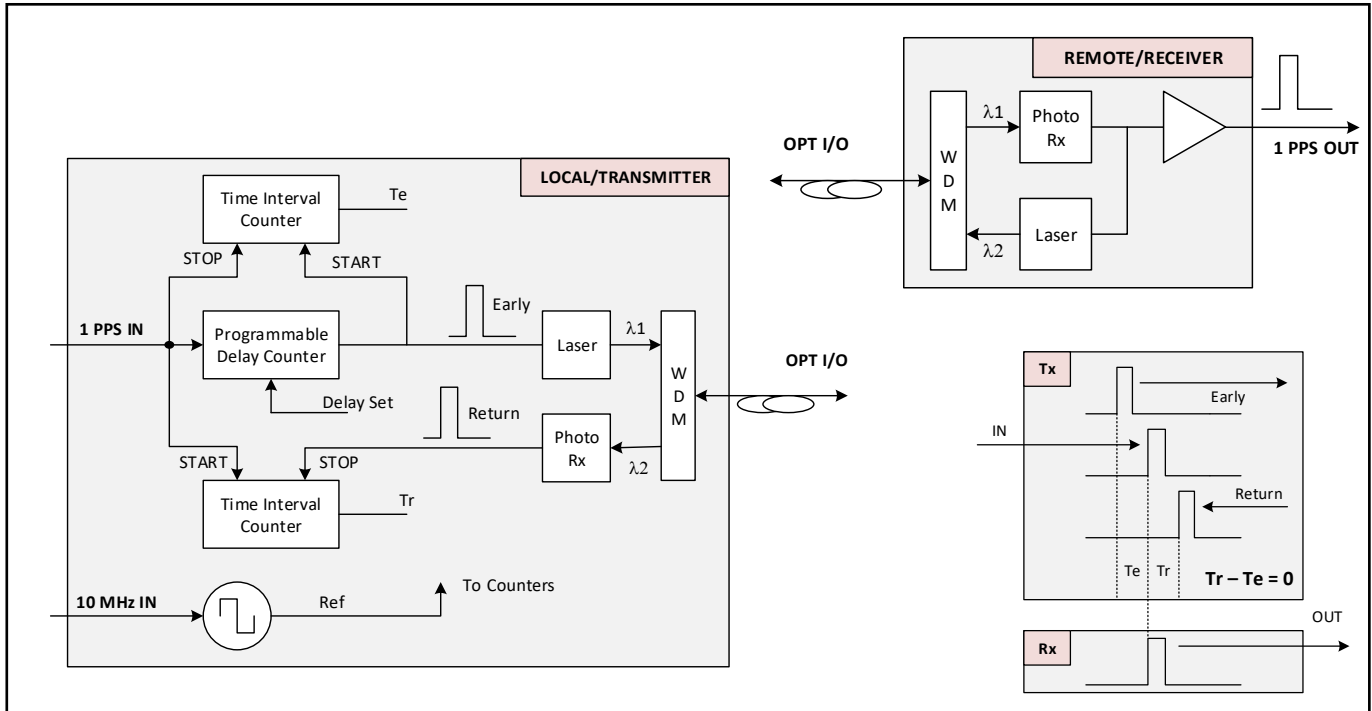
The local transmitter requires a 1 PPS standard input, along with a 10 MHz reference synchronized to the 1 PPS input. The transmitter generates and transmits an "early" 1 PPS pulse to the remote receiver. The receiver returns the pulse to the transmitter. Timing of the "early" pulse is controlled so that it arrives at the output of the receiver at the same instant as the input 1 PPS into the transmitter.

All modules are plug-and-play in the Linear Photonics 19" 1RU IFL Platform.

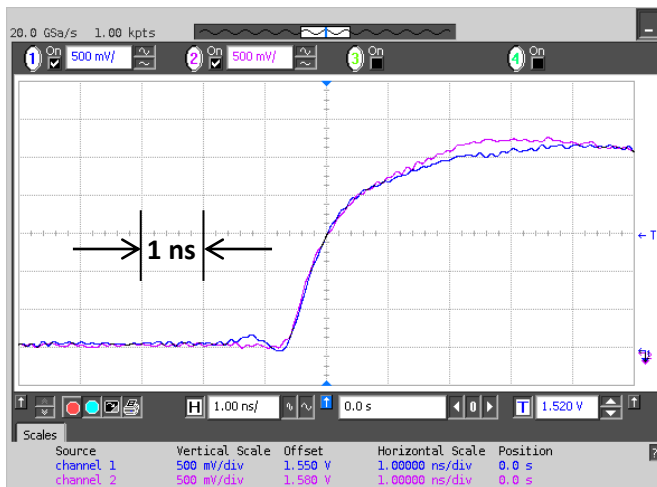
A user programmable offset adjustment allows the user to account for external cabling.

Linear Photonics' On-Time system eliminates the need for complicated two-way time transfer for distances up to 25 km.

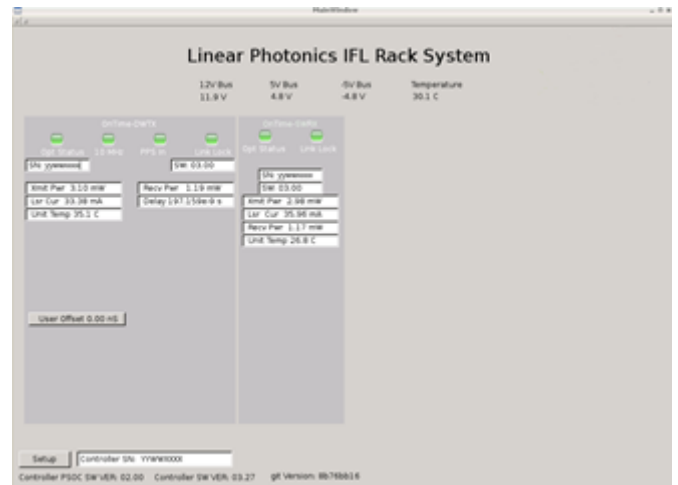
**On-Time FUNCTIONAL BLOCK DIAGRAM**



**Synchronized 1 PPS input/output at 10km**



**GUI Status/Control Interface**



**On-Time INTERFACE AND PERFORMANCE**

Transmitter Specifications <sup>1</sup>		
Module Type	Doublewide IFL Plug-in module	Hot Swappable
Signal Interfaces		
1PPS Input <sup>2</sup>	1 PPS Standard TTL	1 PPS Standard TTL, SMA, 50Ω
10 MHz Input <sup>2</sup>	Input Reference	SMA, 50Ω, 0 to +10 dBm
Optical I/O	From/to 1PPS Receiver	Single Mode (SMF-28e), FC/APC
Indicators		
Optical Status	Indicates status of optical connection	GREEN: Valid Optical and PPS Signals AMBER: Valid Optical, but PPS not detected RED: No Optical link established
10 MHz	Indicates status of 10 MHz Input Signal	GREEN: Valid 10MHz Input detected
PPS IN	Indicates Status of 1PPS Inout Signal	GREEN: Valid 1PPS Input detected
Link Lock	Indicates status of end-end 1PPS link	Blinking GREEN/RED (heartbeat): Link is Locked RED: ALARM
Optical Output Power (Typ)	5	dBm
Optical Wavelength	1550 ±30	nm
NOTES:		
<sup>1</sup> Transmitter and Receiver "matched pairs" are factory calibrated. TX/RX matched pairs must be mated together on the same fiber link for proper performance.		
<sup>2</sup> 10 MHz reference and 1 PPS Input should be derived from the same source. Lead-in cables from source to On-Time input should be of equal length to within 0.5m.		

Receiver Specifications <sup>1</sup>		
Module Type	Singlewide IFL Plug-in module	Hot Swappable
Signal Interfaces		
Optical I/O	From/to 1PPS Transmitter	Single Mode (SMF-28e), FC/APC
1PPS OUT	1 PPS Standard TTL	SMA, 50Ω
Indicators		
Optical Status	Indicates status of optical connection	GREEN: Valid Optical and PPS Signals AMBER: Valid Optical, but no PPS detected RED: No Optical link established
Link Lock	Indicates status of end-end 1PPS link	Blinking GREEN/RED (heartbeat): Link is Locked RED: ALARM
Optical Output Power (Typ)	5	dBm
Optical Wavelength	1550 ±30	nm
<sup>1</sup> Transmitter and Receiver "matched pairs" are factory calibrated. TX/RX matched pairs must be mated together on the same fiber link for proper performance.		

Environmental		
Operating Temp. Range	0°C to 50°C	
Storage Temp. Range	-20°C to 85°C	
Link Length	25 km or 8 dB optical loss	

### ON-TIME PPS ORDERING INFORMATION

Part Number	Description
ONT-Tx-G1	ON-TIME PPS Transmitter
ONT-Rx-G1	ON-TIME PPS Receiver

#### NOTES:

Transmitters and Receivers are factory calibrated as "matched pairs". TX/RX matched pairs must be mated together on the same fiber link for proper performance.

ON-TIME PPS transmitters and receivers require the use of Linear Photonics' 19" 1RU IFL enclosure.

### ON-TIME PPS MODULE OUTLINE DRAWINGS

