

N-Bit Variable RF-Photonic Time Delay System

Product Description

This RF-Photonic Time Delay system is customized to achieve high bit resolution of true time delay in input RF signal. This system is composed of RF-photonic and photonic-RF conversion module, switchable fiber optic delay module as well as the optical amplification. The RF modulated laser beam is switched to pass through N fiber segments, therefore providing N-bit resolution of digitally variable time delay. The fiber optic amplifications are used in this module to compensate optical loss through optic fiber segments and switches.

The system has built-in temperature sensors and the capability to initially check the switchable delay segments through USB interface. All high repeat rate of switching will be controlled by the external TTL signals through D connector.



Performance Specifications

RF-Photonic Time Delay	Min	Typical	Max	Unit
RF frequency range	0.1		20	GHz
RF Insertion Loss ^[1]		0		dB
Delay bit resolution			20	Bit
Delay increment ^[2]		1		ns
Delay accuracy ^[3]		1	10	ns
System intrinsic delay ^[4]			100	ns
Switching Time ^[5]		50		us
Delay Time Range ^[2]		Customized		
RF response flatness		+/- 0.5 within 1GHz		dB
Noise Figure ^[6]		40		dB
SFDR		90		dB/Hz ^{2/3}
Operating Temperature	0		50	°C
Storage Temperature	-40		85	°C
Power supply		120-240		AVC
Package Dimension ^[7]		19" mount rack		

[1]: It is defined for 10GHz and 12-bit system.

[2]: It can be customized up to ms.

[3]: Accuracy from 0.1ns to 10ns depending on the full delay range.

[4]: Depending on the bit number N, such as 100ns for 19-bit, 80ns for 17-bit, 70ns for 16-bit.

[5]: Defined for CL type switch. 200ns or 10ms for NS or MEMS type switch

[6]: It highly depends on RF specs, please contact us for technical detail.

[7]: The height of 19" mount rack will be determined per the total delay range.

Features

- High Resolution
- High Speed
- Large Time Delay Range
- High Reliability
- Low Insertion Loss

Applications

- Phase-Array Antennas
- Instrumentation

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Control Interface

USB or RS232 or TTL control interface is available. TTL control will be performed through D-type connector, which can realize the fast speed to switch the delays. The other control interface can be customized, please contact us.

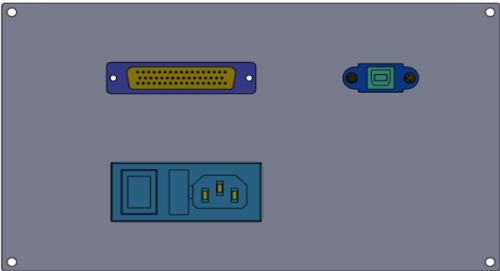
Mechanical Dimensions (mm)

(Typical 6RU 19' mount rack for the customized 16 ~19-bit delay system)



Front Panel (TBD)

- a. Width of panel: 482mm
- b. Width of rack: 420mm
- c. Max. deep of rack: 550mm
- d. 6U height of rack: 266mm



Rear Panel (TBD)

*Product dimensions may change without notice. This is sometimes required for non-standard specifications.

Ordering Information

RPTD-	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	<input type="checkbox"/> <input type="checkbox"/>	0	1
	Resolution	Frequency	Control interface	Package	Switch type	Delay Range	RF Connector
	19-bit = 19 17-bit = 17 16-bit = 16 8-bit = 08	0.1 ~10GHz = 1 0.1 ~20GHz = 2	TTL = 1 USB = 2 RS232 = 3 Special = 0	Customized = 0	CLSW = CL NSSW = NS MEMS = ME	Customized = 0	SMA = 1 Special=0

RPTD: RF-Photonics Time Delay System