

# PRL-350RS DUAL CHANNEL COMPARATOR, RS-422 OUTPUT

## APPLICATIONS

- Window Comparators
- High Speed Timing
- Line Receivers
- Threshold Detection
- Peak Detection
- RS-422 translation

## FEATURES

- $f_{MAX} > 500$  MHz
- 1.1 ns Typical  $t_r$
- +50 mV, 0 V or -50 mV Preset Input Threshold Voltage
- -2.0 V to +3.0 V Input Common Mode Range
- 10 mV<sub>P-P</sub> Minimum Input @ 100 MHz
- DC Coupled 50  $\Omega$  Inputs (75  $\Omega$  for Option C001)
- Differential 124  $\Omega$  RS-422 Outputs
- SMA or Triax I/O Connectors
- Self-contained 1.3 x 2.9 x 3.9-in. module includes AC/DC Adapter

## DESCRIPTION

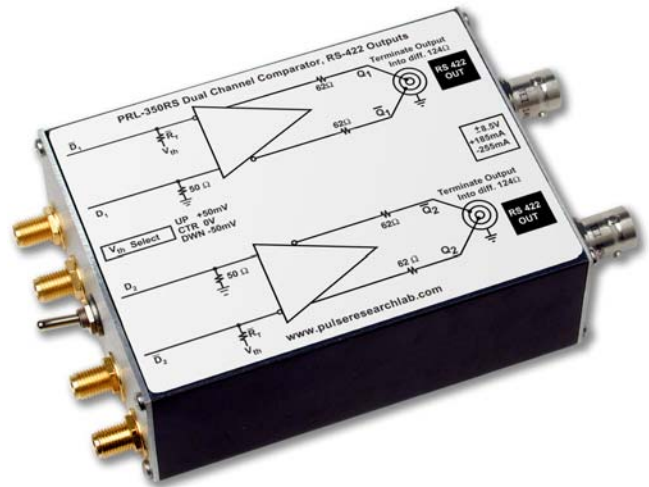
The PRL-350RS is a ready-to-use, high-speed, dual-channel comparator module with RS-422 outputs. The PRL-350RS has a typical maximum clock frequency in excess of 500 MHz and has differential RS-422 outputs designed for driving floating 124  $\Omega$  transmission lines.

The PRL-350RS has DC-coupled 50  $\Omega$  inputs and differential 124  $\Omega$  outputs. Option C001 has 75  $\Omega$  inputs. The input threshold voltage can be selected either from a set of preset values of +50 mV, 0 V or -50 mV using a common three-position switch, or varied independently for each channel by applying a DC bias voltage to one of the two inputs. The input Common Mode Range is -2.0 V to +3.0 V. The 0V threshold setting is intended for signals with zero crossings, such as a sine waves or AC-coupled square waves, etc.

These high-speed comparators are Mini Modular Instruments™ that can be used as peak detectors, threshold detectors, sinewave-to-square wave converters, window comparators or differential line receivers, etc. The typical minimum input voltage of 10 mV<sub>P-P</sub> is required for up to 100 MHz. It is recommended that the non-driven input be terminated into 50  $\Omega$  when the input frequency is near  $f_{MAX}$  and its amplitude is less than 20 mV<sub>P-P</sub>.

The PRL-350RS model has SMA input and output connectors. The PRL-350RSTR has SMA inputs and Triax output connectors.

Each unit is supplied with a  $\pm 8.5$  V AC/DC Adapter and housed in a 1.3 x 2.9 x 3.9-in. extruded aluminum enclosure.



**PRL-350RSTR**  
**Dual Channel Comparator, RS-422 Outputs, Triax option**

# SPECIFICATIONS (0° C ≤ T<sub>A</sub> ≤ 35° C)

Unless otherwise specified, dynamic measurements are made with all outputs terminated into 50 Ω/V<sub>TT</sub>, where V<sub>TT</sub> = -2 V for ECL outputs and 0 V for TTL outputs.

SYMBOL	PARAMETER	PRL-350RS			PRL-350RS-C001			UNIT
		Min	Typ	Max	Min	Typ	Max	
R <sub>in</sub>	Input Resistance	49.5	50	50.5	49.5	50	50.5	Ω
R <sub>out</sub>	Differential Output Resistance	123	124	125	123	124	125	Ω
V <sub>TH+</sub>	Preset positive threshold voltage	45	50	55	45	50	55	mV
V <sub>TH-</sub>	Preset negative threshold voltage	-55	-50	-45	-55	-50	-45	mV
V <sub>TH0</sub>	Preset zero threshold voltage <sup>(1)</sup>	-2	0	2	-2	0	2	mV
V <sub>OL</sub>	Output Low Level	-0.5	0	0.5	-0.5	0	0.5	V
V <sub>OH</sub>	Output High Level	2	2.2	2.4	2	2.2	2.4	V
I <sub>DC</sub>	DC Input Current		165/ -235	175/ -250		165/ -235	175/ -250	mA
V <sub>DC</sub>	DC Input Voltage	±7.5	±8.5	±12	±7.5	±8.5	±12	V
V <sub>AC</sub>	AC/DC Adapter Input Voltage	103	115	127	103	115	127	V
t <sub>PLH</sub>	Propagation Delay to output ↑		2			2		ns
t <sub>PHL</sub>	Propagation Delay to output ↓		2			2		ns
t <sub>r</sub> /t <sub>f</sub>	Rise/Fall Times <sup>(2)</sup>		1100	1250		1100	1250	ps
t <sub>SKEW</sub>	Skew between any 2 outputs		200	400		200	400	ps
V <sub>IN I**</sub>	Minimum Input Voltage @ 150MHz <sup>(3)</sup>	20	10		20	10		mVp-p
V <sub>IN II**</sub>	Minimum Input Voltage @ 250MHz <sup>(3)</sup>	40	20		40	20		mVp-p
V <sub>CM</sub>	Input Common Mode Range		-2.0/ +3.0			-2.0/ +3.0		V
f <sub>MAX</sub>	Max Clock Frequency <sup>(4)</sup>	500	550		500	550		MHz
	Size	1.3 x 2.9 x 3.9			1.3 x 2.9 x 3.9			in.
	Weight	7			7			Oz

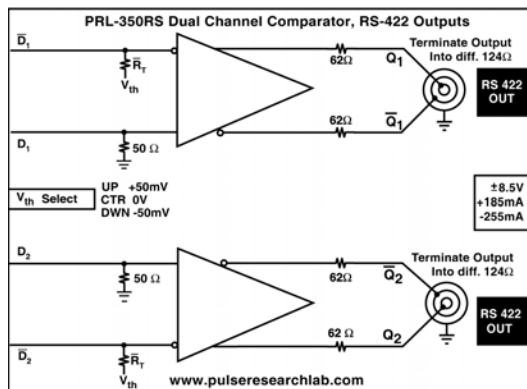


Fig. 1A PRL-350RSTR Block Diagram

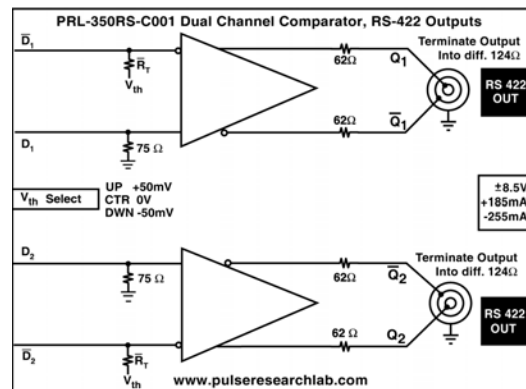


Fig. 1B PRL-350RSTR-C001 Block Diagram

(1) If the switch is set to the center position (0 V threshold) a non-driven channel will oscillate and induce jitter in the driven channel. Connect any output to any input to stop the oscillation.

(2) 20%-80% for ECL outputs, 10%-90% for TTL outputs. For the PRL-350ECL, an unused complementary output must be either terminated into 50 Ω/V<sub>TT</sub> or AC coupled into a 50 Ω load; otherwise, output waveform distortion and rise time degradation will occur. Use the PRL-ACT-50, Dual Channel AC-Coupled 50 Ω Termination, for terminating unused complementary outputs. Use the PRL-550NQ/PQ4X, Four Channel NECL/PECL Terminators, respectively, for the 50 Ω/V<sub>TT</sub> termination and for connection of NECL/PECL signals to 50 Ω input oscilloscopes. If preservation of DC levels is not required, then the PRL-SC-104, 0.1 μf DC block or the PRL-ACX-12dB, 12 dB AC-coupled attenuator may be used to connect the NECL/PECL outputs to 50 Ω input instruments.

(3) In order to reduce jitter near f<sub>MAX</sub>, terminate the non-driven input into 50 Ω when the input voltage is less than 20 mV<sub>p-p</sub>.