

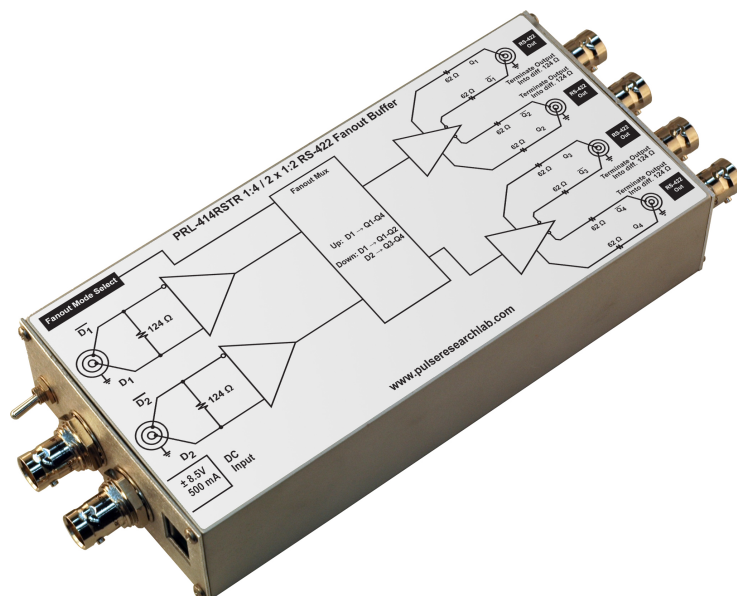
PRL-414RSTR, 1:4 and 2 x 1:2 RS-422 FANOUT BUFFER

APPLICATIONS

- RS-422 Fanout Buffer
- Clock/Data Fanout Buffer
- High Speed Digital Communications Systems Testing
- Satellite Telemetry/Ground Station System Integration

FEATURES

- $f_{\max} > 75$ MHz
- 2.8 ns Typical Output Rise & Fall Times
- 1 ns Typical Channel to Channel Skew
- Floating 124 Ω Differential Inputs for RS-422
- 4 Complementary 124 Ω RS-422 Outputs
- Triax I/Os, Trompeter CBBJR79 or compatible
- Switchable 1:4 Fanout or 2 x 1:2 Fanout Mode for simultaneous CLK/DATA distribution
- Self-contained 1.3 x 2.9 x 6.0-in. unit includes ± 8.5 V/1.4A AC/DC Adapter



PRL-414RSTR

DESCRIPTION

The PRL-414RSTR is a 1:4 fanout or 2 x 1:2 fanout RS-422 line driver. It has two sets of floating 124 Ω differential inputs designed to accept RS-422 signals. The PRL-414RSTR high speed fanout line driver facilitates testing and integration of high speed digital communications circuits and distribution of satellite signals.

The PRL-414RSTR has two fanout modes, selectable by a toggle switch:

- In the 1:4 mode (switch Up) D₁ is connected to all four outputs Q₁-Q₄, and D₂ is ignored. This mode is used for fanout of a single signal to four receivers.
- In the 2 x 1:2 mode (switch Down) each of the two input signals is distributed to two outputs, with D₁ connected to Q₁-Q₂, and D₂ connected to Q₃-Q₄. This mode allows simultaneous distribution of Clock and Data signals to two receivers.

The four sets of complementary outputs are 62 Ω back-terminated and designed for driving floating 124 Ω loads, normally the configuration used in RS-422 input circuits. The output swing is typically 1.40 V with a common mode voltage of 1.55 V. Because every output is independently buffered, unused outputs do not require termination, and outputs can even be shorted without affecting other outputs. These applications would not be possible with a passive splitter or powered distribution amplifier.

Multiple units of PRL-414RSTR can be cascaded for wider fanout, such as 1:16 or higher. The PRL-414RSTR can be combined with other PRL products and integrated into a rack-mount system using PRL's modular rackmount kit, PRL-MRK3-1.

All I/Os are Triax, using Trompeter CBBJR79 or equivalent, and will mate with any Trompeter 70-series Triax Cable Plug with 3 lugs, or compatible connector.

The PRL-414RSTR is supplied with a ± 8.5 V/1.4 A AC/DC adapter and housed in a 1.3 x 2.9 x 6.0-in. extruded aluminum enclosure. Available accessories include voltage distribution modules and shielded twisted pair cables with Triax termination:

- 88001140-36 Cable, Shielded Twisted Pair, 124 Ohm Triax to Triax, 36"
- 88001140-48 Cable, Shielded Twisted Pair, 124 Ohm Triax to Triax, 48"

*SPECIFICATIONS (0° C ≤ T_A ≤ 35° C)

Unless otherwise specified, dynamic measurements are made with all outputs connected to a 124 Ω differential input receiver, the PRL-425TTR-C001. The PRL-177A-200, 2φ square wave clock generator, together with the dual channel PRL-Triax-SMA adapter are used as the clock driver.

SYMBOL	PARAMETER	Min	Typ	Max	UNIT	Comment
R_{IN}	Differential Input Resistance		124		Ω	
R_{INC}	Common Mode Input Resistance		5k		Ω	
R_{OUT}	Differential Output Resistance		124		Ω	
V_{IN}	Input Voltage Range	-7		+12	V	Manufacturer's specification; not tested at PRL
V_{OL}	Output Low Level		0.85		V	
V_{OH}	Output High Level		2.25		V	
V_{OPP}	Voltage Output, peak-to-peak		1.4		V	
V_{CMO}	Output Common Mode Voltage ¹		1.55		V	
I_{DC1}	DC Input Current		300		mA	F = 25 MHz
I_{DC2}	DC Input Current		400		mA	F = 50 MHz
I_{DC3}	DC Input Current		500	550	mA	F = 75 MHz
V_{DC}	DC Input Voltage	+7.5	+8.5	+12.0	V	
V_{AC1}	AC/DC Adapter Input Voltage, 120 V	103	115	127	V	
V_{AC2}	AC/DC Adapter Input Voltage, 230 V	206	230	254	V	
t_{PLH}	Propagation Delay to output ↑		20		ns	
t_{PHL}	Propagation Delay to output ↓		20		ns	
t_r/t_f	Rise/Fall Times (10%-90%) ²		2.8	3.5	ns	
t_{SKW1}	Differential Skew between Q and $\bar{Q}$		200	350	ps	
t_{SKW2}	Skew between any 2 outputs		1000	1500	ps	1:4 Fanout Mode
t_{SKW3}	Skew between any 2 outputs		600	1000	ps	2 x 1:2 Fanout mode
f_{max}	Max Clock Frequency ³	75	80		MHz	
	Size	1.3 x 2.9 x 6.0			in.	
	Weight	9			Oz	w/o AC adapter
	Shipping Weight	4			lb	w/AC adapter

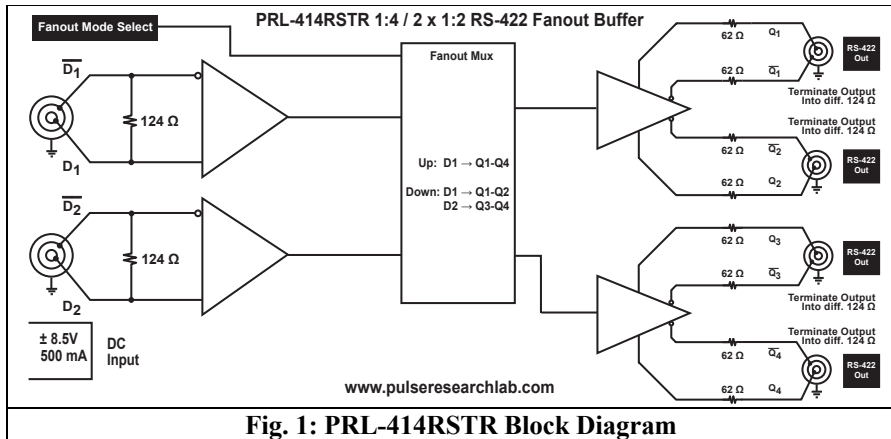


Fig. 1: PRL-414RSTR Block Diagram

Notes:

- (1) $V_{CMVO} = (V_{OH} + V_{OL})/2$
- (2) Rise and Fall times are measured indirectly at the outputs of the PRL-425TTR-C001, 124Ω differential Triax input receiver.
- (3) f_{max} is measured using the PRL-177A Clock Generator driving the inputs via a PRL-Triax-SMA adapter and a PRL-425TTR-C001 receiver.