

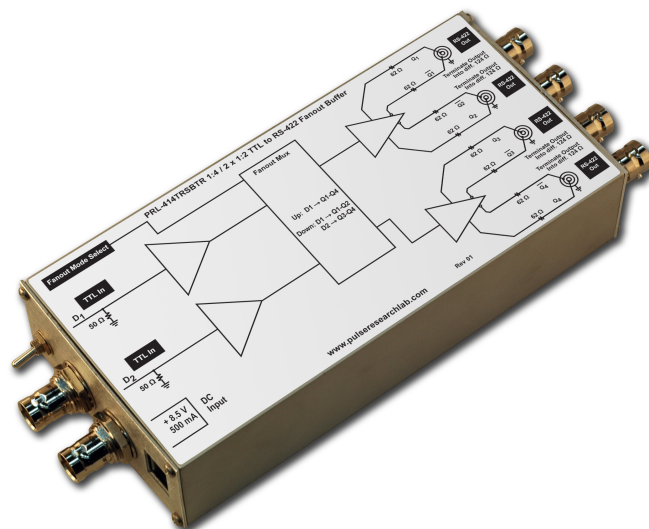
PRL-414TRSBTR, 1:4 and 2 x 1:2 TTL to RS-422 Translator and Fanout Buffer

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
- 2 BNC 50 Ω TTL Inputs
- 4 Complementary Triax 124 Ω RS-422 Outputs
- 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-414TRSBTR

DESCRIPTION

The PRL-414TRSBTR is a 1:4 fanout or 2 x 1:2 fanout RS-422 line driver with two 50 Ω BNC TTL inputs and four 124 Ω Triax complementary RS422 outputs. The PRL-414TRSBTR high speed fanout line driver facilitates testing and integration of high speed digital communications circuits and distribution of satellite signals.

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

- In the 1:4 mode (switch Up) D_1 is connected to all four outputs Q_1 - Q_4 , and D_2 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 D_1 connected to Q_1 - Q_2 , and D_2 connected to Q_3 - Q_4 . 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.

For wider fanout, such as 1:16 or higher, multiple units of PRL-414TRSBTR can be driven by a 1:4 TTL fanout buffer, such as the PRL-414B. The PRL-414TRSBTR can be combined with other PRL products and integrated into a rack-mount system using PRL's modular rackmount kit, PRL-MRK3-1.

All Triax output connectors are Trompeter CBBJR79 or equivalent, and will mate with any Trompeter 70-series Triax Cable Plug with 3 lugs, or compatible a connector.

The PRL-414TRSBTR is supplied with a ± 8.5 V/1.4 A AC/DC adapter, requiring the +8.5V supply only, 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"



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*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, and the inputs driven by the The PRL-177A-200, 2φ square wave clock generator.

| SYMBOL | PARAMETER | Min | Typ | Max | UNIT | Comment |
|--------------------------------|---|-----------------|------|-------|------|---------------------|
| R _{IN} | Input Resistance | | 50 | | Ω | |
| R _{OUT} | Differential Output Resistance | | 124 | | Ω | |
| V _{IN} | TTL Input Voltage Range | 2 | | 5 | V | |
| 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 _{SKEW1} | Differential Skew between Q and \bar{Q} | | 200 | 350 | ps | |
| t _{SKEW2} | Skew between any 2 outputs | | 1000 | 1500 | ps | 1:4 Fanout Mode |
| t _{SKEW3} | 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 |

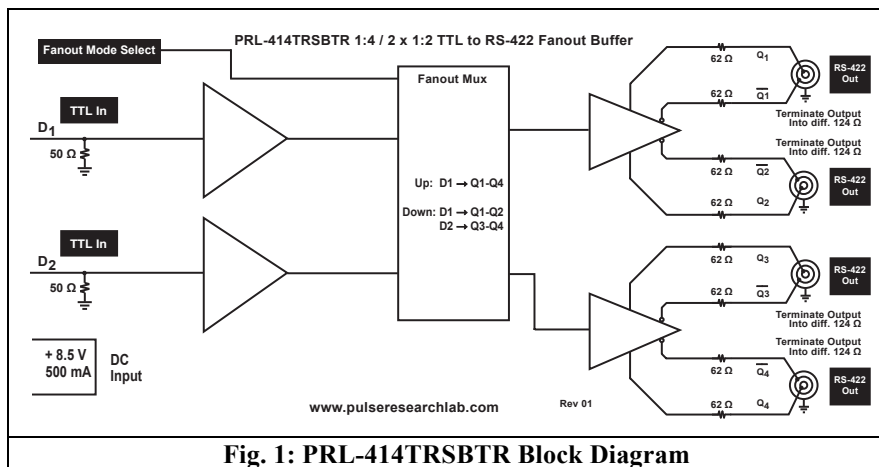


Fig. 1: PRL-414TRSBR Block Diagram

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, 124 Ω differential Triax input receiver.
- (3) f_{max} is measured using the PRL-177A Clock Generator driving the TTL inputs and a PRL-425TTR-C001 receiver.