PRL-8108, 1:8 SIGNAL ROUTER/8:1 REFLECTIVE SCANNER
PRL-8216, 2 x 1:8 SIGNAL ROUTER/8:1 REFLECTIVE SCANNER
PRL-8324, 3 x 1:8 SIGNAL ROUTER/8:1 REFLECTIVE SCANNER

APPLICATIONS

- Switching GHz/Sub-ns Rise Time Signals
- GHz Signal Routing or Scanning
- Differential Signal Routing or Scanning

FEATURES

- 10 ps Typical Channel-Channel Skew
- DC to 2.5 GHz Usable Frequency Range
- Up to 1.75 GHz 3 dB bandwidth
- Z_0 =50 Ω
- Typical 1.65 dB Insertion loss and 46 dB Isolation @ 1.25 GHz
- 6 ms Switching Time
- SMA I/O Connectors
- Manual or Remote Control
- Includes AC/DC Adapter

PRL-8324

DESCRIPTION

The PRL-8108 is a 1:8 DC coupled signal router designed for 50 Ω I/O applications. The usable frequency band extends from DC to >2.5 GHz. A signal connected to input D can be routed to output Q1-Q8. It can also be used as a Reflective Scanner in the reverse direction to scan signals on the Q inputs at the D output. Because signals connected to the non-selected ports are not terminated, these signals will be reflected, hence the term reflective scanner. There are three related models:

- PRL-8108, 1:8 Signal Router/8:1 Reflective Scanner, as described above
- PRL-8216, 2 x 1:8 Signal Router/8:1 Reflective Scanner, with two identical sets of channels
- PRL-8324, 3 x 1:8 Signal Router/8:1 Reflective Scanner, with three identical sets of channels

The PRL-8108 is designed for scanning or routing single-ended signals, while the PRL-8216 can be used for simultaneous scanning or routing of differential signals. The PRL-8324 adds a third signal path for routing an additional signal, such as a timing reference. Each channel set is fully independent and can be controlled separately or slaved to another set's control input or switch, as described below.

Each 8-channel set has an 8-position rotary switch for manual channel selection, a toggle switch for Manual/Remote selection, and 8 LEDs for channel ID. Each set also has 3 x 2 stick pins (pulled up to +5V via 4.99 kΩ resistors) for TTL/CMOS remote control inputs. An parallel set of 3 x 2 stick pins allows control signals to be cascaded to additional sets or units for simultaneous switching. When the toggle switch is set to the Remote position (Up) the logic inputs are left open, Bits A0, A1, and A2 all float high, and channel Q8 is selected. Jumpers or remote inputs may be used to pull the pins low. When the unit is not powered, Q8 is also selected.

D	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
A0	L	H	L	H	L	H	L	H
A1	L	L	H	H	L	L	H	H
A2	L	L	L	L	H	H	H	H

Table I: Logic Input Truth table for PRL-8108
0 V ≤ L ≤ 0.4 V; 2 V ≤ H ≤ 5 V

The pin designations and truth tables for the logic inputs are shown to the left, and a block diagram is shown in Fig. 1. When the toggle switch is in the Manual (Down) position the rotary switch selects the channel, and the remote control pins should be disconnected.

The PRL-8108 series has SMA signal I/O connectors and is housed in a 3.0 x 6.8 x 4.0-in. aluminum extrusion. Each unit includes a ±8.5 V AC/DC adapter. Cable #88004001 (various lengths) may be used to connect the control pins to a digital I/O device and/or to cascade control signals from one PCB or unit to another.

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SPECIFICATIONS ($0\ ^{\circ}C \le T_A \le 35\ ^{\circ}C$)

Unless otherwise specified, dynamic measurements are made with all outputs terminated into 50 Ω.

SYMBOL	PARAMETER	Min	Typ	Max	UNIT	Comments
t_r/t_f	Rise/Fall Times (10%-90%)		200	230	ps	
BW	Equivalent 3 dB bandwidth	1.50	1.75		GHz	
$R_{IN(RM)}$	Input Resistance, Logic inputs		4.99		kΩ	to +5V
V_{IH}	Logic Input Hi Level	2.0	2.0	5.0	V	
V_{IL}	Logic Input Lo Level	-0.5	0.0	0.5	V	
VSWR1	VSWR, 25 MHz ≤ f ≤ 1.25 GHz		1.35:1			
VSWR2	VSWR, 1.25 GHz < f ≤ 2.4 GHz		2.00:1			
V_O/V_{IN1}	Insertion Loss, selected Channel		1.65	2.50	dB	625 MHz ≤ f ≤ 1.25 GHz
V_O/V_{IN2}	Insertion Loss, selected Channel		6.00	10.00	dB	1.25GHz ≤ f ≤ 2.4GHz
V_O/V_{IN3}	Isolation, un-selected Channels	40	46		dB	625 MHz ≤ f ≤ 1.25 GHz
V_O/V_{IN4}	Isolation, un-selected Channels	32	38		dB	1.25 GHz ≤ f ≤ 2.4 GHz
t_{PLH}	Propagation Delay to Output ↑		900	1200	ps	
t_{SKEW}	Skew between any 2 Outputs		10	35	ps	
V_{INMAX}	Maximum Input Voltage			30	V	
I_{MAX}	Maximum Switching Current			0.5	A	
	Switch Time		6		ms	
	Expected Life Cycles		$>10^6$			
V_{DC}	DC Input Voltage	7.5	8.5	12	V	
I_{DC}	DC Input Current		330	360	mA	
V_{AC1}	AC/DC Adapter Input Voltage, 120	108	115	127	V	
V_{AC2}	AC/DC Adapter Input Voltage, 220	216	230	254	V	
	Logic input for Remote operation	3 x 2 pins (A0, A1, A2)				See Table I
	Size	3.0 x 6.8 x 4.0			in.	
	Weight	2			lbs	Excluding AC adapter
	Shipping Weight	6			lbs	Including AC adapter

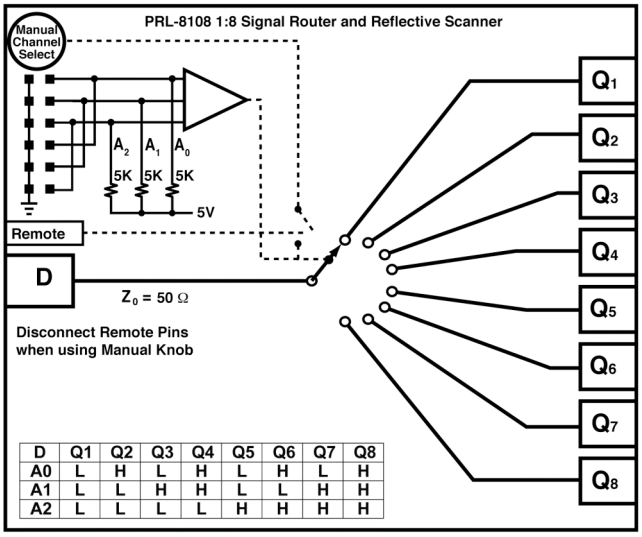

Fig 1: PRL-8108 Block Diagram

A block diagram of a PRL-8108 PCB is shown to the left.

- The PRL-8108 consists of one PCB.
- The PRL-8216 consists of two identical PCBs in one enclosure. Each board operates independently unless the control pins are tied together via external cabling.
- The PRL-8324 consists of three identical PCBs.

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