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PRL-4220, 2:20 FANOUT 50 Ω TTL LINE DRIVER



PRL-4220-BNC, Front View



PRL-4220-SMA, Front View

APPLICATIONS

- TTL/CMOS Clock Distribution
- 2 x 1:10 Fanout Line Driver
- High Speed Digital Communications System Testing
- Mini Modular Instrument

FEATURES

- f_{MAX} > 100 MHz
- Drives 100 ft of cable @ 80 MHz
- 1.8 ns Typical Output Rise & Fall Times
- 2.5 V into 50 Ω Typical
- TTL Compatible 50 Ω or 10 kΩ Input
- 20 in-phase 50 Ω TTL Outputs (two sets of 10)
- Active Low $\overline{EN}$ (Enable) Input
- BNC or SMA I/O Connectors
- DC Coupled I/Os
- Self-contained 3.0 x 6.8 x 4.0-in. unit includes an AC/DC Adapter

DESCRIPTION:

The PRL-4220 is a 2 x 1:10 fanout 50 Ω TTL Line Driver. It is intended for distribution of two independent high-speed clock and logic signals (e.g. CLK and DATA) to multiple loads via long lines. The 50 Ω back-terminated outputs can drive long lines with or without 50 Ω load terminations. With 50 Ω load terminations, however, all outputs of the PRL-4220 can drive 100 ft of 50 Ω cables at clock rates greater than 80 MHz. The PRL-4220 is implemented as two separate, independent 1:10 fanout buffers on two PCBs in a single enclosure.

The input resistance of each 1:10 fanout board can be independently selected to be either 50 Ω or 10 kΩ by a switch. The 10 kΩ-input is desirable when interfacing with low power circuits. The 50 Ω back terminated outputs typically deliver 2.5 V into 50 Ω or 5.0 V into Hi-Z loads. All I/Os are DC coupled and have BNC connectors. SMA I/Os are available on special order.

Each board also has a TTL-compatible $\overline{EN}$ input pulled down via a 1 kΩ resistor. When left open the Enable is active, and the fanout buffer will output signals. Each board can be disabled by driving its $\overline{EN}$ input high.

The PRL-4220 is housed in a 3.0 x 6.8 x 4.0-in. extruded aluminum enclosure and is supplied with the PRL-760C, ±8.5 V/±1.8 A AC/DC Adapter.

A block diagram showing the equivalent input and output circuits of the PRL-4220 is shown in Fig. 1.

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SPECIFICATIONS* (0 °C ≤ T_A ≤ 35 °C)

Unless otherwise specified, dynamic measurements are made with the input set to 50 Ω and all outputs terminated into 50 Ω.

SYMBOL	PARAMETER	Min	Typ	Max	UNIT	Comments
$R_{IN\ Low}$	Input Resistance Low Range	49.5	50.0	50.5	Ω	
$R_{IN\ Hi}$	Input Resistance High Range	9.9	10.0	10.1	kΩ	
$R_{IN\ EN}$	Input Resistance, Enable		1		kΩ	
R_{OUT}	Output Resistance		50		Ω	
V_{IL}	TTL Input Low Level	-0.5	0.0	0.5	V	
V_{IH}	TTL Input High Level	2.0	2.4	5.0	V	
$V_{IL\ EN}$	$\overline{EN}$ Input Low Level	-0.5	0.0	0.5	V	
$V_{IH\ EN}$	$\overline{EN}$ Input High Level	2.0	2.4	5.0	V	Drive $\overline{EN}$ High to disable output
V_{OL}	TTL Output Low Level	0.0	0.25	0.5	V	R_L=50 Ω
V_{OH1}	TTL Output High Level	2.2	2.5		V	R_L=50 Ω @ DC
V_{OH2}	TTL Output High Level	4.4	5.0		V	R_L=1 MΩ @ DC
I_{DC1}	DC Input Current		1000		mA	f =50 MHz sq. wave(1)
I_{DC2}	DC Input Current		1230		mA	f ≤ 100 MHz
I_{DC3}	DC Input Current			1450	mA	f =125 MHz
V_{DC}	DC Input Voltages	7.75	8.50	12.00	V	
V_{AC}	AC/DC Adapter Input Voltage	103	115	127	V	
T_{PLH}	Propagation Delay to output ↑		9	12	ns	
T_{PHL}	Propagation Delay to output ↓		9	12	ns	
t_r/t_f	Rise/Fall Times (10%-90%)		1.8/1.5	2.5	ns	
T_{SKEW1}	Skew between any 2 outputs		500	900	ps	Within one 1:10 bank
T_{SKEW2}	Skew between any 2 outputs		1000	1400	ps	Any two outputs
F_{MAX1}	Max. Clock Frequency(2)	100	125		MHz	RG58C/U, cable length =3 ft
F_{MAX2}	Max. Clock Frequency		80			RG58C/U, cable length = 100 ft
PW_{MIN}	Minimum Pulse Width		4		ns	↑ Input
PW_{MIN}	Minimum Pulse Width		6		ns	↓ Input
	Size	3.0 x 6.8 x 4.0			in.	
	Weight	1.5			lb.	Excluding AC adapter

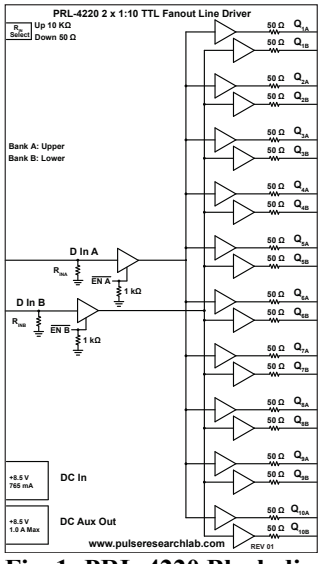


Fig. 1: PRL-4220 Block diagram

Notes:

(1) f_{MAX} should not exceed 125 MHz, otherwise damage of the unit due to overheating may result.

(2) f_{MAX2} is measured by driving a second PRL-4110 at the end of a 100 ft cable.

ORDERING INFORMATION:

- PRL-4220-BNC, 2:20 Fanout 50 Ω TTL Line Driver, BNC I/Os
- PRL-4220-SMA, 2:20 Fanout 50 Ω TTL Line Driver, SMA I/Os

RELATED PRODUCTS:

- PRL-4110, 1:10 Fanout 50 Ω TTL Line Driver
- PRL-4330,3:30 Fanout 50 Ω TTL Line Driver, equivalent to three PRL-4110 units in a single enclosure
- PRL-4122, 1:22 Fanout 50 Ω TTL Line Driver, equivalent to one PRL-414B driving two PRL-4110 units in a single enclosure

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