

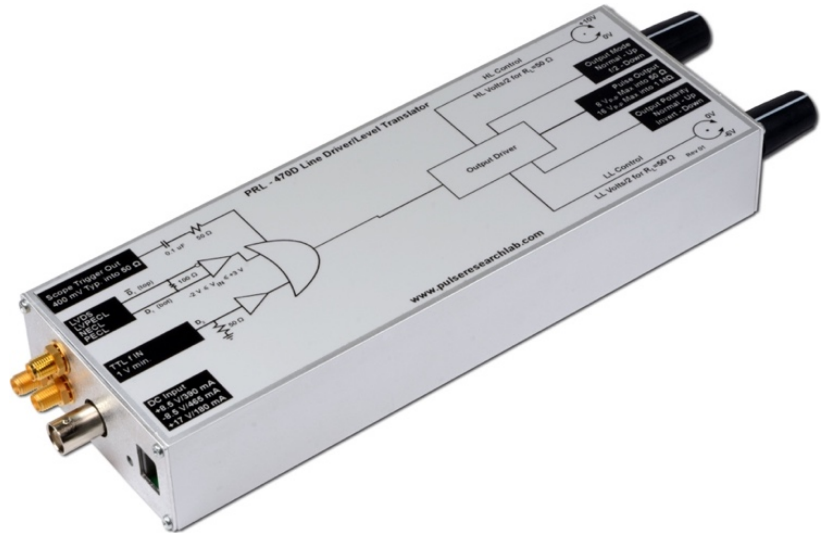
PRL-470D, HIGH SPEED LINE DRIVER/LEVEL TRANSLATOR

Applications

- Long Line Driver/ Level Translator
- Laser Diode Driver
- TTL/CMOS/ECL Device Testing
- Amplifier Large Signal Response Testing
- TDR Source for Cable Testing
- A Mini-Modular Instrument (MMI)

Features

- $t_r = 800$ ps Typical @ 5 V Output into 50 Ω
- +5 V/-3 V Output HL/LL into 50 Ω
- +10 V/-6 V Output HL/LL into 1 M Ω
- Normal or Inverted Output
- f/2 Mode for Square Wave Output
- f_{max} up to 300 MHz @ 3.5 V Output
- 50 Ω TTL Compatible Input requires less than 1 V for triggering
- Universal Differential Input with a floating 100 Ω Termination, logically ORed with TTL input
- Self-contained 1.3 x 2.9 x 8.1-in. Module includes a ± 8.5 V/17 V DC AC/DC adapter

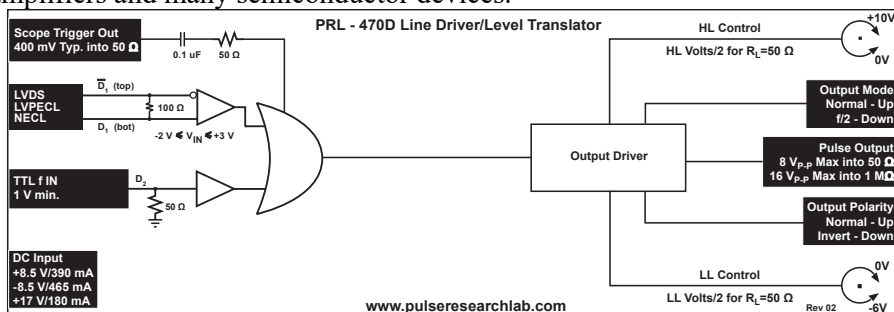


GENERAL DESCRIPTION

The PRL-470D is a high speed 50 Ω Line Driver/Level Translator with independently variable output Hi and Lo levels. It has a TTL and a Universal Differential Input. The TTL input has a 50 Ω to ground termination, and Universal Differential Input has a floating 100 Ω termination. The floating differential input accepts LVDS, LVPECL, NECL, RS-422, or any 100 mV_{PP} minimum differential signal within the window of -2 V to +3 V. The TTL and Universal Differential Input are logically ORed; therefore a Hi level applied to either input can be used as a gate signal. The PRL-470D is an improved version of the earlier Model PRL-470B. The connectors for the universal differential input are SMA, and the connector for the TTL input is BNC. The output connector is SMA

The output Hi and Lo levels are independently variable from 0 V to +5 V and 0 V to -3 V into 50 Ω , respectively, or +10 V and -6 V into 1 M Ω . The maximum output peak to peak swing is 8 V into 50 Ω , or 16 V into 1 M Ω . The back-terminated 50 Ω output can drive long 50 Ω lines with or without load termination. A Normal/Invert switch provides output logic polarity selection, and an f/2 switch provides square wave output. The 50 Ω TTL input requires less than 1 V for triggering.

The 800 ps rise time output makes the PRL-470D a cost effective TDR source for testing cables. Typical maximum clock rate is 300 MHz @ 3.5 V_{PP} output and 250 MHz @ 5 V_{PP} output, well suited for testing logic circuits of different families, amplifiers and many semiconductor devices.



PRL-470D Block Diagram

The trigger output generates > 400 mV into 50 Ω or > 800 mV into high impedance, and is back terminated into an AC-coupled 50 Ω source. The self-contained 1.3 x 2.9 x 8.1-in module is supplied with a ± 8.5 V/+17 V AC/DC adapter.

SPECIFICATIONS (0° C ≤ T_A ≤ 35° C)

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

SYMBOL	PARAMETER	Min	Typ	Max	UNIT	Comments
R _{IN_TTL}	Input Resistance, TTL	49.5	50.0	50.5	Ω	
R _{IN_DIFF}	Input Resistance, Universal Differential		100		Ω	
V _{IL_TTL}	TTL input Low Level	-0.5	0.0	0.5	V	
V _{IH_TTL}	TTL input High Level	0.8	0.85	5.0	V	
V _{IL_DIFF}	Differential Input, Low Level	-2		3	V	
V _{IH_DIFF}	Differential Input, High Level	-2		3	V	
V _{INPP}	Differential Input, Peak to Peak	-2.0	±0.1	3.0	V	
V _{OL1}	Output Low Level, R _L = 50 Ω	-3		0	V	
V _{OL2}	Output Low Level, R _L = 1 MΩ	-6		0	V	
V _{OH1}	Output High Level, R _L = 50 Ω	0		5	V	
V _{OH2}	Output High Level, R _L = 1 MΩ	0		10	V	
V _{PP1}	Output Voltage Swing, R _L = 50 Ω	0.8		8	V	
V _{PP2}	Output Voltage Swing, R _L = 1 MΩ	1.6		16	V	
I _{DC1}	Max. DC Input Current, +8.5 V		+380	+390	mA	
I _{DC2}	Max. DC Input Current, -8.5 V		-465	-465	mA	
I _{DC3}	Max. DC Input Current, +17 V		+140	+180	mA	
V _{DC1}	DC Input Voltage, +8.5 V	+7.5	+8.5	+12	V	
V _{DC2}	DC Input Voltage, -8.5 V	-12	-8.5	-7.5	V	
V _{DC3}	DC Input Voltage, +17 V	+15	+17.5	+20	V	
V _{AC1}	AC/DC Adapter Input Voltage	108	120	132	V	120 VAC
V _{AC2}	AC/DC Adapter Input Voltage	216	240	234	V	220 VAC
t _{PLH/PHL_VO}	Prop. Delay to Output ↑/↓		5.5	7.5	ns	V _{OL} = 0 V, V _{OH} = 5 V
t _{r1}	Output Rise Time (10%-90%)		850	900	ps	V _{OL} = 0 V, V _{OH} = 5 V
t _{f1}	Output Fall Time (10%-90%)		1100	1600	ps	V _{OL} = 0 V, V _{OH} = 5 V
t _{r2}	Output Rise Time (10%-90%)		625	800	ps	V _{OL} = 0 V, V _{OH} = 3.5 V
t _{f2}	Output Fall Time (10%-90%)		950	1100	ps	V _{OL} = 0 V, V _{OH} = 3.5 V
t _{r3}	Output Rise Time (10%-90%)		750	800	ps	V _{OL} = -2.5 V, V _{OH} = 2.5 V
t _{f3}	Output Fall Time (10%-90%)		1200	1300	ps	V _{OL} = -2.5 V, V _{OH} = 2.5 V
t _{r4}	Output Rise Time (10%-90%)		950	1000	ps	V _{OL} = -3 V, V _{OH} = 5 V
t _{f4}	Output Fall Time (10%-90%)		1400	1600	ps	V _{OL} = -3 V, V _{OH} = 5 V
t _{SKEW}	Skew between V _{O↑} and V _{O↓}		100	300**	ps	V _{OL} = 0 V, V _{OH} = 5 V, f = 50 MHz, PW = 5 ns
f _{max1}	Maximum Clock Frequency	225	250		MHz	V _{OL} = 0 V, V _{OH} = 5 V
f _{max2}	Maximum Clock Frequency	250	300		MHz	V _{OL} = 0 V, V _{OH} = 3.5 V
f _{max3}	Maximum Clock Frequency	250	300		MHz	V _{OL} = -2.5 V, V _{OH} = 2.5 V
f _{max4}	Max. Input Clock Frequency	500	600		MHz	Square Wave Mode
PW _{MIN}	Minimum Output Pulse Width		2.0	2.5	ns	V _{PP} = 5 V
ΔPW	Output PW change, V _{O↑} to V _{O↓}		200	400*	ps	V _O = 0 to 5 V, PW = 5 ns
V _{O Trigg}	Trigger Output	1.0	1.2		V	R _L = 50 Ω, f ≤ 250 MHz
	Size	1.3 x 2.9 x 8.1			in.	
	Weight	13			Oz	

** Skew and ΔPW may vary with different output level, frequency and pulse width settings