PPL-1550-R

1550 nm Programmable Picosecond Laser, SM, Rackmount

OVERVIEW

The Optilab PPL-1550-R is a programmable laser that produces picosecond pulses with electrical input pulses. It functions as a seed pulse generator for Master Oscillator Power Amplifiers (MOPA). The PPL- 1550-R is designed to produce < 100 ps widths and corresponding repetition rates up to 100 MHz from the user's electrical pulse generator. It features a high Extinction Ratio (ER) Mach-Zehnder Interferometer (MZI) optical modulator with a high pulse contrast of -30 dB. The PPL-1550-R consists of a narrow-line- width, ultra stable, DFB laser diode, centered at 1550 nm transmission wavelength, but with the flexibility to offer wavelengths above 1563 nm upon request. The DFB laser operates under Continuous Wave (CW) mode, modulated by a high speed modulator rise time of less than 35 ps. The Automatic Bias Controller (ABC) board is used to properly maintain the bias point of the optical modulator and ensure jitter free, ultra-fast pulse generation. The PPL-1550-R incorporates 25/300 Large Diameter Fiber (LDF) to overcome non-linear effect. The laser system is equipped with a standard remote control interface (RS-232) and an LCD display screen for easy user interface, accessible through a front panel adjustment knob. Contact Optilab for more information.

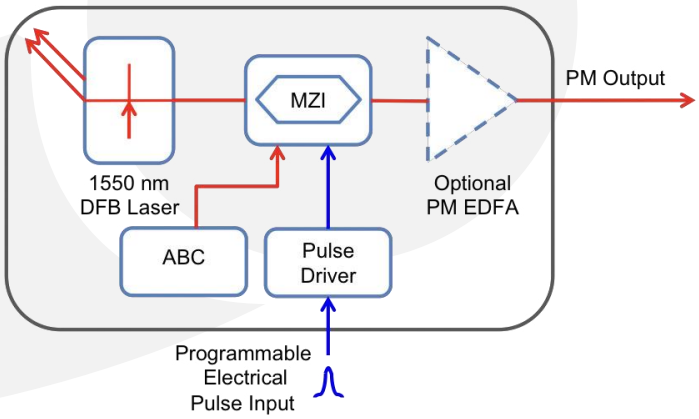
FEATURES

- High Pulse Contrast of -30 dB
- Generate short pulse of < 100 ps
- Uses external electrical input
- Optional PM high power collimator
- Optional high power PM EDFA
- Programmable pulse width & repetition rate
- 1540-1563 nm laser adjustable +/- 1.5 nm
- High speed optical modulator with < 35 ps rise time
- Collimated output available

USE IN

- Picosecond pulse generator
- Research & development
- Test & measurement
- Master Oscillator Power Amplifier (MOPA)

FUNCTIONALDIAGRAM



PPL-1550-R

SPECIFICATIONS

OPTICAL

Wavelength	1540 nm to 1563 nm
Wavelength Tuning Range	Up to ± 1.5 nm
Minimum Pulse Width	< 100 ps
Modulator Rise/Fall Time	< 35 ps
Source Laser Linewidth	< 3 MHz, 1 MHz available
Pulse Repetition Rate	Programmable 100 KHz to 100 MHz depending on electrical pulse
Energy per Pulse	Up to 2 uJ w/ EDFA, at 500 KHz
Pulse Contrast	-30 dB
Peak Power Output (no EDFA)	10 mW peak
Peak Power Output (w/ EDFA)	Up to 1 kW peak
Jitter Relative to RF Reference	10 rms max.
Pulse Amplitude Variation	1% rms max.
Polarization Extinction Ratio	20 dB typ.
Amplitude Stability (short term)	< 1%
Polarization Design	Single linear polarization, slow axis passing

ELECTRICAL PULSE INPUT

Modulator Bandwidth	Up to 20 GHz
Modulator Type	MZI with high ER ratio 40 dB
Input Level	> 0.5 V peak to peak
Pulse Repetition Rate	Programmable 100 KHz to 100 MHz depending on electrical pulse input
Minimal Pulse Width	< 75 ps
Electrical Input Frequency	50 KHz to 12 GHz
Electrical Connector	SMA

OPTICAL COLLIMATOR

Collimated Beam Quality	m^2 < 1.5
Nominal Beam Diameter	1.2 mm
Average Optical Power	15 W max.
Peak Power for ns Pulse	15 KW max
Fiber Type	PLMA-GDF-25/300

ORDERING OPTIONS

PPL-xxxx-y-SM

xxxx Wavelength: 1540-1563 nm, user specify

y Peak Power in dBm

PPL-1550-R

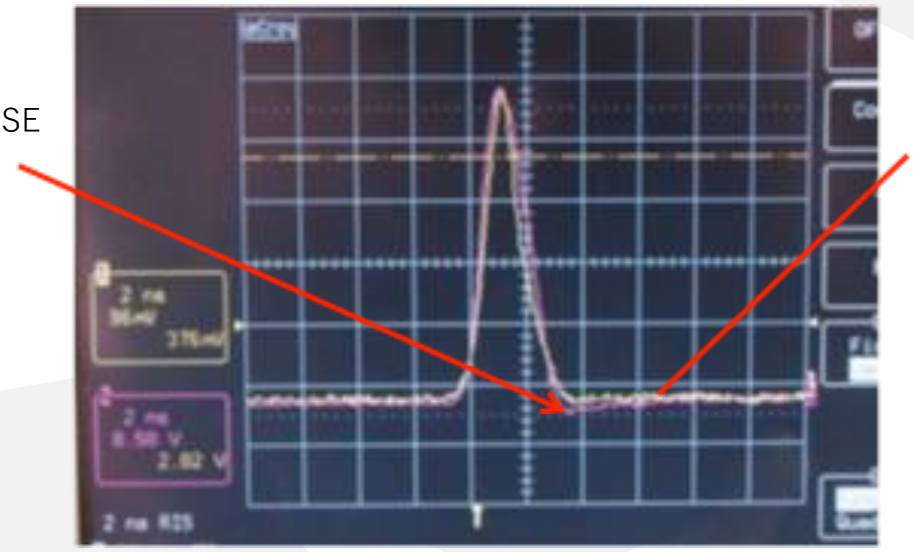
MECHANICAL

Operating Temperature	0°C to +50°C
Storage Temperature	-40°C to +70°C
Humidity	10% to 90%
Power Supply	110 V AC and 220 V AC, 50 or 60 Hz
Display	Temperature, Current, Voltage
Controls/Monitoring	LDC display for Laser Switch, EDFA output power through front panel. See next page.
Communication Interface	RS-232 interface with Ethernet optional
Dimensions	1 RU: 19" x 14" x 1.75"
Optical Connector	SMF-28 FC/APC or user option
Optical Fiber	PANDA Fiber PM
Electrical Connector	SMA Female

OPTICAL PULSE OUT

The PPL-1550-R has a linear translation from electrical to optical pulses with a 1:1 ratio. The electrical and optical pulses look nearly identical. The following is a near Gaussian shape 2 ns optical pulse output.

OPTICAL PULSE



ELECTRICAL PULSE

PPL-1550-R

OPTIONAL PPL-1550-PM-R SYSTEM CONFIGURATIONS

The PPL-1550-PM-R has three different system configurations. First, the PPL-1550-PM-R without an EDFA. Secondly, the PPL-1550-PM-R with a PM EDFA to boost peak pulse power, and a collimating lens. And third, the PPL-1550-PM-R connected to the EPA-40-PM erbium-doped pulse amplifier. See the diagrams below.