

Low Impedance High Current Pulsar

The S-3 High Power Pulse Generator is designed to drive devices requiring short or long pulses of high current with a non-linear response, including optical devices such as high power quantum cascade lasers, infrared laser diodes, LEDs or electronic devices such as Gunn diodes or high speeds transistors and rectifiers.

Key Features

- Small footprint low impedance head
- Convenient access to all signals
- Up to 8A peak /3A average current
- Voltage compliance: 25 V
- Computer control of output voltage
- Computer or TTL control of pulse sequence
- Stand alone operation possible once programmed

Key Applications

- Increased wavelength scanning span fully electrically
- Wavelength dither and ramps as in conventional DFB
- DFB wavelength reproducibility
- DFB linewidth and noise



The S-3 is a good replacement for the obsolete Keysight/Agilent 8114A or the AV-107 from Avtech and provides additional features. The S-3 offers many programmable options and can be programmed from a computer through its USB port but once this done, if you plan to use the device continuously, you can just have it start at turn on and do not need any computer command command to turn it on for full stand-alone operation.

The device can operate as a slave, reproducing a control pulse or its internal clock can be used to produce pulses or trains of pulses in most relevant configuration.

The device contains an external enable/disable TTL control that allows full operation in Quasi-CW mode of a QCL, Laser Diode or any load.

The device contains an internal DC bias Tee allowing to add a DC dither in between the pulses to create a DC additional dissipation. This is controlled independently from the pulse current. This is particularly useful for pulsed QCLs to adjust wavelength without changing pulse current or heat sink temperature.



Specifications

PARAMETER NAME	MINIMUM VALUE	TYPICAL VALUE	MAXIMUM VALUE	UNIT	NOTE
Pulse Repetition Frequency	0	0.3	1	MHz	
Low impedance head size		88 × 42 × 22		mm ³	
Voltage setting/measurement resolution		5		mV	
DC bias Tee Current	0	0	30	mA	
DC bias Tee current resolution		10		μA	
Analog input resolution		1		mV	
DC bias Tee current slew rate	0		3	A/s	As required by settings
Amplitude slew rate	0		20	V/s	As required by settings
Analog input range	0		3.3	V	
Trigger Level / Gate Level		TTL			
Peak current	0	1	8	A	
Average current	0	0.1	3	A	
Output voltage	0	12	25	V	Cannot exceed input voltage
Pulse width	20	300	DC	ns	From 20 ns to 1.3 ms in 20 ns increments, then up to 85 s with larger increments, and CW
Pulse width Increment	20	20	1300 000	ns	Up to 1.3 ms for internal modulation and for externally modulated operation, any pulse length and frequency will be reproduced identically to the source.
Pulse repetition period resolution	20	20	1300 000	ns	Periods from 1000 to 1310700 ns with 20 ns resolution; periods up to 85 s with lower resolutions (multiples of 20 ns).
Rise/Fall Time	2.5	5	8	ns	The values given are for AL's HHL and LLH packages with proper cabling
Current measurement resolution	2	2		mA	Beware that for pulse length below 300 ns the value is overestimated and indicative only. The quantity is measured every pulse and averaged over multiple measurements providing a refresh rate of 10Hz.
Pulser box size		20 × 22 × 13		cm ³	



S-3 Pulser Head

S-3 back panel with connectors

