ALPES LASERS

The Source for Unipolar Quantum Cascade Lasers for Mid and Far Infrared

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# Low impedance High Current Pulser

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.

## Specifications

| QUANTITY | MIN | TYP | MAX | UNIT | NOTE |
|---|---|---|---|---|---|
| Max Pulse Repetition Frequency | – | – | 1 | MHz | |
| Low impedance head size | 88 | 42 | 22 | mm³ | |
| Voltage setting/measurement resolution | – | 5 | – | mV | |
| DC bias Tee max current | – | 30 | – | mA | |
| DC bias Tee current resolution | – | 10 | – | µA | |
| Analog input resolution | – | 1 | – | mV | |
| DC bias Tee current slew rate | – | – | 3 | A/s | |
| Amplitude slew rate | – | 20 | – | V/s | |
| Analog input range | 0 | – | 3.3 | V | |
| Trigger Level | | TTL | | | |
| Gate Level | | TTL | | | |
| Maximum peak current | – | – | 8 | A | 1 |
| Maximum voltage | – | – | 25 | V | 2 |
| Maximum average current | – | – | 3 | A | 3 |
| Pulse width | 20 | – | DC | ns | 4 |
| Pulse width minimum increment | – | 20 | – | ns | 5 |
| Pulse repetition period resolution | – | – | 20 | ns | 6 |
| Rise time | 2.5 | 5 | – | ns | 7 |
| Fall time | 2.5 | 5 | – | ns | 8 |
| Current measurement resolution | – | 2 | – | mA | 9 |
| Pulser box size | 200 | 220 | 130 | mm³ | 10 |

## 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

- Lab driver for pulsed QCLs
- Multi purpose low impedance driver
- Driver for highly non-linear loads
- Laser Range Finding
- High power short rise time applications

**These specifications may be changed without further notice.**

1. Please inquire about higher current versions.
2. Limited by capacitors
3. Limited by heat extraction
4. Strictly speaking, from 20 ns to 1.3 ms in 20 ns increments, then up to 85 s with larger increments, and CW
5. 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.
6. Periods from 1000 to 1310700 ns with 20 ns resolution; periods up to 85 s with lower resolutions (multiples of 20 ns).
7. This is mostly defined by the load; the values given are for AL's HHL and LLH packages with proper cabling; with inductive loads the rise time can be much worse than 5 ns
8. See the note for the rise time
9. 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.
10. Including connectors

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.



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