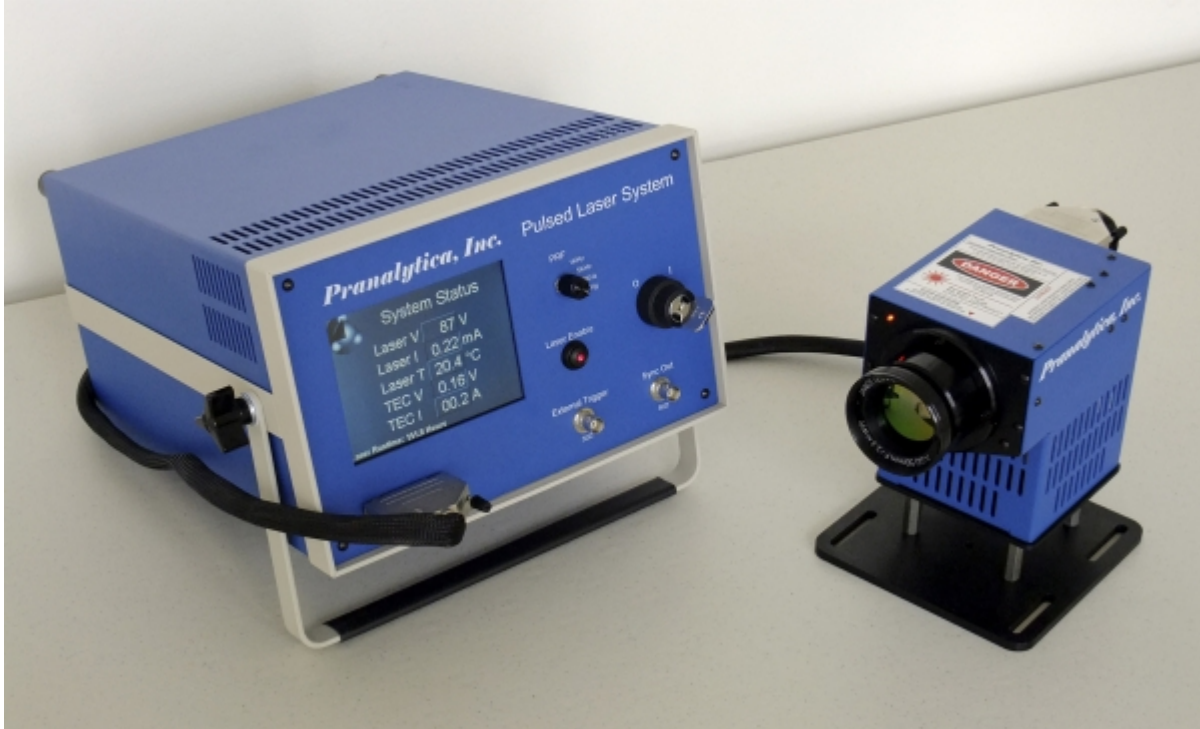


Laser System Model 1101-46-HP-XXXX

Pulsed High Power Room Temperature QCL System

Specifications



Model 1101-46-HP-XXXX quantum cascade laser is supplied as a complete system consisting of the laser head with its matched power supply, ready to be turned on in a customer's location. The standard version of the system consists of the quantum cascade laser and its collimating optics, located in a hermetically sealed package for trouble free operation in harsh physical environments, plus appropriate electronics. The MWIR laser radiation emerges in a ~ 4 mm diameter nearly collimated beam.

For special applications, the system is available (at optional extra cost) with an external bayonet mount infrared beam expanding lens for projection of the MWIR beam over kilometer distances (see the photograph above, in which a Janos ASIO 50 mm F/2.3 objective is integrated with the laser head). The bayonet mount accepts other lenses for customer specific applications.

Output pulses are of fixed duration, user-specified between 50 ns and 500 ns, with frequency from single pulses up to 1 MHz. The system features very fast pulse rise and fall times of less than 5 ns. Various internal and external triggering options are provided.

The laser is offered in three pulsed power output versions:

Model 1101-46-HP-1000: Peak pulse power output of > 1.0 W in an ambient environment with laser head at room temperature

Model 1101-46-HP-2000: Peak pulse power output of > 2.0 W in an ambient environment with laser head at room temperature

Model 1101-46-HP-4000: Peak pulse power output of > 4.0 W in an ambient environment with laser head at room temperature

Pulsed High Power Quantum Cascade Laser Head

Operation	<ul style="list-style-type: none">• Pulsed operation with the laser head at room temperature
Wavelength	<ul style="list-style-type: none">• 4.6 μm (other wavelengths up to 12 μm available on request)
Output spectrum	<ul style="list-style-type: none">• Broadband power centered ~ 4.6 μm; spectral width ~ 150 nm
Pulse length	<ul style="list-style-type: none">• 50 ns to 500 ns (specified by the customer)

- Pulse rise/fall time**
 - less than 5 ns
- Maximum pulse repetition rate**
 - 1 MHz
- Operating mode**
 - Internally triggered at 3 discrete user-specified frequencies
 - Synchronized with externally supplied pulse sequences
- Output beam**
 - Nearly collimated; Optional modification permits attachment of external beam expanding infrared lens assembly for projection of the laser radiation over kilometer distances.
- Output beam quality**
 - Nearly diffraction limited (please call for details)
- Reliability**
 - Measured lifetime data for >3,000 hours with no power degradation at full power and periodic thermal cycling from full power to off and vice versa
- Ambient operating temperature**
 - < 45°C
- Physical details**
 - Size: 13 cm (W), 17 cm (H), 15 cm (D) (w/o optional external lens)
 - Weight: 1.9 kg (w/o optional external lens)

Pulsed High Power Quantum Cascade Laser Power Supply

- Operation**
 - Provides the necessary laser drive current for the quantum cascade laser (factory adjusted to deliver the specified laser output power)
 - Provides the necessary drive current for the associated thermoelectric coolers (factory adjusted to provide the needed cooling at the optimum operating point)
- Pulse repetition rate**
 - Internal free running; adjustable in 3 user-specified steps
 - Synchronization output provided
- External pulse**
 - Synchronized with externally determined pulse sequences (TTL, maximum rate from single pulses to 1 MHz)
- Ambient operating temperature**
 - < 45°C
- Physical details**
 - Size: 28 cm (W), 18 cm (H), 37 cm (D)
 - Weight: 7.3 kg
- Electrical details**
 - 110/220 V, 3 A (max)
 - Can be modified to operate from a single DC supply at 28V with somewhat lower power consumption

