

高功率量子级联 QCL 激光器



美国 Pranalytica 公司是世界领先的中红外和长波红外的量子级联激光器生产商，其产品主要应用于国防，军工和商用市场和探测领域，其产品主要特点为功率高，包括连续波和脉冲型，宽谱，波长可调，多波长，以及 OEM 量子级联激光器。

作为目前商用市场上输出功率最大的中红外量子级联激光器，其产品具有以下特点：

- 单个器件的最大功率可达 4W
- 波长从 3.8 微米到 12 微米
- 可调谐 QCL 系统
- 高规格参数，超出军方要求
- 单波长以及多波长高亮度系统
- 提供 OEM 和系统级配置

The Model 1101-46-CW-XXXX laser is sold as a complete system consisting of the laser head and matched power supply, ready to be turned on at the customer's location. The thermoelectric cooler and collimating optics for the quantum cascade laser are located in a hermetically sealed package for trouble free operation in real environments.

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The system is offered in four power output versions:

Model 1101-46-CW-750: Power output of > 0.75 W, continuous wave in an ambient environment with laser head at room temperature

Model 1101-46-CW-1000: Power output of > 1.0 W, continuous wave in an ambient environment with laser head at room temperature

Model 1101-46-CW-1500: Power output of > 1.5 W, continuous wave in an ambient environment with laser head at room temperature

Model 1101-46-CW-2000: Power output of > 2.0 W, continuous wave in an ambient environment with laser head at room temperature

Packaged quantum cascade laser (laser head)

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|----------------------------|---|
| Operation | •CW operation with the laser head at room temperature |
| Wavelength | •4.6 μm Broadband power centered $\sim 4.6 \mu\text{m}$; spectral width ~ 150 |
| Output spectrum | •nm |
| Power output | • $\geq 0.75 \text{ W}$, $\geq 1.0 \text{ W}$, 1.5 W , or $> 2.0 \text{ W}$ (model dependent) |
| Output beam | •Nearly collimated |
| Output beam quality | •Nearly diffraction limited (please call for details) Model 1101-46-CW may be operated in true CW mode by applying +5V DC to the modulation input connector |
| CW operation | •(front panel) Model 1101-46-CW may be modulated from 1 kHz to |
| Modulated operation | 100 kHz by applying TTL modulation to the input •connector (front panel) Measured lifetime data for >3,000 hours with no power degradation at full power and periodic thermal cycling |
| Reliability | •from full power to off and vice versa |
| Physical details | •Size: 13 cm (W), 17 cm (H), 15 cm (D) •Weight: 1.9 kg |

Power supply

Provides the necessary laser drive current for the quantum cascade laser (factory adjusted to deliver the specified

Laser

Provides the necessary drive current for the associated

Thermoelectric coolers

thermoelectric coolers (factory adjusted to provide the needed cooling at the optimum operating point)

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| | |
|---------------------------|---|
| | Front panel input connector for modulation of the laser output from 1 kHz to 100 kHz (3 dB bandwidth, TTL input), limited by the power supply. The quantum cascade laser can be modulated at rates up to 1 GHz with special |
| Modulation | •power supply. Laser power supply is equipped with multiple levels of |
| Protection | •protection for trouble free operation of the QCL •Power supply has a 5 second startup delay time •Laser is activated by a separate switch |
| Physical details | •Size: 28 cm (W), 18 cm (H), 37 cm (D) •Weight: 10 kg |
| Electrical details | •110/220 V, 4 A (max) Optional modification available for operation from a single 28V DC source with somewhat lower power •consumption |

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