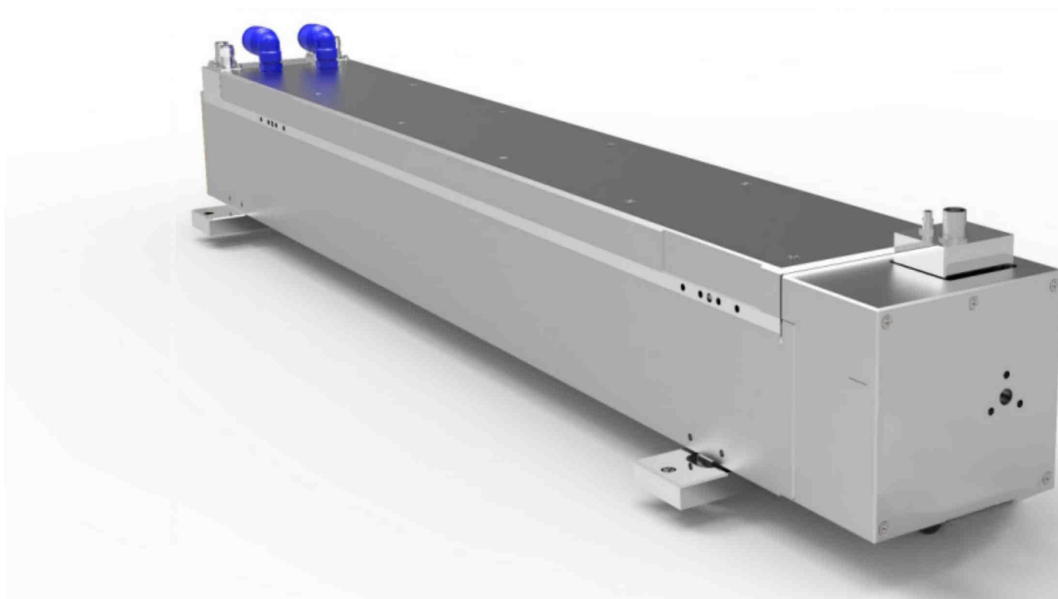


# AL50SQ CO<sub>2</sub> Laser



Access Laser AL50SQ is a compact RF-excited, INVAR-stabilized, fully sealed CO<sub>2</sub> waveguide laser that is Q-switched with an acoustic-optical modulator (AOM). This results in outstanding pulse characteristics with high peak powers of 1.5 kW, 200 ns pulse widths and frequencies up to 100 kHz. Our unique sealed and INVAR-stabilized design ensures highest quality and reliable laser processing with industry-leading power stability and low maintenance. The precision pulse control makes this laser exceptionally useful for high-precision applications such as selective removal of thin-film layers on display panels or electronic components, sensitive marking of security features, high-resolution micro-perforation and others. Based on your application and material specifications, we optimize the laser wavelength to 9.3  $\mu\text{m}$ , 9.6  $\mu\text{m}$ , 10.2  $\mu\text{m}$  or 10.6  $\mu\text{m}$ . Many materials such as glasses, ceramics, plastics, soft and hard tissues show high absorption at these wavelengths and as such, can be processed with high precision and minimal thermal impact using short-pulsed CO<sub>2</sub> lasers.

## FEATURES

  **$\leq 200 \text{ ns}$ , 0.3 mJ, 1.5 kW**  
Short high-power pulses ensure high-precision laser processing with minimal thermal stress

 **Q-Switch Pulse Control**  
Intra-cavity AOM for pulse frequencies from Hz to 100 kHz

 **INVAR Stabilized Waveguide Laser Design**  
Consistent results with high pulse-to-pulse repeatability < 2% and high pointing accuracy < 0.1 mrad

**Fully Sealed Laser Cavity**  
Reliable performance over many years with minimal maintenance



# AL50SQ CO<sub>2</sub> Laser

## SPECIFICATIONS

|                      |                   |
|----------------------|-------------------|
| <b>Laser Power</b>   | 9.3, 9.6, 10.2 or |
| Wavelength           | 10.6 $\mu$ m      |
| Pulse Peak Power     | 1.5kW             |
| Average Power        | up to 10 W        |
| Pulse Energy         | 0 – 0.3 mJ        |
| Pulse Rep. Frequency | 0 Hz – 100 kHz    |
| Pulse Width          | < 200 ns          |
| CW Power Stability   | $\pm 2\%$         |

## Beam Characteristics

|                       |                    |
|-----------------------|--------------------|
| Beam Waist Diameter   | 2.8 mm             |
| Vaist Location        | Output Coupler     |
| Mode Quality          | $M^2 \leq 1.2$     |
| Full Divergence Angle | 6 mrad             |
| Polarization          | $\geq 50:1$ Linear |

## Heat & Cooling

|                            |                        |
|----------------------------|------------------------|
| Heat Dissipation           | $\leq 750$ W           |
| Cooling Requirement        | Water Cooled           |
| Working Temperature        | 5 – 40 $^{\circ}$ C    |
| Min Flow Rate              | 3.8 LPM                |
| Recommended Flow Rate      | 9.5 LPM                |
| Max Pressure               | 10 bar                 |
| Required Chiller Stability | $\pm 0.1$ $^{\circ}$ C |
| Storage Temp. Range        | 5 – 50 $^{\circ}$ C    |

## DC Power Requirements

|                         |                    |
|-------------------------|--------------------|
| Laser RF Driver (U   I) | 28 V (48 V)   28 A |
| AOM RF Driver           | 12 V               |

## Dimensions & Weight

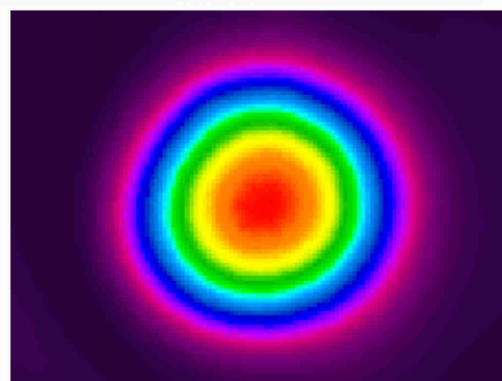
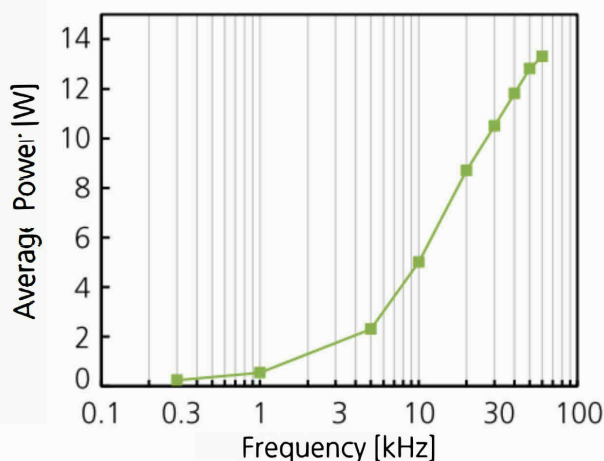
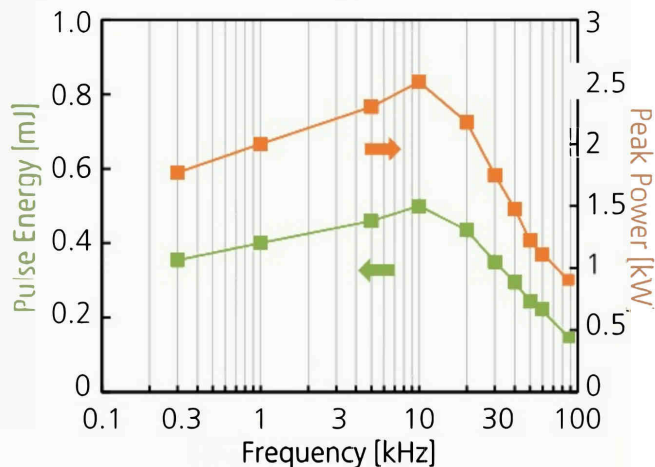
|                      |                   |
|----------------------|-------------------|
| Laser Weight         | 15.5 kg           |
| Dimensions L x W x H | 84 x 10 x 12.5 cm |
| RF Driver Weight     | 5.2 kg            |

## Notes

Power Stability calculated by:  $\frac{P_{max} - P_{min}}{P_{max} + P_{min}}$

Beam specifications measured at:  $\frac{1}{e^2}$

## TYPICAL PERFORMANCE



Average or pulsed power may exceed listed value. All specifications are subject to change without notice. Stability measured after 45 minute warm-up to allow laser head to reach thermal equilibrium. \*1)Non-condensing condition.



## AL50SQ Dimensions

