Fiber Lasers

ARM FL4CSM

Fiber Laser with Single Mode Center Beam and Adjustable Ring Mode (ARM)

The ARM FL Compact series of industrial, multi-kilowatt fiber lasers delivers superior results in a variety of challenging welding tasks. Adjustable ring mode refers to the unique output beam from this laser, which consists of two independently controllable, co-axial beams from a single delivery fiber.

The ARM FL4CSM is available with an output power of 4 kW (1.5 kW center + 2.5 kW ring). The center fiber produces single mode output which enables a small focused spot. This laser extends the welding application areas over the standard single-mode fiber lasers, enabling it to weld “challenging” materials that were difficult or impossible to process in the past. These include thin (some tenths of a mm) substrates which do not tolerate high total heat input (e.g. foil to tab welding), and mixed materials having significantly different thicknesses and melting points.

FEATURES

- Output power: 4000 Watts
- Adjustable Ring Mode (ARM)
- Single mode center beam
- Excellent stability over the entire power range (1% to 100%)
- Inherently back reflection safe
- Industry-leading closed loop power control for high process consistency
- Optimized power profile programming tool for welding processes
- Reliable and fast welding process with high efficiency
- Superior welding seam quality with minimal heat affected zones
- Highest part quality with minimum reject rates
- Minimized operating costs

APPLICATIONS

- Welding of dissimilar materials such as copper and aluminum
- Welding of foil stacks with precise control
- Cutting

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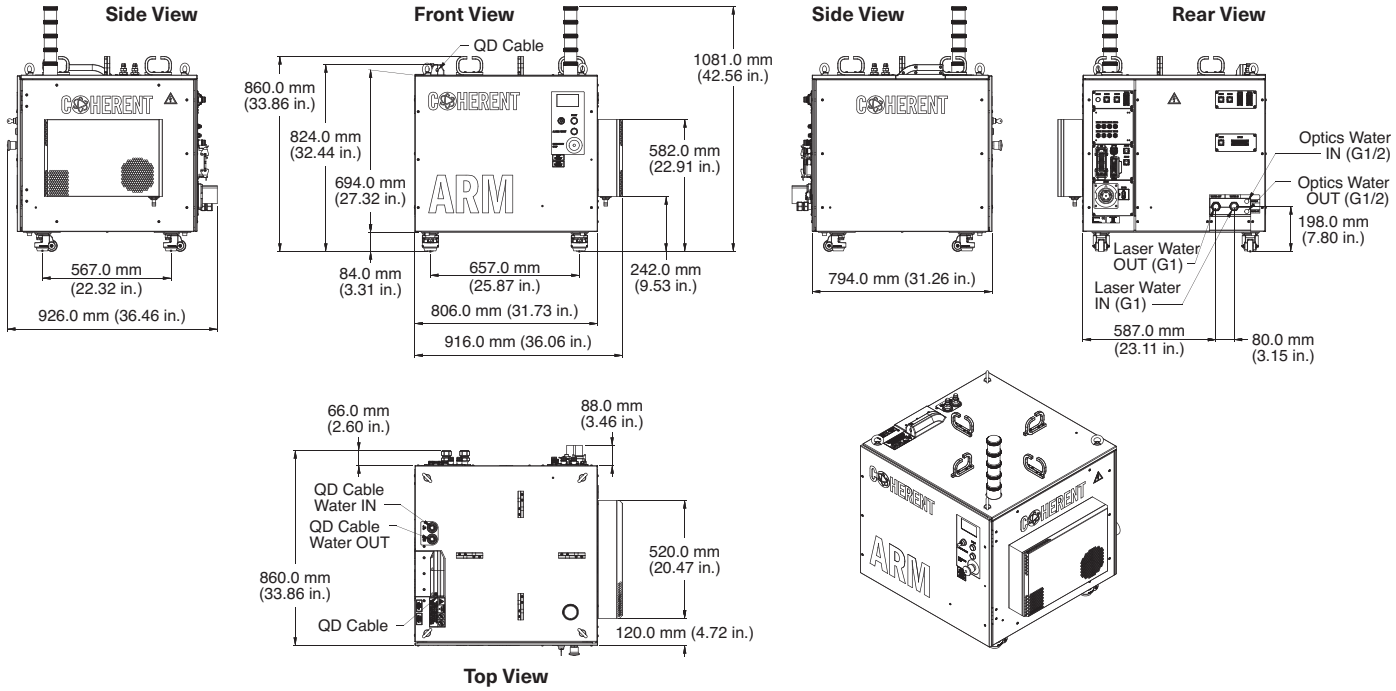
Specifications	ARM FL4CSM
Nominal Power[1] (W)	4000 Center 1500 / Ring 2500
Power Range (%)	1 to 100
Typical Laser Beam Quality (BPP) at Collimator (mm x mrad)	Center ≤0.6 / Ring ≤8
Power Stability (%)	±1
Pulse Frequency Range (kHz)	CW - 10
Wavelength	1070 ±10
Electrical Ratings	
Voltage (VAC)	400/440/480 ±10%
Connected Load (kVA)	12.7
Effective Power at Nominal Power (kW)	12.5
Max. Current Consumption at 400 V (A)	18
Fuses Type NH (A)	32
Cooling	
Recommended Cooling Capacity Laser and QHB/QD (kW)	8.9
Flow Rate Laser (l/min.)	43
Flow Rate QHB/QD (l/min.)	2
Temperature Laser (°C)	25 ±1
Temperature for QHB/QD (°C)	24 to 45
Max. Pressure Laser (MPa)	0.5
Max. Pressure QBH/QD (Mpa)	0.4
Typical Pressure Drop Laser (MPa)	0.25
Fiber Delivery System	
Interface	QBH/QD
Diameter (µm)	Center D 25, Ring OD 170
Length (m)	15
Dimensions and Weights	
Laser Dimension (L x W x H) (mm) without Signal Tower	Midi: 794 x 916 x 824
Laser Weight (kg)	<350
Environmental Conditions	
Ambient Temperature in Operation (°C)	5 to 40
Humidity (°C)	Environmental conditions always below the dew point. Condensation to laser, QHB/QD and optics must be avoided during the operation, storage, and transport.
Customer Interface	
Digital Signals (V DC)	24
Power Control (V DC)	0 to 10
Gate Control (V DC)	24, rise/fall time < 30 µs
Options Laser	
Vision System	Field bus (Ethernet/IP, Profinet, Profibus, Devicenet, Ethercat), Scanner control interface, Multi station interface

Notes:

1. Other power configurations are available upon request.

Mechanical Specifications

Midi: ARM FL4CSM



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