ARM FL Compact Single Mode

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 FLC SM is available with an output power of up to 6 kW. 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: 4 to 6 kW
- 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

COHERENT

Specifications	ARM FL4C SM	ARM FL6C SM
Nominal Power[1] (W)	4000 Center 1500 / Ring 2500	6000 Center 2000 / Ring 4000
Power Range (%)	1 to 100	
Typical Laser Beam Quality (BPP) at Collimator (mm x mrad)	25/170 µm Center ≤0.6 / Ring ≤8	
Power Stability (%)	±1	
Pulse Frequency Range (kHz)	CW - 10	
Wavelength	1070 ±10	
Electrical Ratings		
Voltage (VAC)	400 - 480 ±10%	
Connected Load (kVA)	12.7	18.9
Effective Power at Nominal Power (kW)	12.5	18.7
Max. Current Consumption at 400 V (A)	18	27
Fuses Type NH (A)	32	63
Cooling		
Recommended Cooling Capacity Laser and QHB/QD (kW)	8	12
Flow Rate Laser (l/min.)	43	65
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	10
Dimensions and Weights		
Laser Dimension (L x W x H) (mm) without Signal Tower	Midi: 808 x 518 x 845	Maxi: 808 x 518 x 1290
Laser Weight (kg)	<220	<300
Environmental Conditions		
Ambient Temperature in Operation (°C)	5 to 40	
Humidity (°C)	Environmental conditions always below the dew point. Condensation must be avoided.	
Customer Interface		
Digital Signals (V DC)	24	
Power Control (V DC)	0 to 10 (depending on the laser model beams; center, ring1, ring2)	
Gate Control (V DC)	24, rise/fall time < 25 µs (10 to 90%)	
Options Laser		
	Field bus (Ethernet/IP, Profinet, Profibus, Devicenet), Water Sensor Unit with extendable sensor interface, Water connectors, I/O interface cable kit, Twinsafe (for EtherCat only)	

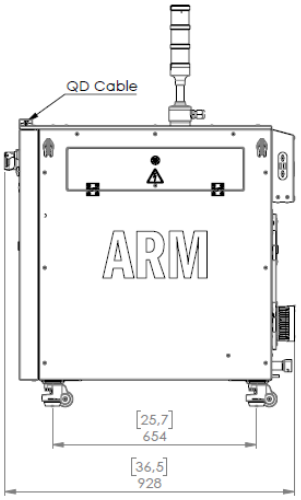
Notes:

1. Other power configurations are available upon request.

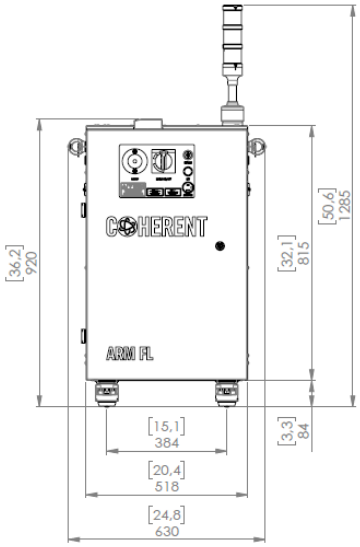
Mechanical Specifications

Midi: ARM FL4C SM

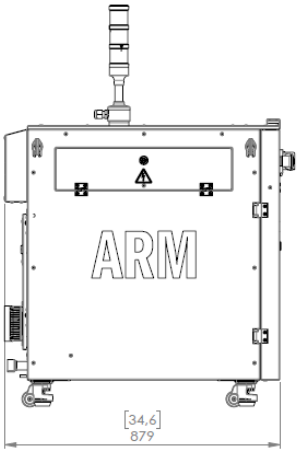
Side View



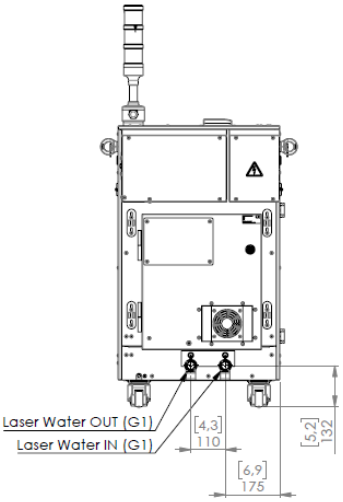
Front View



Side View

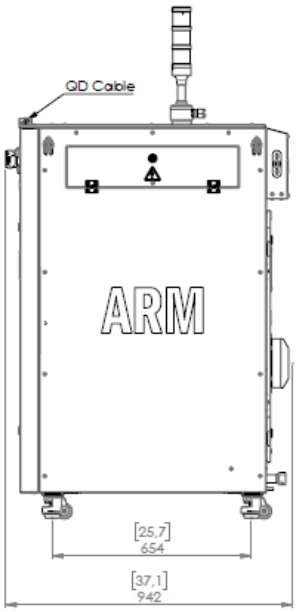


Rear View

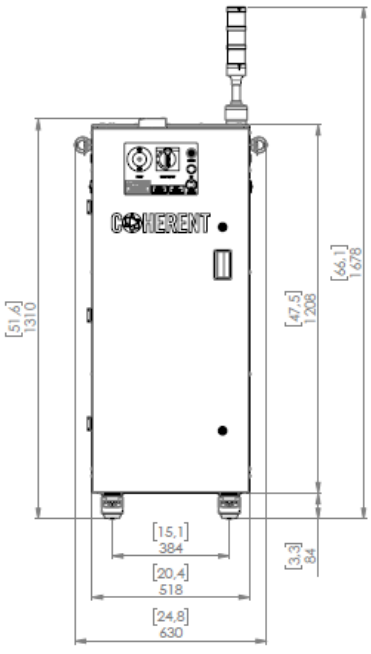


Maxi: ARM FL6C SM

Side View



Front View



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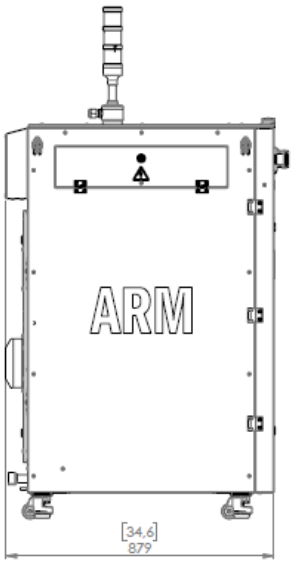
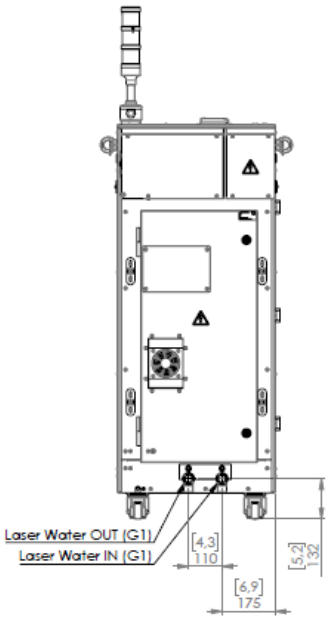


Rear View



For more information
www.coherent.com

Mechanical Specifications

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