ARM FL Compact

High-Power Adjustable Ring Mode (ARM) Fiber Lasers

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.

ARM FL Compact lasers are available in two configurations. A multi-mode version (the center spot is multi-transverse mode), provides the ability to join parts having large or inconsistent gaps, while producing improved joint strength and a smaller heat affected zone (HAZ). It also delivers high speed and high throughput, spatter-free processing, and lowers overall production costs by largely eliminating the need for postprocessing. It is particularly useful for applications such as crack free welding of aluminum without filler wire, and zero-gap lap welding of zinc coated steel.

A superior brightness version of the laser (1.5 kW center + 2.5 kW ring) with the 25 µm center core diameter and 15 m fiber length producing significantly smaller spot size, is also available.



FEATURES

- Output power: 2000 to 10,000 Watts
- Adjustable Ring Mode (ARM)
- 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
- Maximized freedom for welding geometries
- Highest welded part quality with minimum reject rates
- Minimized operating costs

APPLICATIONS

- High-quality welding of challenging materials like high-strength steel, aluminum, or copper
- Cutting

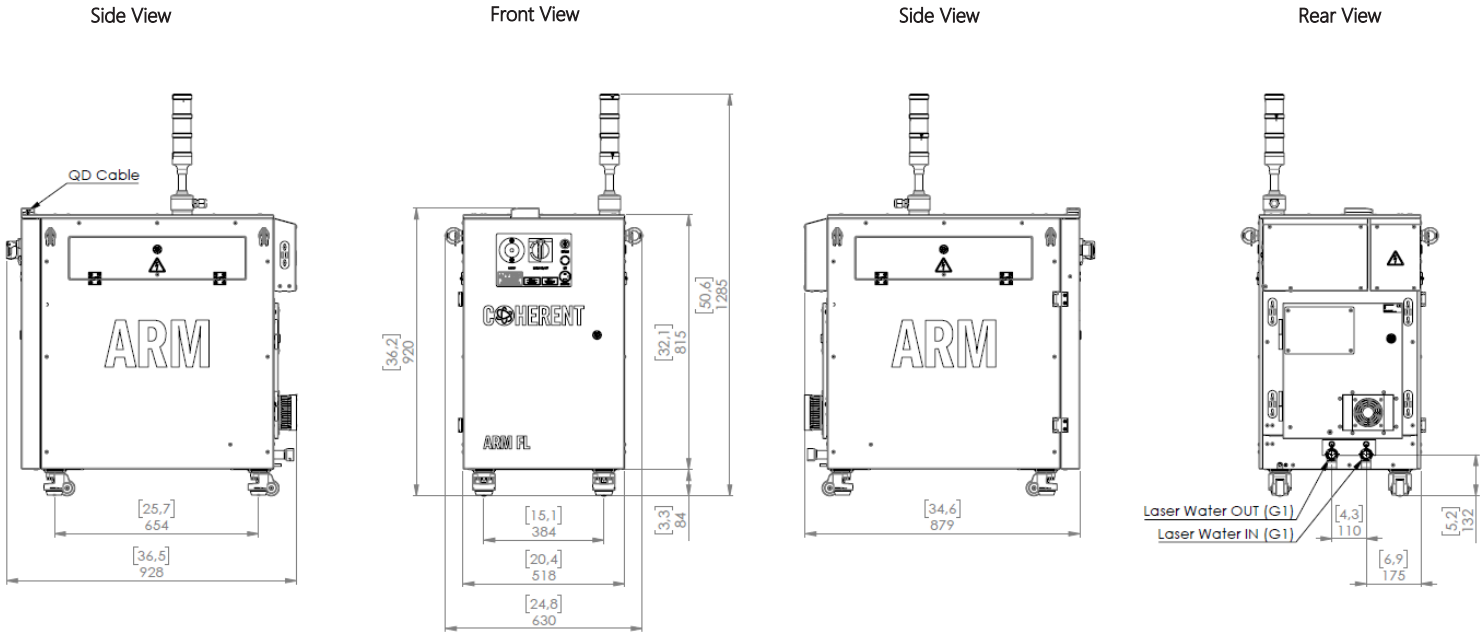
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Specifications	ARM FL2C	ARM FL4C	ARM FL5C
Nominal Power (W)	2000	4000	5000
Power Range (%)	1 to 100		
Typical Laser Beam Quality (BPP) at Collimator (mm x mrad)	For 70/180 µm Center ≤2.5, Ring ≤9; For 50/140 µm Center <2.5, Ring <6.5 For 50/200 µm Center 2.5, Ring ≤ 10		
Power Stability (%)	±1		
Pulse Frequency Range (kHz)	CW - 10		
Wavelength	1070 ±10		
Electrical Ratings			
Voltage (VAC)	400 - 480 ±10%		
Connected Load (kVA)	8.9	12.7	17.5
Effective Power at Nominal Power (kW)	8.7	12.5	17.3
Max. Current Consumption at 400 V (A)	12.5	18	25
Fuses Type NH (A)	32		
Cooling			
Recommended Cooling Capacity Laser (kW)	4.4	8.9	11.1
Recommended Cooling Capacity FFC/FFS and QHB/QD (kW)	0.2	0.5	
Flow Rate Laser (l/min.) (FLS+PSU+RLC)	22	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 70 µm, Ring OD 180 µm / Center D 50 µm, Ring OD 140 µm		
Length (m)	20 m (other lengths on request)		
Dimensions and Weights			
Laser Dimension (L x W x H) (mm) without Signal Tower	Midi: 808 x 518 x 845		
Laser Weight (kg)	<160	<220	
Environmental Conditions			
Ambient Temperature (°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 < 25 µs (10 to 90%)		
Options Laser			
	Field bus (Ethernet/IP, Profinet, Profibus, Devicenet), Water Sensor Unit with extaendable sensor interface, Water connectors, I/O interface cable kit, Twinsafe (for EtherCat only), External Power Control Unit (PCU) *		

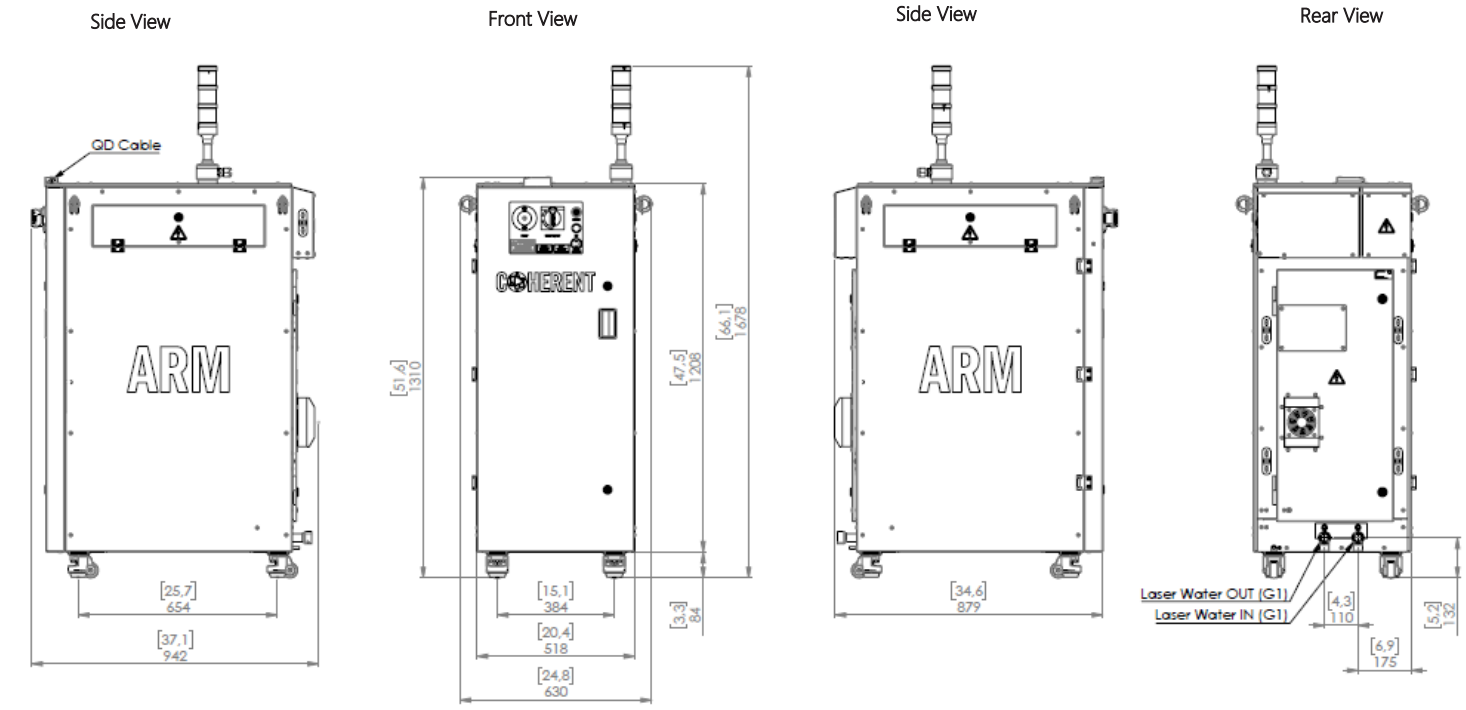
Specifications	ARM FL6C	ARM FL7.5C	ARM FL8C	ARM FL10C
Nominal Power (W)	6000	7500	8000	10,000
Power Range (%)	1 to 100			
Typical Laser Beam Quality (BPP) at Collimator (mm x mrad)	For 70/180 µm Center ≤2.5, Ring ≤9; For 50/140 µm Center <2.5, Ring <6.5 For 50/200 µm Center 2.5, Ring ≤ 10			
Power Stability (%)	±1			
Pulse Frequency Range (kHz)	CW - 10			
Wavelength	1070 ±10			
Electrical Ratings				
Voltage (VAC)	400 - 480 ±10%			
Connected Load (kVA)	18.9	24.4	25.1	34.8
Effective Power at Nominal Power (kW)	18.7	24.2	24.9	34.6
Max. Current Consumption at 400 V (A)	27	35	36	50
Fuses Type NH (A)	63			
Cooling				
Recommended Cooling Capacity Laser (kW)	13.3	16.7	17.8	22.2
Recommended Cooling Capacity FFC/FFS and QHB/QD (kW)	0.6	1		
Flow Rate Laser (l/min.) (FLS+PSU+RLC)	65		84	
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 70 µm, Ring OD 180 µm / Center D 50 µm, Ring OD 140 µm			
Length (m)	20 m (other lengths on request)			
Dimensions and Weights				
Laser Dimension (L x W x H) (mm) without Signal Tower	Maxi: 808 x 518 x 1290			
Laser Weight (kg)	<300	<360		
Environmental Conditions				
Ambient Temperature (°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 < 25 µs (10 to 90%)			
Options Laser				
	Field bus (Ethernet/IP, Profinet, Profibus, Devicenet), Water Sensor Unit with extaendable sensor interface, Water connectors, I/O interface cable kit, Twinsafe (for EtherCat only), External Power Control Unit (PCU) *			

Mechanical Specifications

Midi: ARM FL2C-5C



Maxi: ARM FL6C-10C



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