Beam Delivery Components for High-Power Lasers

QD FIBER OPTIC CABLE

1030 nm to 1090 nm

The QD fiber optic cable complies with the European automotive industry's standard interface requirements. Its innovative connector design features an integrated photodiode that enables detection of coupling losses on the input side as well as back reflections from the workpiece on the output side.

The QD fiber connector is water-cooled to ensure optimal performance and excellent power-loss handling capability. An integrated mode stripper removes unwanted cladding light, producing a well-defined output beam free from cladding power.

Combined with a reinforced, highly durable fiber hose, the QD fiber optic cable is ideally suited for demanding dynamic robotic applications.



FEATURES

- Up to 20 kW (CW)
- Mode-stripper
- AR-coated end cap
- Scattered light detection
- Superior power loss handling
- Round or square fiber core
- Plug-and-play within 10 µm

APPLICATIONS

- Welding
- Cutting
- Surface Treatment
- Cladding
- 3D Additive Manufacturing

COHERENT

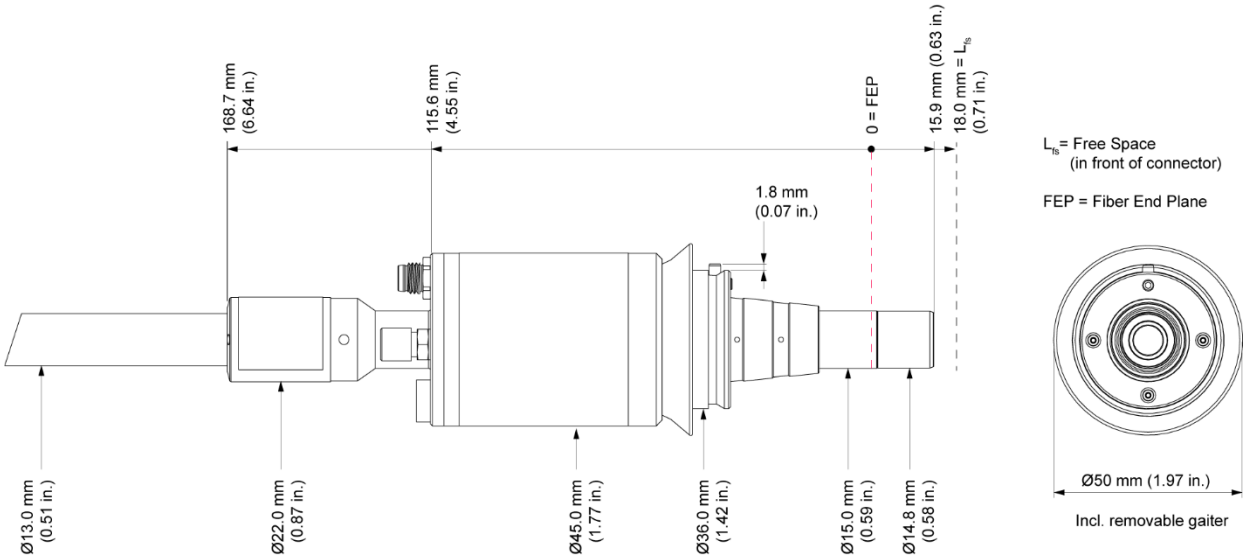
Specifications	QD
Maximum Power CW (kW)	20
Wavelength (nm)	1030 to 1090
Numerical Aperture $NA_{fiberacc}$	0.05 to 0.20
Fiber Core Dimensions (µm)	≤1000
Fiber Concentricity (µm)	≤10
Z-position Tolerance (µm)	±50
Pointing/Angular Deviation[1] (mrad) Core Diameter >200 µm Core Diameter ≤200 µm	 ≤10 ≤20
Power Loss Capability[2] (kW)	2.0 (10 s) 1.0 (10 min.) 0.5 (continuously)
Transmission Losses[3] (%)	<3
Fiber Cable Properties	
Cable Lengths (m)	≤200
Maximum Torsion (°/m)	90
Cooling	
Cooling Method	Water
Flow Rate (l/min)	2.0
Maximum Input Pressure (bar)	8.0
Pressure Drop (bar)[4]	1.1
Safety Interlock	
Interlock Circuit Resistance	3.3 kΩ ±5% +2 Ω/m cable length
Thermoswitch	Yes, 70°C ±5°C, reset temp >30°C
Dimensions & Weight	
Dimensions	See pages 3 to 4
Weight (kg) Fiber Connector Fiber Cable (per meter)	 0.6 0.2
Environmental Conditions	
Humidity (% RH)	<80
Operating Temperature (°C)	5 to 50 (non-condensing)
Storage Temperature (°C)	-20 to 70
Compliance Information	
RoHS	Directives 2011/65/EU and (EU) 2015/863
REACH	Regulation (EC) No. 1907/2006

1. Pigtail fibers: Cladding diameter up to and equal 500 µm: ≤20 mrad.
2. Within specified fiber NA.
3. ≤100 m cable length.
4. At flow rate: 2.0 l/min.

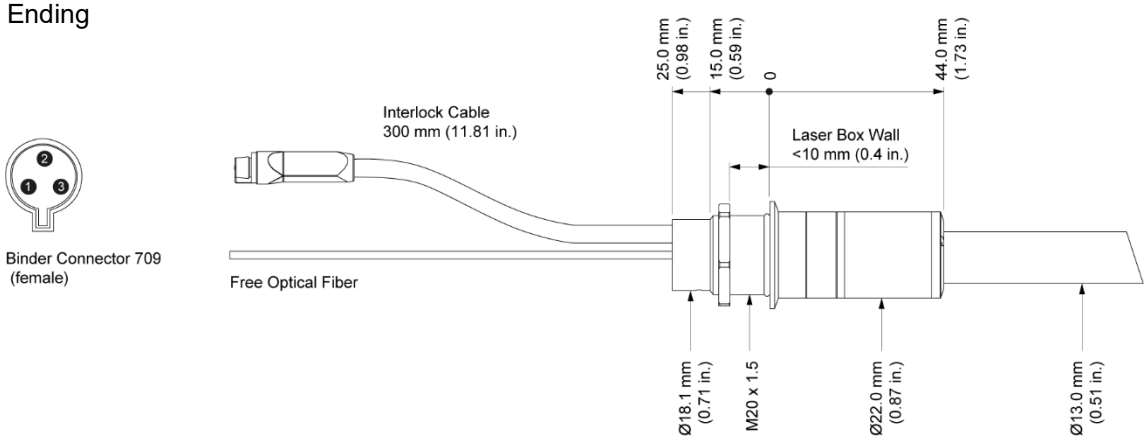
Mechanical Specifications

Connector Dimensions

QD



Pigtail Ending

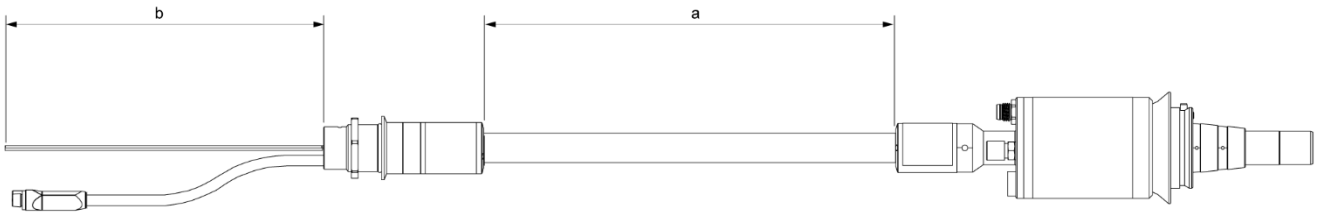


Length Definitions

Two Connectors



One Connector (Pigtail)



a = Fiber Cable Length
b = Free Optical Fiber Length

Part Numbers

QD Fiber Optic Cables

Circular Fiber Core, Two Connectors

	5 m	10 m	15 m	20 m	30 m	35 m	50 m
50 µm	2214310	2214311	2214312	2214313	2214314	2214315	2214316
100 µm	2214319	2214320	2214321	2214322	2214323	2214324	2214325
150 µm	2214328	2214329	2214330	2214331	2214332	2214333	2214334
200 µm	2214337	2214338	2214339	2214340	2214341	2214342	2214343
300 µm	2214346	2214347	2214348	2214349	2214350	2214351	2214352
400 µm	2214355	2214356	2214357	2214358	2214359	2214360	2214361
600 µm	2214365	2214366	2214367	2214368	2214369	2214370	2214371
800 µm	2290826	2290827	2290828	2290829	2290830	2290831	2290832
1000 µm	2290833	2290834	2290835	2290836	2290837	2290838	2290839

Circular Fiber Core, One Output Connector (Pigtail)

	2 m	3 m	5 m	10 m	15 m	20 m	25 m
20/395 µm	2214282	2214283	2214284	2214285	2214286	2214287	2214288
50/360 µm	2214291	2214292	2214293	2214294	2214295	2214296	2214297
100/360 µm	2214300	2214301	2214302	2214303	2214304	2214305	2214306

Note: Free optical fiber length b>1.0m.

Square Formed Fiber Core, Two Connectors

	5 m	10 m	15 m	20 m	30 m	35 m	50 m
100x100 µm	2214393	2214394	2214395	2214396	2214397	2214398	2214399
200x200 µm	2214402	2214403	2214404	2214405	2214406	2214407	2214408
400x400 µm	2214411	2214412	2214413	2214414	2214415	2214416	2214417
600x600 µm	2290854	2290855	2290856	2290857	2290858	2290859	2290860
800x800 µm	2377071	2377072	2377073	2377074	2377075	2377076	2377077
1000x1000 µm	2377078	2377079	2377080	2377081	2377082	2377083	2377084

Customized lengths and dimensions are available upon request.

Fiber Optic Cable Accessories

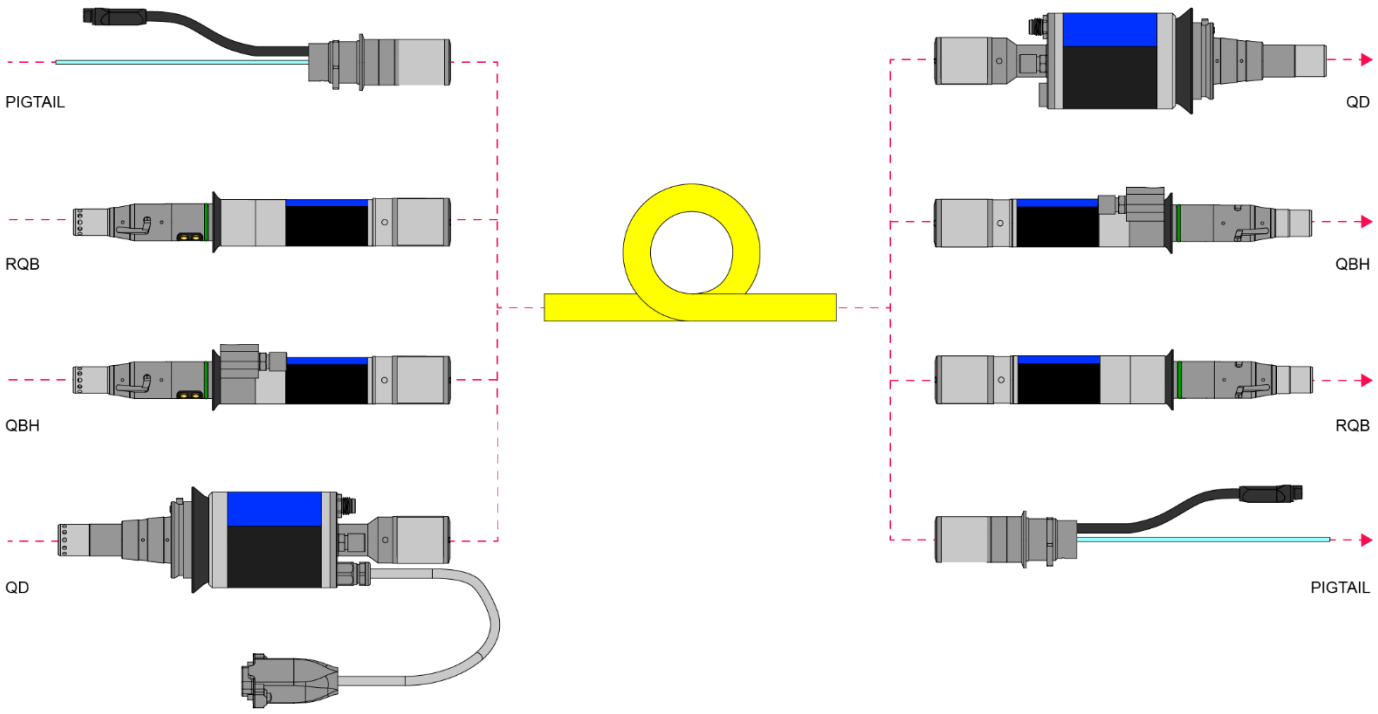
Product Description	Part Number
QD Protection Window, Input Side, 1030 to 1090 nm	2217239
QD Protection Window, Output Side, 1030 to 1090 nm	2216860

Hybrid Fibers

The flexible fiber cable design enables both standard configurations with identical connectors at each end and hybrid configurations with different input and output connectors selected to meet application requirements.

Hybrid fibers provide a simple and cost-effective solution for connecting a laser source and processing head that use different fiber interfaces, eliminating the need for additional adapters or interface components.

For pigtail configurations, the splice-ready pigtail termination can be provided on either the input or output side of the fiber cable.



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