Beam Delivery Components for High-Power Lasers

QBH FIBER OPTIC CABLE

Diode Lasers

The QBH fiber optic cable is the industry-standard interface for high-power industrial fiber lasers. Its proven design ensures compatibility with a wide range of laser processing systems and tools used worldwide.

The water-cooled QBH connector is designed to maximize performance, including its superior power loss capability. For lower-power laser systems and applications, an air-cooled version (RQB) is also available.

An integrated mode stripper removes residual cladding light, delivering a clean, well-defined output beam. The reinforced, highly durable fiber hose is engineered to withstand demanding industrial environments and is particularly well suited for dynamic robotic applications.



FEATURES

- Up to 10 kW (CW)
- Mode-stripper
- AR-coated end cap
- 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

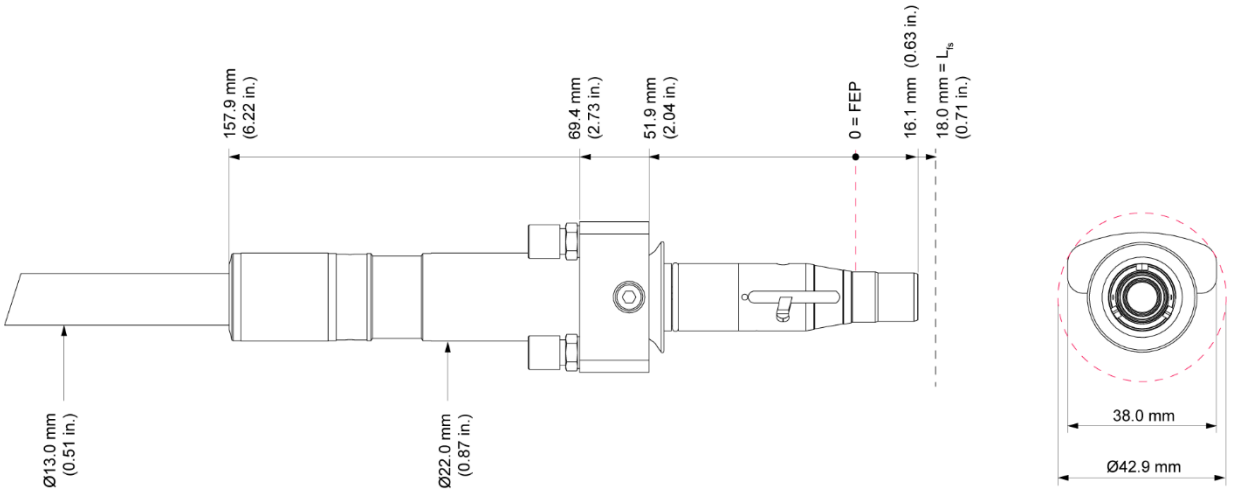
Specifications	QBH	RQB
Maximum Power CW (kW)	10	1.5 (3.0 with external cooler)
Wavelength (nm)	780 to 1100 (diode lasers)	
Numerical Aperture $NA_{fiberacc}$	0.05 to 0.20	
Fiber Core Dimensions (µm)	≤1000	
Fiber Concentricity (µm)	≤10	
Z-position Tolerance (µm)	±50	
Pointing/Angular Deviation[1] (mrad) 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)	0.1 (10 s) 0.05 (1 min.) 0.01 (continuously)
Transmission Losses[3] (%)	<3	
Fiber Cable Properties		
Cable Lengths (m)	≤200	
Maximum Torsion (°/m)	90	
Cooling		
Cooling Method	Water	Air (passive)
Flow Rate (l/min)	2.0	N/A
Maximum Input Pressure (bar)	8.0	N/A
Pressure Drop (bar)[4]	0.9	N/A
Safety Interlock		
Interlock Circuit Resistance[5]	3.3 kΩ ±5% +2 Ω/m cable length	
Thermoswitch	No	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)	 0.3 0.2	 0.1 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.
5. Input pigtail fibers: 2 Ω/m cable length.

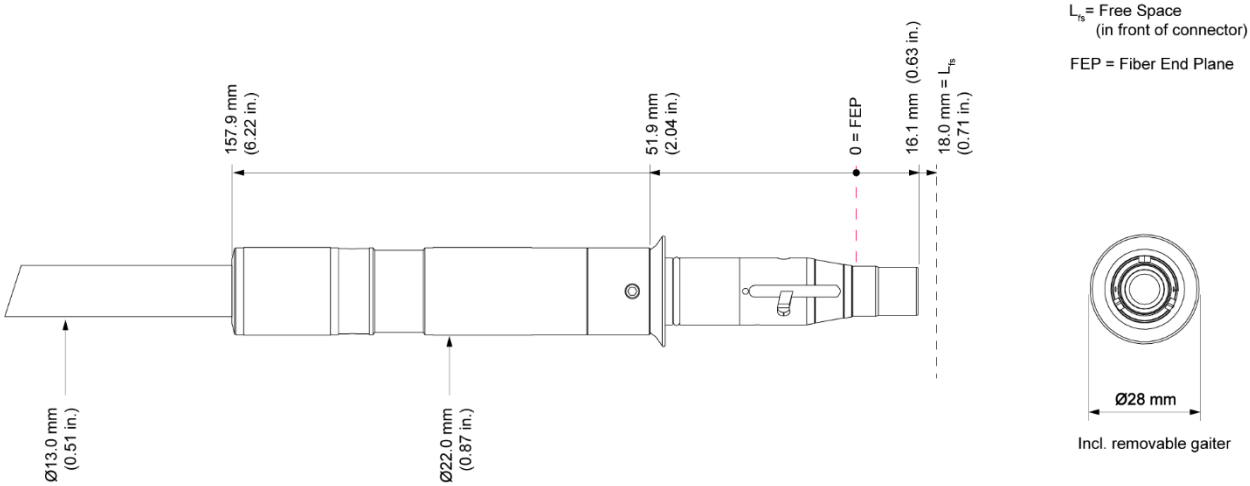
Mechanical Specifications

Connector Dimensions

QBH



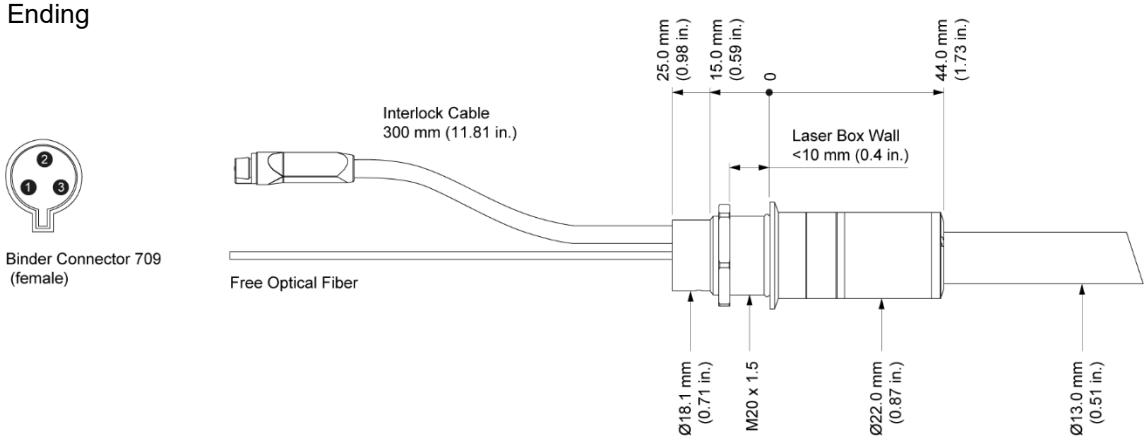
RQB



L_{fs} = Free Space (in front of connector)

FEP = Fiber End Plane

Pigtail Ending

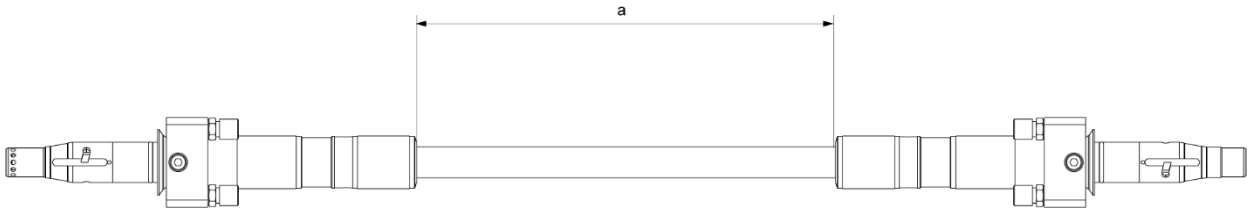


Input Side / Output Side

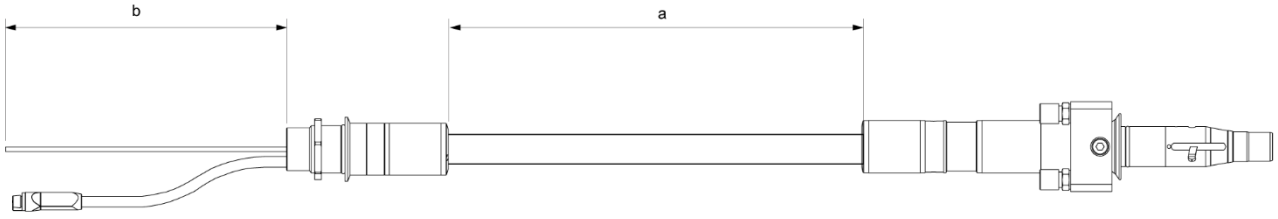


Length Definitions

Two Connectors



One Connector (Pigtail)



a = Fiber Cable Length
b = Free Optical Fiber Length

Part Numbers

QBH Fiber Optic Cables

Circular Fiber Core, Two Connectors

	5 m	10 m	15 m	20 m	25 m	30 m	50 m
50 µm	2223338	2223339	2223340	2223341	2223342	2223343	2223344
100 µm	2223345	2223346	2223347	2223348	2223349	2223350	2223351
150 µm	2223352	2223353	2223354	2223355	2223356	2223357	2223358
200 µm	2223359	2223360	2223361	2223362	2223363	2223364	2223365
300 µm	2223366	2223367	2223368	2223369	2223370	2223371	2223372
400 µm	2223373	2223374	2223375	2223376	2223377	2223378	2223379
600 µm	2223380	2223381	2223382	2223383	2223384	2223385	2223386
800 µm	2223387	2223388	2223389	2223390	2223391	2223392	2223393
1000 µm	2223394	2223395	2223396	2223397	2223398	2223399	2223400

Square Formed Fiber Core, Two Connectors

	5 m	10 m	15 m	20 m	25 m	30 m	50 m
100x100 µm	2223461	2223462	2223463	2223464	2223465	2223466	2223467
200x200 µm	2223468	2223469	2223470	2223471	2223472	2223473	2223474
400x400 µm	2223475	2223476	2223477	2223478	2223479	2223480	2223481
600x600 µm	2223482	2223483	2223484	2223485	2223486	2223487	2223488
800x800 µm	2377113	2377114	2377115	2377116	2377117	2377118	2377119
1000x1000 µm	2377120	2377121	2377122	2377123	2377124	2377125	2377126

Customized lengths and dimensions are available upon request.

RQB Fiber Optic Cables

Circular Fiber Core, Two Connectors

	5 m	10 m	15 m	20 m	25 m	30 m	50 m
50 µm	2289128	2289129	2289130	2289131	2289132	2289133	2289134
100 µm	2289135	2289136	2289137	2289138	2289139	2289140	2289141
150 µm	2289142	2289143	2289144	2289145	2289146	2289147	2289148
200 µm	2289149	2289150	2289151	2289152	2289153	2289154	2289155
300 µm	2289156	2289157	2289158	2289159	2289160	2289161	2289162
400 µm	2289163	2289164	2289165	2289166	2289167	2289168	2289169
600 µm	2289170	2289171	2289172	2289173	2289174	2289175	2289176
800 µm	2289177	2289178	2289179	2289180	2289181	2289182	2289183
1000 µm	2289184	2289185	2289186	2289187	2289188	2289189	2289190

Square Formed Fiber Core, Two Connectors

	5 m	10 m	15 m	20 m	25 m	30 m	50 m
100x100 µm	2289235	2289236	2289237	2289238	2289239	2289240	2289241
200x200 µm	2289242	2289243	2289244	2289245	2289246	2289247	2289248
400x400 µm	2289249	2289250	2289251	2289252	2289253	2289254	2289255
600x600 µm	2289256	2289257	2289258	2289259	2289260	2289261	2289262
800x800 µm	2377141	2377142	2377143	2377144	2377145	2377146	2377147
1000x1000 µm	2377148	2377149	2377150	2377151	2377152	2377153	2377154

Customized lengths and dimensions are available upon request

Fiber Optic Cable Accessories

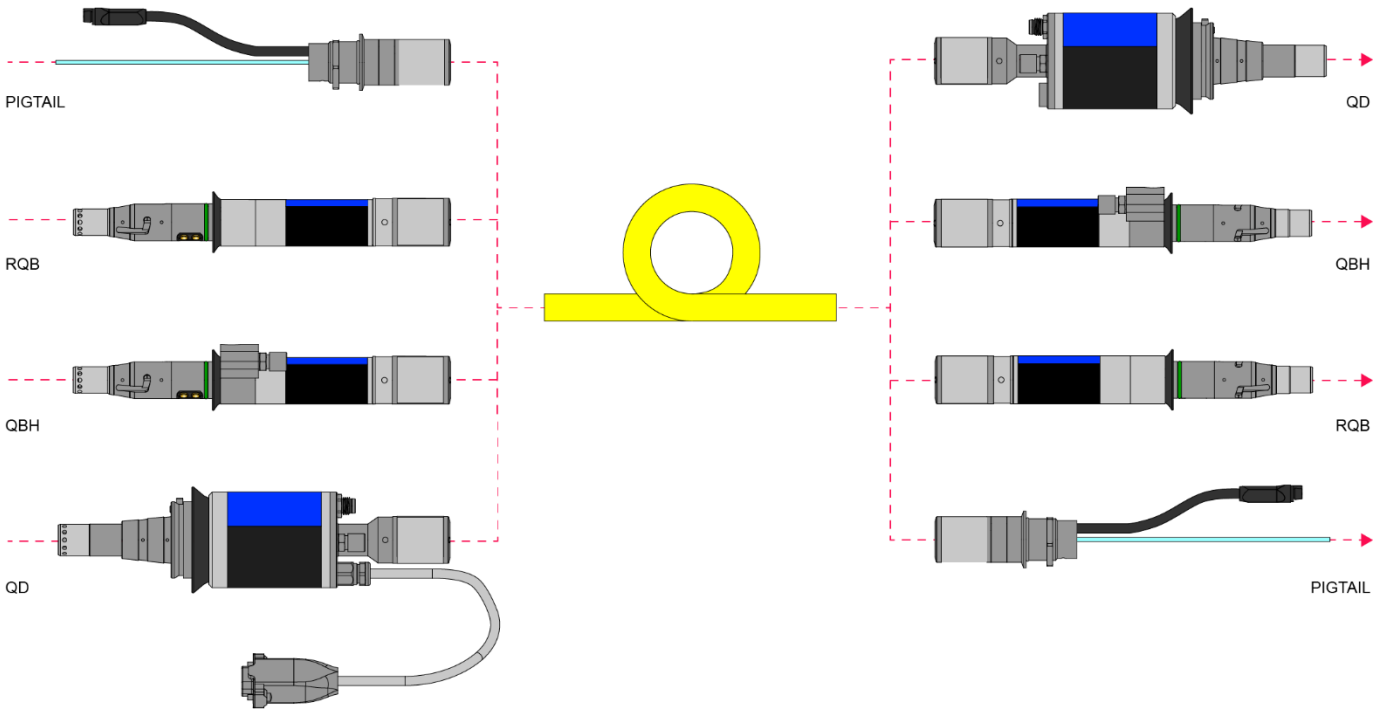
Product Description	Part Number
QB Protection Window, Input Side, Diode Laser	1412502
QB Protection Window, Output Side, Diode Laser	1412503
RQB External Cooler	101880X01

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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