



Diode Lasers

# QBH Fiber Optic Cable

## High-Power Beam Delivery

The QBH fiber optic cable is the no.1 fiber interface for industrial high-power lasers. It's a well proven standard compatible with most available tools worldwide. The QBH fiber connector is water-cooled to optimize the performance, including its superior power loss capability. For lower power systems and applications an air-cooled version is available (RQB). The built-in mode stripper generates a well-defined beam without any cladding power. With the reinforced and extremely durable fiber hose it is well-suited for dynamic robot applications.

### FEATURES & BENEFITS

- 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  $\mu\text{m}$

### APPLICATIONS

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



## QBH Fiber Optic Cable: Diode Lasers Datasheet

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 <sub>fiberacc</sub>	0.05 to 0.20	
Fiber Core Dimensions (μm)	≤1000	
Fiber Concentricity (μm)	≤10	
Z-position Tolerance (μm)	±50	
Pointing/Angular Deviation <sup>1</sup> (mrad)		
Core Diameter >200 μm	≤10	
Core Diameter ≤200 μm	≤20	
Power Loss Capability <sup>2</sup> (kW)		
10 seconds	2.0	0.1
10 minutes	1.0	0.05
Continuously	0.5	0.01
Transmission Losses <sup>3</sup> (%)	<3	
FIBER CABLE PROPERTIES		
Cable Lengths (m)	≤200	
Maximum Torsion (°/m)	90	
COOLING		
Cooling Method	Water	Air (passive), optional: external water-cooler
Flow Rate (l/min)	2.0	N/A
Maximum Input Pressure (bar)	4	N/A
Pressure Drop (bar at 2.0 l/min)	0.9	N/A
SAFETY INTERLOCK		
Interlock Circuit Resistance <sup>4</sup>	3.3 kOhm ±5% + 2 Ohm/m cable length	
Thermoswitch	No	Yes, 70°C ±5°C, reset temp >30°C
DIMENSIONS & WEIGHT		
Dimensions	See page 3 to 4	See page 3 to 4
Weight (kg)		
Fiber Connector	0.3	0.1
Per Meter Fiber Cable	0.2	0.2
ENVIRONMENTAL CONDITIONS		
Humidity (% RH)	<80	
Operating Temperature (°C)	5 to 50 (non-condensing)	
Storage Temperature (°C)	-10 to 70	
COMPLIANCE INFORMATION		
RoHS	Directives 2011/65/EU and 2015/863/EU	
REACH	Directive EC no 1907/2006	

<sup>1</sup> Pigtail fibers: Cladding diameter up to and equal 500 μm: ≤20 mrad.

<sup>2</sup> Within specified fiber NA.

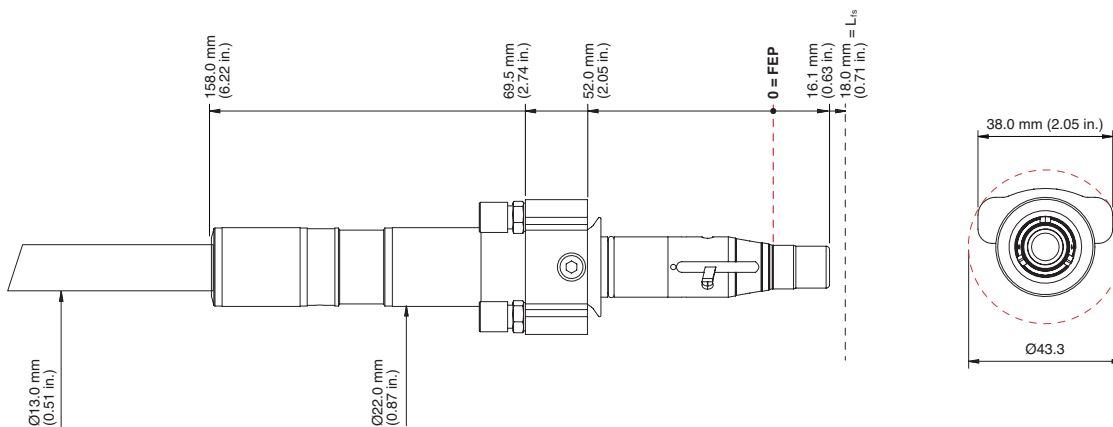
<sup>3</sup> ≤100 m cable length.

<sup>4</sup> Input pigtail fibers: 2 Ohm/m cable length.

## MECHANICAL SPECIFICATIONS

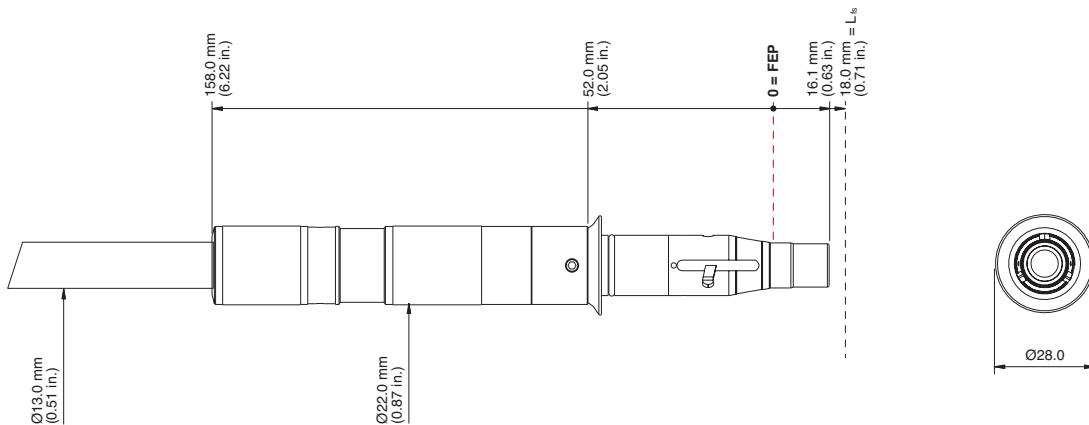
### Connector Dimensions

QBH



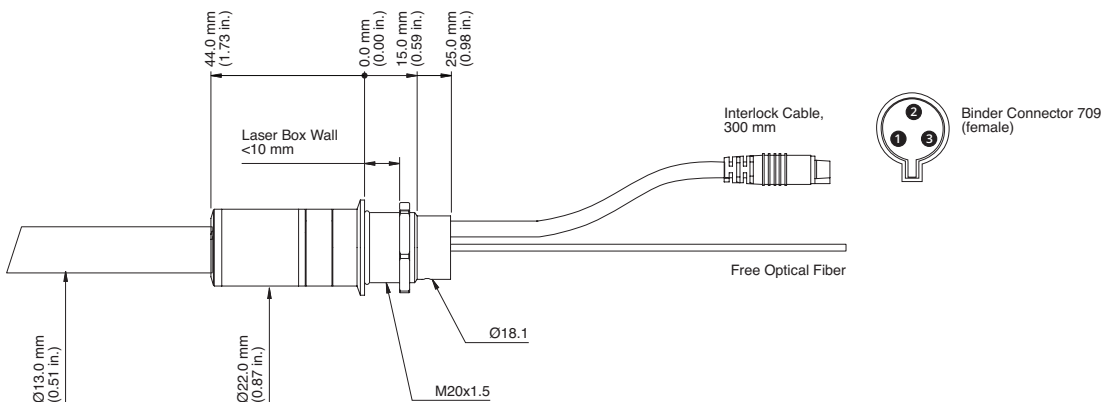
L<sub>fs</sub> = Free Space in Front of Connector  
FEP = Fiber End Plane

RQB



Max. Diameter including the Removable Gaiter

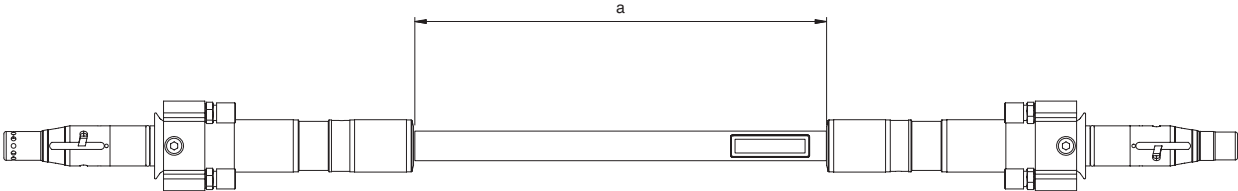
Pigtail Ending



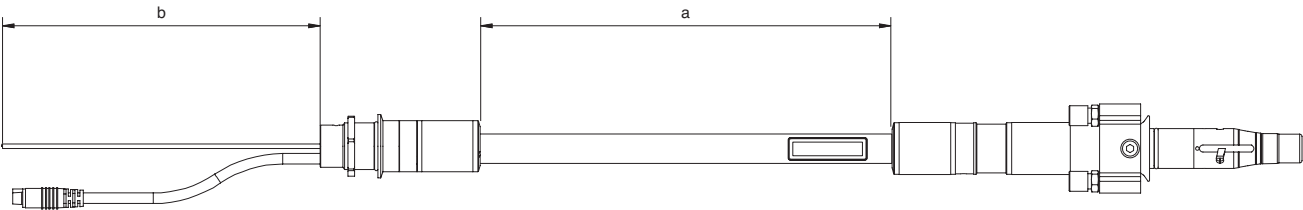
**MECHANICAL SPECIFICATIONS**

**Length Definitions**

**Two Connectors**



**One Connector (Pigtail)**



a = Fiber Cable Length  
b = Free Optical Fiber Length

## QBH FIBER OPTIC CABLES

### Circular Fiber Core, Two Connectors

	5m	10m	15m	20m	25m	30m	50m
<b>50 <math>\mu\text{m}</math></b>	1450453	1450454	1450455	1450456	1450457	1450458	1450459
<b>100 <math>\mu\text{m}</math></b>	1427443	1427444	1427445	1427446	1427447	1427448	1427450
<b>150 <math>\mu\text{m}</math></b>	1450462	1450463	1450464	1450465	1450466	1450467	1450468
<b>200 <math>\mu\text{m}</math></b>	1450471	1450472	1450473	1450474	1450475	1450476	1450477
<b>300 <math>\mu\text{m}</math></b>	1450480	1450481	1450482	1450483	1450484	1450485	1450486
<b>400 <math>\mu\text{m}</math></b>	1450489	1450490	1450491	1450492	1450493	1450494	1450495
<b>600 <math>\mu\text{m}</math></b>	1450498	1450499	1450500	1450501	1450502	1450503	1450504
<b>800 <math>\mu\text{m}</math></b>	1450507	1450508	1450509	1450510	1450511	1450512	1450513
<b>1000 <math>\mu\text{m}</math></b>	1450516	1450517	1450518	1450519	1450520	1450521	1450522

### Square Formed Fiber Core, Two Connectors

	5m	10m	15m	20m	25m	30m	50m
<b>100x100 <math>\mu\text{m}</math></b>	1450885	1450886	1450887	1450888	1450889	1450890	1450891
<b>200x200 <math>\mu\text{m}</math></b>	1450894	1450895	1450896	1450897	1450898	1450899	1450900
<b>400x400 <math>\mu\text{m}</math></b>	1450903	1450904	1450905	1450906	1450907	1450908	1450909
<b>600x600 <math>\mu\text{m}</math></b>	1450912	1450913	1450914	1450915	1450916	1450917	1450918
<b>800x800 <math>\mu\text{m}</math></b>	1450921	1450922	1450923	1450924	1450925	1450926	1450927
<b>1000x1000 <math>\mu\text{m}</math></b>	1450930	1450931	1450932	1450933	1450934	1450935	1450936

*Customized lengths and dimensions are available upon request.*

## RQB FIBER OPTIC CABLES

### Circular Fiber Core, Two Connectors

	5m	10m	15m	20m	25m	30m	50m
<b>50 μm</b>	3-9268X01	3-9268X02	3-9268X03	3-9268X04	3-9268X05	3-9268X06	3-9268X10
<b>100 μm</b>	3-9269X01	3-9269X02	3-9269X03	3-9269X04	3-9269X05	3-9269X06	3-9269X10
<b>150 μm</b>	3-9270X01	3-9270X02	3-9270X03	3-9270X04	3-9270X05	3-9270X06	3-9270X10
<b>200 μm</b>	3-9271X01	3-9271X02	3-9271X03	3-9271X04	3-9271X05	3-9271X06	3-9271X10
<b>300 μm</b>	3-9272X01	3-9272X02	3-9272X03	3-9272X04	3-9272X05	3-9272X06	3-9272X10
<b>400 μm</b>	3-9273X01	3-9273X02	3-9273X03	3-9273X04	3-9273X05	3-9273X06	3-9273X10
<b>600 μm</b>	3-9274X01	3-9274X02	3-9274X03	3-9274X04	3-9274X05	3-9274X06	3-9274X10
<b>800 μm</b>	3-9275X01	3-9275X02	3-9275X03	3-9275X04	3-9275X05	3-9275X06	3-9275X10
<b>1000 μm</b>	3-9276X01	3-9276X02	3-9276X03	3-9276X04	3-9276X05	3-9276X06	3-9276X10

### Square Formed Fiber Core, Two Connectors

	5m	10m	15m	20m	25m	30m	50m
<b>100x100 μm</b>	3-9526X01	3-9526X02	3-9526X03	3-9526X04	3-9526X05	3-9526X06	3-9526X10
<b>200x200 μm</b>	3-9527X01	3-9527X02	3-9527X03	3-9527X04	3-9527X05	3-9527X06	3-9527X10
<b>400x400 μm</b>	3-9528X01	3-9528X02	3-9528X03	3-9528X04	3-9528X05	3-9528X06	3-9528X10
<b>600x600 μm</b>	3-9529X01	3-9529X02	3-9529X03	3-9529X04	3-9529X05	3-9529X06	3-9529X10
<b>800x800 μm</b>	3-9530X01	3-9530X02	3-9530X03	3-9530X04	3-9530X05	3-9530X06	3-9530X10
<b>1000x1000 μm</b>	3-9531X01	3-9531X02	3-9531X03	3-9531X04	3-9531X05	3-9531X06	3-9531X10

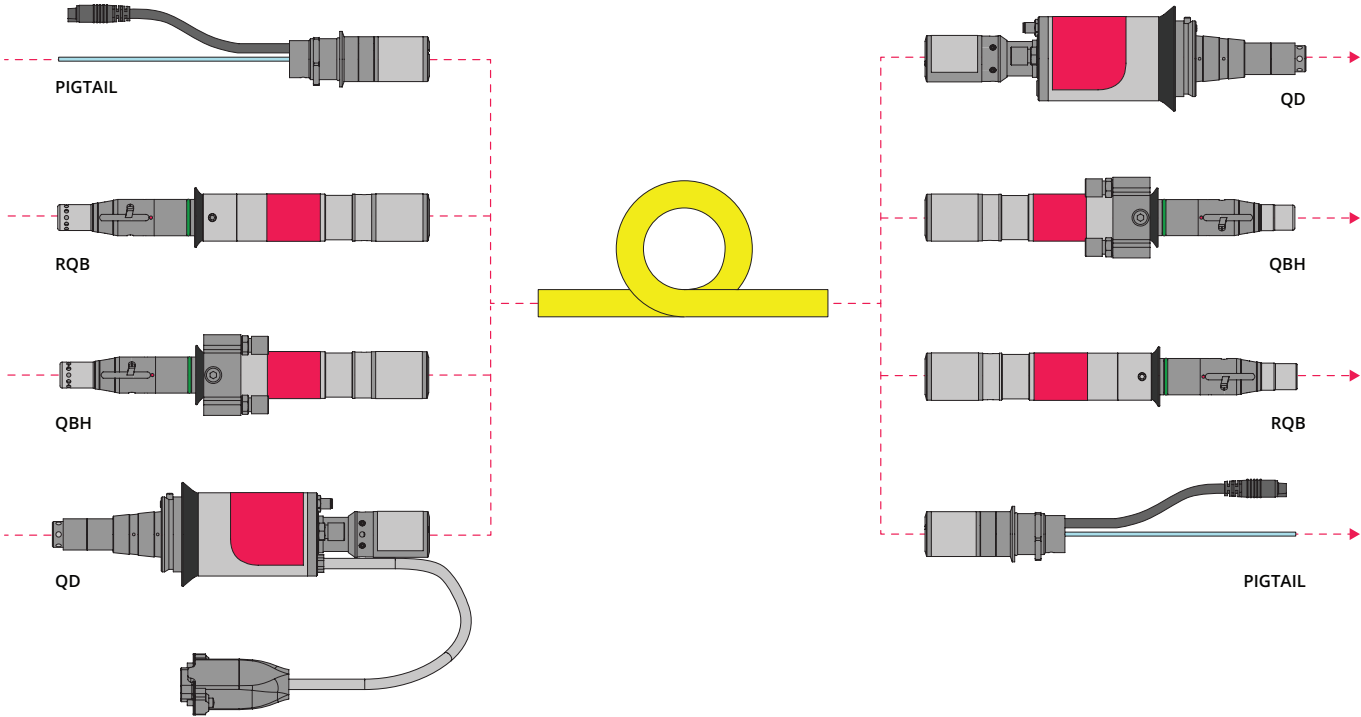
*Customized lengths and dimensions are available upon request.*

### Fiber Optic Cable Accessories

Accessory	Part Number
QB Protection Cap, Input Side, Diode Laser	1412502
QB Protection Cap, Output Side, Diode Laser	1412503
RQB External Cooler	101880X01

HYBRID FIBERS

The flexible Coherent fiber cable design makes it possible for us to not only offer fiber cables with same type of connectors on both sides but also hybrid fibers where customer select input and output connectors. For many end-users, this is a simple and cost-efficient way to connect laser and process head even in cases where they don't share the same fiber interface. For pigtail fibers, it is possible to have the pigtail termination for splicing at either input or output side of the fiber cable.



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Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice. Coherent's scientific and industrial lasers are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered by the Center for Devices and Radiological Health on all systems ordered for shipment after August 2, 1976.

Coherent offers a limited warranty for all QBH Fiber Optic Cables. For full details of this warranty coverage, please refer to the Service section at [www.coherent.com](http://www.coherent.com) or contact your local Sales or Service Representative. MC-034-20-0M0121 Copyright ©2021 Coherent, Inc.