

Fiber to Fiber Coupler

Stand Alone Fiber to Fiber Coupler (FFC)



nLIGHT Fiber to Fiber Coupler (FFC) allows the interconnection between the feeding fiber of the laser source and the process fiber to the process head. The laser delivery fiber is thus detached from the processing head and the process fiber can be easily replaced in the field if damaged.

High-quality fused silica optics guarantee low power loss and high beam quality. The FFC also includes an electronic board to control the interlock connection, to guarantee safety of the operator and of the FFC itself. The Fiber-to-Fiber Coupler is an eye-safe water-cooled unit with one input fiber (feeding fiber) and one output fiber (process fiber). The input block collimates the feeding fiber output beam, and the output block focuses the collimated beam into the delivery fiber. The onboard electronics incorporate the safety and coupler function via two hardware and firmware redundant sub-systems.

Features

- **Up to 20 kW**
Lens materials, coatings and water cooling allow operation to 20kW laser power
- **Receptacle Options**
Available in either QBH or QD (Auto) receptacle configuration
- **Dual Channel Safety Circuits**

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nLIGHT Fiber to Fiber Coupler Product Datasheet

| Specification | Fiber to Fiber Coupler |
|---|--|
| Optical | |
| Maximum Power | 20 kW |
| Wavelength Range | 1030 - 1090 nm |
| Full Beam Maximum NA | 0.16 ¹ |
| Lens Material | High-Quality Fused Silica |
| Typical Power Loss | < 2 % |
| Typical Aiming Beam Transmission (630÷660 nm) | > 90 % |
| Electrical | |
| Power Supply | 24 V |
| Maximum Current Consumption | <1 A |
| Interlock Safety Range | 1.65 - 6.6 kΩ |
| Analogue Photodiode Output Range | 0 - 3.3 V |
| Communication Protocol | CANBUS |
| Maximum Ratings | |
| Operating Temperature | 5 - 40 °C |
| Relative Humidity | < 90 % non-condensing |
| Storage Temperature | -10 - 60 °C |
| Maximum Ambient Variation | ± 10 °C |
| Cooling | |
| Minimum Water Flow | 1 l/min |
| Maximum Pressure | 4 bar |
| Water Temperature | 20 - 35 °C (above dew point) |
| Water Quality | Filtered clean water (< 100 µm) with or without glycol |
| Water Pipes ID/OD | 4/6 mm |
| Purge | |
| Gas to be Used | Compressed Dry Air Nitrogen Argon |
| Maximum Pressure | 1 bar |
| CDA Quality | 1 µm particle filter / 0.01 µm oil mist filter |
| Purge Pipes ID/OD | 6/8 mm |

¹ Larger numerical apertures are also possible for the Fiber Laser upon request.

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