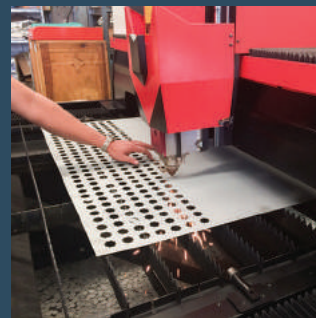
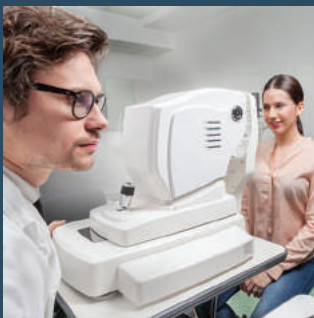
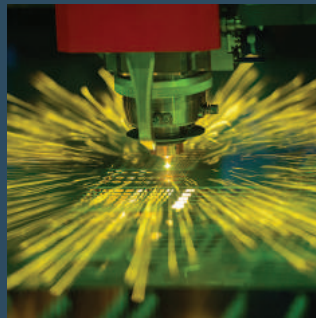
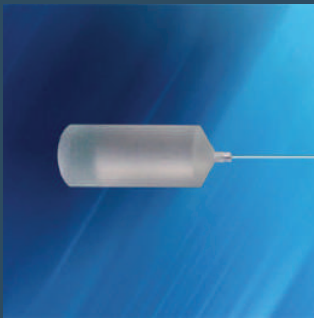
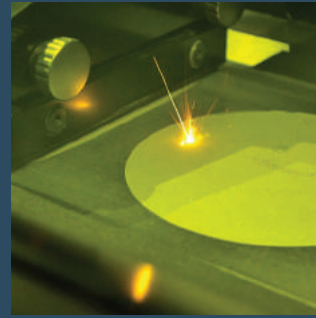


High Power

Fiber Optic Components



LIGHTTEL

High Power Fiber Optic Components

High power fiber optic systems are experiencing rapid growth due to their many applications in the material processing, medical and defense industries. Fiber lasers are especially becoming more popular due to their versatility, precision control, superior performance and low maintenance costs when compared to other laser systems. Lightel offers a wide variety of superior quality, high power fiber optic components for your system needs.

Pump and Signal Combiners

Lightel's pump combiners can be used to combine several pump lasers. Our patented bundling technology significantly increases the combiner's reliability. Manufactured using our proprietary methods, Lightel's combiners are available with up to $N=37$ and other custom configurations handling as much as 10kW total power. In addition, Lightel offers specialty combiners with extended wavelength, active combiners and polarization maintaining combiners.

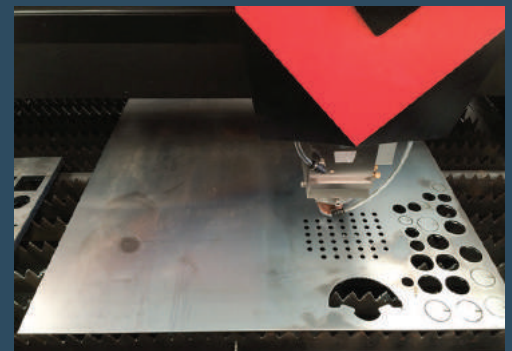
- $N \times 1$ High Power Pump Combiners
- $(N+1) \times 1$ High Power Pump and Signal Combiners
- $(1+1) \times 1$ or $(2+1) \times 1$ High Power Side Pump and Signal Combiners
- $(N+1) \times 1$ PM Pump Combiners
- 2000nm High Power Pump and Signal Combiners
- $(N+1) \times 1$ High Power Reverse Pump Combiner
- Active $(2+1) \times 1$ Combiner
- High Power Laser Combiners
- RGB Combiners



High Power Fused Devices

High power fiber laser and amplifier systems often require additional fused devices. For example, Mode Field Adapters (MFA) can be used to connect two fibers with different core diameters and numerical apertures (NA). Lightel's MFAs utilize mode field optimization technology to obtain high transfer efficiency and low beam degradation. Also, Cladding Power Strippers (CPS) are utilized to strip unwanted cladding light from dual clad fiber (DCF). Fiber End-Caps (FEC) are used to reduce the power density at the output of the fiber facet. A mode stripper is incorporated into all Lightel FECs to strip unwanted back-reflected light from the cladding.

- Mode Field Adapter (PM or Non-PM)
- Cladding Power Strippers
- Fiber End Cap (PM or Non-PM)
- High Power Couplers/WDMs



High Power Micro-Optic Devices

Some high power fiber optic systems need specialized micro-optic components to reduce backreflection and protect the pump and signal lasers. In addition, high power signals sometimes need to be split and combined depending upon their polarization or wavelength. Lightel offers a wide range of high power micro-optic fiber optic components to satisfy even the most demanding performance requirements.

- High Power Polarization Beam Splitter/Combiner
- High Power Single and Dual Stage Isolator
- High Power 3-Port Polarization Insensitive Circulator
- High Power Filter Devices
- Pump Laser Protector

High Power Laser Delivery Head

Lightel also offers several industry-standard laser head delivery systems depending on beam power level. For high power applications such as material processing, our QBH-style laser head has an integral quartz block and mode stripper, allowing it to handle optical power in excess of 2kW. The internally water-cooled connector provides low signal loss and beam quality degradation, and is equipped with a safety interlock.

In addition, Lightel supplies cable assemblies equipped with SMA or D80 connectors for medium power laser delivery in medical and industrial applications. Both connectors have a free-standing, epoxyless fiber tip which prevents the ferrule from melting or the potential burning of epoxy. Also, the copper ferrule provides better heat dissipation than those found in traditional multimode connectors. Wavelengths from 190nm-2500nm and fiber sizes from 105 μ m-1500 μ m are supported.

Steel-armored protection tubing ensures laser safety and all assemblies are offered in standard or customer specified lengths and colors. Angle polish, AR coatings, integral cladding mode strippers, water or air cooling, and other custom options are also available upon request.

- QBH Cable Assemblies
- SMA Cable Assemblies
- D80 Cable Assemblies



About Lightel

LIGHTEL designs, develops, and manufactures a broad range of products and services for the high power fiber optic industry worldwide. Our product line includes passive optical components (such as high power end and side pump combiners, couplers, isolators, circulators, filters and WDMs), video inspection scopes (supporting large core fiber up to 1000 microns) and workstations to manufacture high power components.