

Fiberoptic Bundles and Arrays



Fiber Optic Bundles and Arrays are simply fiberoptic assemblies comprised of multiple fibers. Using multiple fibers provides several important benefits:

- Apertures over 1mm in diameter are easily and cost effectively accommodated.
- The flexibility of a bundle of multiple smaller core fibers is superior to a single larger diameter fiber.
- Multiple fibers can be configured in virtually any configuration imaginable and the two (or more) ends may have different cross section geometries or patterns.

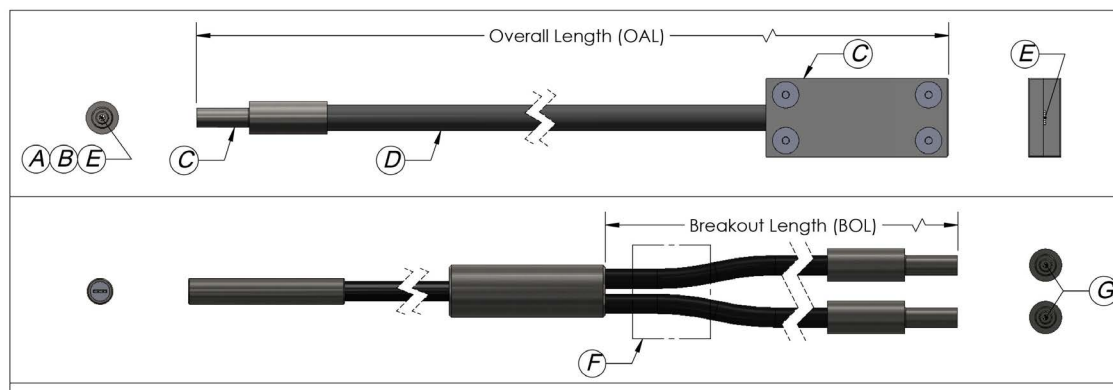
Design: The design possibilities are almost limitless. Therefore we only provide very general statements of our wide-ranging design and fabrication capabilities. Within the bounds of your requirements we will help you select the best materials and design characteristics to meet your needs.

Fiber Materials: LEONI fabricates prototype and production bundles and arrays using all of the standard types of optical fibers. These include silica core/silica clad, silica core/plastic clad, borosilicate or leaded glass fiber, polymer optical fiber, or various exotic constructions. These fibers cover the Numerical Aperture range from 0.12NA to 0.55NA and the wavelength range from 180nm to 2500nm (although some exotic constructions will transmit well into the IR wavelengths). The fiber types can be step index or graded index and multimode or singlemode. This extremely wide range of fiber material choices allows LEONI to tailor our products to meet your specific technical and economic requirements.

End Fittings: LEONI can also provide any standard fiberoptic connector or end fitting for your bundle and array. We also routinely fabricate custom end fittings to suit your specific custom or OEM application requirements. Examples of custom end fittings include linear and rectangular array ferrules, cylindrical ferrules of all types, and fiber terminations suitable for high temperature and/or vacuum applications. We can also easily incorporate various optical and mechanical elements as well as anti-reflective coatings.

Environments: In addition, LEONI excels in the design of bundles and arrays for a wide range of environments. Whether the installation environment is harsh or benign, LEONI has well over a century of aggregate experience in manufacturing the highest quality fiberoptic assemblies. Harsh environments and unique assembly geometries have been one of LEONI's specialties over the years. LEONI assemblies have been successfully deployed to the bottom of the ocean, into the harshest portions of nuclear reactors, and to the outer reaches of the Solar System. Whether you are trying to manage kilowatts of laser energy or trying to preserve individual photons, LEONI should be your first call when designing your assembly.

Quality: Our ISO registered QMS is certified to the ISO9001 standards to provide world-class inspection and control methods and tools to guarantee that all assemblies meet or exceed our stringent specifications every time.



Fiber optic Bundles and Arrays need to be specified with regard to their aperture shapes and sizes, lengths, fiber type, jacketing and end terminations. Any other critical information – such as environment, specific tolerances, etc. – should also be provided.

As with all LEONI products, virtually all characteristics of these assemblies may be modified to optimize the finished product for your specific application. Contact LEONI with your requirements.

Applications

- Emission, Fluorescence and Absorption Spectroscopy
- Astronomy
- High Energy Physics
- Medical devices
- Illumination
- Splitters - Single input to multiple outputs
- Combiners - Multiple inputs to a single output
- Mapped arrays for position sensing or the generation of specific input and/or output distributions
- Linear arrays for spectrometer slit matching
- Transmission of spectral data across a vacuum or thermal barrier

Features

- Flexibility and excellent throughput by using multiple fibers of the highest quality
- Geometry of the end fittings can be customized to suit almost any need
- Bundle geometry of each end may be different, e.g. spot to slit, etc.
- Aperture shaping allows for aperture matching
- Transmission from 180nm through 2500nm
- Standard and custom end fittings available
- Material selection options for harsh environments
 - o Vacuum
 - o High or low temperature
 - o Aggressive chemicals
 - o High pressure
 - o Mechanical stresses (crushing, axial loads, etc.)