

Fiber Bundles and Arrays

Applications:

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



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

- Apertures larger than 1mm are easily and cost effectively accommodated
- The flexibility of a bundle of multiple smaller core fibers is superior to a single larger core fiber
- Multiple fibers can be configured in virtually any configuration imaginable

Design: The design possibilities are virtually 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: RSOF fabricates prototype and production bundles and arrays using all of the standard types of optical fibers. These include silica core/silica clad, silica core/polymer 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 RSOF to tailor our products to meet your specific technical and economic requirements.

End Fittings: RSOF can also provide any standard fiberoptic connector or end fitting for your bundle and array. We 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.

Environment: RSOF excels in the design of bundles and arrays for a wide range of environments. Whether the installation environment is harsh or benign, RSOF has well over a century of aggregate experience in manufacturing the highest quality fiberoptic assemblies. We have been involved in projects where 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, RSOF should be your first call when designing your assembly.

Quality: All of our products come with a standard 1 year warranty to protect against any defects in materials or workmanship. At RSOF – we stand behind our products 100%!

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

NOTES:

- For any configuration that is not accommodated by the specifying system, please call RSOF.
- To discuss high temperature, vacuum or other environmental concerns, please call RSOF.
- Fiber transmission curves and other performance details can be provided as required

FEATURES

- Flexible and excellent 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 190nm to 2500nm
- Standard and custom end fittings
- Material selection for harsh environments

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

(A) Fiber Type	(B) Fiber Size	(C) Connector	(D) Sheathing
1) Silica/Silica (UV/VIS)	1) 50µm 6) 500µm	1) SMA-905 5) ST	1) PVC Tubing
2) Silica/Silica Low Solarization (UV)	2) 100µm 7) 600µm	2) O-ring SMA 6) Biconic	2) PVC/Kevlar Furcation Tubing
3) Silica/Silica (VIS/NIR)	3) 200µm 8) 800µm	3) Std. Ferrule* 7) Ø0.250" Ferrule	3) PVC Monocoil
4) Polymer Clad Silica(UV/VIS High NA)	4) 300µm 9) 1,000µm	4) FC 8) Ø10mm Ferrule	4) Stainless Steel BX
5) Polymer Clad Silica(VIS/NIR High NA)	5) 400µm 10) Other _____	5) Housing - 9) Other _____	5) Braided SSIL/PTEF Hose
6) Plastic (PMMA)		0.313"x0.75"x1.5"	6) Teflon Tubing
7) Other _____			7) Other _____

(E) Aperture Size or Number of Fibers	(F) Number of Legs
1) 0.75mm Round	Specify _____
2) 1.25mm Round	
3) 1.75mm Round	
4) 2.2mm Round	
5) 2.7mm Round	
6) 0.6mm x 5mm Rectangle	
7) 1.1mm x 5mm Rectangle	
8) Other _____	

(G) Aperture or Number of Fibers per Leg
Specify _____

Temperature Requirements: _____
 Other Requirements: _____

RSOF offers a wide variety of assembly options. Please contact one of our technical sales associates to assist you in defining the configuration that really works in your application!

*Std Ferrule pictured at Top drawing, left letter C

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