

Fibre Optic Feedthroughs, Cables and Accessories



Multimode - Step-Index & Graded-Index

Our UHV fibre optic feedthroughs are hermetically sealed into a stainless steel shell, using the latest in glass bonding technology. Our proprietary seal allows for the broadest temperature range of any fibre feedthrough available today, from -269°C to +250°C.

Patch cables for in-vacuum and air-service are also available in many core sizes and wavelength ranges. Patch cables are offered with SMA 905 premium connectors as off-the-shelf standards.

For our customers who have special applications or who want to build their own components, we offer a complete line of assembly components. The components consist of bare fibre optic cable, connectors, jacketing, cable wrap, polishing supplies, polishing consumables and numerous couplers, adapters and mounts. We also offer speciality cable assemblies such as bifurcated cables and reflection probes.

Custom feedthroughs and cables are available upon request, please contact our sales office to discuss your requirements.

UV/VIS Multimode Step-Index



Our fibre optic vacuum feedthroughs are constructed with 100, 200, 400, 600 and 1000 μm UV/VIS fibres, they are designed for vacuum applications requiring fibre optic connection from inside a vacuum system to external equipment. The fibre is hermetically sealed into a stainless steel shell using the latest in glass bonding technology and terminates on both vacuum and air side with standard SMA 905 terminations.

Ultra High Vacuum polyimide / aluminium buffered optical fibres are available to meet the demands of UHV environments.

All of our optical fibre is constructed as a core-cladding composite. The core, or the filament that guides the light consists of a thin strand of high transmission fused silica. The cladding consists of an outer layer of doped, lower refractive index fused silica. This two layer design tightly confines the light to the central core of the fibre which in turn delivers a maximum amount of light at the far end. We also closely control the fibre diameter during the drawing process, allowing the fibre to centre well in connectors and boast a low loss rate.

Features:

- UHV compatible construction
- 100, 200, 400, 600 & 1000 μm UV/VIS fibre
- SMA 905 connector interface
- High temperature rated 250°C
- ConFlat® compatible flange mounts
- KF compatible flange mounts
- Polyimide / aluminium buffered vacuum rated optical cables

Specifications:

Materials

St.St., Glass, Quartz

Vacuum Range

CF Flanged

atm to 1x10⁻¹⁰Torr

KF Flanged

atm to 1x10⁻⁸Torr

Temperature Range*

CF Flanged

-269 to 250°C

KF Flanged (Viton® seals)

-29 to 150°C

Vacuum Cables

-65 to 200°C

Air cables

Up to 80°C

Thermal Gradient

25°C/min (max)

Optical Fibre

Operating wavelength

200nm to 800nm

Bare fibre

Pure fused silica core

Cladding

Fluorine doped silica

Buffer

Polyimide / aluminium

Fibre profile

Step-index multimode

Numerical aperture

0.22±0.02 or 24.8°

Core to cladding ratio:

Core diameter ≥ 200 μm

1:1.1

Fibre Bend Radius:

Short term

200 x core diameter

Long term

400 x core diameter

Insertion loss of interconnects

-0.8dB to -2.0dB

Power

<1W

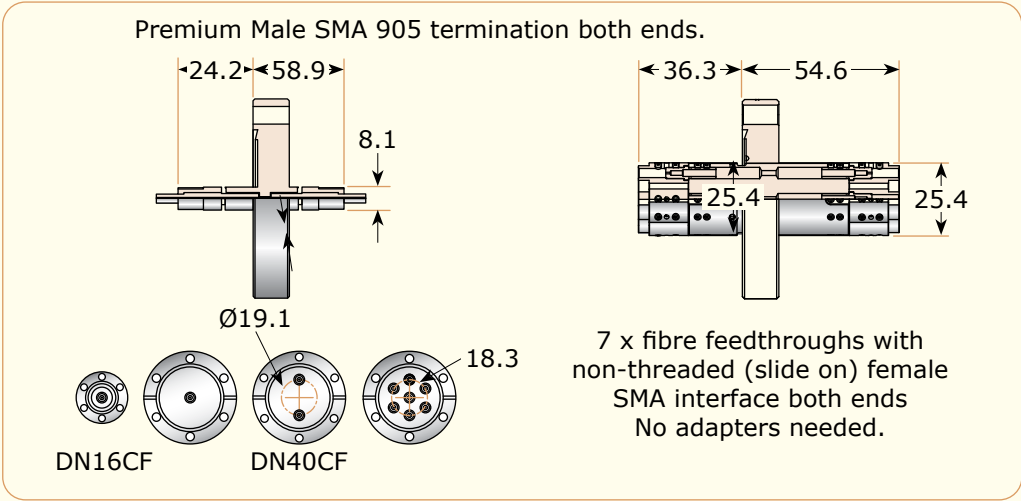
* - Assembly rating is reduced to that of the lowest rated component.

All dimensions are nominal in millimetres unless otherwise specified

CF Flanges 1,2,4 & 7 Fibres - UV/VIS



Number of Feedthroughs	Fibre Diameter	Flange	Part Code	Price £	Price €
1	100 μm	DN16CF	FOA-UV100-16CF	£647	€745
1	100 μm	DN40CF	FOA-UV100-40CF	£660	€759
2	100 μm	DN40CF	FOA-2UV100-40CF	£1,169	€1345
1	200 μm	DN16CF	FOA-UV200-16CF	£443	€510
1	200 μm	DN40CF	FOA-UV200-40CF	£461	€531
2	200 μm	DN40CF	FOA-2UV200-40CF	£807	€929
1	400 μm	DN16CF	FOA-UV400-16CF	£452	€520
1	400 μm	DN40CF	FOA-UV400-40CF	£452	€520
2	400 μm	DN40CF	FOA-2UV400-40CF	£811	€933
1	600 μm	DN16CF	FOA-UV600-16CF	£455	€524
1	600 μm	DN40CF	FOA-UV600-40CF	£456	€525
2	600 μm	DN40CF	FOA-2UV600-40CF	£815	€938
1	1000 μm	DN16CF	FOA-UV1000-16CF	£514	€592
1	1000 μm	DN40CF	FOA-UV1000-40CF	£519	€597
2	1000 μm	DN40CF	FOA-2UV1000-40CF	£895	€1030
7	200 μm	DN40CF	FOA-7UV200-40CF	£2,613	€3005
7	400 μm	DN40CF	FOA-7UV400-40CF	£2,525	€2904
7	600 μm	DN40CF	FOA-7UV600-40CF	£2,436	€2802
7	1000 μm	DN40CF	FOA-7UV1000-40CF	£2,347	€2700



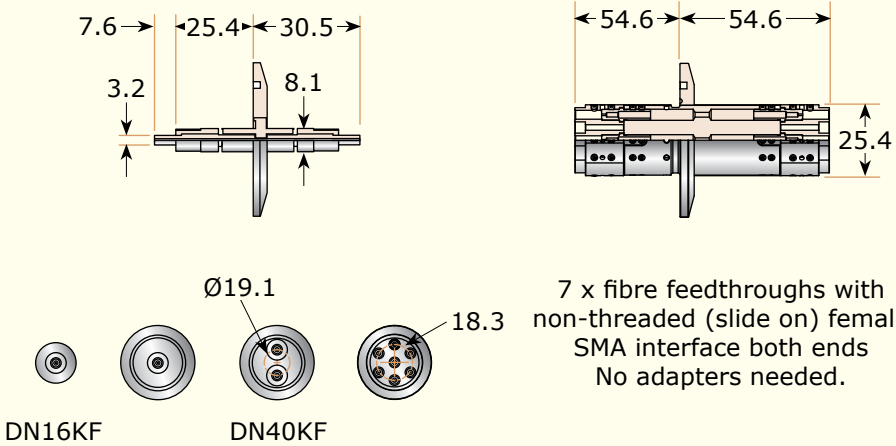
All dimensions are nominal in millimetres unless otherwise specified

KF Flanges 1,2,4 & 7 Fibres - UV/VIS



Number of Feedthroughs	Fibre Diameter	Flange	Part Code	Price £	Price €
1	100µm	DN16KF	FOA-UV100-16KF	£651	€749
1	100µm	DN40KF	FOA-UV100-40KF	£660	€759
2	100µm	DN40KF	FOA-2UV100-40KF	£1,180	€1357
1	200µm	DN16KF	FOA-UV200-16KF	£439	€505
1	200µm	DN40KF	FOA-UV200-40KF	£456	€525
2	200µm	DN40KF	FOA-2UV200-40KF	£802	€923
1	400µm	DN16KF	FOA-UV400-16KF	£443	€510
1	400µm	DN40KF	FOA-UV400-40KF	£461	€531
2	400µm	DN40KF	FOA-2UV400-40KF	£807	€929
1	600µm	DN16KF	FOA-UV600-16KF	£452	€520
1	600µm	DN40KF	FOA-UV600-40KF	£471	€542
2	600µm	DN40KF	FOA-2UV600-40KF	£815	€938
1	1000µm	DN16KF	FOA-UV1000-16KF	£509	€586
1	1000µm	DN40KF	FOA-UV1000-40KF	£516	€594
2	1000µm	DN40KF	FOA-2UV1000-40KF	£888	€1022
7	200µm	DN40KF	FOA-7UV200-40KF	£2,613	€3005
7	400µm	DN40KF	FOA-7UV400-40KF	£2,285	€2628
7	600µm	DN40KF	FOA-7UV600-40KF	£2,436	€2802
7	1000µm	DN40KF	FOA-7UV1000-40KF	£2,347	€2700

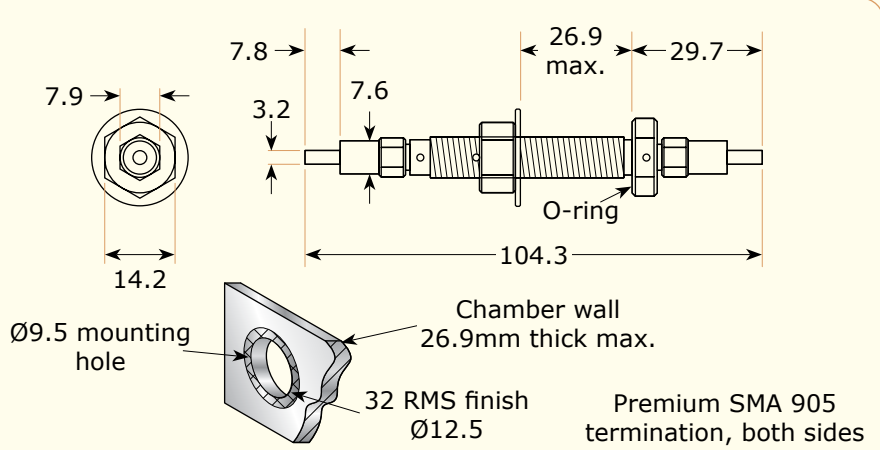
Premium Male SMA 905 termination both ends.



Bolt Style Feedthrough 1 Fibre - UV/VIS

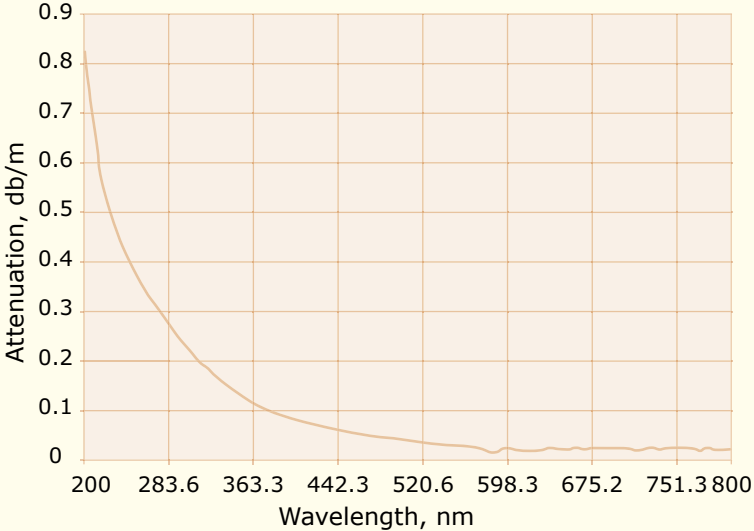


Number of Feedthroughs	Fibre Diameter	Part Code	Price £	Price €
1	100µm	FOA-UV100-B	£412	€474
1	200µm	FOA-UV200-B	£335	€386
1	400µm	FOA-UV400-B	£335	€386
1	600µm	FOA-UV600-B	£335	€386
1	1000µm	FOA-UV1000-B	£335	€386

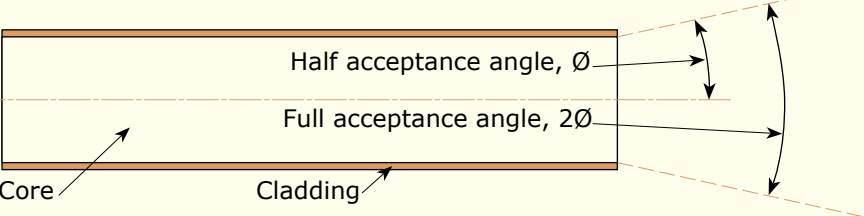


UV/VIS or High-OH Fibre, 200-800nm

- Intended for UV and UV/VIS applications only
- Recommended in lengths of less than 15m to avoid high attenuation



Optical Fibre Numerical Aperture



Numerical aperture is a relative measurement of how much light a fibre can gather. Numerical aperture is expressed as a result of Snell's Law: $NA=(N_1^2 - N_2^2)^{1/2} = N\sin\theta_{max}$. All of our multimode fibres have a numerical aperture of 0.22, which equals a whole acceptance angle of 24.8°

All dimensions are nominal in millimetres unless otherwise specified

All dimensions are nominal in millimetres unless otherwise specified

In-vacuum Cables - Multimode Step-Index, SMA

In Vacuum SMA 905 To SMA 905 Connector - UV/VIS



Fibre Diameter	Length	Terminations	Part Code	Price £	Price €
100µm*	480	SMA-SMA	FOA-UV100V-480D	£169	€195
100µm*	990	SMA-SMA	FOA-UV100V-990D	POA	POA
200µm**	480	SMA-SMA	FOA-UV200V-480D	£155	€179
200µm**	990	SMA-SMA	FOA-UV200V-990D	£171	€197
400µm	480	SMA-SMA	FOA-UV400V-480D	£160	€184
400µm	990	SMA-SMA	FOA-UV400V-990D	£175	€202
600µm	480	SMA-SMA	FOA-UV600V-480D	£175	€202
600µm	990	SMA-SMA	FOA-UV600V-990D	£205	€236
1000µm	480	SMA-SMA	FOA-UV1000V-480D	£465	€535
1000µm	990	SMA-SMA	FOA-UV1000V-990D	£744	€856

* - Supplied complete with PEEK braid jacket
** - Due to its small core size, we strongly recommend adding one of the jacketing options below. Non-jacketed patch cables of these core sizes are not warranted.

In Vacuum SMA 905 Connector To Bare Fibre End - UV/VIS



Fibre Diameter	Length	Terminations	Part Code	Price £	Price €
100µm	480	SMA-BARE	FOA-UV100V-480S	£107	€124
100µm	990	SMA-BARE	FOA-UV100V-990S	£112	€129
200µm	480	SMA-BARE	FOA-UV200V-480S	£112	€129
200µm	990	SMA-BARE	FOA-UV200V-990S	£122	€141
400µm	480	SMA-BARE	FOA-UV400V-480S	£122	€141
400µm	990	SMA-BARE	FOA-UV400V-990S	£127	€147
600µm	480	SMA-BARE	FOA-UV600V-480S	£131	€151
600µm	990	SMA-BARE	FOA-UV600V-990S	£155	€179
1000µm	480	SMA-BARE	FOA-UV1000V-480S	£419	€482
1000µm	990	SMA-BARE	FOA-UV1000V-990S	£697	€802

In Vacuum Cable Assembly Jacketing Options



Description	Part Code	Price £	Price €
PEEK braided jacketing for 480mm cable	(ADD) -PBJS	£36	€42
PEEK braided jacketing for 990mm cable	(ADD) -PBJL	£54	€63
Stainless steel braided jacketing for 480mm cable	(ADD) -SBJS	£36	€42
Stainless steel braided jacketing for 990mm cable	(ADD) -SBJL	£54	€63
Silver plated copper braided jacketing for 480mm cable	(ADD) -CBJS	£36	€42
Silver plated copper braided jacketing for 990mm cable	(ADD) -CBJL	£54	€63

These are sold as additions to the above cable assemblies and are added at the factory only.

Coupler

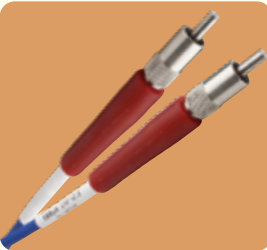


Description	Part Code	Price £	Price €
Fibre optic SMA coupler vacuum service	FOA-SMAC-V	£30	€35

All dimensions are nominal in millimetres unless otherwise specified

Air Service Cables - Multimode Step-Index, SMA

Air Service SMA 905 To SMA 905 Connector - UV/VIS



Fibre Diameter	Length	Terminations	Part Code	Price £	Price €
100µm	2m	SMA-SMA	FOA-UV100A-2M	£107	€124
200µm	2m	SMA-SMA	FOA-UV200A-2M	£131	€151
400µm	2m	SMA-SMA	FOA-UV400A-2M	£141	€163
600µm	2m	SMA-SMA	FOA-UV600A-2M	£180	€207
1000µm	2m	SMA-SMA	FOA-UV1000A-2M	£315	€363

Coupler



Description	Part Code	Price £	Price €
Fibre optic SMA coupler air service	FOA-SMAC-A	£24	€28

All dimensions are nominal in millimetres unless otherwise specified

VIS/NIR Multimode Step-Index



Our fibre optic vacuum feedthroughs are constructed with 100, 200, 400, 600 and 1000 μm VIS/NIS fibres, they are designed for vacuum applications requiring fibre optic connection from inside a vacuum system to external equipment. The fibre is hermetically sealed into a stainless steel shell using the latest in glass bonding technology and terminates on both vacuum and air side with standard SMA 905 terminations.

Ultra High Vacuum polyimide / aluminium buffered optical fibres are available to meet the demands of UHV environments.

All of our optical fibre is constructed as a core-cladding composite. The core, or the filament that guides the light consists of a thin strand of high transmission fused silica. The cladding consists of an outer layer of doped, lower refractive index fused silica. This two layer design tightly confines the light to the central core of the fibre which in turn delivers a maximum amount of light at the far end. We also closely control the fibre diameter during the drawing process, allowing the fibre to centre well in connectors and boast a low loss rate.

Features:

- UHV compatible construction
- 100, 200, 400, 600 & 1000 μm VIS/NIR fibre
- SMA 905 connector interface
- High temperature rated 250°C
- ConFlat® compatible flange mounts
- KF compatible flange mounts
- Polyimide / aluminium buffered vacuum rated optical cables

Specifications:

Materials

St.St., Glass, Quartz

Vacuum Range

CF Flanged

atm to 1x10⁻¹⁰Torr

KF Flanged

atm to 1x10⁻⁸Torr

Temperature Range*

CF Flanged

-269 to 250°C

KF Flanged (Viton® seals)

-29 to 150°C

Vacuum Cables

-65 to 200°C

Air cables

Up to 80°C

Thermal Gradient

25°C/min (max)

Optical Fibre

Operating wavelength

400nm to 2200nm

Bare fibre

Pure fused silica core

Cladding

Fluorine doped silica

Buffer

Polyimide / aluminium

Fibre profile

Step-index multimode

Numerical aperture

0.22±0.02 or 24.8°

Core to cladding ratio:

Core diameter ≥ 200 μm

1:1.1

Fibre Bend Radius:

Short term

200 x core diameter

Long term

400 x core diameter

Insertion loss of interconnects

-0.8dB to -2.0dB

Power

<1W

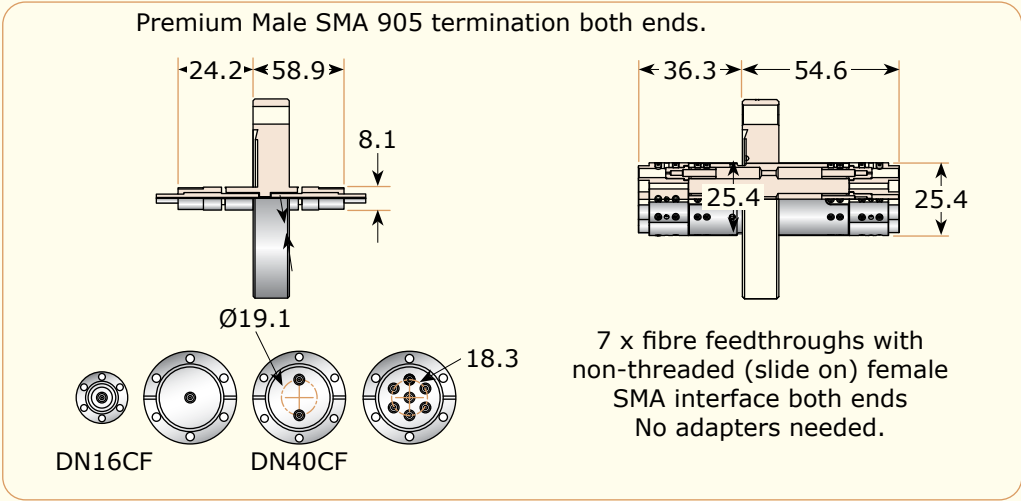
* - Assembly rating is reduced to that of the lowest rated component.

All dimensions are nominal in millimetres unless otherwise specified

CF Flanges 1,2,4 & 7 Fibres - VIS/NIR



Number of Feedthroughs	Fibre Diameter	Flange	Part Code	Price £	Price €
1	100 μm	DN16CF	FOA-IR100-16CF	£647	€745
1	100 μm	DN40CF	FOA-IR100-40CF	£660	€759
2	100 μm	DN40CF	FOA-2IR100-40CF	£1,169	€1345
1	200 μm	DN16CF	FOA-IR200-16CF	£443	€510
1	200 μm	DN40CF	FOA-IR200-40CF	£461	€531
2	200 μm	DN40CF	FOA-2IR200-40CF	£807	€929
1	400 μm	DN16CF	FOA-IR400-16CF	£452	€520
1	400 μm	DN40CF	FOA-IR400-40CF	£466	€536
2	400 μm	DN40CF	FOA-2IR400-40CF	£811	€933
1	600 μm	DN16CF	FOA-IR600-16CF	£456	€525
1	600 μm	DN40CF	FOA-IR600-40CF	£474	€546
2	600 μm	DN40CF	FOA-2IR600-40CF	£815	€938
1	1000 μm	DN16CF	FOA-IR1000-16CF	£514	€592
1	1000 μm	DN40CF	FOA-IR1000-40CF	£519	€597
2	1000 μm	DN40CF	FOA-2IR1000-40CF	£895	€1030
7	200 μm	DN40CF	FOA-7IR200-40CF	£2,613	€3005
7	400 μm	DN40CF	FOA-7IR400-40CF	£2,525	€2904
7	600 μm	DN40CF	FOA-7IR600-40CF	£2,436	€2802
7	1000 μm	DN40CF	FOA-7IR1000-40CF	£2,347	€2700



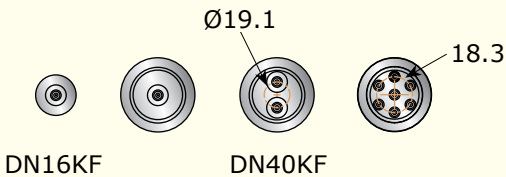
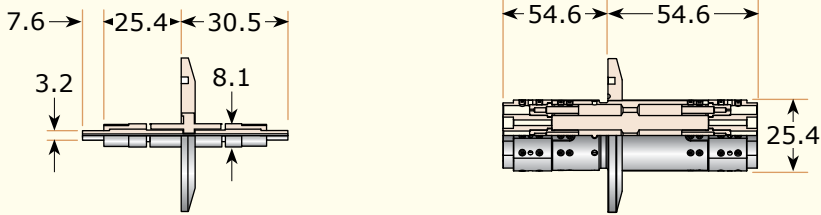
All dimensions are nominal in millimetres unless otherwise specified

KF Flanges 1,2,4 & 7 Fibres - VIS/NIR



Number of Feedthroughs	Fibre Diameter	Flange	Part Code	Price £	Price €
1	100µm	DN16KF	FOA-IR100-16KF	£651	€749
1	100µm	DN40KF	FOA-IR100-40KF	£660	€759
2	100µm	DN40KF	FOA-2IR100-40KF	£1,180	€1357
1	200µm	DN16KF	FOA-IR200-16KF	£439	€505
1	200µm	DN40KF	FOA-IR200-40KF	£456	€525
2	200µm	DN40KF	FOA-2IR200-40KF	£802	€923
1	400µm	DN16KF	FOA-IR400-16KF	£443	€510
1	400µm	DN40KF	FOA-IR400-40KF	£461	€531
2	400µm	DN40KF	FOA-2IR400-40KF	£807	€929
1	600µm	DN16KF	FOA-IR600-16KF	£452	€520
1	600µm	DN40KF	FOA-IR600-40KF	£471	€542
2	600µm	DN40KF	FOA-2IR600-40KF	£815	€938
1	1000µm	DN16KF	FOA-IR1000-16KF	£509	€586
1	1000µm	DN40KF	FOA-IR1000-40KF	£516	€594
2	1000µm	DN40KF	FOA-2IR1000-40KF	£888	€1022
7	200µm	DN40KF	FOA-7IR200-40KF	£2,611	€3003
7	400µm	DN40KF	FOA-7IR400-40KF	£2,525	€2904
7	600µm	DN40KF	FOA-7IR600-40KF	£2,436	€2802
7	1000µm	DN40KF	FOA-7IR1000-40KF	£2,347	€2700

Premium Male SMA 905 termination both ends.



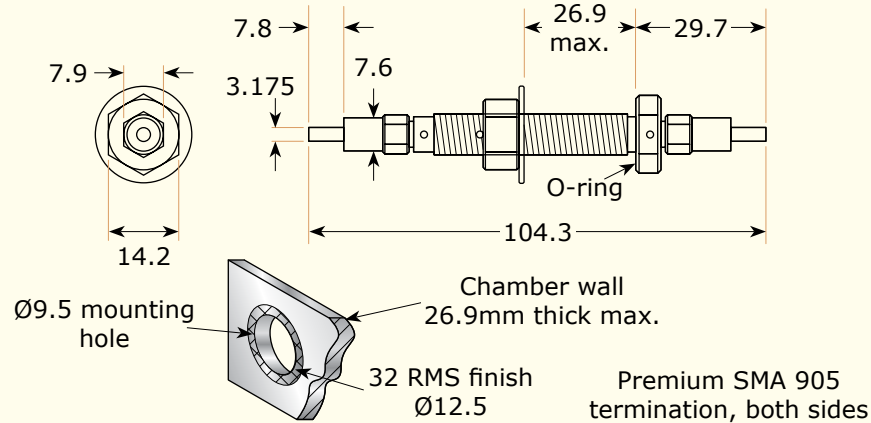
7 x fibre feedthroughs with non-threaded (slide on) female SMA interface both ends
No adapters needed.

All dimensions are nominal in millimetres unless otherwise specified

Bolt Style Feedthrough 1 Fibre - VIS/NIR

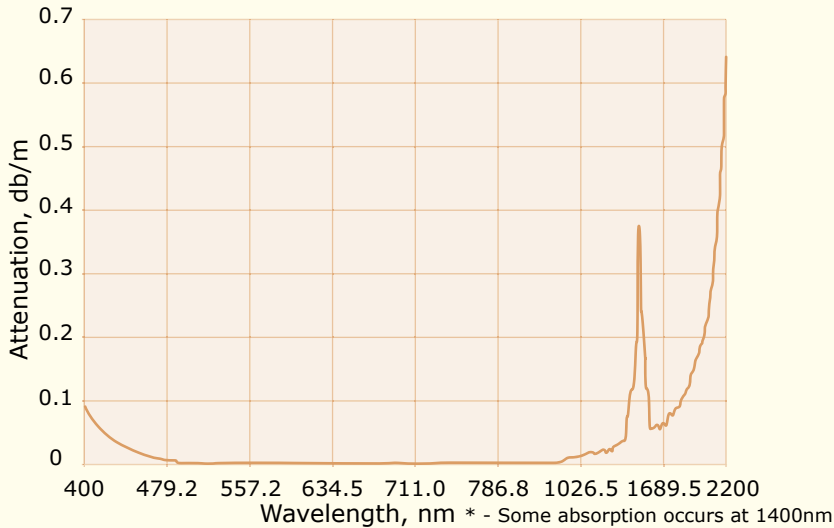


Number of Feedthroughs	Fibre Diameter	Part Code	Price £	Price €
1	100µm	FOA-IR100-B	€ 474	€546
1	200µm	FOA-IR200-B	€ 386	€444
1	400µm	FOA-IR400-B	€ 386	€444
1	600µm	FOA-IR600-B	€ 386	€444
1	1000µm	FOA-IR1000-B	€ 386	€444

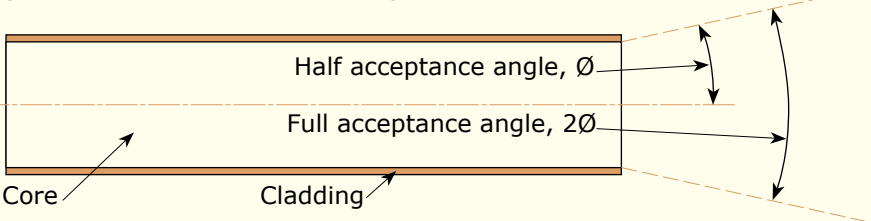


VIS/NIR or Ultra Low-OH Fibre, 400-2200nm*

- Provides the lowest possible internal light attenuation
- Useful for VIS or VIS/NIR applications requiring very long fibre lengths



Optical Fibre Numerical Aperture



Numerical aperture is a relative measurement of how much light a fibre can gather. Numerical aperture is expressed as a result of Snell's Law: $NA = (N_1^2 - N_2^2)^{1/2} = N \sin \theta_{max}$. All of our multimode fibres have a numerical aperture of 0.22, which equals a whole acceptance angle of 24.8°

All dimensions are nominal in millimetres unless otherwise specified

In-Vacuum Cables - Multimode Step-Index, SMA

In Vacuum SMA 905 To SMA 905 Connector - VIS/NIR



Fibre Diameter	Length	Terminations	Part Code	Price £	Price €
100µm*	480	SMA-SMA	FOA-IR100V-480D	£169	€195
100µm*	990	SMA-SMA	FOA-IR100V-990D	£194	€224
200µm**	480	SMA-SMA	FOA-IR200VC-480D	£155	€179
200µm**	990	SMA-SMA	FOA-IR200VC-990D	£171	€197
400µm	480	SMA-SMA	FOA-IR400V-480D	£160	€184
400µm	990	SMA-SMA	FOA-IR400V-990D	£175	€202
600µm	480	SMA-SMA	FOA-IR600V-480D	£175	€202
600µm	990	SMA-SMA	FOA-IR600V-990D	£205	€236
1000µm	480	SMA-SMA	FOA-IR1000V-480D	£465	€535
1000µm	990	SMA-SMA	FOA-IR1000V-990D	£744	€856

* - Supplied complete with PEEK braid jacket
** - Due to its small core size, we strongly recommend adding one of the jacketing options below. Non-jacketed patch cables of these core sizes are not warranted.

In Vacuum SMA 905 Connector To Bare Fibre End - VIS/NIR



Fibre Diameter	Length	Terminations	Part Code	Price £	Price €
100µm	480	SMA-BARE	FOA-IR100V-480S	£107	€124
100µm	990	SMA-BARE	FOA-IR100V-990S	£112	€129
200µm	480	SMA-BARE	FOA-IR200V-480S	£112	€129
200µm	990	SMA-BARE	FOA-IR200V-990S	£114	€132
400µm	480	SMA-BARE	FOA-IR400V-480S	£122	€141
400µm	990	SMA-BARE	FOA-IR400V-990S	£127	€147
600µm	480	SMA-BARE	FOA-IR600V-480S	£131	€151
600µm	990	SMA-BARE	FOA-IR600V-990S	£155	€179
1000µm	480	SMA-BARE	FOA-IR1000V-480S	£419	€482
1000µm	990	SMA-BARE	FOA-IR1000V-990S	£697	€802

In Vacuum Cable Assembly Jacketing Options



Description	Part Code	Price £	Price €
PEEK braided jacketing for 480mm cable	(ADD) -PBJS	£36	€42
PEEK braided jacketing for 990mm cable	(ADD) -PBJL	£54	€63
Stainless steel braided jacketing for 480mm cable	(ADD) -SBJS	£36	€42
Stainless steel braided jacketing for 990mm cable	(ADD) -SBJL	£54	€63
Silver plated copper braided jacketing for 480mm cable	(ADD) -CBJS	£36	€42
Silver plated copper braided jacketing for 990mm cable	(ADD) -CBJL	£54	€63

These are sold as additions to the above cable assemblies and are added at the factory only.

Coupler



Description	Part Code	Price £	Price €
Fibre optic SMA coupler vacuum service	FOA-SMAC-V	£30	€35

All dimensions are nominal in millimetres unless otherwise specified

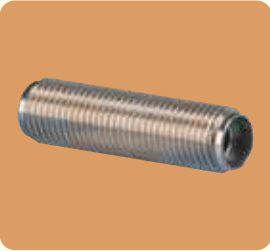
Air Service Cables - Multimode Step-Index, SMA

Air Service SMA 905 To SMA 905 Connector - VIS/NIR



Fibre Diameter	Length	Terminations	Part Code	Price £	Price €
100µm	2m	SMA-SMA	FOA-IR100AC-2M	£107	€124
200µm	2m	SMA-SMA	FOA-IR200AC-2M	£131	€151
400µm	2m	SMA-SMA	FOA-IR400AC-2M	£141	€163
600µm	2m	SMA-SMA	FOA-IR600AC-2M	£180	€207
1000µm	2m	SMA-SMA	FOA-IR1000AC-2M	£315	€363

Coupler



Description	Part Code	Price £	Price €
Fibre optic SMA coupler air service	FOA-SMAC-A	£24	€28

All dimensions are nominal in millimetres unless otherwise specified

Multimode Graded-Index



Features:

- UHV compatible construction
- 62.5µm core / 125µm clad fibre
- SMA 905 connector interface
- High temperature rated 250°C
- ConFlat® compatible flange mounts
- KF compatible flange mounts
- UHV compatible patch cables

Specifications:

Materials

St.St., Glass, Quartz

Vacuum Range

CF Flanged	atm to 1x10 ⁻¹⁰ Torr
KF Flanged	atm to 1x10 ⁻⁸ Torr

Temperature Range*

CF Flanged	-269 to 250°C
KF Flanged (Viton® seals)	-29 to 150°C
Vacuum Cables	-65 to 200°C

Air cables

Up to 80°C

Thermal Gradient

25°C/min (max)

Optical Fibre

Operating wavelength

800nm & 1300nm
(optimised for both wavelengths)

Bare fibre

Pure fused silica core

Cladding

Fluorine doped silica

Buffer

Polyimide

Fibre profile

Graded-index multimode

Numerical aperture

0.27±0.02 or 31.3°

Fibre Bend Radius:

Short term

400 x core diameter

Long term

800 x core diameter

Attenuation @ 850nm

≤ 3.0dB

Attenuation @ 1300nm

≤ 0.8dB

Power

<1W

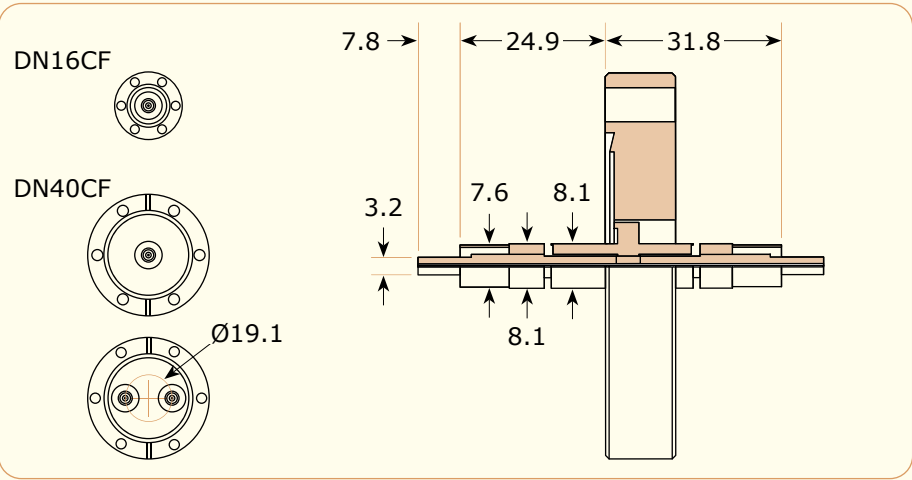
* - Assembly rating is reduced to that of the lowest rated component.

All dimensions are nominal in millimetres unless otherwise specified

CF Flanges 1 & 2 Fibres



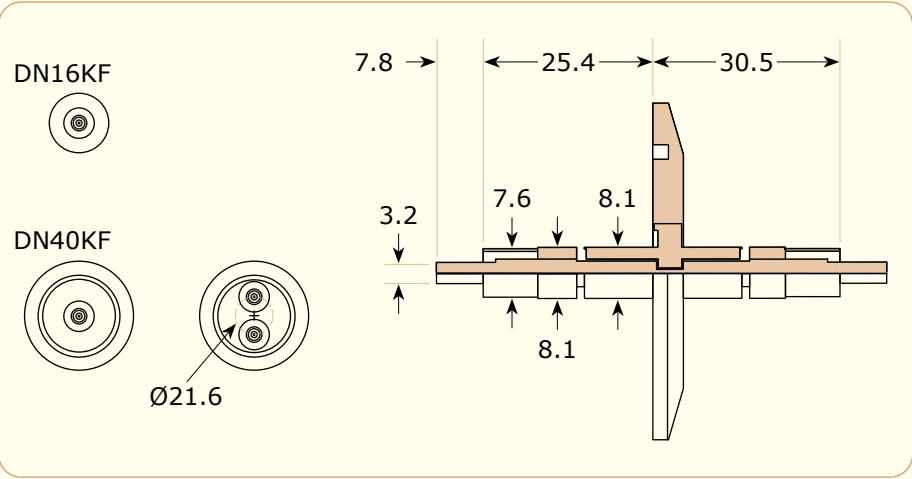
Number of Feedthroughs	Fibre core	Flange	Part Code	Price £	Price €
1	62.5µm	DN16CF	FOA-GI62.5-16CF	£541	€623
1	62.5µm	DN40CF	FOA-GI62.5-40CF	£550	€633
2	62.5µm	DN40CF	FOA-2GI62.5-40CF	£966	€1111



KF Flanges 1 & 2 Fibres



Number of Feedthroughs	Fibre Diameter	Flange	Part Code	Price £	Price €
1	62.5µm	DN16KF	FOA-GI62.5-16KF	£529	€609
1	62.5µm	DN40KF	FOA-GI62.5-40KF	£543	€625
2	62.5µm	DN40KF	FOA-2GI62.5-40KF	£961	€1106

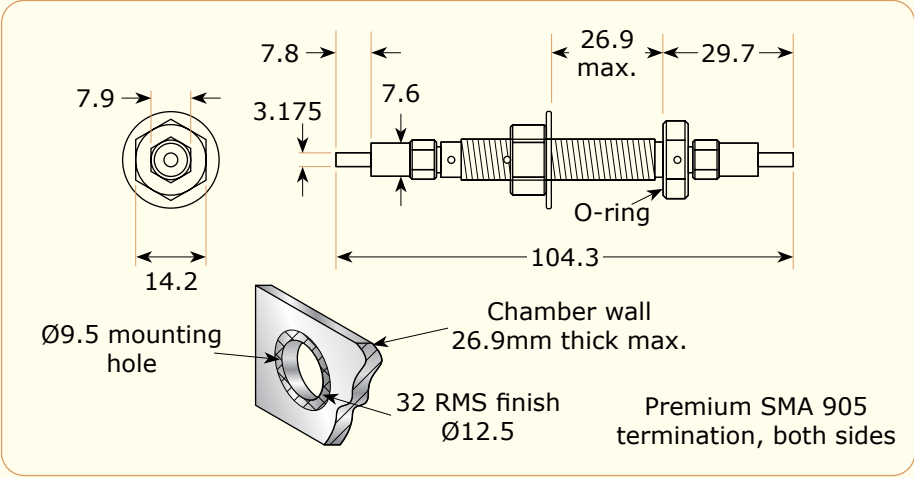


All dimensions are nominal in millimetres unless otherwise specified

Bolt Style Feedthrough 1 Fibre - Graded Index



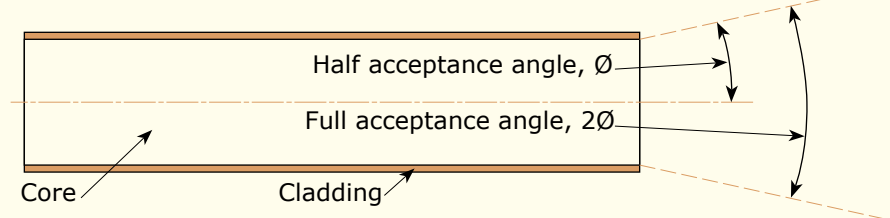
Number of Feedthroughs	Fibre Diameter	Part Code	Price £	Price €
1	62.5µm	FOA-GI62.5-B	£433	€498



V62.5µm Graded-Index Multimode Fibre

- Graded-Index multimode fibre is a great choice for bridging the gap between singlemode and step-index multimode fibres, giving up some bandwidth for ease of termination and light launch.
- Lower cost than singlemode.
- Primarily used for data communication.
- Less useful for power delivery applications.
- Recommended for Graded-Index applications requiring medium distance (2-15km) fibre lengths.

Optical Fibre Numerical Aperture



Numerical aperture is a relative measurement of how much light a fibre can gather. Numerical aperture is expressed as a result of Snell's Law: $NA = (N_1^2 - N_2^2)^{1/2} = N \sin \theta_{max}$. All of our Graded Index fibres have a numerical aperture of 0.27, which equals a whole acceptance angle of 31.3°

All dimensions are nominal in millimetres unless otherwise specified

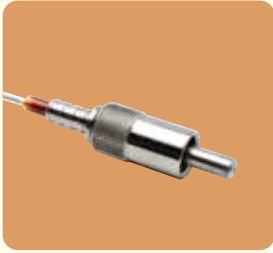
In-vacuum & Air Cables - Multimode Graded-Index, SMA

In Vacuum SMA 905 To SMA 905 Connector



Fibre Core	Length	Terminations	Part Code	Price £	Price €
62.5µm	480	SMA-SMA	FOA-GI62.5-480	£229	€264
62.5µm	990	SMA-SMA	FOA-GI62.5-990	£253	€291

In Vacuum SMA 905 Connector To Bare Fibre End



Fibre Core	Length	Terminations	Part Code	Price £	Price €
62.5µm	480	SMA-BARE	FOA-GI62.5-480S	£185	€213
62.5µm	990	SMA-BARE	FOA-GI62.5-990S	£215	€248

In Vacuum Cable Assembly Jacketing Options



Description	Part Code	Price £	Price €
PEEK braided jacketing for 480mm cable	(ADD) -PBJS	£36	€42
PEEK braided jacketing for 990mm cable	(ADD) -PBJL	£54	€63
Stainless steel braided jacketing for 480mm cable	(ADD) -SBJS	£36	€42
Stainless steel braided jacketing for 990mm cable	(ADD) -SBJL	£54	€63
Silver plated copper braided jacketing for 480mm cable	(ADD) -CBJS	£36	€42
Silver plated copper braided jacketing for 990mm cable	(ADD) -CBJL	£54	€63

Air Service SMA 905 To SMA 905 Connector



Fibre Core	Length	Terminations	Part Code	Price £	Price €
62.5µm	2m	SMA-SMA	FOA-GI62.5AC-2M	£205	€236

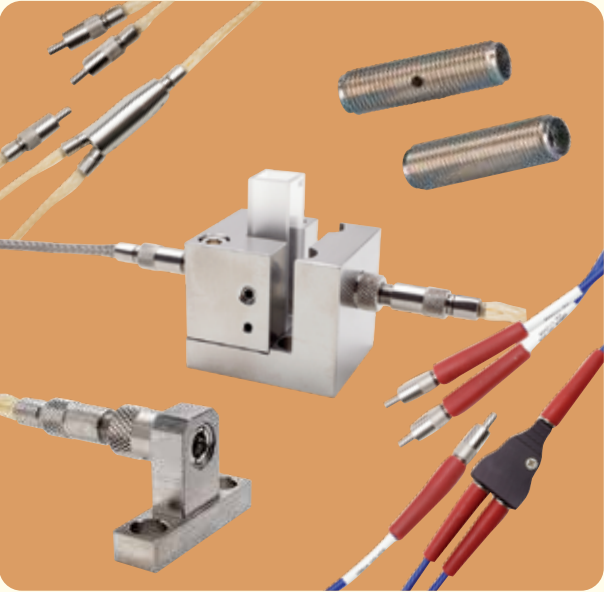
Couplers



Description	Part Code	Price £	Price €
Fibre optic SMA coupler vacuum service	FOA-SMAC-V	£30	
Fibre optic SMA coupler air service	FOA-SMAC-A	£24	

All dimensions are nominal in millimetres unless otherwise specified

Fibre Optic Accessories



Our fibre optic accessories include bifurcated cables, reflection probes, and other assemblies. These assemblies are high quality, precision assemblies that consistently deliver uniform results with minimal signal variation.

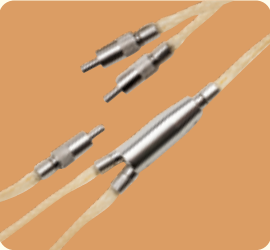
Collimating lenses, couplers, adapters and mounts are offered in both UHV and air-service designs. The UHV versions are made with 100 percent UHV components including PEEK, stainless steel and other materials. Standard air service components are also available for a complete air to vacuum configuration. Custom configurations are available upon request.

Bifurcated Cables

Bifurcated cable assemblies are Y-shaped assemblies with two fibres of the same diameter. The two fibers are side-by-side inside of a common premium SMA 905 connector on one end. From the breakout point of the assembly, the two fibers diverge into two legs. UHV and air-service versions are available where the UHV version is made from 100 percent UHV compatible materials including a PEEK weave jacket, the air service assemblies are made with a PVC jacket, blue for UV and red for IR.

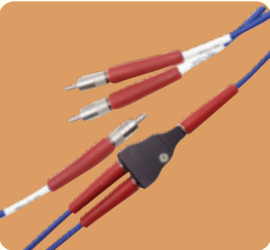
Air-service versions are split at 635mm from the common end and the UHV versions are split at 305mm from the common end.

Bifurcated Cables - Vacuum



Fibre Core / Type	Length	Part Code	Price £	Price €
200µm / UV	900	FOA-UV200BVC-900	£243	€280
400µm / UV	900	FOA-UV400BVC-900	£267	€308
600µm / UV	900	FOA-UV600BVC-900	£291	€335
200µm / IR	900	FOA-IR200BVC-900	£243	€280
400µm / IR	900	FOA-IR400BVC-900	£267	€308
600µm / IR	900	FOA-IR600BVC-900	£291	€335

Bifurcated Cables - Air



Fibre Core / Type	Length	Part Code	Price £	Price €
200µm / UV	2m	FOA-UV200BAC-2M	£291	€335
400µm / UV	2m	FOA-UV400BAC-2M	£321	€370
600µm / UV	2m	FOA-UV600BAC-2M	£359	€413
200µm / IR	2m	FOA-IR200BAC-2M	£291	€335
400µm / IR	2m	FOA-IR400BAC-2M	£321	€370
600µm / IR	2m	FOA-IR600BAC-2M	£359	€413

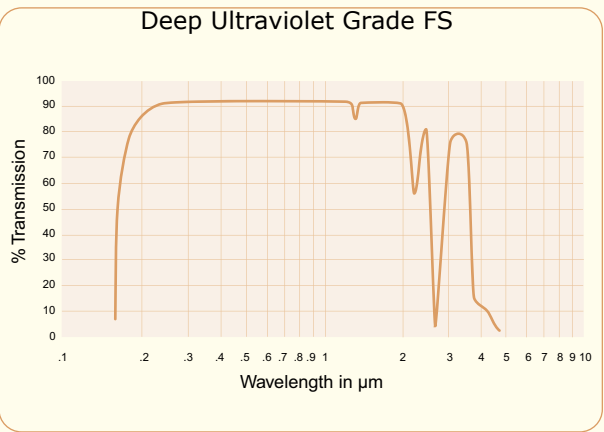
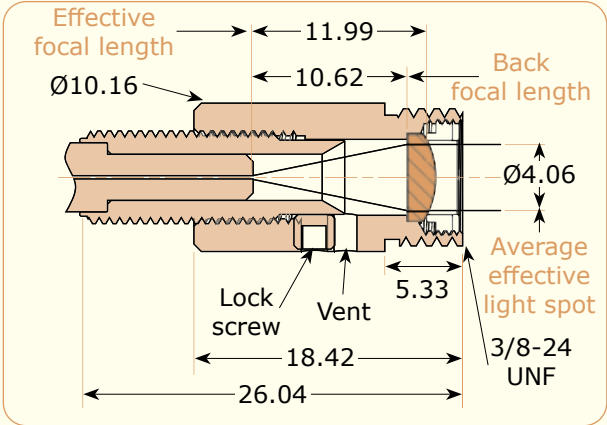
Collimating Lenses - Vacuum / Air

Collimating lenses use a high performance optical element (lens) manufactured using research-grade synthetic fused silica or sapphire that has excellent transmission characteristics and higher operating temperatures than other elements.

Collimating lenses come set to standard effective focal length distances. However, a means of adjustment is built into the body to allow precision adjustments.



Description	Part Code	Price £	Price €
Fused silica collimating lens with SMA connection	FOA-COL-SMA	£219	€252
Sapphire collimating lens with SMA connection	FOA-COL-SA-SMA	£470	€541
Fused silica collimating lens 1" with SMA connection	FOA-COL-1-SMA	£472	€543
Sapphire collimating lens 1" with SMA connection	FOA-CO-1-SA-SMA	£534	€615



All dimensions are nominal in millimetres unless otherwise specified

All dimensions are nominal in millimetres unless otherwise specified

Fibre Optic Accessories

Couplers



Description	Part Code	Price £	Price €
Fibre optic SMA coupler vacuum service	FOA-SMAC-V	£30	€35
Fibre optic SMA coupler air service	FOA-SMAC-A	£24	€28
Fibre optic SMA coupler bulkhead mount vacuum service	FOA-SMAC-V-BH	£46	€53
Fibre optic SMA coupler bulkhead mount air service	FOA-SMAC-A-BH	£24	€28
Fibre optic ST coupler vacuum service	FOA-STC-V	£43	€50
Fibre optic ST coupler air service	FOA-STC-A	£24	€28

These adapters are used to connect fibres with two similar terminations.

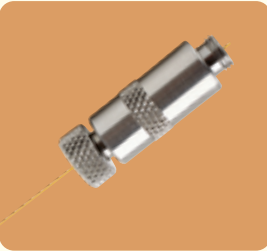
Adapters



Description	Part Code	Price £	Price €
Fibre optic SMA to FC adapter air & vacuum service	FOA-SMA-FC-V	£40	€46
Fibre optic SMA to ST adapter vacuum service	FOA-SMA-ST-V	£69	€80
Fibre optic SMA to ST adapter air service	FOA-SMA-ST-A	£54	€63

These adapters are used to connect fibres with different types of terminations.

Adapters - Bare Fibre (Multi-use)

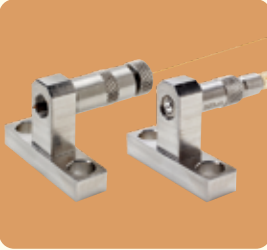


Description	Part Code	Price £	Price €
Fibre optic bare fibre 200µm adapter vacuum / air service	FOA-BFA200-VA	£160	€184
Fibre optic bare fibre 400µm adapter vacuum / air service	FOA-BFA400-VA	£160	€184
Fibre optic bare fibre 600µm adapter vacuum / air service	FOA-BFA600-VA	£160	€184

Fibre not included

Bare fibre adapters can be used as the following devices: SMA adapter, ferrule, or as a bulkhead mount. Simply insert the bare fibre end into the collet and tighten until snug. Bare fibre adapters are designed to fit on our polyimide buffered fibres only.

Mounts

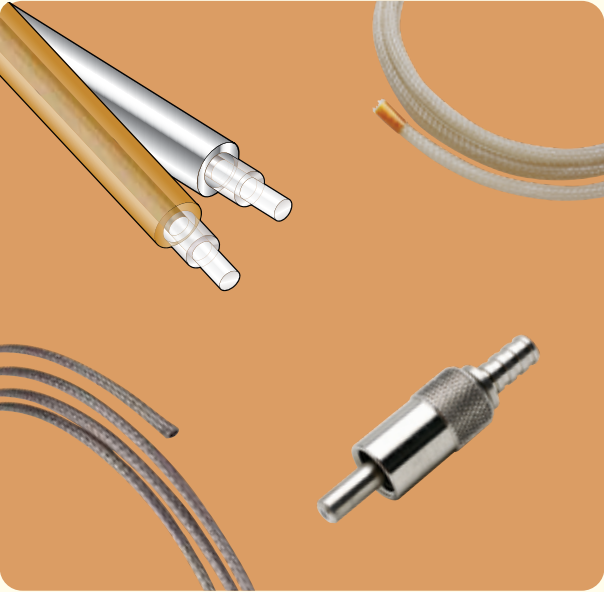


Description	Part Code	Price £	Price €
Mount for SMA connector / bare fibre adapter	FOA-SMA-MOUNT	£64	€74
Mount for collimating lens	FOA-COL-MOUNT	£64	€74

Fibre and adapter assemblies not included

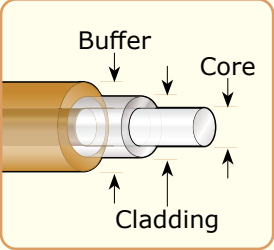
Mounts are made from 304 stainless steel and are ideally suited for UHV and air service.

Fibre Optic Cable Assembly Components



We offer all of the individual components needed to assemble your own fibre optic cable assemblies. Fibre core sizes of 100, 200, 400, 600 & 1000µm are available with either polyimide or aluminium buffers. Premium stainless steel SMA 905 connectors and UHV compatible epoxy used in conjunction with our polishing supplies and consumables allow custom configurations of cable assemblies to be manufactured at your own facilities.

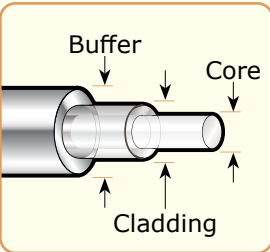
UHV Multimode Step-Index Polyimide Buffer Fibre



Polyimide buffer fiber is ideally suited for UHV environments and made with step index high-OH silica core for UV/VIS and low-OH silica core for VIS/NIR, doped silica cladding, and a polyimide buffer with a concentricity of $\pm 3\mu\text{m}$. Fibre is step-index and has a numerical aperture of 0.22 ± 0.02 and a full acceptance cone angle of 24.8° . This fiber is supplied non-terminated. Each fiber end is cleaved and NOT polished. Optical fiber has been proof tested to 100 kpsi.

Fibre Core / Type	Length	Operating Wavelength Range	Part Code	Price £	Price €
100µm / UV	480	200 - 800nm	FOA-UV100P-480	£16	€19
100µm / UV	990	200 - 800nm	FOA-UV100P-990	£31	€36
200µm / UV	480	200 - 800nm	FOA-UV200P-480	£17	€20
200µm / UV	990	200 - 800nm	FOA-UV200P-990	£34	€40
400µm / UV	480	200 - 800nm	FOA-UV400P-480	£19	€22
400µm / UV	990	200 - 800nm	FOA-UV400P-990	£37	€43
600µm / UV	480	200 - 800nm	FOA-UV600P-480	£29	€34
600µm / UV	990	200 - 800nm	FOA-UV600P-990	£58	€67
100µm / IR	480	400 - 2200nm	FOA-IR100P-480	£16	€19
100µm / IR	990	400 - 2200nm	FOA-IR100P-990	£31	€36
200µm / IR	480	400 - 2200nm	FOA-IR200P-480	£17	€20
200µm / IR	990	400 - 2200nm	FOA-IR200P-990	£34	€40
400µm / IR	480	400 - 2200nm	FOA-IR400P-480	£19	€22
400µm / IR	990	400 - 2200nm	FOA-IR400P-990	£37	€43
600µm / IR	480	400 - 2200nm	FOA-IR600P-480	£29	€34
600µm / IR	990	400 - 2200nm	FOA-IR600P-990	£58	€67

UHV Multimode Step-Index Aluminium Buffer Fibre



Aluminium buffer fibre is ideally suited for UHV environments and made with step index high-OH silica core for UV/VIS and low-OH silica core for VIS/NIR, doped silica cladding, and an aluminium buffer. Fibre is step-index and has a numerical aperture of 0.22 ± 0.02 and a full acceptance cone angle of 24.8° . Aluminium buffered silica/doped silica fibres are the latest technology to enable fibre optics to be used in some of the most harsh and extreme environments known, including UHV applications. This metalized fibre technology has the strongest adhesion of all fibre optic cables. It creates a hermetically sealed fibre and can withstand the highest temperatures of any fibre. This fibre is supplied non-terminated. Each fibre end is cleaved and NOT polished.

Fibre Core / Type	Length	Operating Wavelength Range	Part Code	Price £	Price €
100µm / UV	480	200-800nm	FOA-UV100A-480	£31	€36
100µm / UV	990	200-800nm	FOA-UV100A-990	£62	€72
200µm / UV	480	200-800nm	FOA-UV200A-480	£59	€68
200µm / UV	990	200-800nm	FOA-UV200A-990	£118	€136
400µm / UV	480	200-800nm	FOA-UV400A-480	£85	€98
400µm / UV	990	200-800nm	FOA-UV400A-990	£170	€196
600µm / UV	480	200-800nm	FOA-UV600A-480	£102	€118
100µm / UV	990	200-800nm	FOA-UV600A-990	£204	€235
1000µm / UV	480	200-800nm	FOA-UV1000A-480	£270	€311
1000µm / UV	990	200-800nm	FOA-UV1000A-990	£539	€620
100µm / IR	480	400-2200nm	FOA-IR100A-480	£31	€36
100µm / IR	990	400-2200nm	FOA-IR100A-990	£62	€72
200µm / IR	480	400-2200nm	FOA-IR200A-480	£59	€68
200µm / IR	990	400-2200nm	FOA-IR200A-990	£118	€136
400µm / IR	480	400-2200nm	FOA-IR400A-480	£85	€98
400µm / IR	990	400-2200nm	FOA-IR400A-990	£170	€196
600µm / IR	480	400-2200nm	FOA-IR600A-480	£102	€118
100µm / IR	990	400-2200nm	FOA-IR600A-990	£204	€235
1000µm / IR	480	400-2200nm	FOA-IR1000A-480	£270	€311
1000µm / IR	990	400-2200nm	FOA-IR1000A-990	£539	€620

SMA 905 Fibre Optic Connectors

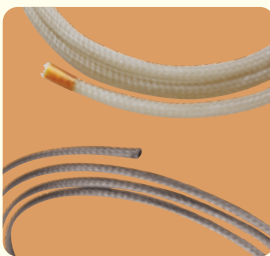


SMA 905 fibre optic connectors are used to terminate UHV and air service fiber optic cables. These connectors mate with corresponding buffer/fibre type as detailed previously. Use of a coupler is required to mate with fibre optic feedthroughs found previously in this catalogue. SMA 905 connectors are made with stainless steel ferrules and bodies for UHV environments.

Fibre Core	Fibre Buffer Type	Part Code	Price £	Price €
100µm	Polyimide	FOA-SMA100P	£20	€23
200µm	Polyimide	FOA-SMA200P	£20	€23
400µm	Polyimide	FOA-SMA400P	£20	€23
600µm	Polyimide	FOA-SMA600P	£20	€23
200µm	Aluminium	FOA-SMA200A	£20	€23
400µm	Aluminium	FOA-SMA400A	£20	€23
600µm	Aluminium	FOA-SMA600A	£20	€23
1000µm	Aluminium	FOA-SMA1000A	£20	€23

All dimensions are nominal in millimetres unless otherwise specified

Fibre Optic Jacketing

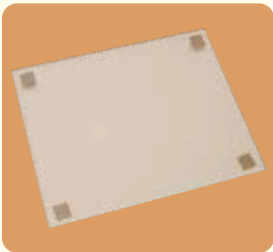


PEEK, stainless steel and silver-plated copper braid are ideally suited for use as fibre optic cable jacketing for UHV and other applications. The braided design facilitates ease of pump down. All materials used in manufacturing these braids are UHV compatible. PEEK & PTFE cable wraps for bundling cables together are also available, please see Section 9.1 of this catalogue, Vacuum Accessories.

Material	Fibre Core	Length	ID	Part Code	Price £	Price €
PEEK	All	1500	4.7	BS-PEEK4.7	£29	€34
St.St.	All	1500	3.2	BS-SS3.2L	£24	€28
St.St.	All	4500	3.2	BS-SS3.2L4.5	£67	€78
St.St.	All	7600	3.2	BS-SS3.2L7.6	£111	€128
Ag plated Cu	All	4500	3.2	BS-SPC3.2-4.5	£54	€63
Ag plated Cu	All	7600	3.2	BS-SPC3.2-7.6	£87	€101

All dimensions are nominal in millimetres unless otherwise specified

Polishing & Lapping Equipment



We can supply a range of polishing and lapping equipment for those who wish to manufacture their own fibre optic cables. Please contact our sales office for further details.

Description	Part Code	Price £	Price €
Polishing plate - Glass, 228 x 279mm	FOA-PPG	£38	€44
SMA polishing puck	FOA-SMA-PUCK	£113	€130
Fibre scribe	FOA-FS	£92	€106
Inspection scope	FOA-SCOPE	£159	€183
Inspection scope - Replacement bulb	FOA-RB-SCOPE	£5	€6
SMA bare fibre chuck	FOA-SMA-BCK	£185	€213
200µm SMA bare fibre polishing holder	FOA-200SMA-PH	£38	€44
400µm SMA bare fibre polishing holder	FOA-400SMA-PH	£40	€46
600µm SMA bare fibre polishing holder	FOA-600SMA-PH	£44	€51
1000µm SMA bare fibre polishing holder	FOA-1000SMA-PH	£47	€55
SMA bare fibre polishing complete kit	FOA-BFP-KIT	£326	€375
30µm aluminium oxide polishing & lapping film 228 x 279mm	FOA-POL-30-FLM	£20	€23
12µm aluminium oxide polishing & lapping film 228 x 279mm	FOA-POL-12-FLM	£19	€22
5µm aluminium oxide polishing & lapping film 228 x 279mm	FOA-POL-5-FLM	£18	€21
3µm aluminium oxide polishing & lapping film 228 x 279mm	FOA-POL-3-FLM	£17	€20
1µm aluminium oxide polishing & lapping film 228 x 279mm	FOA-POL-1-FLM	£17	€20
0.3µm aluminium oxide polishing & lapping film 228 x 279mm	FOA-POL-0.3-FLM	£16	€19



Polishing Plate : Made from safety glass with all corners and edges rounded. A hard flat surface is required for polishing fibre optic connectors.



SMA Polishing Puck : Holds an SMA 905 connector in place for polishing. The puck is factory set to produce the correct ferrule length after polishing.



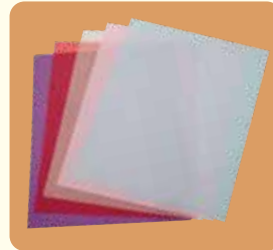
Fibre Scribe : Is a professional tool utilizing a carbide tipped 30° wedge and is ideal for scribing fibres to produce a clean cleave on the fibre.

Inspection Scope : Is a 100x magnification scope that features a low cost design that is perfect for inspecting fibre optic terminations during and after the polishing process.

Bare Fibre Chuck : Is ideally suited to hold an SMA bare fibre holder in place during the polishing procedure.

Bare Fibre Polishing Holder : Is substituted for an actual connector during the polishing process. Choose from 4 sizes to correspond with the fibre size that you are polishing.

Bare Fibre Polishing Complete Kit : Is offered for users who wish to have a complete set of holders and chuck.



Safety Equipment & Consumables



Description	Part Code	Price £	Price €
Safety glasses	FOA-GLASSES	£13	€15
Scrap bin for fibre scraps	FOA-BIN	£16	€19
Vinyl polishing work mat	FOA-POLISH-MAT	£22	€26
Fibre optic tweezers	FOA-TWEEZ	£25	€29
High temperature UHV compatible epoxy	FOA-EPOXY	£21	€25
Syringe for epoxy application 5/pk	FOA-SYRINGE	£13	€15
Lint free wipes	FOA-LF-WIPES	£6	€7
Pre-saturated isopropyl alcohol wipes 2/pk	FOA-ISO-WIPES	£6	€7
Optic prep tissue pack 5/pk	FOA-TISSUES	£13	€15
Dusting kit	FOA-DUST-KIT	£20	€23
Lint free cotton gloves 3 pairs	FOA-GLOVES	£9	€11
Fibre optic cleaning dispenser	FOA-CLEAN-DISP	£43	€50
Refill for fibre optic cleaning dispenser	FOA-CLEAN-REFILL	£36	€42
Piano wire 0.125mm (0.004") diameter 2/pk	FOA-PIANO-WIRE	£7	€9

Plastic Safety Glasses : A must when cutting or scribing fibre.

Fibre Optic Trash Can : Is a small desktop trash can used for the disposal of small fibre scraps. This is the safest method of disposing of fibre scraps.

Vinyl Polishing Work Mat : Is black in colour to help locate loose fibre scraps that can become lodged in ones skin if not disposed of properly.

Fibre Optic Tweezers : Have a low slip resin coated tip to help hold and pick up fibre optic scraps, etc. May also be used for splinter removal.

High Temperature UHV Compatible Epoxy : Is supplied in single, two part, 4g packs eliminating the need for measuring and cup mixing. Ideally suited for UHV environments to 1x10⁻¹⁰ Torr and operating temperatures of 250°C and up to 400°C for brief periods.

Piano Wire : Is ideally suited to push into connectors where a fibre has broken off inside of the connector during the polishing process.

