

Fibre Optic Feedthroughs, Cables and Accessories



Multimode

Multimode step index fibre optic feedthroughs, cables and associated accessories are available to allow transmission of light signals into and out of your vacuum system. Fibres are available in a range of diameters from 400µm to 1000µm. In-vacuum fibres are clad with CuBALL copper based alloy, capable of withstanding higher temperatures than acrylate or polyimide coated fibres. CuBALL is better suited for use in UHV systems, where use of polyimide coated fibres can give rise to outgassing problems.

Fibres are available with both IR and UV specification. All fibres and feedthroughs are coupled using industry standard SMA-905 connectors. In-vacuum fibres can be supplied with the free end, fitted with SMA-905 connector, a plain bare polished end or with a stainless steel ferrule.



Single Mode

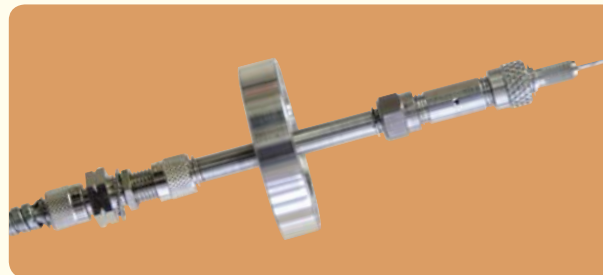
Single mode fibre optic feedthroughs, cables and associated accessories are available for use at the most common telecom wavelengths of 800nm - 900nm and 1300nm - 1550nm. In-vacuum cables are clad with CuBALL copper based alloy capable of withstanding higher temperatures than acrylate or polyimide coated fibres. CuBALL is better suited for use in UHV systems, where use of polyimide coated fibres can give rise to outgassing problems.

All fibres and cables are coupled using industry standard FC connectors. In-vacuum fibres can be supplied with the free end fitted with an FC connector or ready for user cleaving.



Multiple Fibre Feedthroughs

In addition to our standard range of single fibre feedthroughs, we can supply multiple fibres mounted onto single flanges. We can also manufacture bespoke flanges or plates for the mounting of fibre feedthroughs to suit your particular application.



All dimensions are nominal in millimetres unless otherwise specified

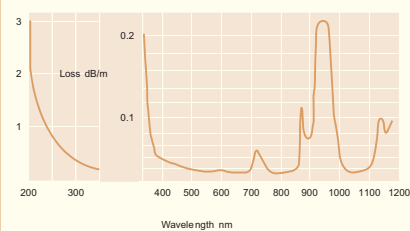


Features:

- Multimode step index fibres.
- UHV compatible materials & brazing.
- High purity silica core with doped silica cladding.
- Industry standard SMA-905 connectors.
- CuBALL fibre coating.
- Feedthrough transmission loss typically ≤ 2 dB.
- Maximum power transmission of Nd-YAG laser is $100\text{kW}/\text{cm}^2$ for continuous wave mode, $500\text{kW}/\text{cm}^2$ in pulses $< 1\mu\text{s}$.
- Range of fibre diameters, $400\mu\text{m}$, $600\mu\text{m}$ & $1000\mu\text{m}$.
- Core to cladding ratio - 1:1.06.

* - Assembly rating must be reduced to that of lowest rated component.

Attenuation - UV grade fibre



Specifications:

Transmission Range

UV	180nm to 1200nm
IR	500nm to 2600nm

Attenuation (typical)

UV 248nm KrF Laser	$< 1.2\text{dB}/\text{m}$
308nm XeCl Laser	$< 0.26\text{dB}/\text{m}$
IR 1.06 μm Nd-YAG Laser	$< 0.01\text{dB}/\text{m}$

Fibre Bend Radius

Short term	40 x Fibre radius
Long term	100 x Fibre radius

Numerical Aperture	0.22 ± 0.02
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Materials

Core	High purity synthetic silica
Cladding	Doped silica
Coating	CuBALL

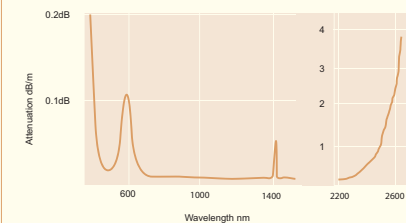
Vacuum Range

CF Flanged	atm to 1×10^{-10} mbar
KF Flanged	atm to 1×10^{-8} mbar

Temperature Range*

CF Flanged	-196 to 200°C
KF Flanged (Viton® seals)	-29 to 150°C
Cables	-196 to 200°C

Attenuation - IR grade fibre



400 μm Fibres



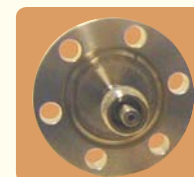
Fibre Diameter	Flange	Part Code	Price £	Price €
400 μm	DN16CF	FO-400-16CF	£345	€432
400 μm	DN40CF	FO-400-40CF	£348	€435
400 μm	DN16KF	FO-400-16KF	£339	€424
400 μm	DN25KF	FO-400-25KF	£339	€424
400 μm	DN40KF	FO-400-40KF	£341	€427

600 μm Fibres



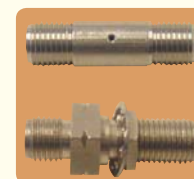
Fibre Diameter	Flange	Part Code	Price £	Price €
600 μm	DN16CF	FO-600-16CF	£354	€443
600 μm	DN40CF	FO-600-40CF	£357	€447
600 μm	DN16KF	FO-600-16KF	£348	€435
600 μm	DN25KF	FO-600-25KF	£348	€435
600 μm	DN40KF	FO-600-40KF	£349	€437

1000 μm Fibres

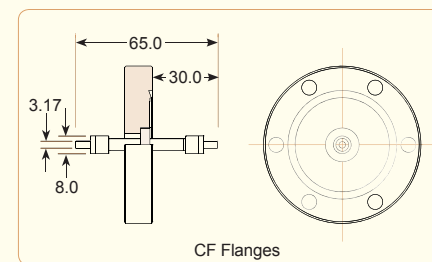


Fibre Diameter	Flange	Part Code	Price £	Price €
1000 μm	DN16CF	FO-1000-16CF	£387	€484
1000 μm	DN40CF	FO-1000-40CF	£390	€488
1000 μm	DN16KF	FO-1000-16KF	£381	€477
1000 μm	DN25KF	FO-1000-25KF	£381	€477
1000 μm	DN40KF	FO-1000-40KF	£383	€479

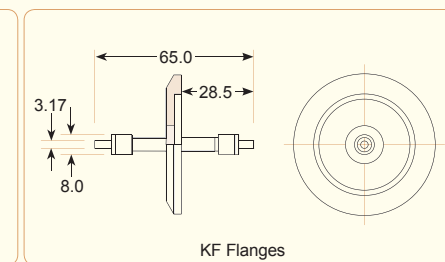
Couplers



Type	Part Code	Price £	Price €
In-vacuum	FO-SMAC-V	£14	€18
Air Service	FO-SMAC-A	£11	€14



CF Flanges



KF Flanges

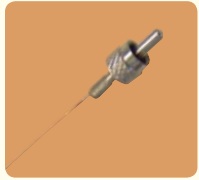
All feedthroughs are manufactured using UV fibre as standard, as transmission losses over the length of the fibre within the feedthrough are negligible at all wavelengths. Feedthroughs with IR fibre can be supplied to special order if required.

All dimensions are nominal in millimetres unless otherwise specified

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In-vacuum Cables - Multimode Step Index, SMA

400µm Fibres



Range	Length	Terminations	Part Code	Price £	Price €
UV	300	SMA - Ferrule	FO-UV400VC-300S	£255	€ 319
UV	600	SMA - Ferrule	FO-UV400VC-600S	£270	€ 338
UV	900	SMA - Ferrule	FO-UV400VC-900S	£285	€ 357
UV	300	SMA - SMA	FO-UV400VC-300D	£255	€ 319
UV	600	SMA - SMA	FO-UV400VC-600D	£270	€ 338
UV	900	SMA - SMA	FO-UV400VC-900D	£285	€ 357
IR	300	SMA - Ferrule	FO-IR400VC-300S	£255	€ 319
IR	600	SMA - Ferrule	FO-IR400VC-600S	£270	€ 338
IR	900	SMA - Ferrule	FO-IR400VC-900S	£285	€ 357
IR	300	SMA - SMA	FO-IR400VC-300D	£255	€ 319
IR	600	SMA - SMA	FO-IR400VC-600D	£270	€ 338
IR	900	SMA - SMA	FO-IR400VC-900D	£285	€ 357

600µm Fibres

Range	Length	Terminations	Part Code	Price £	Price €
UV	300	SMA - Ferrule	FO-UV600VC-300S	£266	€ 333
UV	600	SMA - Ferrule	FO-UV600VC-600S	£282	€ 353
UV	900	SMA - Ferrule	FO-UV600VC-900S	£299	€ 374
UV	300	SMA - SMA	FO-UV600VC-300D	£266	€ 333
UV	600	SMA - SMA	FO-UV600VC-600D	£282	€ 353
UV	900	SMA - SMA	FO-UV600VC-900D	£299	€ 374
IR	300	SMA - Ferrule	FO-IR600VC-300S	£266	€ 333
IR	600	SMA - Ferrule	FO-IR600VC-600S	£282	€ 353
IR	900	SMA - Ferrule	FO-IR600VC-900S	£299	€ 374
IR	300	SMA - SMA	FO-IR600VC-300D	£266	€ 333
IR	600	SMA - SMA	FO-IR600VC-600D	£282	€ 353
IR	900	SMA - SMA	FO-IR600VC-900D	£299	€ 374

1000µm Fibres

Range	Length	Terminations	Part Code	Price £	Price €
UV	300	SMA - Ferrule	FO-UV1000VC-300S	£291	€ 364
UV	600	SMA - Ferrule	FO-UV1000VC-600S	£315	€ 394
UV	900	SMA - Ferrule	FO-UV1000VC-900S	£345	€ 432
UV	300	SMA - SMA	FO-UV1000VC-300D	£291	€ 364
UV	600	SMA - SMA	FO-UV1000VC-600D	£315	€ 394
UV	900	SMA - SMA	FO-UV1000VC-900D	£345	€ 432
IR	300	SMA - Ferrule	FO-IR1000VC-300S	£291	€ 364
IR	600	SMA - Ferrule	FO-IR1000VC-600S	£315	€ 394
IR	900	SMA - Ferrule	FO-IR1000VC-900S	£345	€ 432
IR	300	SMA - SMA	FO-IR1000VC-300D	£291	€ 364
IR	600	SMA - SMA	FO-IR1000VC-600D	£315	€ 394
IR	900	SMA - SMA	FO-IR1000VC-900D	£345	€ 432

All dimensions are nominal in millimetres unless otherwise specified

Air Service Cables - Multimode Step Index, SMA

400µm Fibres



Range	Length	Terminations	Part Code	Price £	Price €
UV	1000	SMA - SMA	FO-UV400AC-1M	£153	€ 192
UV	5000	SMA - SMA	FO-UV400AC-5M	£228	€ 285
UV	10000	SMA - SMA	FO-UV400AC-10M	£321	€ 402
IR	1000	SMA - SMA	FO-IR400AC-1M	£153	€ 192
IR	5000	SMA - SMA	FO-IR400AC-5M	£228	€ 285
IR	10000	SMA - SMA	FO-IR400AC-10M	£321	€ 402

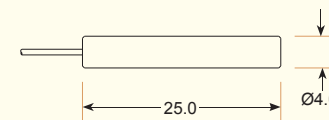
600µm Fibres

Range	Length	Terminations	Part Code	Price £	Price €
UV	1000	SMA - SMA	FO-UV600AC-1M	£165	€ 207
UV	5000	SMA - SMA	FO-UV600AC-5M	£267	€ 334
UV	10000	SMA - SMA	FO-UV600AC-10M	£416	€ 520
IR	1000	SMA - SMA	FO-IR600AC-1M	£165	€ 207
IR	5000	SMA - SMA	FO-IR600AC-5M	£267	€ 334
IR	10000	SMA - SMA	FO-IR600AC-10M	£416	€ 520

1000µm Fibres

Range	Length	Terminations	Part Code	Price £	Price €
UV	1000	SMA - SMA	FO-UV1000AC-1M	£199	€ 249
UV	5000	SMA - SMA	FO-UV1000AC-5M	£458	€ 573
UV	10000	SMA - SMA	FO-UV1000AC-10M	£780	€ 975
IR	1000	SMA - SMA	FO-IR1000AC-1M	£199	€ 249
IR	5000	SMA - SMA	FO-IR1000AC-5M	£458	€ 573
IR	10000	SMA - SMA	FO-IR1000AC-10M	£780	€ 975

Standard Ferrule



In-vacuum cables can also be supplied with plain bare polished fibre end if required.

Both in-vacuum and air service cables can be supplied with standard or user specific ferrule termination, or alternative industry standard connectors.

Cables can also be supplied in customer specific lengths to special order.

Please contact our sales office for further details.

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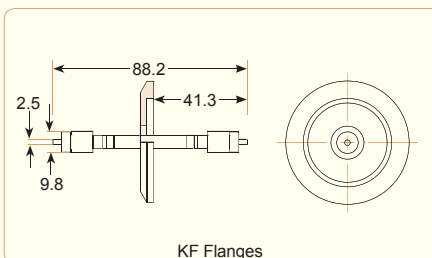
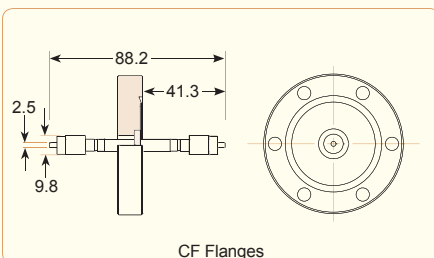
Feedthroughs - Single Mode, FC



Features:

- Single mode fibres.
- Cladding diameter of 125µm.
- UHV compatible materials†.
- Specialist epoxy seal to minimise outgassing†.
- High purity silica core with acrylate cladding.
- Industry standard FC/PC connectors.
- CuBALL fibre coating.
- Feedthrough transmission loss typically ≤0.5dB
- 1300-1550nm & 800-900nm fibres available.
- Cut off wavelengths of 1172nm & 770nm.

† Feedthroughs contain small amount of specialist epoxy resin.
* - Assembly rating must be reduced to that of lowest rated component.



Specifications:

Transmission Range

1300nm to 1550nm
800nm to 900nm

Attenuation (fibre)

1300nm-1550nm fibre <2dB/km
800nm-900nm fibre <5dB/km

Fibre Bend Radius

Short term 40 x Fibre radius
Long term 100 x Fibre radius

Materials

Core High purity synthetic silica
Cladding Acrylate
Coating CuBALL

Vacuum Range

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

Temperature Range*

CF Flanged -196 to 200°C
KF Flanged (Viton® seals) -29 to 150°C
Cables -196 to 200°C

1300 - 1550nm



Wavelength	Flange	Part Code	Price £	Price €
1300-1550nm	DN16CF	FO-SM1300-16CF	£354	€443
1300-1550nm	DN40CF	FO-SM1300-40CF	£357	€447
1300-1550nm	DN16KF	FO-SM1300-16KF	£348	€435
1300-1550nm	DN25KF	FO-SM1300-25KF	£348	€435
1300-1550nm	DN40KF	FO-SM1300-40KF	£350	€438

800 - 900nm



Wavelength	Flange	Part Code	Price £	Price €
800-900nm	DN16CF	FO-SM800-16CF	£354	€443
800-900nm	DN40CF	FO-SM800-40CF	£357	€447
800-900nm	DN16KF	FO-SM800-16KF	£348	€435
800-900nm	DN25KF	FO-SM800-25KF	£348	€435
800-900nm	DN40KF	FO-SM800-40KF	£350	€438

Couplers



Type	Part Code	Price £	Price €
UHV	FO-FCC-V	£42	€53
HV / AIR	FO-FCC-A	£12	€15

In-vacuum Cables



Wavelength	Terminations	Length	Part Code	Price £	Price €
1300-1550nm	FC - FC	300	FO-SM1300VC-300	£266	€333
1300-1550nm	FC - FC	600	FO-SM1300VC-600	£282	€353
1300-1550nm	FC - FC	900	FO-SM1300VC-900	£299	€374
800 - 900nm	FC - FC	300	FO-SM800VC-300	£266	€333
800 - 900nm	FC - FC	600	FO-SM800VC-600	£282	€353
800 - 900nm	FC - FC	900	FO-SM800VC-900	£299	€374

Air Service Cables



Wavelength	Terminations	Length	Part Code	Price £	Price €
1300-1550nm	FC - FC	1000	FO-SM1300AC-1M	£153	€192
1300-1550nm	FC - FC	5000	FO-SM1300AC-5M	£197	€247
1300-1550nm	FC - FC	10000	FO-SM1300AC-10M	£243	€304
800 - 900nm	FC - FC	1000	FO-SM800AC-1M	£153	€192
800 - 900nm	FC - FC	5000	FO-SM800AC-5M	£197	€247
800 - 900nm	FC - FC	10000	FO-SM800AC-10M	£243	€304

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