

## 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

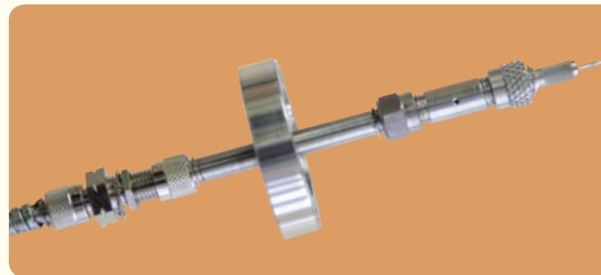
Single mode fibre optic feedthroughs, cables and associated accessories are available for use at the most common telecom wavelengths of 800nm - 900nm and 1300nm - 1550nm. In-vacuum cables are clad with CuBALL copper based alloy capable of withstanding higher temperatures than acrylate or polyimide coated 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

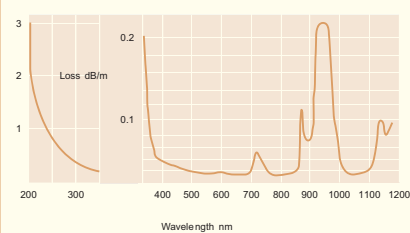


### Features:

- 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  $\leq 2$ 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 $\mu\text{m}$ 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	$0.22 \pm 0.02$
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#### Materials

Core	High purity synthetic silica
Cladding	Doped silica
Coating	CuBALL

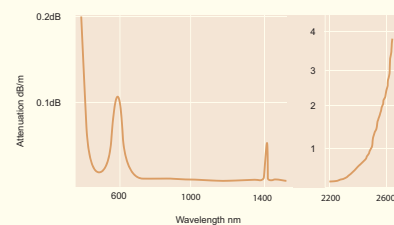
#### Vacuum Range

CF Flanged	atm to $1 \times 10^{-10}$ mbar
KF Flanged	atm to $1 \times 10^{-8}$ 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 $\mu\text{m}$ Fibres



Fibre Diameter	Flange	Part Code	Price £	Price €
400 $\mu\text{m}$	DN16CF	FO-400-16CF	£345	€432
400 $\mu\text{m}$	DN40CF	FO-400-40CF	£348	€435
400 $\mu\text{m}$	DN16KF	FO-400-16KF	£339	€424
400 $\mu\text{m}$	DN25KF	FO-400-25KF	£339	€424
400 $\mu\text{m}$	DN40KF	FO-400-40KF	£341	€427

### 600 $\mu\text{m}$ Fibres



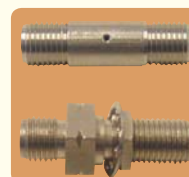
Fibre Diameter	Flange	Part Code	Price £	Price €
600 $\mu\text{m}$	DN16CF	FO-600-16CF	£354	€443
600 $\mu\text{m}$	DN40CF	FO-600-40CF	£357	€447
600 $\mu\text{m}$	DN16KF	FO-600-16KF	£348	€435
600 $\mu\text{m}$	DN25KF	FO-600-25KF	£348	€435
600 $\mu\text{m}$	DN40KF	FO-600-40KF	£349	€437

### 1000 $\mu\text{m}$ Fibres

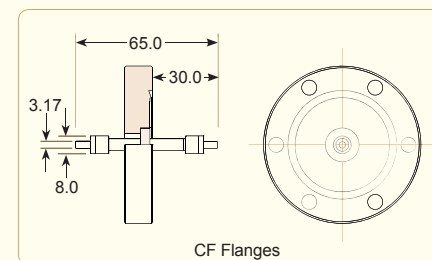


Fibre Diameter	Flange	Part Code	Price £	Price €
1000 $\mu\text{m}$	DN16CF	FO-1000-16CF	£387	€484
1000 $\mu\text{m}$	DN40CF	FO-1000-40CF	£390	€488
1000 $\mu\text{m}$	DN16KF	FO-1000-16KF	£381	€477
1000 $\mu\text{m}$	DN25KF	FO-1000-25KF	£381	€477
1000 $\mu\text{m}$	DN40KF	FO-1000-40KF	£383	€479

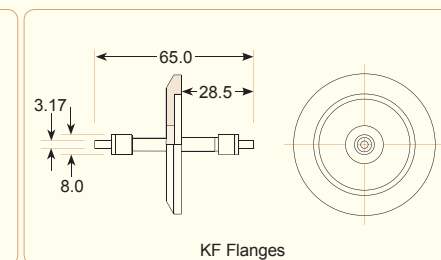
### Couplers



Type	Part Code	Price £	Price €
In-vacuum	FO-SMAC-V	£16	€20
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.

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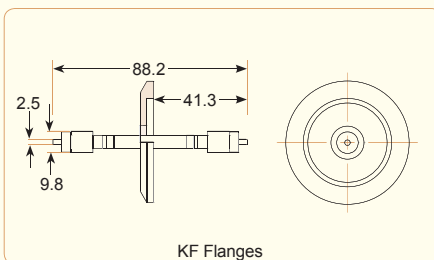
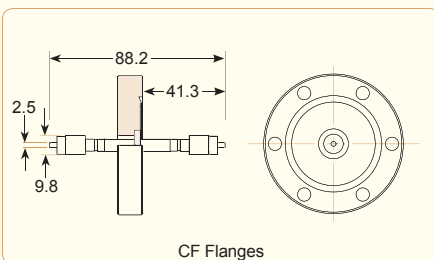
## Feedthroughs - Single Mode, FC



## 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<sup>-10</sup>mbar  
KF Flanged atm to 1x10<sup>-8</sup>mbar

## 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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