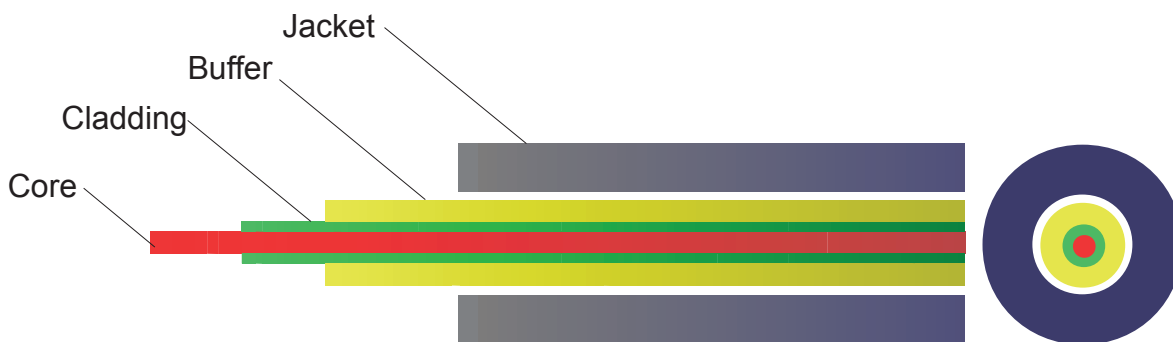


Fiber-optic cables for optogenetics

Patch cords

A fiber-optic patch cord connects two distant fiber optic ends and uses the same type of fiber and connections as the tips of the respective fibers it connects. In the context of optogenetics experiments with the rotary joint, a fiber optic patch cord is needed to connect the light source and the rotary joint and yet another patch cord to connect the rotary joint and the fiber-optic cannula.

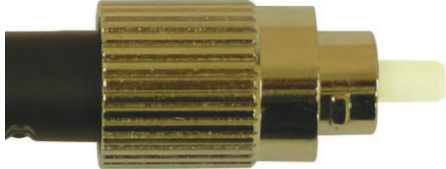





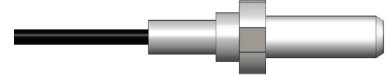




Structure of a patch cord



The **core** and the **cladding** are two layers that make up the lightguide. However, the light travels inside the core of the fiber-optic, barely or not inside the cladding. For this reason, interconnected fiber-optics should have the same core diameter. Different cladding diameters have no influence on the coupling efficiency.

The **buffer** is a protective layer that tightly encircles the cladding. For patch cords, we usually recommend the use of another protective layer, called **jacket**, which is a loose tube covering the previously mentioned layers of the cable.

Table 4: Termination codes for patch cords

Description	Picture	Termination code
FC/PC connector		FC
SMA905 connector		SMA
Zirconia ferrule OD=1.25mm		ZF1.25
Zirconia ferrule OD=1.25mm with flange		ZF1.25(F)
Metal ferrule OD=1.25mm		MF1.25
Zirconia ferrule OD=2.5mm		ZF2.5
Zirconia ferrule OD=2.5mm with flange		ZF2.5(F)
Metal ferrule OD=2.5mm		MF2.5
Rectangular magnetic connector		RMC
M3 connector		CM3
M3 connector – peek plastic		CM3(P)

Optical fibers for patch cords

Table 5: Silica multimode optical fibers

Core	Cladding	Outer diameter		Numerical Aperture	Fiber-optic code
		Buffer	Jacket		
50	125	250	900	0.22	50/125/900-0.22
62.5	125	250	900	0.27	62.5/125/900-0.27
100	110	125	900	0.22	100/110/900-0.22
100	110	125	900	0.37	100/110/900-0.37
100	110	500	900	0.44	100/110/900-0.44
105	125	250	900	0.22	105/125/900-0.22
200	220	245	900	0.37	200/220/900-0.37
200	220	500	900	0.53	200/220/900-0.53
200	220	240	900	0.22	200/220/900-0.22
200	240	400	900	0.22	200/240/900-0.22
200	230	500	900	0.37	200/230/900-0.37
200	230	500	900	0.48	200/230/900-0.48
300	330	370	900	0.22	300/330/900-0.22
300	330	650	1000	0.37	300/330/1000-0.37
300	330	650	1000	0.48	300/330/1000-0.48
400	440	480	900	0.22	400/440/900-0.22
400	430	730	1100	0.37	400/430/1100-0.39
400	430	730	1100	0.48	400/430/1100-0.48

Table 6: Plastic optical fibers

Core	Cladding	Outer diameter		Numerical Aperture	Fiber-optic code
		Buffer	Jacket		
240	250	1000	-	0.50	240/250/1000-0.50
480	500	1000	-	0.50	480/500/1000-0.50
960	1000	2200	-	0.50	960/1000/2200-0.50
1480	1500	3000	-	0.50	1480/1500/3000-0.50

Unless otherwise specified, the patch cords are black.

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For better fiber protection, we also offer larger jackets made of PVC tubing. In this case, we use the following color convention, or we can use the black jacket if preferred.

Table 7: Alternative jackets for patch cords

Jacket color	Fiber core diameter (µm)	Alternative fiber-optic codes	
		PVC jacket OD 2mm	PVC jacket OD 3mm
Red	50	50/125/2000-0.22	50/125/3000-0.22
Green	100 or 105	100/□□□/2000-□□□ or 105/125/2000-0.22	100/□□□/3000-□□□ or 105/125/3000-0.22
Dark blue	200	200/□□□/2000-□□□	200/□□□/3000-□□□
Light blue	300	300/□□□/2000-□□□	300/□□□/3000-□□□
Orange	400	400/□□□/2000-□□□	400/□□□/3000-□□□
Yellow	600	600/□□□/2000-□□□	600/□□□/3000-□□□

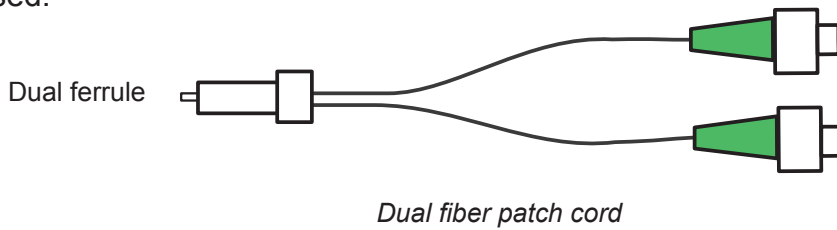
Metal jacket or jackets made of other materials are also available on request.

Dual Fiber Patch cords

A dual fiber patch cord has two fiber-optic strands within the jacket, where the fiber ends are inserted into mono or dual fiber ferrules or connectors.

Some dual fiber patch cords were especially designed to easily bring the light from the two optical channels of the 1x2 rotary joint into a dual fiber cannula.

There are several types of dual fiber patch cords, depending on the type of connectors and cannulas used.



ORDERING CODE: DFP / / - - 2

Fiber-optic code
See *Table 5* and *Table 6* for available codes

Fiber length (m)
(From ferrule tip to ferrule tip)

Termination code : Single connector side
See *Table 8* for available codes

Termination Code: Two connectors side
See *Table 4* for available codes

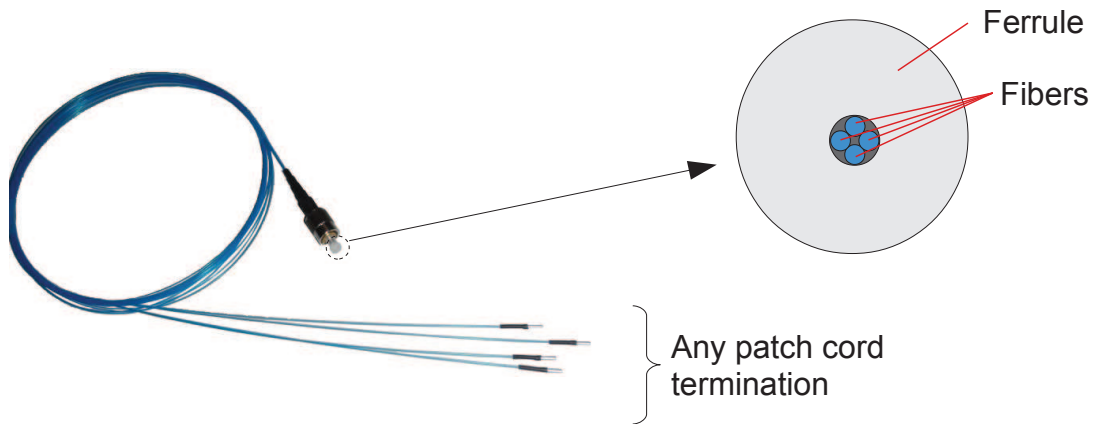
Table 8: Termination codes for patch cords for dual fiber patch cord (single connector side)

Description	Picture	Termination code
Dual ferrule with pitch 0.7mm -Titanium		DF0.7
Dual ferrule with pitch 1.0mm - Titanium		DF1.0
Dual ferrule with pitch 1.2mm - Titanium		DF1.2
Dual ferrule with pitch 1.5mm -Titanium		DF1.5

Branching Fiber Patch cords (1xN)

A branching fiber patch cord has multiple fiber-optic strands within the jacket, where the fiber ends are inserted into mono or multiple fiber ferrules or connectors.

We offer fiber-optic patch cords that branch from one input to N output connectors. These patch cords have a single connector on one end (choose between FC, SMA, M3, zirconia or metal ferrule,...), and several distinct fibers on the other end. The optical power is equally divided between the channels.



Connects to:

- »Fiber with a larger core diameter
- »LED source

ORDERING CODE: BFP_ / / - - - x

Fiber-optic code _____
See *Table 5* and *Table 6* for available codes

Fiber length (m) _____
(From ferrule tip to ferrule tip)

Termination code : Single connector side _____
See *Table 4* for available codes

Number of branches _____

Termination Code: Multiple connectors side _____
See *Table 4* for available codes