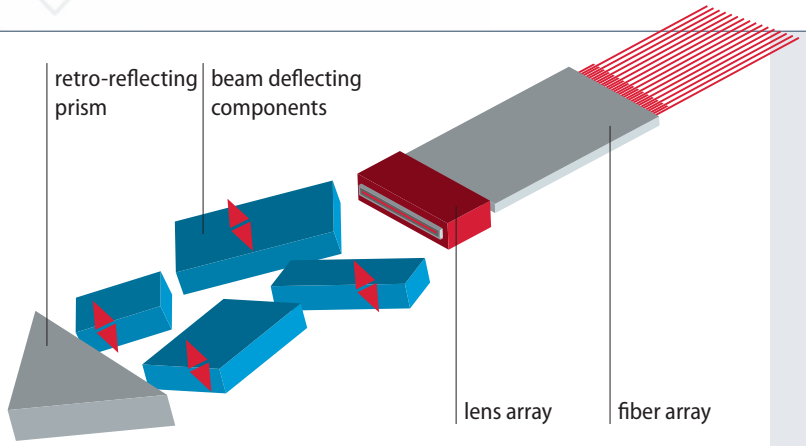
FiberSwitch®

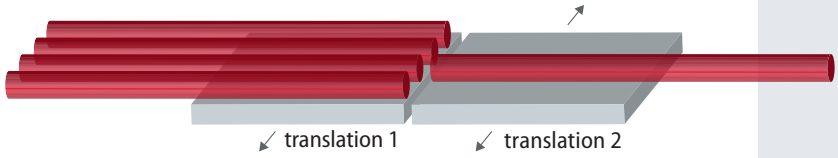
Fiber optical singlemode and multimode switches

Product description

The fiber optical switches from LEONI are based on a unique patented micro-mechanical / microoptical concept. For various applications they provide excellent parameters, high flexibility and long term stability. The switches are available for a broad wavelength range from the Ultraviolet to Infrared and can be fabricated with practically all possible fiber types.



Schematic diagram of a fiber optical singlemode switch 1×16



Schematic diagram of a fiber optical multimode switch 1×4

Optical parameters

- Low insertion loss
- Low polarization dependent loss (PDL) for eol series
- Excellent repeatability
- High optical isolation
- Ultra low back reflection (eol series)
- Very broad spectral ranges
- Short switching times down to 2.0 ms

Housing properties

- Compact rugged metal housing
- Flexible housing options available (compact with pigtails; table top or 19" rack mounts)
- In house optical connectorization
- Low power consumption
- Integrated microcontroller with several electrical interfaces serves for flexible switch control options

Reliability

- Excellent environmental stability, tested acc. to Telcordia GR-1073
- High long-term stability: > 10^8 switching cycles for both eol and mol series

Application & technology

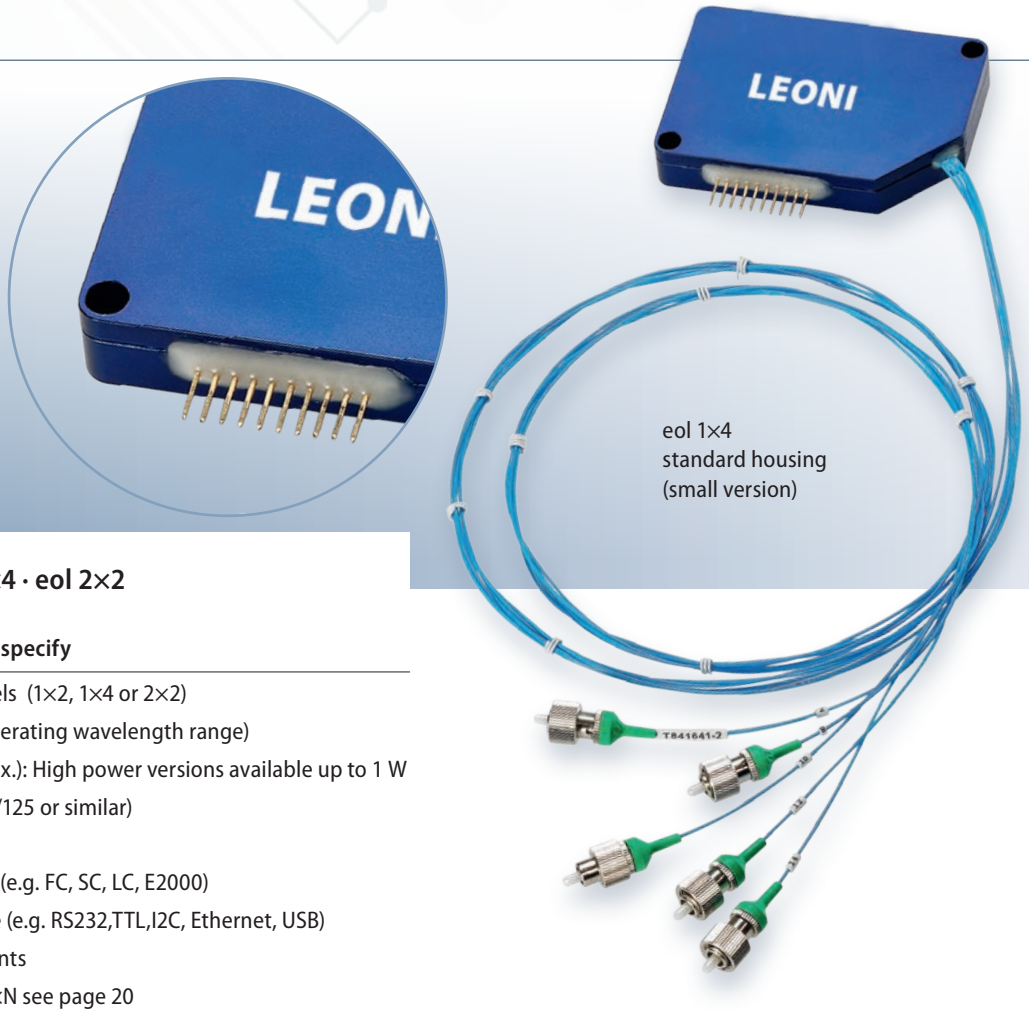
LEONI´s fiber optical switches are mainly used for high demanding applications in telecommunications, optical measurement and test systems, industrial production and process control, as well as in biomedical section. Examples for such applications are laser guiding systems for confocal fluorescence microscopy and laser scanning microscopy, fiber optic strain and temperature sensors for pipelines, bridges, tunnels etc., fiber optical measurement systems for environmental monitoring and also test equipment of optoelectronic devices in their production chain.

- Redundant GPON networks
- Line monitoring and tracing (measurement)
- By-pass solutions
- Full matrix switches

Optical technologies and LEONI

The Business Unit Fiber Optics of the LEONI Group is one of the leading manufacturers of fiber optics for special applications in the industrial and energy sector, in communications, transportation, Life Science and optical metrology. LEONI Fiber Optics offers a unique product portfolio at every stage of the value-added chain: from the fused silica to preforms and drawn fibers up to fiber optic cables and complete fiber optic systems with in-house developed optical components such as optical switches, splitters and couplers. Having sites in Europe, the USA and Asia, production and services are within easy reach of clients and markets.

FiberSwitch® Fiber optical singlemode switches



eol 1×2 · eol 1×4 · eol 2×2

For requests please specify

- Number of channels (1×2, 1×4 or 2×2)
- Spectral range (operating wavelength range)
- Optical power (max.): High power versions available up to 1 W
- Fiber type (e.g. E9/125 or similar)
- Pigtail length (m)
- Connector type(s) (e.g. FC, SC, LC, E2000)
- Electrical interface (e.g. RS232,TTL,I2C, Ethernet, USB)
- Special requirements
- Switch versions 2×N see page 20

Spectral range		VIS	NIR I	NIR II	IR
Specifications					
Operating wavelength	[nm]	400 – 670	600 – 850	900 – 1200	1260 – 1380 1480 – 1650
max. insertion loss (typ.)	[dB]	2…2.5	1.4 (0.9)	1.4 (0.9)	1.0 (0.7)
Return loss	[dB]	> 40 (> 55 *)	> 55	> 60	> 60
Crosstalk	[dB]	≤ –55			
Repeatability	[dB]	≤ 0.01	≤ 0.01	≤ 0.01	≤ 0.005
Polarization dependent loss PDL	[dB]	≤ 0.05			
Switching times	[ms]	≤ 5			
Guaranteed lifetime	[switching cycles]	> 10^8			
Switching frequency	[s^{-1}]	≤ 30			
Operating voltage	[V]	5 (+/–10 %)			
Power consumption	[mW]	< 450			
Operating temperature	[°C]	0 up to +60			
Storage temperature	[°C]	–40 up to +80			
Housing dimensions	[mm]	standard large (124 × 56 × 13)		standard small (75 × 50 × 13)	
Housing options*		Alu Compact table top, 19" rack; different sizes on request			

* on request

FiberSwitch® Fiber optical singlemode switches

eol 1×12
standard housing
(large version)

eol 1×8 · eol 1×12 · eol 1×16 · eol 2×4 · eol 2×8

For requests please specify

- Number of channels (1×8, 1×12, 1×16, 2×4 or 2×8; other channel counts on request)
- Spectral range (operating wavelength range)
- Optical power (max.): High power versions available up to 1 W
- Fiber type (e.g. E9/125 or similar)
- Pigtail length (m)
- Connector type(s) (e.g. FC, SC, LC, E2000)
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Housing dimensions	[mm]	standard large (124 × 56 × 13)			
Housing options		Alu Compact table top, 19" rack; different sizes on request			

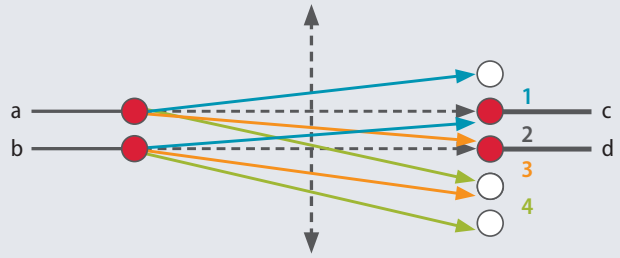
* For eol 1×16: max. insertion loss is 1.5 dB for IR version and 2.0 dB for all other versions

Switching principles of fiber optical switches

eol 2×N · mol 2×N

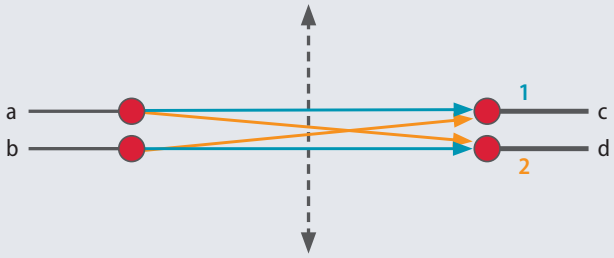
Version 1

eol 2×2 · mol 2×2 (4 switch positions)



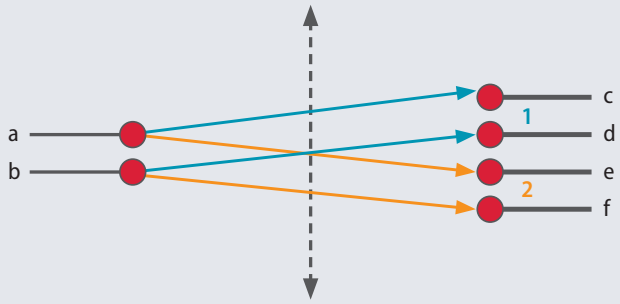
Version 2

eol 2×2 · mol 2×2 (2 switch positions)



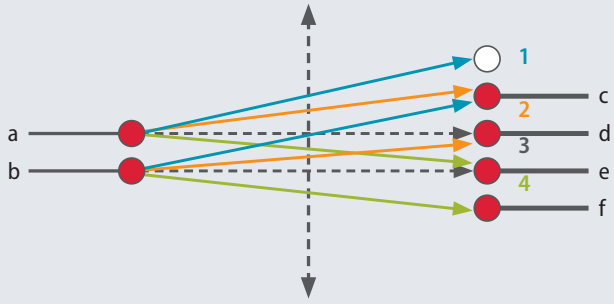
Version 3

eol 2×4 · mol 2×4 (2 switch positions)



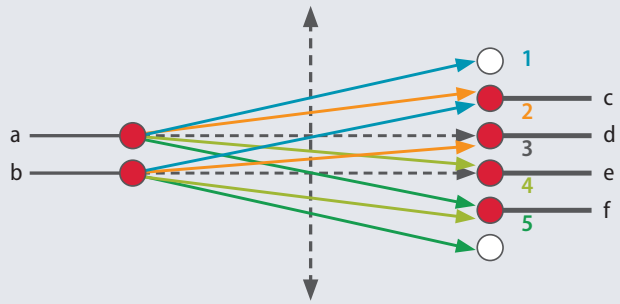
Version 4

eol 2×4 · mol 2×4 (4 switch positions)



Version 5

eol 2×4 · mol 2×4 (5 switch positions)



further configurations on request

Version 6

eol 2×8 (9 switch positions)