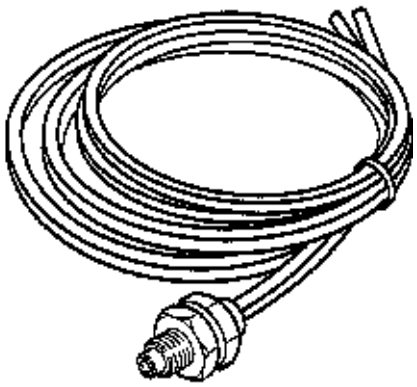
# Fibre-optic cable
# SOEZ-LLK-RT-2,0-M6

Optoelectronic sensors



Optoelectronic sensors

Variants
Size
- M12x1 external thread
- M18x1 external thread
- Rectangular design

- Voltage: 10 ... 30 V DC
- Choice of NPN or PNP output
- Plug or cable connection

- Diffuse light sensor, cylindrical or rectangular design

- Retro-reflective sensors, cylindrical or rectangular design
- Reflectors

- Through-beam sensors, cylindrical or rectangular design

- Fibre optic units, rectangular design
- Fibre optic cables

Features
- Ranges to 6000 mm
- IP 65 protection

Accessories:
- Mounting bracket for optical sensors with rectangular design

- Cutting tool SOES-LKS for polymer fibre optic cable
The fibre optic cable is guided within the cutter to ensure a clean, right-angle cutting surface, thus keeping light losses to a minimum. In
order to obtain the highest-quality cuts, each hole should be used once only.

Sensor tester SM-TEST-1
The sensor tester is used to test and adjust sensors and proximity switches. The sensor tester facilitates commissioning and service work.
- Voltage supply for testing operation of proximity switches
- Adjustment of proximity switches while attached to cylinders
- Identification of switching outputs of proximity switches and sensors with PNP, NPN, NC and NO functions by means of



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the appropriate
LED.

Retro-reflective sensors
Sensors are equipped with polarizing filters, assuring that they only respond to light returned by special reflectors. These are based upon
the triple mirror principle. The choice of the most suitable reflector for a given application is governed by the required working range and
available mounting facilities

.Fibre optic cable
A fibre optic cable can consist of a bundle of glass fibres, or one or more plastic fibres. The function of a fibre optic cable is to guide light
from one place to another, even around corners. This is made possible by exploiting the phenomenon of total internal reflection. Total
internal reflection occurs whenever light from a material with a high refractive index impinges on the boundary between this material, and
a medium with a lower refractive index at an angle less than the maximum angle for total internal reflection. The fibres consist of a core
(with a high refractive index) and a sheath (with a low refractive index). Light is constantly reflected back and forth within this
construction as a result of total internal reflection, and is thus even able to traverse curved paths.

Installation
Optoelectronic sensors must not be allowed to interfere with each other's operation. A certain minimum distance must be maintained
between sensors. This distance depends principally on the sensitivity to which the sensors have been set. For sensors fitted with fibre
optic cables, the distance is heavily dependent upon the type of utilised fibre optic cable.

Alignment
Through-beam sensors
- First position the receiver as desired and secure it.
- Then align the transmitter as accurately as possible to the



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receiver.

Retro-reflective sensors
- First position the reflector as desired and secure it.
- Cover the reflector so that only the centre remains exposed (25% of reflector's surface area).
- Install the retro-reflective sensor such that reliable switching operation is obtained.
- Finally, remove the cover from the reflector.

Diffuse sensors
- Align the sensor to the object to be scanned such that reliable operation is obtained.
- In order to obtain reliable operation, the operating reserve must be active.

Operating reserve
Operating reserve is a measure of the excess radiant energy which falls onto the light-gathering surface, and is evaluated by the light
receiver. Operating reserve may diminish over a period of time due to contamination, changing reflection factor of the object to be
scanned and ageing of the transmitter diode, so that reliable operation is no longer assured.
Certain sensors are equipped with a second LED (green) which lights up when approx. 80% of the sensor's available working range is
being utilised. With certain other sensors, a yellow LED flashes when available operating reserve is insufficient. This allows for prompt
recognition of inadequate operating reliability.
Operating reserve switching hysteresis

Correction factors
The specified working ranges for diffuse sensors are determined using test cards (Kodak Gray Cards). For other surfaces, the switching
point should be determined by applying the listed correction factors.

Working range
The specified working range is the maximum possible distance between the transmitter and receiver (through-beam sensor). To obtain



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this maximum, the potentiometer must be set to MAX and the specified reflector (retro-reflective sensor) must be used.

Switching functions
Dark switching
A “dark switching” function means that the respective output conducts current (i.e. is activated) when no light strikes the receiver. This is
equivalent to a normally closed function (NC).

Light switching
A “light switching” function means that the respective output conducts current (i.e. is activated) when light strikes the receiver. This is
equivalent to a normally open function (NO).

Parallel connection
It is possible to connect optoelectronic sensors in parallel to obtain any desired logic functions.
- Current consumption increases
- Inverse currents are cumulative, with the result that impermissibly large voltage drops may occur across the load even if the sensors are
non-conductive.



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# SOEZ-LLK-RT-2,0-M6

Fibre-optic cable

Data sheet

Part no.: 165358



| Feature | Data/description |
|---|---|
| Signal processing (measuring principle) | **red light** |
| Switch triggering | **Reflex** |
| Function on actuation | **Polymer fibre optic cable** |
| Coverage range max. | **120 mm** |
| Minimum ambient temperature | **-40 °C** |
| Maximum ambient temperature | **70 °C** |
| Mounting thread | **M 6** |
| Material of housing | **brass** |
| Product weight | **0,02 kg** |
| Coating of housing | **Nickel-plated** |
| Degree of protection | **IP65** |



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