D-LAS Series

D-LAS3-...

- Visible laser beam (<0.4 mW, 670 nm), **laser class 1**
- Various apertures available
- Receiver aperture alternatively with collecting lense or with particular lense for more accurate switching point
- Interference filter
- High reproducibility (in the µm-range)
- Switching output (npn or pnp)
- Sturdy housing made of brass, nickel-plated
- Optics cover made of glass
- Compact M8-housing

Design

Product name:

Transmitter:
D-LAS3-(aperture)*-T

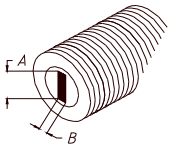
Receiver (standard version):
= with collecting lense, aligned to transmitter aperture
D-LAS3-Q-(aperture)*-R
D-LAS3-Qinv-(aperture)*-R

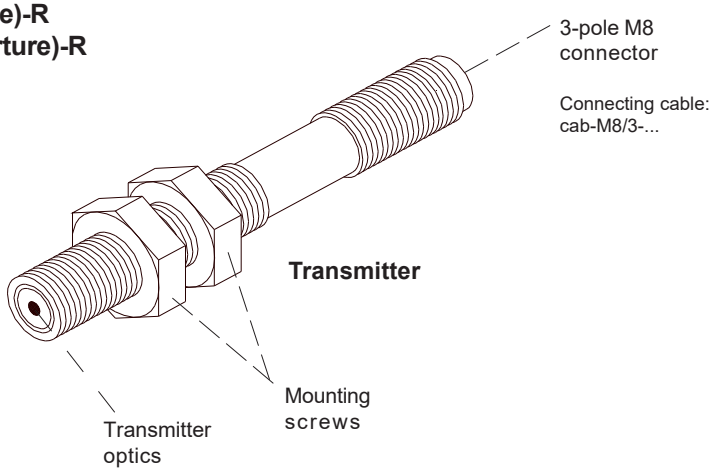
Empfänger (Sonderversion A):
= with particular receiver aperture,aligned to reference transmitter aperture
D-LAS3-Q-A-(receiver aperture)*-(reference transm. aperture)-R
D-LAS3-Qinv-A-(receiver aperture)*-(reference transm. aperture)-R

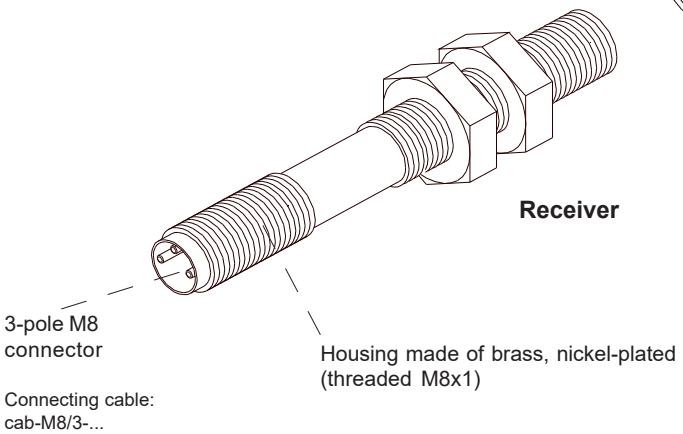
Q = Switching output:
npn dark-switching (npn n.o.)/
pnp bright-switching (pnp n.c.)
Qinv = Switching output:
pnp dark-switching (pnp n.o.)/
npn bright-switching (npn n.c.)

***Available apertures:**

Round (Ø in mm):	Rectangular (AxB in mm):
d0.15	0.3x0.5
d0.3	0.3x1
d0.5	0.3x1.5
d0.7	0.5x1
d1.0	0.75x2
d2.0	1x2







Technical Data

Type	D-LAS3
Laser	Solid state laser, 670 nm, AC operation, <0.4 mW opt. power, laser class 1 acc. to DIN EN 60825-1. The use of these laser transmitters therefore requires no additional protective measures.
Max. range	30 m (depends on the aperture used)
Min. detectable object	typ. 1% of aperture size
Reproducbility	typ. 1% of aperture size
Optical filter	Interference filter
Voltage supply	+24VDC (± 10%), protected against polarity reversal, overload protected
Alternating current/ direct current supply	AC operation (45 kHz)
Ambient light	up to 5000 Lux (depends on the aperture used)
Current consumption	Transmitter: typ. 50 mA Receiver: typ. 30 mA
Max. size of aperture	Round aperture: max. Ø 2.0 mm Rectangular aperture: max. 2 mm x 1 mm (Receiver special version A: receiver aperture is aligned to reference transmitter aperture)
Monitoring output	Analog output 0V...+10V (typ. 100 kHz band width)
Type of protection	IP67
Operating temperature range	-20°C up to +50°C
Storage temperature range	-20°C up to +85°C
Housing material	Brass, nickel-plated
Housing dimensions	Transmitter respectively receiver: M8x1, length approx. 66 mm
Connector type	M8, 3-pole (V2A-plug)
Max. switching current	100 mA, short-circuit-proof
EMC test acc. to	DIN EN 60947-5-2 CE
Switching frequency	typ. 1 kHz

Laser Information

The laser transmitters of D-LAS series comply with laser class 1 according to EN 60825-1. Under reasonably foreseeable conditions a class 1 laser is safe. The reasonably foreseeable conditions are kept during specified normal operation. The use of these laser transmitters therefore requires no additional protective measures.

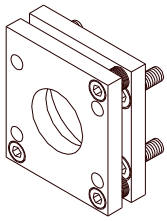
The laser transmitters of D-LAS series are supplied with an information label „CLASS 1 Laser Product“.

Mounting

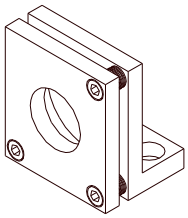
Mounting accessories:
(please order separately)

Mounting flange FL-8
Mounting flange WFL-8

FL-8



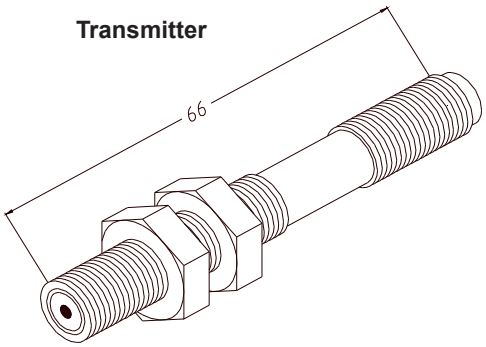
WFL-8



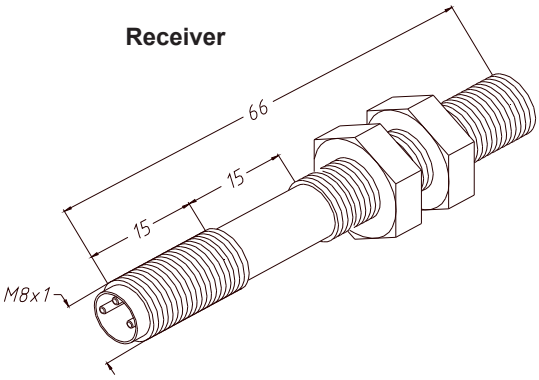
Dimensions

D-LAS3 transmitter
D-LAS3 receiver

Transmitter



Receiver



(All dimensions in mm)

Connector Assignment

Receiver
(3-pin M8-connector)

Type Q (npn dark-switching / pnp bright-switching):

Pin No.:	Color:	Assignment:
1	brn	+24VDC (± 10%)
3	blu	GND (0V)
4	blk	OUTPUT

Type Qinv (pnp dark-switching / npn bright-switching):

Pin No.:	Color:	Assignment:
1	brn	+24VDC (± 10%)
3	blu	GND (0V)
4	blk	OUTPUT INV

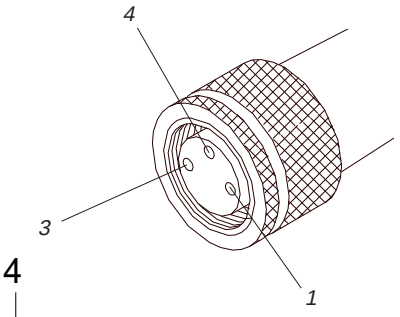
Transmitter
(3-pin M8-connector)

Pin No.:	Color:	Assignment:
1	brn	+24VDC (± 10%)
3	blu	GND (0V)
4	blk	SHIELD

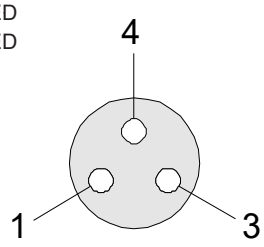
Connecting Cables

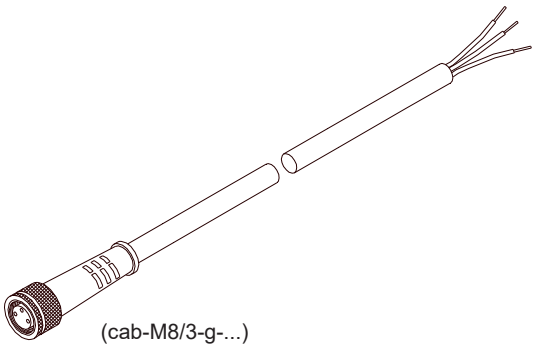
Availabe cable types:

cab-M8/3-g-2m	Length: 2m	Outer jacket: PUR	
cab-M8/3-g-5m	Length: 5m	Outer jacket: PUR	
cab-M8/3-w-2m	Length: 2m	Outer jacket: PUR	angle type
cab-M8/3-w-5m	Length: 5m	Outer jacket: PUR	angle type
cab-M8/3-w-npn-2m	Length: 2m	Outer jacket: PUR	angle type, LED
cab-M8/3-w-npn-5m	Length: 5m	Outer jacket: PUR	angle type, LED
cab-M8/3-w-pnp-2m	Length: 2m	Outer jacket: PUR	angle type, LED
cab-M8/3-w-pnp-5m	Length: 5m	Outer jacket: PUR	angle type, LED

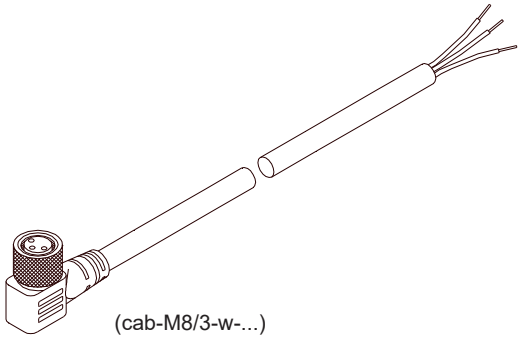


(3-pin M8 female connector)

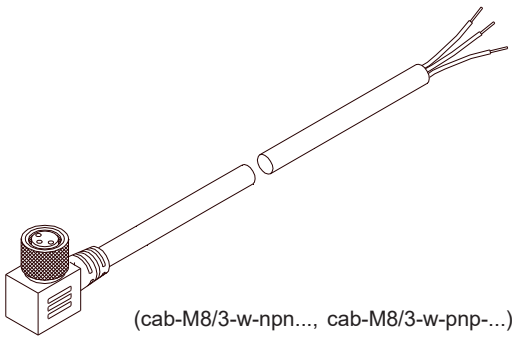




(cab-M8/3-g-...)



(cab-M8/3-w-...)



(cab-M8/3-w-npn..., cab-M8/3-w-pnp-...)

Characteristics

D-LAS Series - Laser Digital Light Barriers

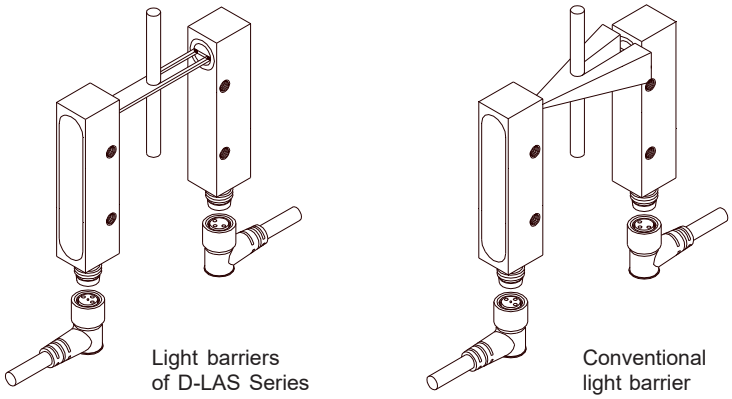
The laser digital light barriers of D-LAS Series work with visible parallel laser light.
The use of round or rectangular apertures ensures a homogeneous light distribution in the laser beam.
Smallest objects are detected even in case of a large transmitter/receiver distance. Dynamic correction of the switching threshold compensates the effect of dirt accumulation (with D-LAS1, D-LAS2, D-LAS34, D-LAS-34/90).

These light barriers are ideal for positioning tasks.

Collimated laser beam

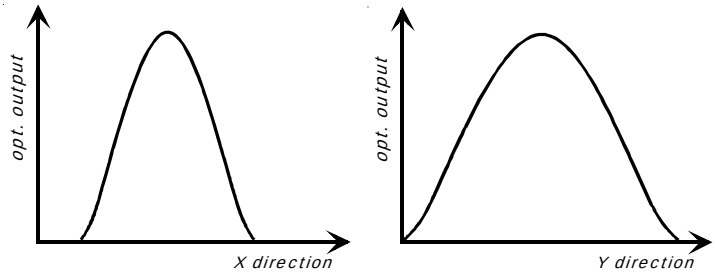
The laser light beam that is emitted by a high-precision optics unit (aspherical surface made of glass) allowes the detection of smallest objects (e.g. threads) even in case of a large transmitter/receiver distrance (distances up to 100 m, depending on the light barrier type and aperture size).

Advantages:
- Telecentrical design
- Exact shadow projection onto the receiver
- The distance of measuring object to the transmitter or receiver has no influence on the measuring signal over a wide range

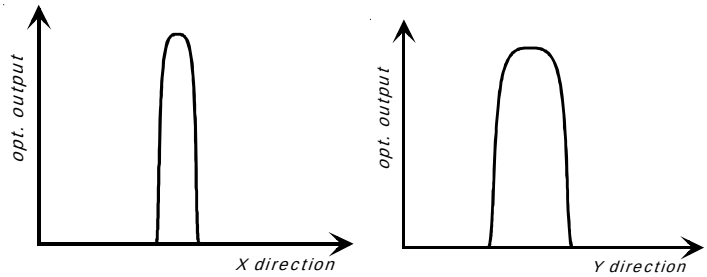


Homogeneous light distribution

The use of high-precision apertures in the transmitter ensures optimum adaptation to the respective application. Apart from a large variety of standard apertures special apertures can also be realized.
The aperture ensures a homogeneous light distribution in the beam and a sharp beam limitation.



Conventional design: Beam profile in the two main axes

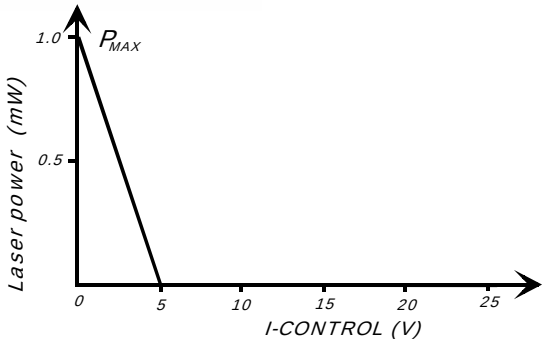


D-LAS series: Beam profile in the two main axes

Characteristics

Adjustable laser power

In case of types **D-LAS1, D-LAS2, and D-LAS90** the laser power can be adjusted with the current control input. The voltage at the I-CONTROL current control input can be varied between 0V and +24V. The maximum laser power is reached at 0V; the laser power then decreases linearly with increasing voltage, and at +5V it reaches the 0 mW value (LASER OFF). The current control input therefore can also be used as a test input for switching the laser light barrier ON or OFF (0V = ON, +5V or +24V = OFF).
If a receiver with a fixed comparator threshold is used, the I-CONTROL input is used for setting the sensitivity.

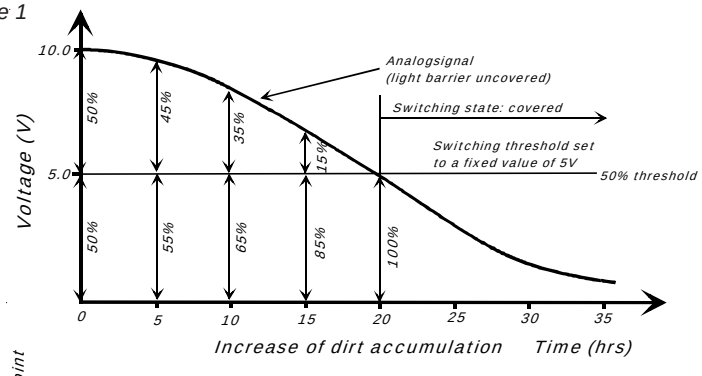


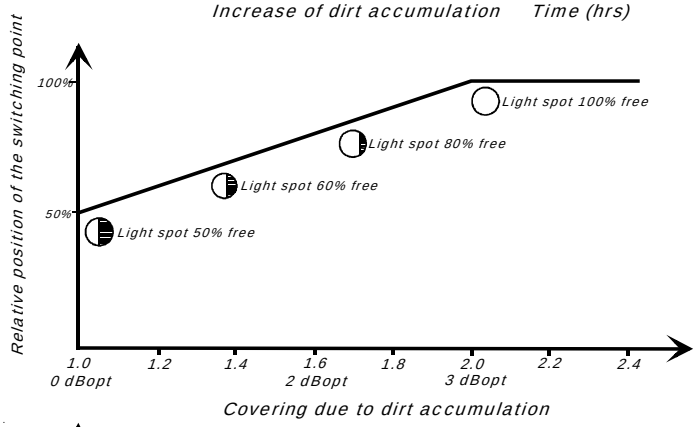
High positioning accuracy

In conventional light barriers the switching threshold, which depends on a fixed voltage (absolute value), is adjusted by means of a potentiometer. As a consequence the switching point shofts with increasing dirt accumulation.

Example 1 (cf. illustration):
The switching threshold is set to a fixed value of 5V, which in case of a 10V analog signal (without dirt accumulation and covering) leads to a change of the switching state at 50% light spot covering.
The analog signal decreases with increasing dirt accumulation, while the switching threshold remains constant. This means that the light spot no longer needs to be covered by 50% to cause switching of the light barrier.

Example 1

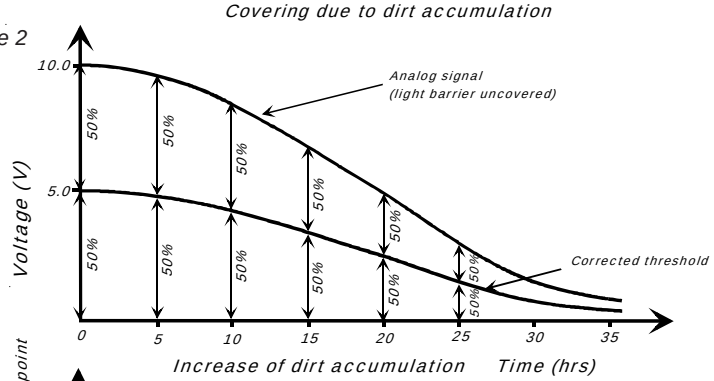


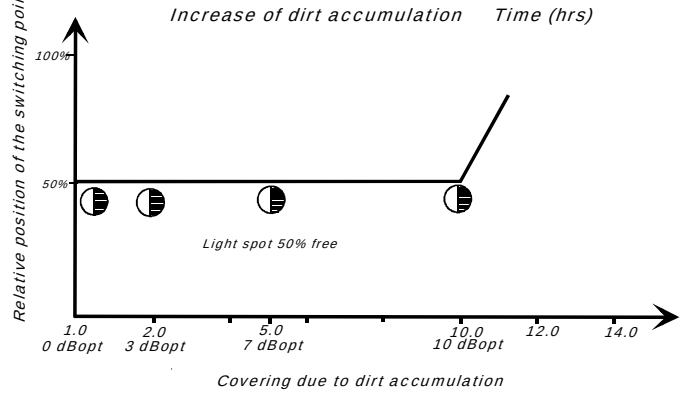


By way of continuous monitoring of the maximum value at the receiver a dynamic correction of the switching threshold compensates the effect of dirt accumulation. This means that increased dirt accumulation does not lead to a shift of the switching point.

Example 2 (cf. illustration):
In clean condition the laser light barriers of D-LAS Series indicates a value of 10 V at the analog output, the switching threshold adjusts itself to 50% of the analog signal, i.e. the switching state changes at 50% covering of the light spot.
In case of increasing dirt accumulation the value of the analog signal decreases, but the 50% distance to the switching threshold is maintained.

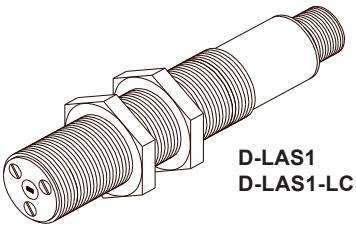
Example 2



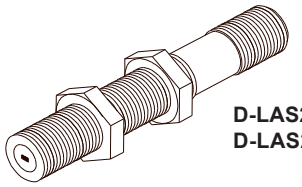


Product Line

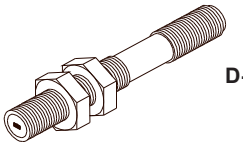
Type summary D-LAS Series



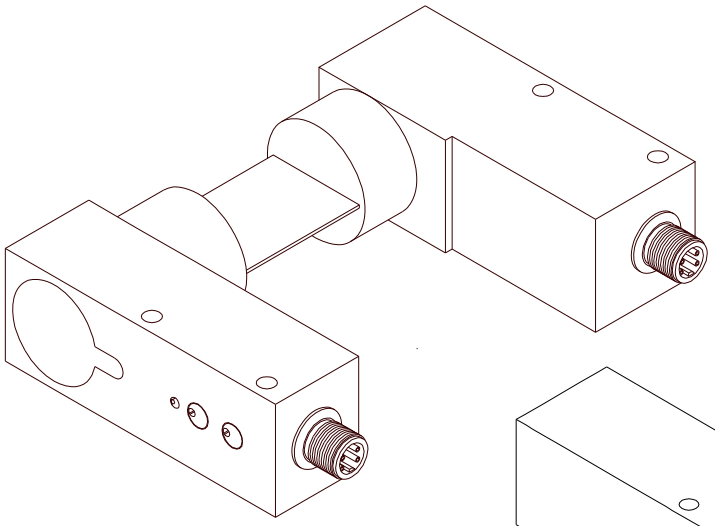
D-LAS1
D-LAS1-LC



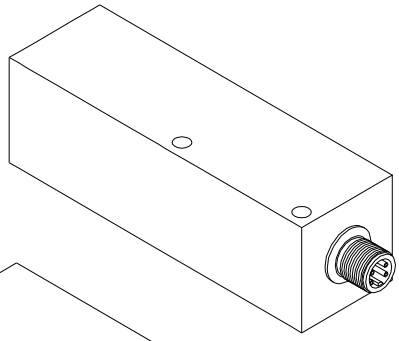
D-LAS2
D-LAS2-LC

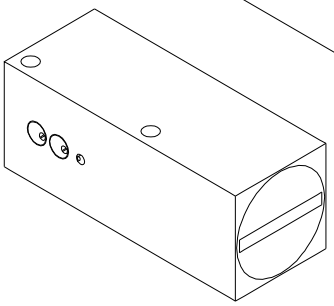


D-LAS3

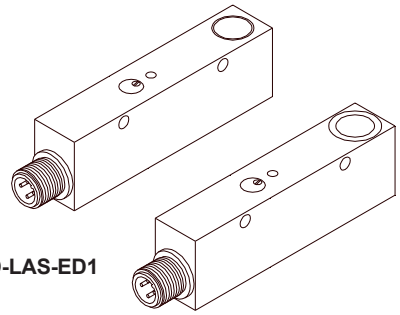


D-LAS-34/90

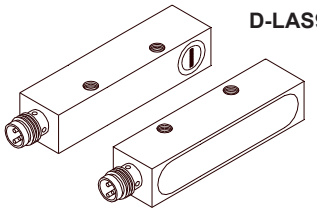




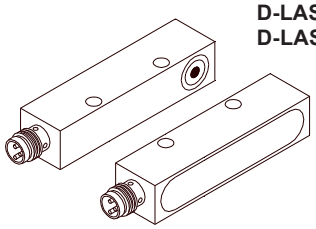
D-LAS-34



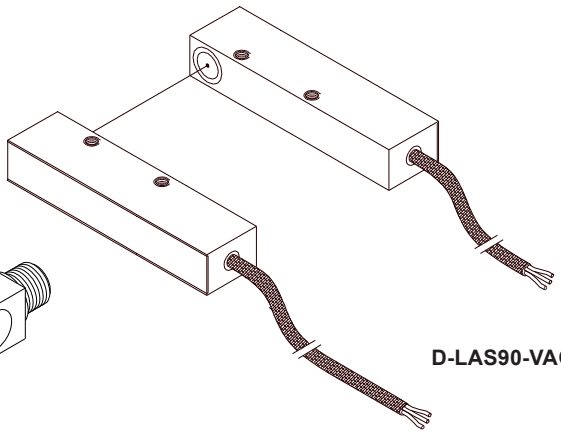
D-LAS-ED1



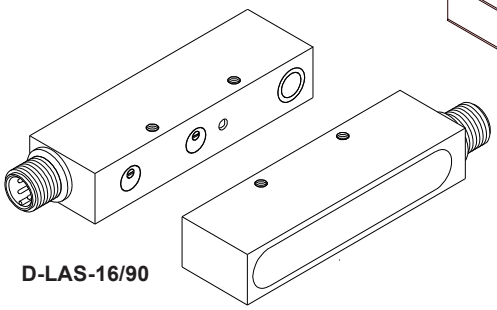
D-LAS90



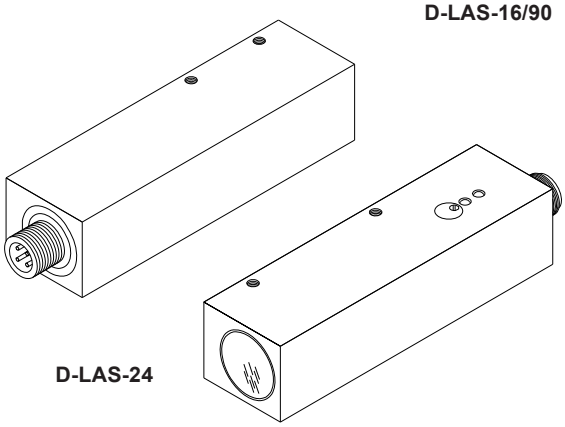
D-LAS90-S
D-LAS90-L



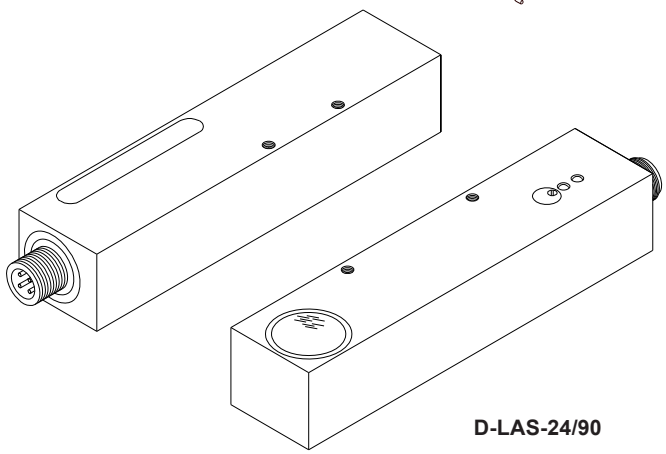
D-LAS90-VACU



D-LAS-16/90



D-LAS-24



D-LAS-24/90