

# D-LAS Series

## ► D-LAS-CERO

The laser light barrier D-LAS-CERO has been developed especially for the use in ceramic kilns, respectively in the immediate vicinity of kilns.

This laser light barrier monitors for example whether material has piled up in the kiln, or also whether a caster is broken.

In particular suitable for the detection of objects exposed to very high temperatures.



## Characteristics

### Product name:

**Transmitter:** D-LAS-CERO-T

**Receiver:** M18 housing:  
D-LAS-CERO-(output)-(type)-R  
D-LAS-CERO-(output)-(type)-RA-R

**Receiver:** Rectangular housing:  
D-LAS-CERO90-(output)-(type)-R  
D-LAS-CERO90-(output)-(type)-RA-R

**Attachment optics:** EO-18 (for D-LAS-CERO-...-R)

**Reflector top:** CERO-RFL (for EO-18)

### Switching output:

Q = npn dark-switching / pnp bright-switching

Qinv = pnp dark-switching / npn bright-switching

### Type (switching frequency):

S = 0,3 Hz

M = 20 Hz

L = 1 kHz

### Also available:

RA = Reduced Amplification

### Collimated laser beam

Laser diodes are light sources that are - due to their extremely small aperture - excellently suitable for the generation of almost parallel light. This guarantees that the diameter of the laser light beam can be kept small even at very large distances.

For a distance of 100 m the laser spot has an expansion of about 300 mm x 150 mm (at ambient temperature).

### High sensitivity of the receiver

Due to the high temperatures in the kiln, the laser beam is additionally expanded and deflected.

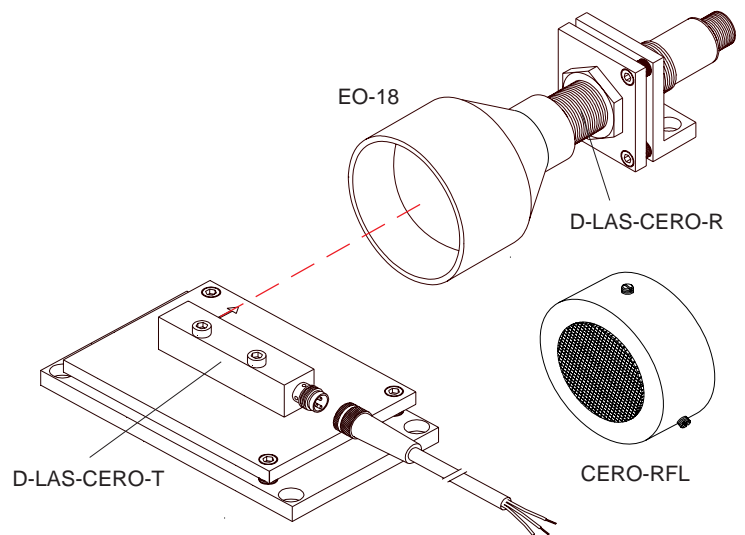
The large receiver optics (EO-18) with a diameter of 50 mm and a receiver electronic with a corresponding sensitivity guarantee the detection of the laser light.

### Easy mounting

The visible red laser light, the available mounting angles, and the switching state indicator (LED) in the receiver cable guarantee an easy integration to new kilns; existing kilns can also be equipped without problems.


### Help for the adjustment of the laser

- With the help of a mounting angle the transmitter is very exactly adjustable; this is very important especially for large transmitter/receiver distances (e.g. 100 m)
- Furthermore the reflector CERO-RFL, which is mounted onto the optics EO-18 during adjustment process, allows easy adjustment of the receiver





**Technical Data**

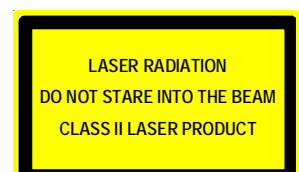
| Model                              | D-LAS-CERO   |
|------------------------------------|--|
| Laser                              | Solid-state laser, 670 nm, 1 mW max. opt. power, laser class 2 acc. to DIN EN 60825.<br>The use of these laser transmitter requires no additional protective measures. |
| Max. distance transmitter/receiver | In the kiln: 150 m   |
| Reproducibility                    | typ. 10 mm   |
| Min. detectable object             | typ. 10 mm   |
| Optical filter                     | Interference filter and red light filter RG630   |
| Voltage supply                     | +12VDC ... +32VDC, reverse-polarity protection, overcurrent protection   |
| Alternating light operation        | 100 kHz, pulse/pause ratio 1:1   |
| Ambient light                      | up to 5000 Lux, no influence on the receiver optics  |
| Enclosure rating                   | IP67   |
| Current consumption                | approx. 110 mA   |
| Laser beam dimensions              | at transmitter outlet: typ. 4 mm x 2 mm  |
| Beam divergency                    | typ. 2 mrad (at ambient temperature)<br>typ. 10 mrad (through the kiln)  |
| Operating temperature range        | -20°C ... +50°C  |
| Storage temperature range          | -20°C ... +85°C  |
| Housing material                   | Brass, nickel-plated   |
| Connector type                     | Transmitter: 3-pin M8 plug<br>Receiver D-LAS-CERO90-...-R: 3-pin M8 plug respectively D-LAS-CERO-...-R: 4-pin M12 plug   |
| Switching frequency                | Depends on the receiver type:<br>with type "S": 0,3 Hz<br>with type "M": 20 Hz<br>with type "L": 1 kHz   |
| Max. switching current             | 100 mA, short-circuit protection   |
| EMC test acc. to                   | IEC - 801 ...   |



**Laser Warning**

The transmitters of the laser one-way light barriers of D-LAS Series comply with laser class 2 according to EN 60825. The use of these laser transmitters therefore requires no additional protective measures.

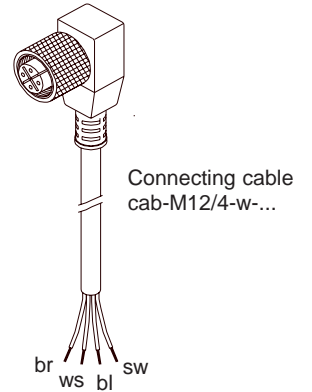
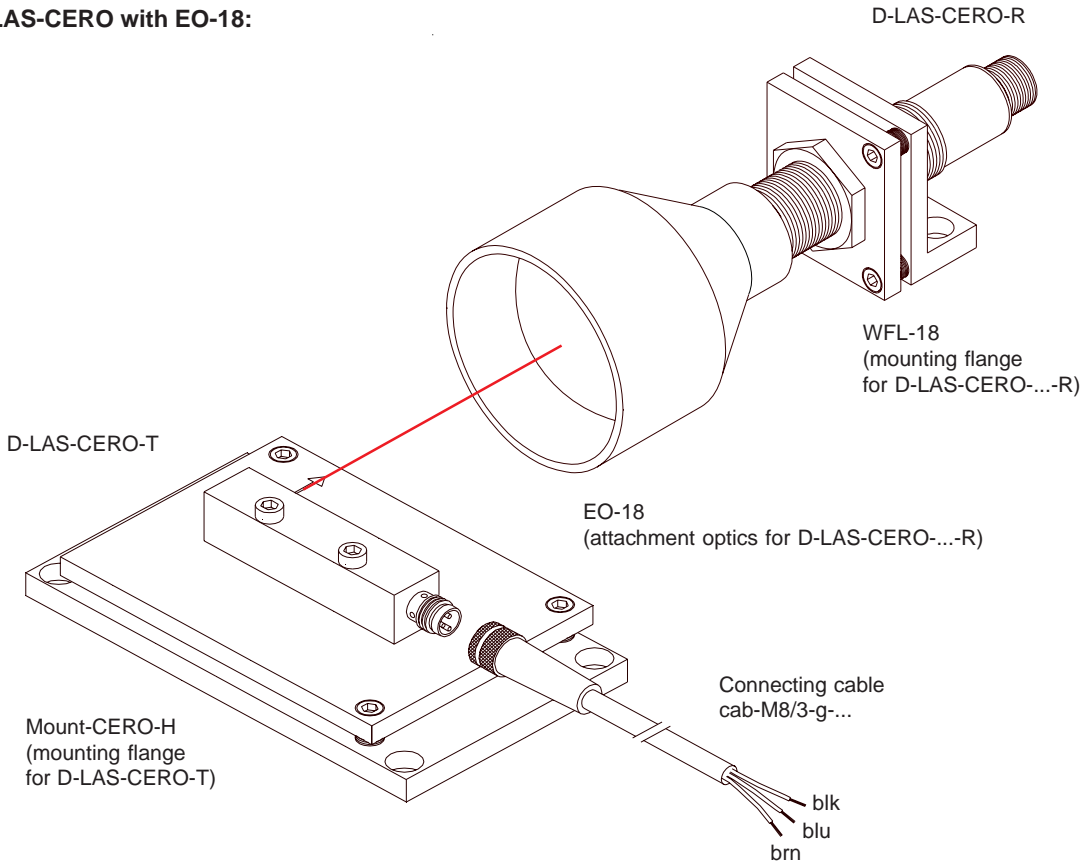
The transmitters of the D-LAS Series are supplied with a laser warning label.



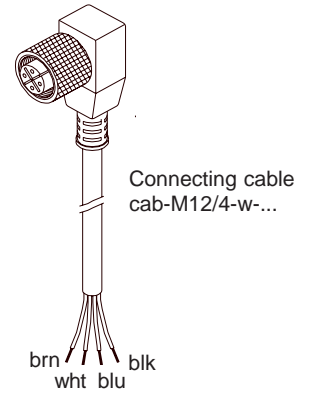
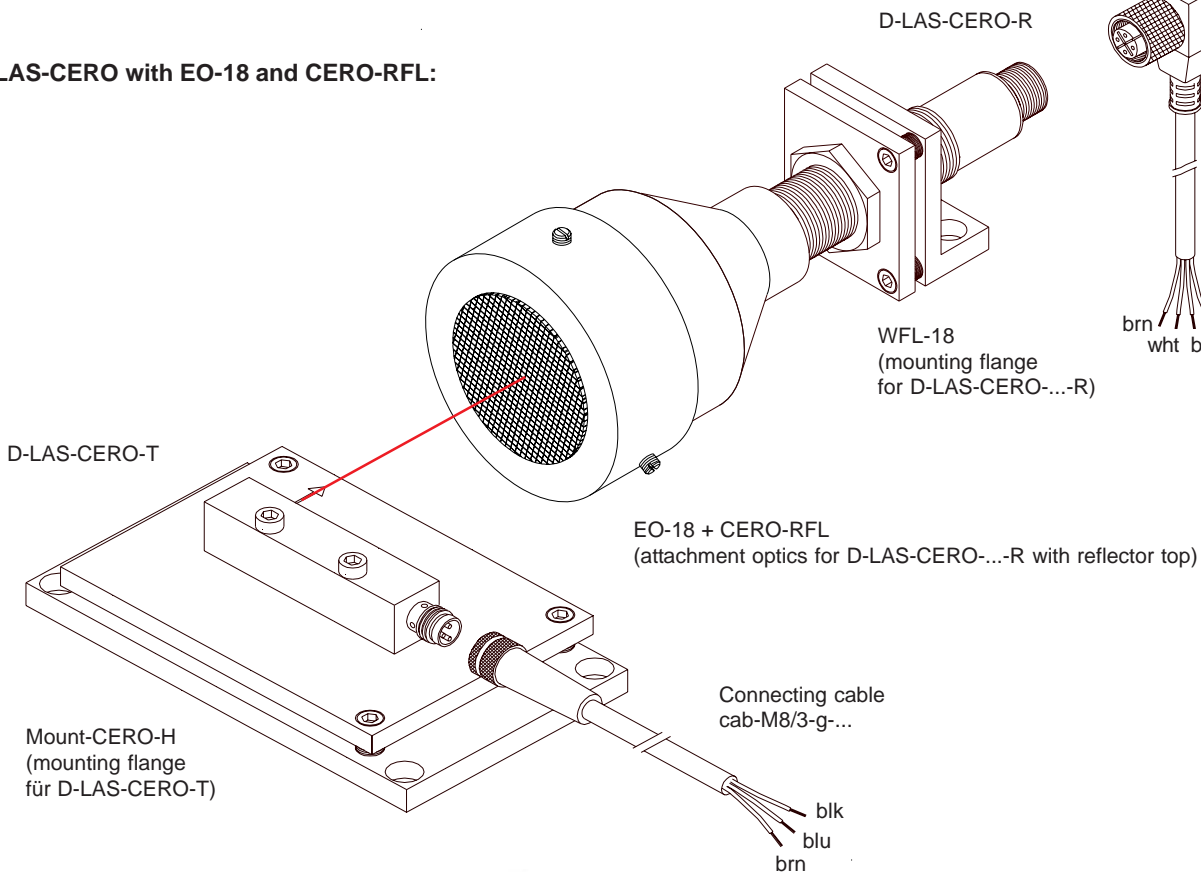


**Design**

**D-LAS-CERO with EO-18:**



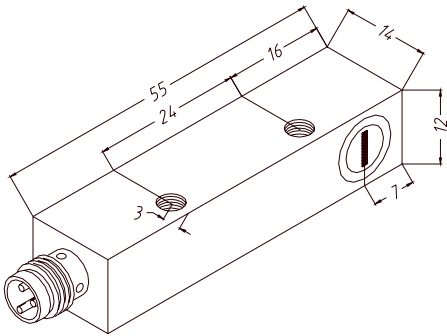
**D-LAS-CERO with EO-18 and CERO-RFL:**



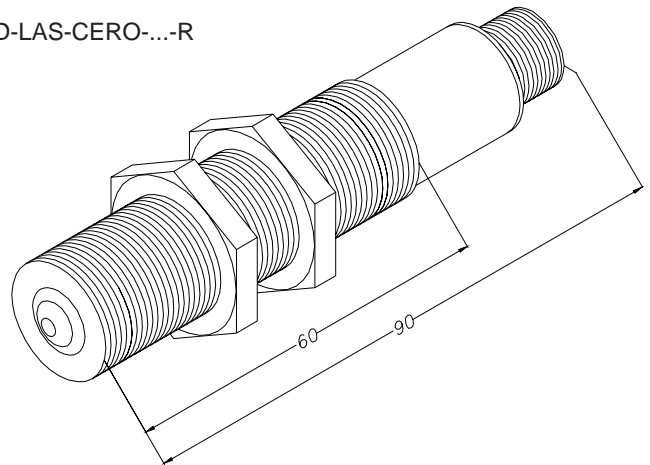


Dimensions

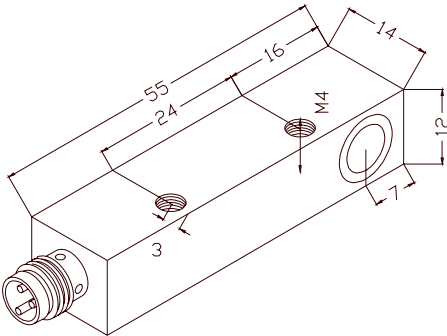
D-LAS-CERO-T



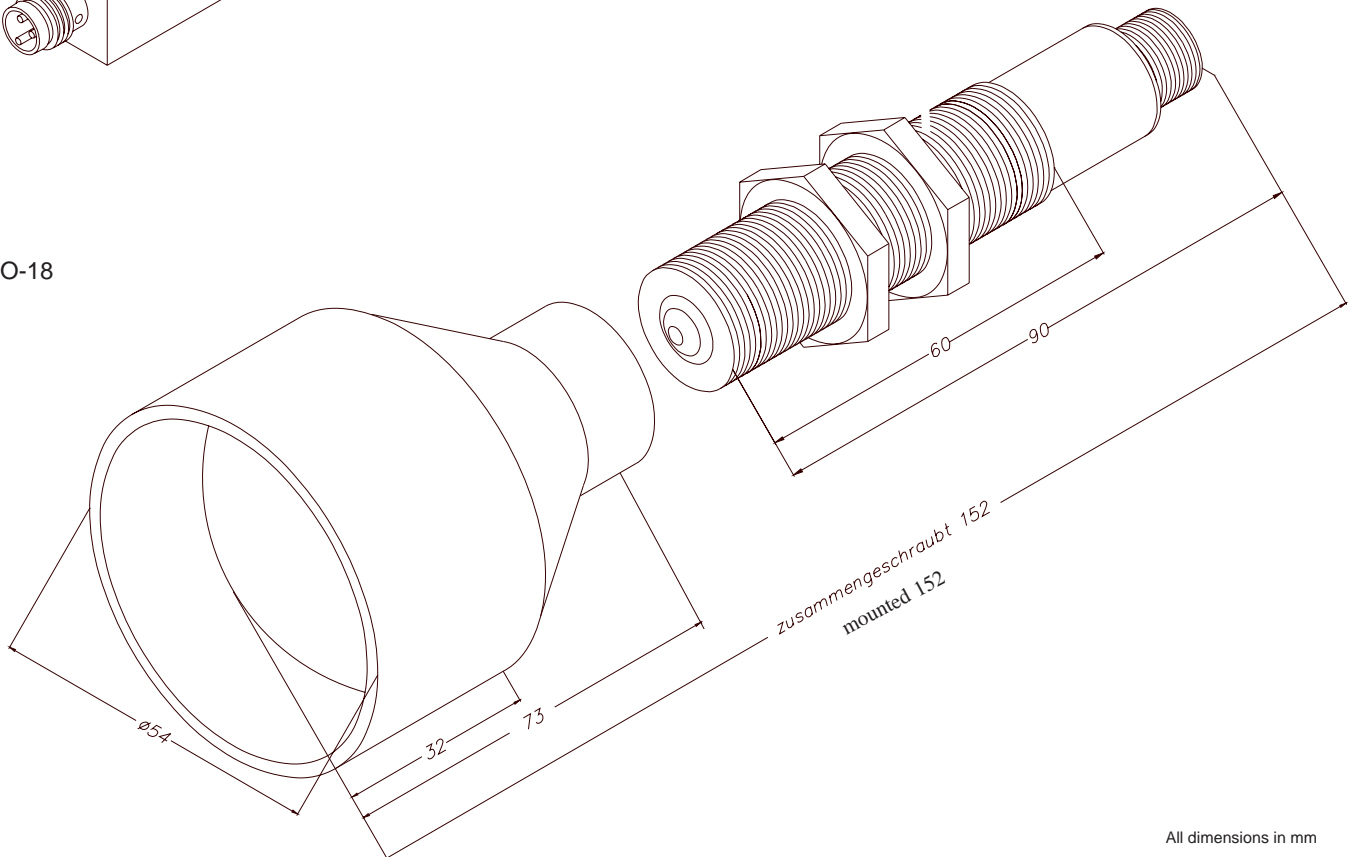
D-LAS-CERO-...-R



D-LAS-CERO90-...-R



EO-18

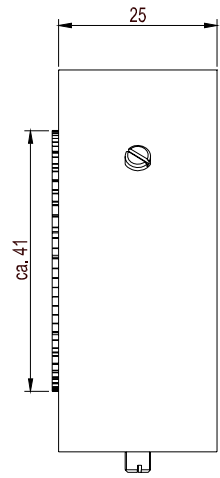
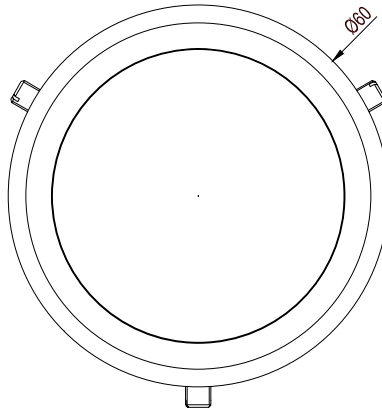
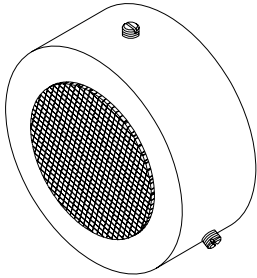


All dimensions in mm

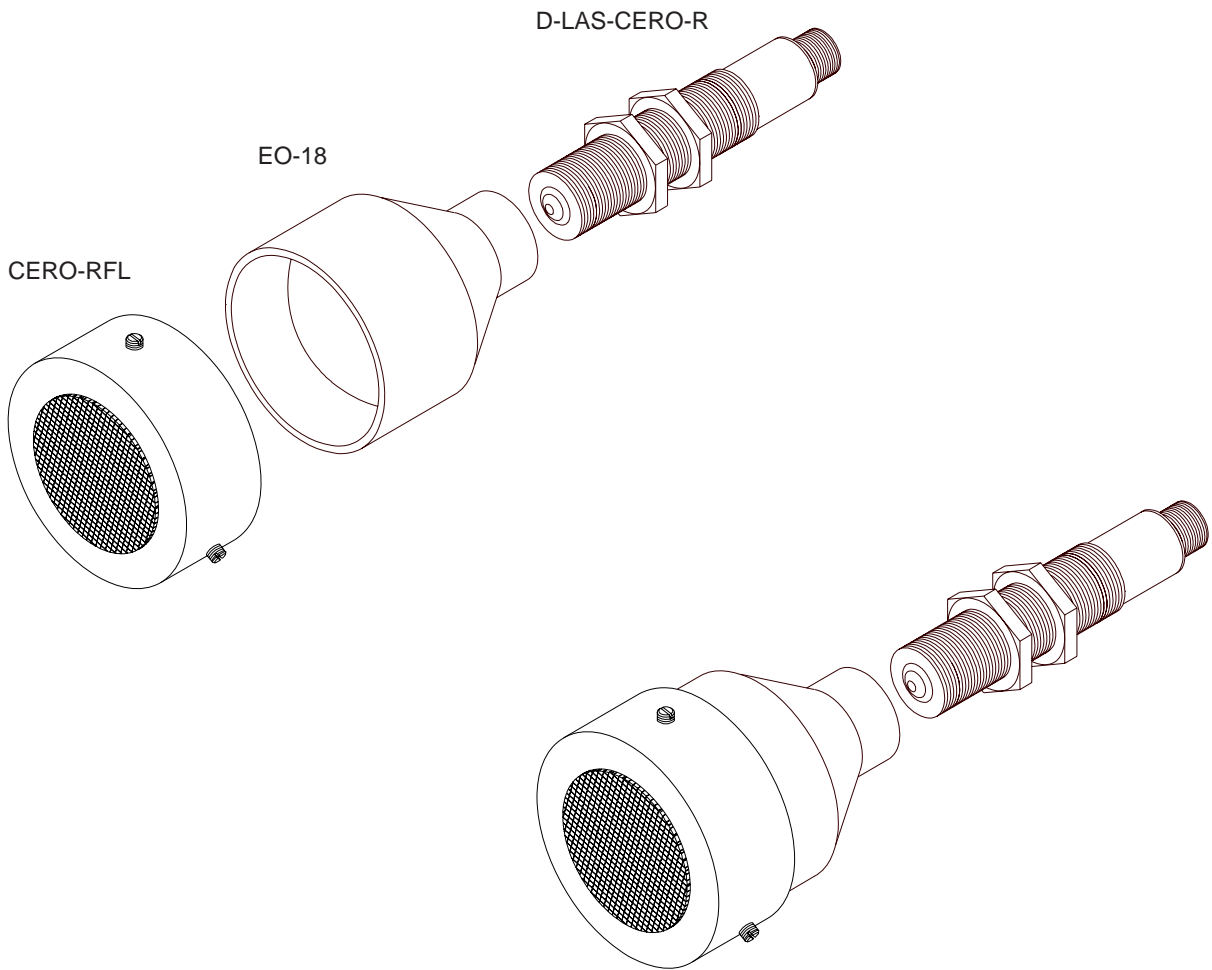


Reflector

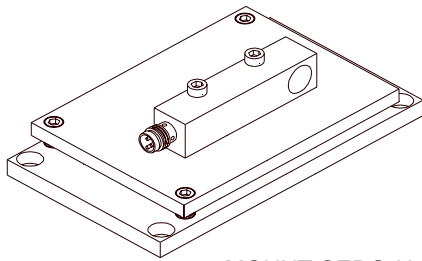
CERO-RFL



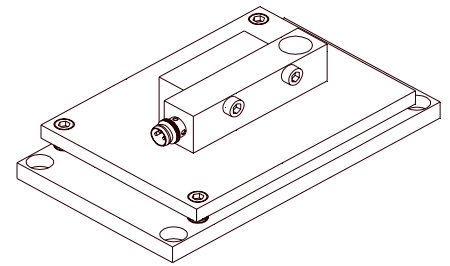
All dimensions in mm



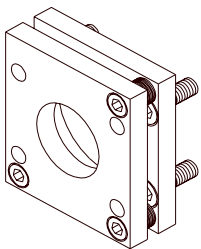
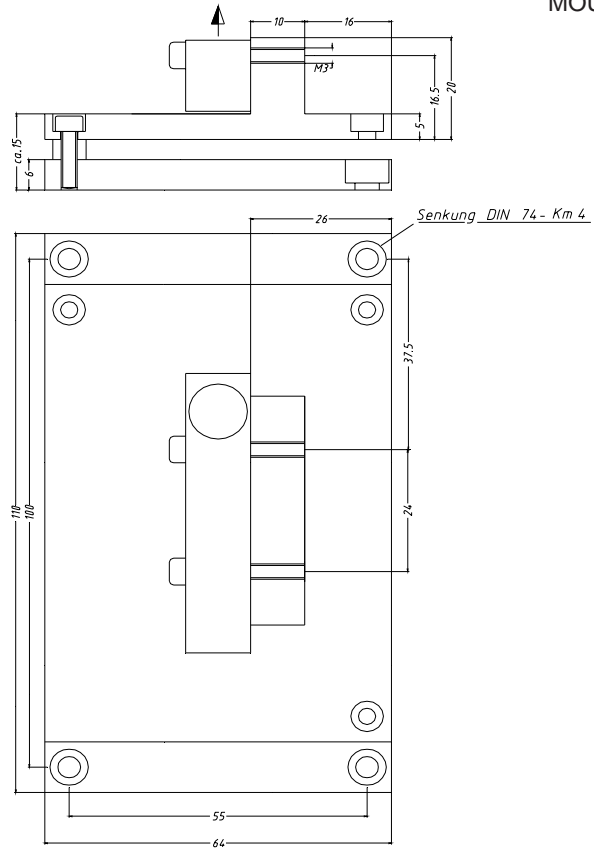
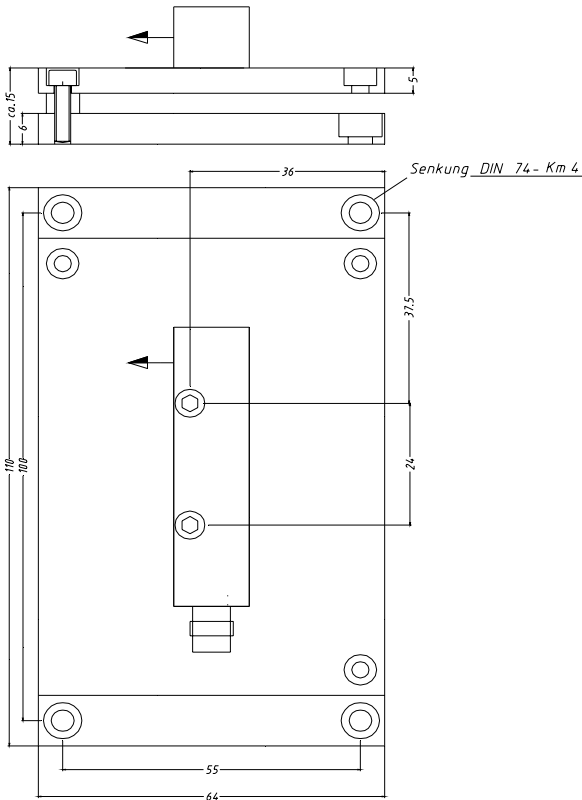
Mounting



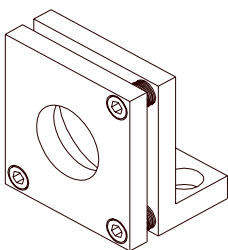
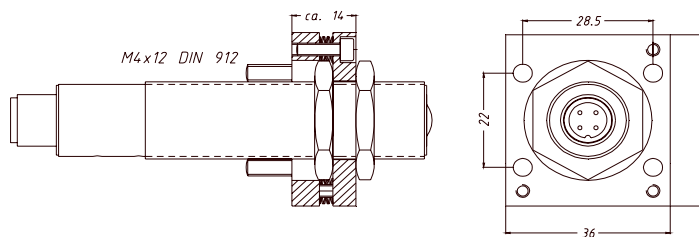
MOUNT-CERO-H



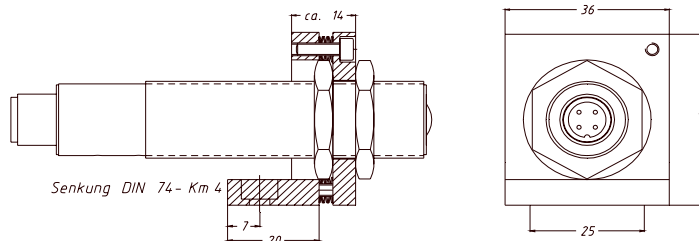
MOUNT-CERO-V



FL-18



WFL-18



All dimensions in mm

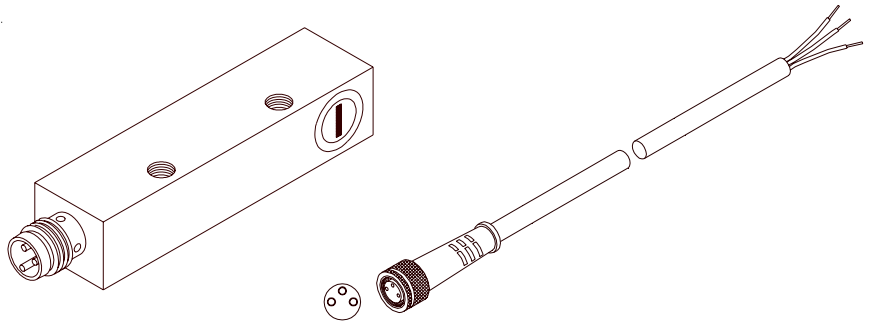


## Connector Assignment

### Transmitter D-LAS-CERO-T

#### 3-pin M8-connector:

| Pin No.: | Color: | Assignment:          |
|----------|--------|----------------------|
| 1        | brn    | +12VDC...+32VDC      |
| 3        | blu    | 0V (GND)             |
| 4        | blk    | I-Control (0...+24V) |

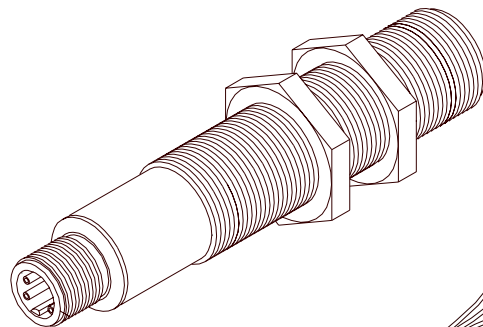


### Receiver D-LAS-CERO-Q-...-R

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

#### 4-pin M12-connector:

| Pin No.: | Color: | Assignment:     |
|----------|--------|-----------------|
| 1        | brn    | +12VDC...+32VDC |
| 2        | wht    | SHIELD          |
| 3        | blu    | 0V (GND)        |
| 4        | blk    | OUTPUT Q        |

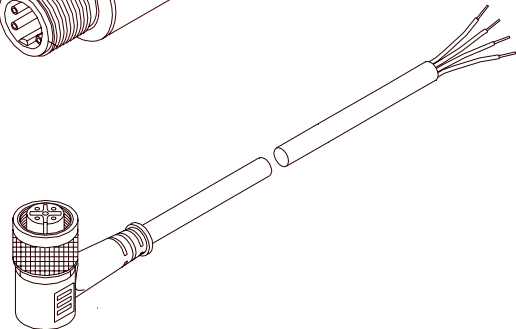


### Receiver D-LAS-CERO-Qinv-...-R

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

#### 4-pin M12-connector:

| Pin No.: | Color: | Assignment:     |
|----------|--------|-----------------|
| 1        | brn    | +12VDC...+32VDC |
| 2        | wht    | SHIELD          |
| 3        | blu    | 0V (GND)        |
| 4        | blk    | OUTPUT Qinv     |

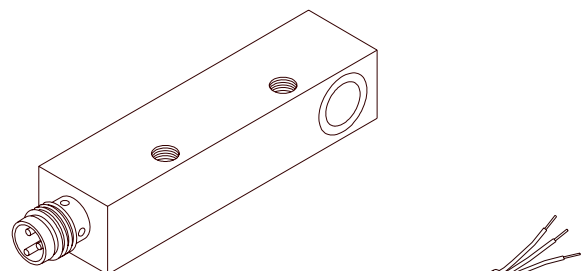


### Receiver D-LAS-CERO90-Q-...-R

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

#### 3-pin M8-connector:

| Pin No.: | Color: | Assignment:     |
|----------|--------|-----------------|
| 1        | brn    | +12VDC...+32VDC |
| 3        | blu    | 0V (GND)        |
| 4        | blk    | OUTPUT Q        |

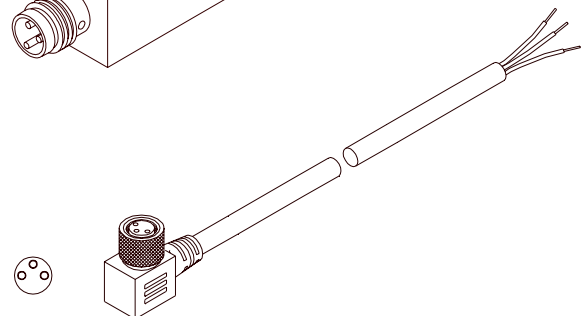


### Receiver D-LAS-CERO90-Qinv-...-R

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

#### 3-pin M8-connector:

| Pin No.: | Color: | Assignment:     |
|----------|--------|-----------------|
| 1        | brn    | +12VDC...+32VDC |
| 3        | blu    | 0V (GND)        |
| 4        | blk    | OUTPUT Qinv     |





**Connecting Cables**

**Available connecting cables:**

**for receiver D-LAS-CERO90-...-R:**

|                         |            |             |                 |
|-------------------------|------------|-------------|-----------------|
| <b>cab-M8/3-w-npn-2</b> | Length: 2m | Sheath: PUR | angle type, LED |
| <b>cab-M8/3-w-npn-5</b> | Length: 5m | Sheath: PUR | angle type, LED |
| <b>cab-M8/3-w-pnp-2</b> | Length: 2m | Sheath: PUR | angle type, LED |
| <b>cab-M8/3-w-pnp-5</b> | Length: 5m | Sheath: PUR | angle type, LED |

**for transmitter D-LAS-CERO-T:**

|                     |            |             |            |
|---------------------|------------|-------------|------------|
| <b>cab-M8/3-g-2</b> | Length: 2m | Sheath: PUR |            |
| <b>cab-M8/3-g-5</b> | Length: 5m | Sheath: PUR |            |
| <b>cab-M8/3-w-2</b> | Length: 2m | Sheath: PUR | angle type |
| <b>cab-M8/3-w-5</b> | Length: 5m | Sheath: PUR | angle type |

**for receiver D-LAS-CERO-...-R:**

|                          |            |             |                 |
|--------------------------|------------|-------------|-----------------|
| <b>cab-M12/4-g-2</b>     | Length: 2m | Sheath: PUR |                 |
| <b>cab-M12/4-g-5</b>     | Length: 5m | Sheath: PUR |                 |
| <b>cab-M12/4-w-2</b>     | Length: 2m | Sheath: PUR | angle type      |
| <b>cab-M12/4-w-5</b>     | Length: 5m | Sheath: PUR | angle type      |
| <b>cab-M12/4-w-npn-2</b> | Length: 2m | Sheath: PUR | angle type, LED |
| <b>cab-M12/4-w-npn-5</b> | Length: 5m | Sheath: PUR | angle type, LED |
| <b>cab-M12/4-w-pnp-2</b> | Length: 2m | Sheath: PUR | angle type, LED |
| <b>cab-M12/4-w-pnp-5</b> | Length: 5m | Sheath: PUR | angle type, LED |

