

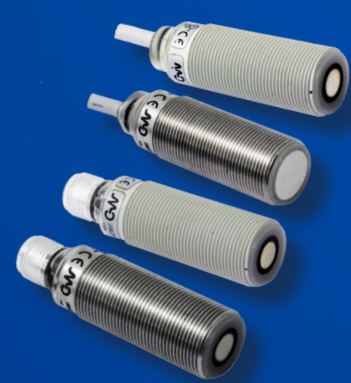


# UK6 series

M18 cylindrical short body direct diffuse & retro-reflective Ultrasonic Sensor UK6



M18 short body with Teach-In button



## features

- M18 diffuse sensors with short housing
- Digital output
- Analogue output

## web contents



- Application notes
- Photos
- Catalogue / Manuals



## code description

UK 6 A / H 1 - 0 E UL IO AN

|                             |           |   |
|-----------------------------|-----------|---|
| series                      | <b>UK</b> | M18 Ultrasonic sensor   |
| function                    | <b> </b>  | Diffuse models  |
|                             | <b>R</b>  | Retroreflective models  |
| housing type                | <b>6</b>  | M18 Short housing   |
| nominal sensing distance Sn | <b>A</b>  | 40...300 mm (diffuse models), 50...300 mm (retroreflective models)      |
|                             | <b>C</b>  | 60...800 mm (diffuse models), 80...800 mm (retroreflective models)      |
|                             | <b>D</b>  | 80...1,200 mm (diffuse models), 100...1,200 mm (retroreflective models) |
| adjustment                  | <b>H</b>  | Teach-In by cable   |
| output                      | <b>1</b>  | 0...10 V single voltage analogue output                                 |
|                             | <b>2</b>  | 4...20 mA single current analogue output                                |
|                             | <b>P</b>  | PNP - NO/NC digital output  |
|                             | <b>N</b>  | NPN - NO/NC digital output  |
| housing materials           | <b>0</b>  | Axial plastic housing   |
|                             | <b>1</b>  | AISI 316L (DIN 1.4404) stainless steel housing (axial)                  |
| cable exit / connector      | <b>E</b>  | M12 plug cable exit   |
|                             | <b>A</b>  | 2 m cable exit  |
| cULus                       | <b>UL</b> | cULus certified   |
| IO-Link                     | <b>IO</b> | IO-Link models  |
| ATEX                        | <b>AN</b> | ATEX certified, Cat.3, 2.22 Zone  |



## available models

### diffuse models

M18 short body  
with Teach-In button

| housing | material | output | distance (mm) | PNP - NO/NC  | NPN - NO/NC  | analogue output<br>0...10 V | analogue output<br>4...20 mA |
|---------|----------|--------|---------------|--------------|--------------|-----------------------------|------------------------------|
| M18     | plastic  | M12    | 40...300      | UK6A/HP-0EUL | UK6A/HN-0EUL | UK6A/H1-0EUL                | UK6A/H2-0EUL                 |
|         |          |        | 60...800      | UK6C/HP-0EUL | UK6C/HN-0EUL | UK6C/H1-0EUL                | UK6C/H2-0EUL                 |
|         |          |        | 80...1,200    | UK6D/HP-0EUL | UK6D/HN-0EUL | UK6D/H1-0EUL                | UK6D/H2-0EUL                 |
|         |          | cable  | 40...300      | UK6A/HP-0AUL | UK6A/HN-0AUL | UK6A/H1-0AUL                | UK6A/H2-0AUL                 |
|         |          |        | 60...800      | UK6C/HP-0AUL | UK6C/HN-0AUL | UK6C/H1-0AUL                | UK6C/H2-0AUL                 |
|         |          |        | 80...1,200    | UK6D/HP-0AUL | UK6D/HN-0AUL | UK6D/H1-0AUL                | UK6D/H2-0AUL                 |

| housing | material | output | distance (mm) | PNP - NO     | NO/NC        | analogue output<br>0...10 V | analogue output<br>4...20 mA |
|---------|----------|--------|---------------|--------------|--------------|-----------------------------|------------------------------|
| M18     | metal    | M12    | 40...300      | UK6A/HP-1EUL | UK6A/HN-1EUL | UK6A/H1-1EUL                | UK6A/H2-1EUL                 |
|         |          |        | 60...800      | UK6C/HP-1EUL | UK6C/HN-1EUL | UK6C/H1-1EUL                | UK6C/H2-1EUL                 |
|         |          |        | 80...1,200    | UK6D/HP-1EUL | UK6D/HN-1EUL | UK6D/H1-1EUL                | UK6D/H2-1EUL                 |
|         |          | cable  | 40...300      | UK6A/HP-1AUL | UK6A/HN-1AUL | UK6A/H1-1AUL                | UK6A/H2-1AUL                 |
|         |          |        | 60...800      | UK6C/HP-1AUL | UK6C/HN-1AUL | UK6C/H1-1AUL                | UK6C/H2-1AUL                 |
|         |          |        | 80...1,200    | UK6D/HP-1AUL | UK6D/HN-1AUL | UK6D/H1-1AUL                | UK6D/H2-1AUL                 |

## available models

### retroreflective models

| housing | material | distance (mm) | plastic housing |               | metal housing |               |
|---------|----------|---------------|-----------------|---------------|---------------|---------------|
|         |          |               | PNP - NO/NC     | NPN - NO/NC   | PNP - NO/NC   | NPN - NO/NC   |
| M18     | M12      | 50...300      | UKR6A/HP-0EUL   | UKR6A/HN-0EUL | UKR6A/HP-1EUL | UKR6A/HN-1EUL |
|         |          | 80...800      | UKR6C/HP-0EUL   | UKR6C/HN-0EUL | UKR6C/HP-1EUL | UKR6C/HN-1EUL |
|         |          | 100...1,200   | UKR6D/HP-0EUL   | UKR6D/HN-0EUL | UKR6D/HP-1EUL | UKR6D/HN-1EUL |
|         | cable    | 50...300      | UKR6A/HP-0AUL   | UKR6A/HN-0AUL | UKR6A/HP-1AUL | UKR6A/HN-1AUL |
|         |          | 80...800      | UKR6C/HP-0AUL   | UKR6C/HN-0AUL | UKR6C/HP-1AUL | UKR6C/HN-1AUL |
|         |          | 100...1,200   | UKR6D/HP-0AUL   | UKR6D/HN-0AUL | UKR6D/HP-1AUL | UKR6D/HN-1AUL |




## available models

### IO-Link

| housing | material                     | output           | output                  | distance   | model        |
|---------|------------------------------|------------------|-------------------------|------------|--------------|
| M18     | stainless steel<br>AISI 316L | M12<br>connector | IO-Link or<br>push-pull | 40...300   | UK6A/HP-1EIO |
|         |                              |                  |                         | 80...1,200 | UK6D/HP-1EIO |

UK6 - UKR6



|                             | UK6A/H*-**   | UK6C/H*-**   | UK6D/H*-**  |
|-----------------------------|--|--|---|
|                             |               |  |  |
| nominal sensing distance    | 300 mm   | 800 mm   | 1.200 mm  |
| minimum sensing distance    | 40 mm  | 60 mm  | 80 mm   |
| beam angle                  | 7° ± 2°  | 8° ± 2°  |   |
| switching frequency         | 8 Hz   | 5 Hz   | 5 Hz  |
| operating voltage           | 10...30 Vdc  |  |   |
| max ripple content          | 5 %  |  |   |
| output type                 | PNP or NPN - NO/NC selectable<br>analogue output: 0...10 V or 4...20 mA                        |  |   |
| output current              | 100 mA   |  |   |
| output voltage drop         | ≤ 2,2 V (@ I = 100 mA)   |  |   |
| no-load supply current      | ≤ 35 mA @ Val = 30 V   |  |   |
| leakage current             | ≤ 10 µA @ 30 V   |  |   |
| power on delay              | ≤ 100 ms   |  |   |
| temperature range           | -20°C...+70°C  |  |   |
| temperature drift of Sr     | ≤ 5 %  |  |   |
| short-circuit protection    | ● (autoreset)  |  |   |
| induction protection        | ●  |  |   |
| voltage reversal protection | ●  |  |   |
| weight                      | plastic version: 65 g connector / 75 g cable<br>metallic housing: 80 g connector / 140 g cable |  |   |
| LEDs                        | yellow: output<br>green: alignment   |  |   |
| protection degree           | IP67   |  |   |
| EMC                         | conforming to EMC Directive, according to EN 60947-5-2   |  |   |
| housing material            | plastic housing: PTB<br>metal housing: AISI316L  |  |   |
| active head material        | epoxy - glass resin  |  |   |
| connection                  | M12 plug cable exit<br>2 m cable exit  |  |   |

<sup>(1)</sup> metallic target 100 x 100 (UK6A)

<sup>(2)</sup> metallic target 200 x 200 (UK6C - UK6D)

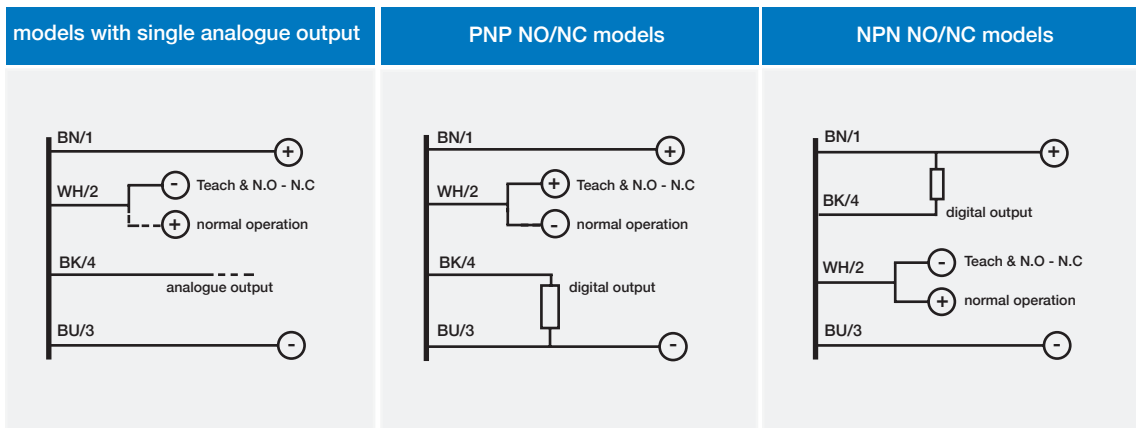


# technical specification

M18 short body  
with Teach-In button

|                                  | UK6RA/H*~**  | UKR6C/H*~** | UKR6D/H*~** |
|----------------------------------|--|-------------|-------------|
|                                  |  |             |             |
| nominal sensing distance         | 300 mm   | 800 mm      | 1,200 mm    |
| detection distance Sr            | 270 mm   | 720 mm      | 1,080 mm    |
| minimum distance from background | 50 mm  | 80 mm       | 100 mm      |
| beam angle                       | 7° ± 2°  | 8° ± 2°     |             |
| switching frequency              | 8 Hz   | 5 Hz        | 3 Hz        |
| operating voltage                | 10...30 Vdc  |             |             |
| max ripple content               | 5 %  |             |             |
| output type                      | PNP or NPN - NO/NC selectable                          |             |             |
| output current                   | 100 mA   |             |             |
| output voltage drop              | ≤ 2,2 V (@ I = 100mA)                                  |             |             |
| no-load supply current           | ≤ 35 mA @ Val = 30 V                                   |             |             |
| leakage current                  | ≤ 10 µA @ 30 V   |             |             |
| power on delay                   | ≤ 100 ms   |             |             |
| temperature range                | -20°C...+70°C  |             |             |
| temperature drift of Sr          | ≤ 5 %  |             |             |
| short-circuit protection         | ● (autoreset)  |             |             |
| induction protection             | ●  |             |             |
| voltage reversal protection      | ●  |             |             |
| weight                           | 65 g plastic version / 80 g metallic version           |             |             |
| LEDs                             | yellow: output<br>green: alignment                     |             |             |
| protection degree                | IP67   |             |             |
| EMC                              | conforming to EMC Directive, according to EN 60947-5-2 |             |             |
| housing material                 | plastic housing: PTB<br>metal housing: AISI316L        |             |             |
| active head material             | epoxy - glass resin                                    |             |             |
| connection                       | M12 plug cable exit<br>2 m cable exit                  |             |             |

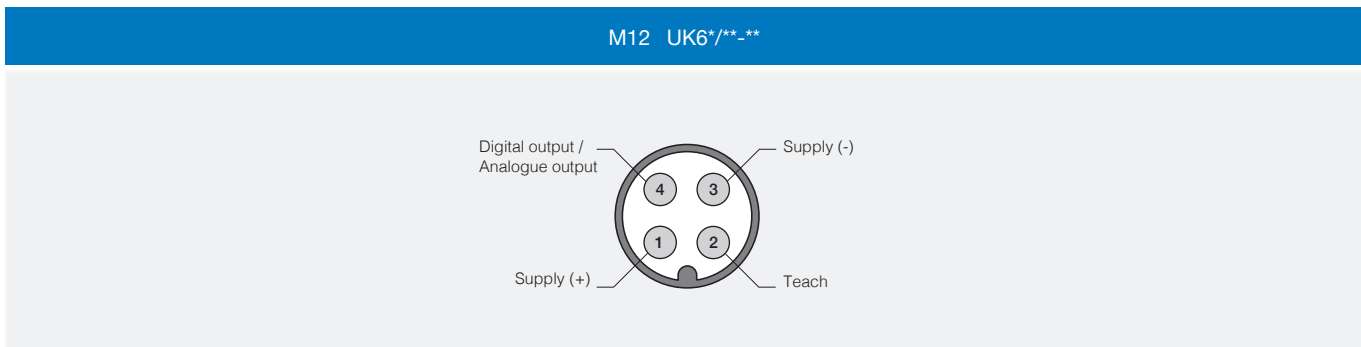
# electrical diagrams of connections



- BN** brown
- BU** blu
- BK** black
- WH** white

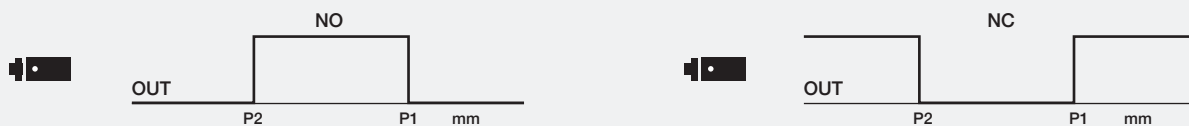
M18 short body  
with Teach-In button

## connector

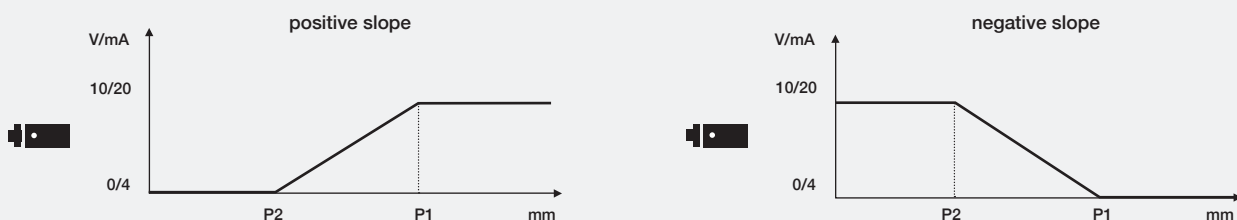


## available outputs

### models with single digital output



### models with single analogue output



UK6 - UKR6

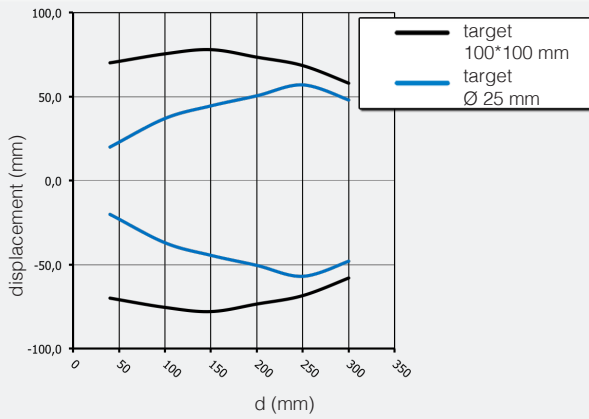


# response diagrams

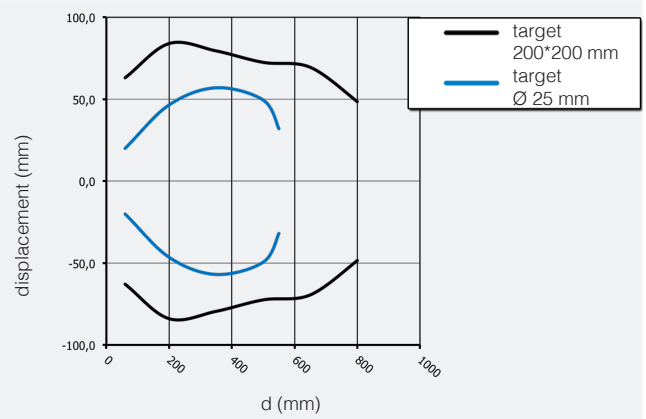
direct diffuse models

M18 short body  
with Teach-In button

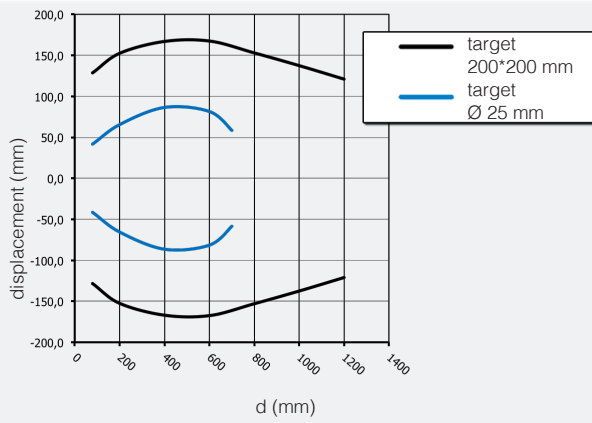
UK6A/\*\*-\*\* parallel displacement

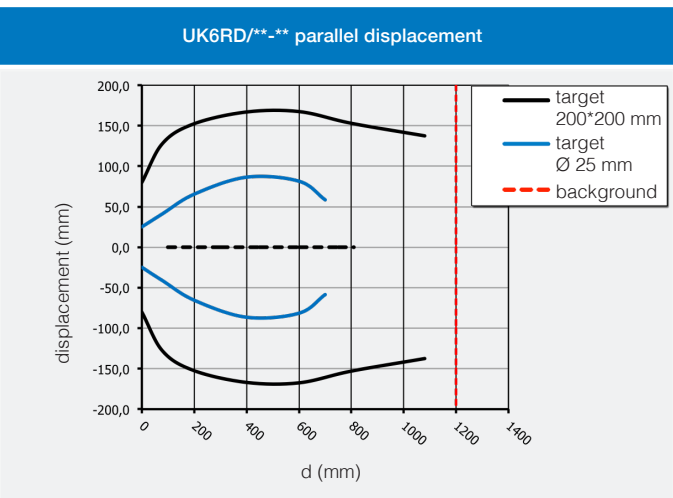
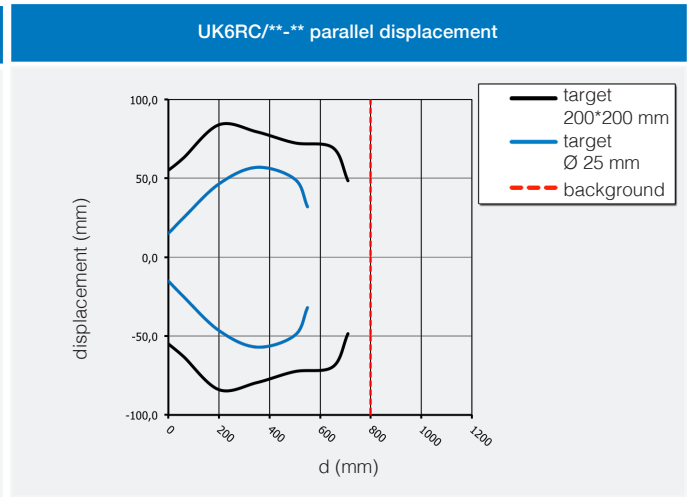
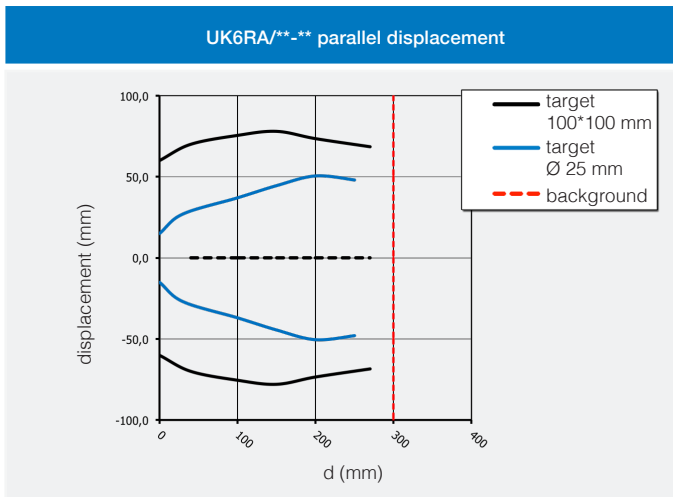


UK6C/\*\*-\*\* parallel displacement



UK6D/\*\*-\*\* parallel displacement





## adjustment

### Reflector detection (Sd)

Install the sensor in the correct position. Install the background (any solid, flat, fixed surface) perpendicularly to the sensor's axes. Connect the Teach-in wire to +24V (PNP models) or to 0V (NPN models) for 2 sec. Yellow LED blinks for 5 times, after that, the sensor acquires the background position (Sd distance).

### NO/NC selection

Connect the Teach-in wire to +24V (PNP models) or to 0V (NPN models) for a time > 8 sec. Yellow LED blinks quickly until the teach-in wire is released, then 5 blinks confirm the change of working state. The sensor change its working mode from NO to NC and vice versa.

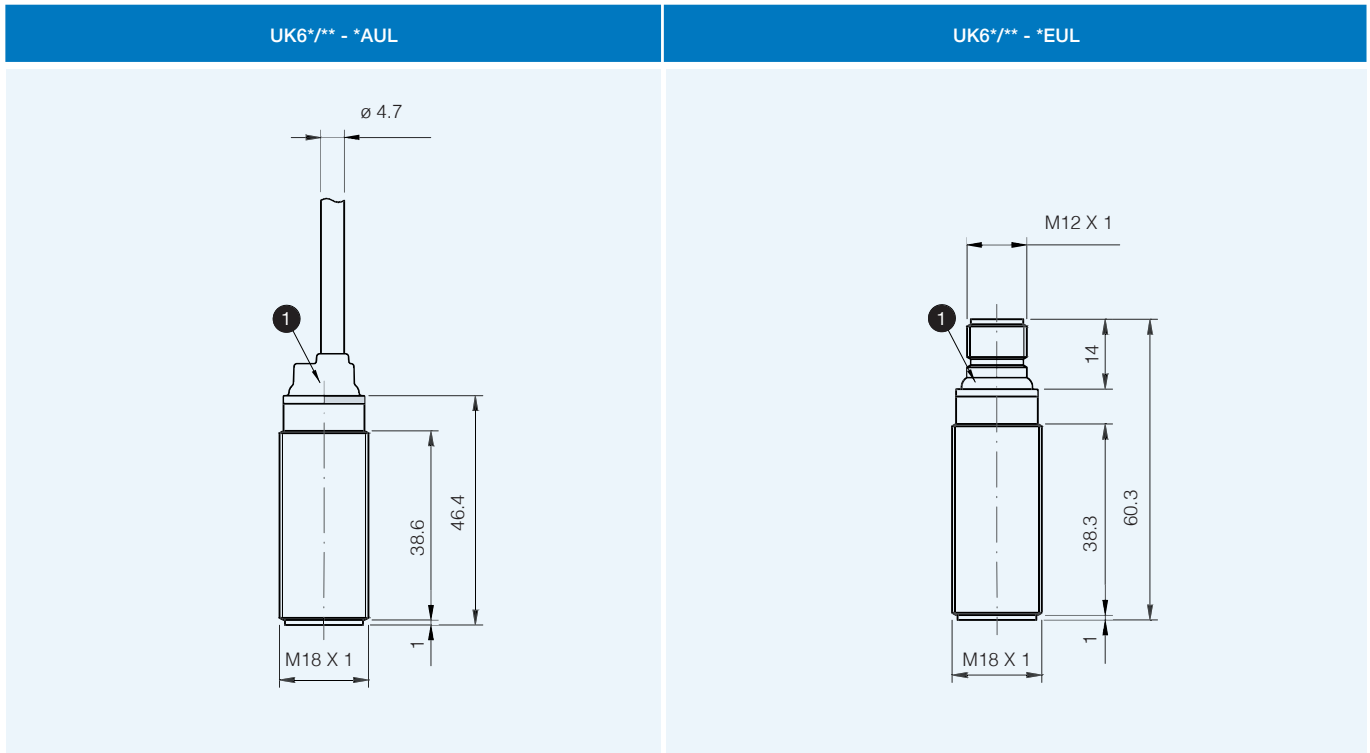
### Operating distance (Sr)

The effective operating distance (Sr) is equivalent to background distance (Sd) decreases of 10%. This hysteresis allows the correct detection of the target even if the background is vibrating during the machine normal operations.



## dimensions (mm)

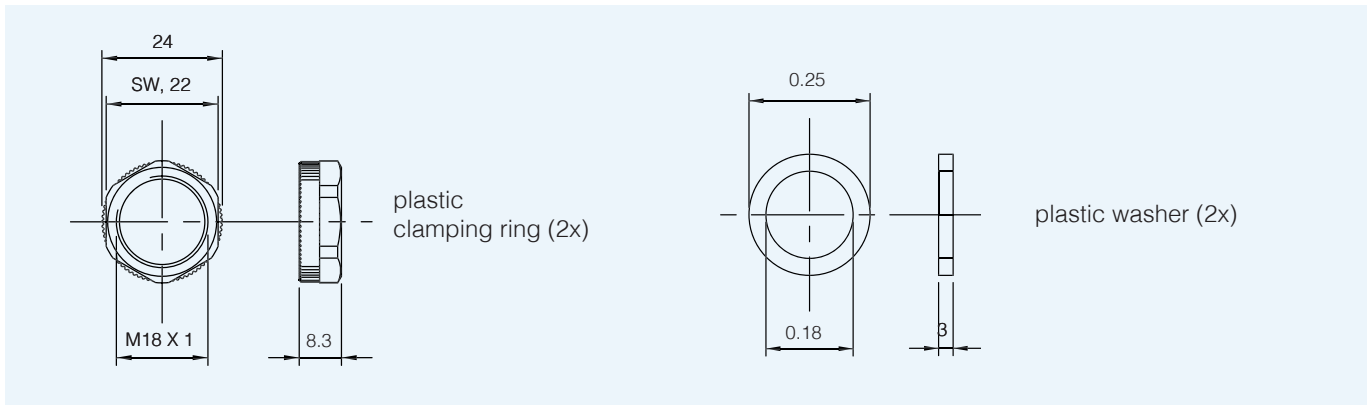
M18 short body  
with Teach-In button



1 LED

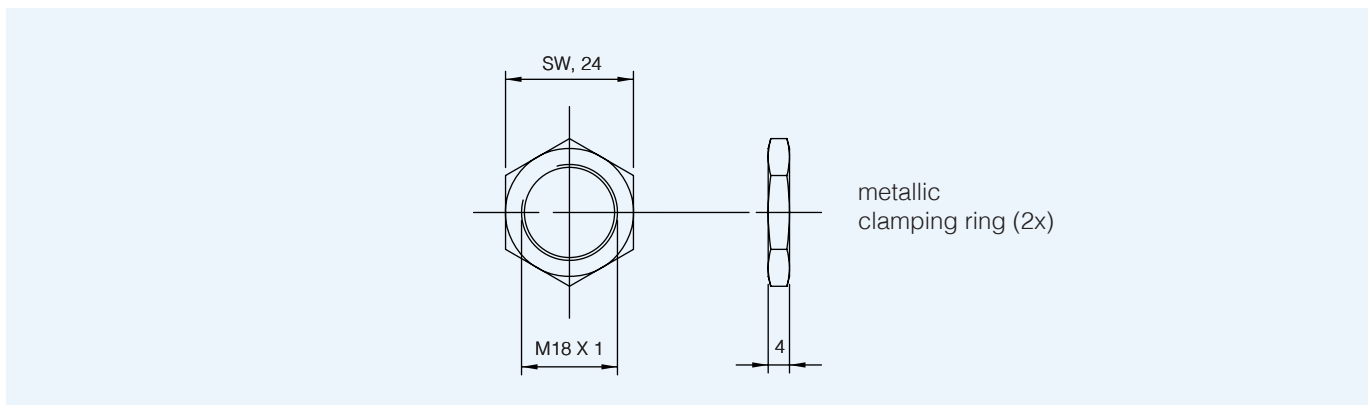
## dimensions (mm)

accessories included in all plastic models



## dimensions (mm)

accessories included in all metallic models



UK6 - UKR6