

## Compact ø18mmx65mm barrel type photoelectric switches for DC operation

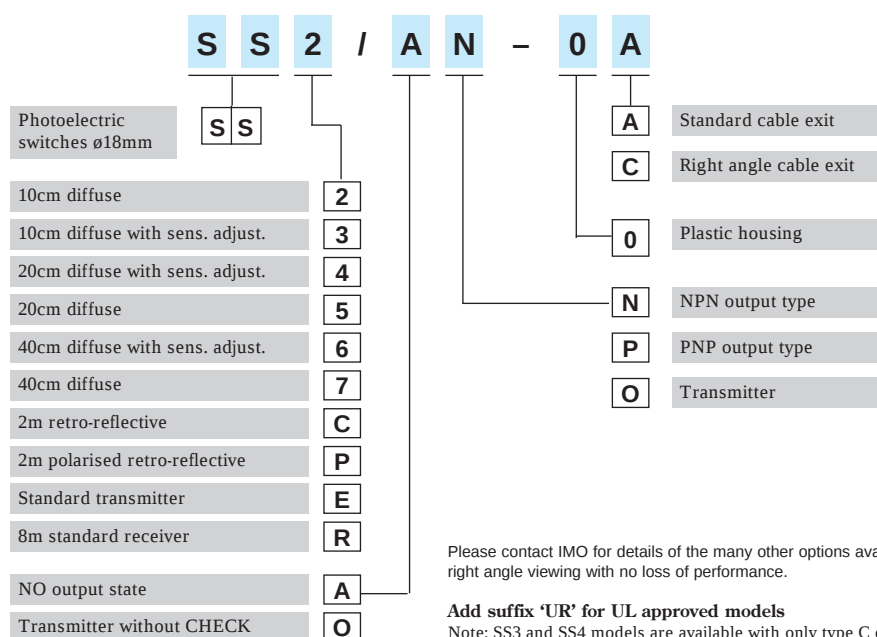
- Diffuse, retro-reflective, polarised, through-beam models
- Small object detection through-beam models
- Diagnostic CHECK function available on through-beam models
- IP67 nickel-plated or output-type colour-coded plastic housing
- Optional sensitivity adjustment - diffuse type (IP65)
- Rear mounted LED operation indicator
- Short-circuit protection
- UL approved option



SS3+SS4 models, feature flush lenses as standard

## Options and ordering codes

### Cable Exit Types



Please contact IMO for details of the many other options available, including small object detection and the SP range which gives right angle viewing with no loss of performance.

Add suffix 'UR' for UL approved models

Note: SS3 and SS4 models are available with only type C or K cable exits (right angle cable and M12 right angle plug).

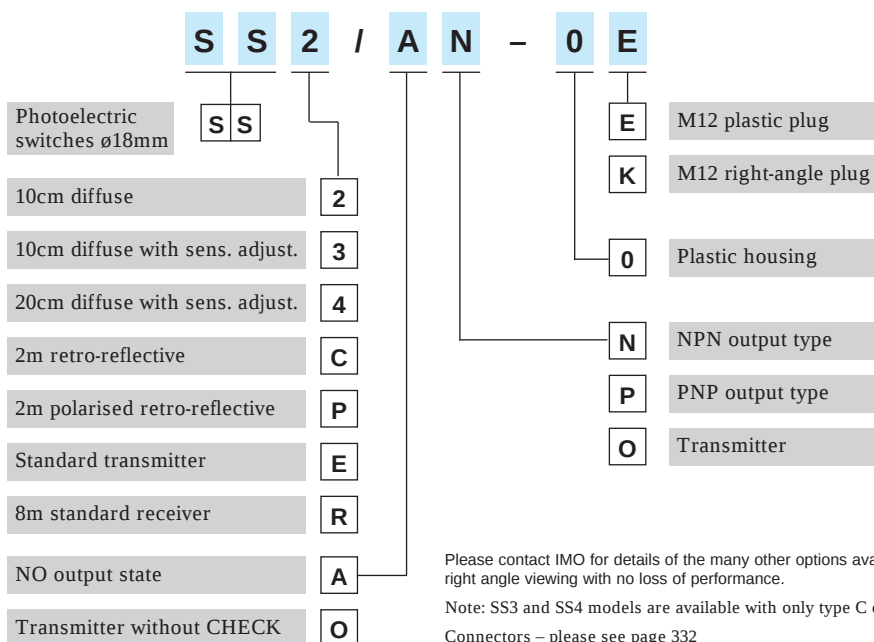
## Specifications

| Type                           | diffuse                                                                                                                 |                     |                     |                     | retro-reflective           | polarised         | through-beam                               |                   |                   |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------|---------------------|---------------------|---------------------|----------------------------|-------------------|--------------------------------------------|-------------------|-------------------|
| Models                         | SS2                                                                                                                     | SS3                 | SS4/5               | SS6/SS7             | SSC                        | SSP               | SSE-SSR                                    | SSU-SSG           | SSU-SSV           |
| Sensing range Sn               | 10cm <sup>(1)</sup>                                                                                                     | 10cm <sup>(1)</sup> | 20cm <sup>(2)</sup> | 40cm <sup>(2)</sup> | 2m <sup>(3)</sup>          | 2m <sup>(3)</sup> | 8m <sup>(4)</sup>                          | 8m <sup>(5)</sup> | 3m <sup>(6)</sup> |
| Emission                       | infra-red                                                                                                               |                     |                     |                     |                            | red               | infrared                                   | red               |                   |
| Hysteresis                     |                                                                                                                         |                     |                     |                     |                            | 10%               |                                            |                   |                   |
| Repeatability                  |                                                                                                                         |                     |                     |                     |                            | 5%                |                                            |                   |                   |
| Tolerance                      | -5+15%                                                                                                                  | -0+20%Sn            |                     |                     | -5+15% of sensing range Sn |                   |                                            |                   |                   |
| Supply voltage                 | 10 - 30 VDC ripple 10% max.                                                                                             |                     |                     |                     |                            |                   |                                            |                   |                   |
| Max consumption                | 30mA                                                                                                                    | 25mA                |                     |                     | 30m A                      |                   | trans 15mA (with CHECK 35mA) receiver 20mA |                   |                   |
| Response time                  | 5ms                                                                                                                     |                     |                     |                     | 5ms                        |                   | 20ms                                       | 2ms               |                   |
| Output type                    | NPN or PNP - NO or NC                                                                                                   |                     |                     |                     |                            |                   |                                            |                   |                   |
| Load current                   | 100 mA                                                                                                                  |                     |                     |                     |                            |                   |                                            |                   |                   |
| Residual output voltage        | 1.2V max. IL = 100 mA                                                                                                   |                     |                     |                     |                            |                   |                                            |                   |                   |
| Leakage current                | 10µA max. to 30VDC                                                                                                      |                     |                     |                     |                            |                   |                                            |                   |                   |
| Output current limit           | ~200 mA at 25°C                                                                                                         |                     |                     |                     |                            |                   |                                            |                   |                   |
| Electrical protections         | against short circuit (autoreset) - polarity reversal - inductive loads                                                 |                     |                     |                     |                            |                   |                                            |                   |                   |
| Time before switch operation   | 200 ms                                                                                                                  |                     |                     |                     |                            |                   |                                            |                   |                   |
| LED status indicator           | yes (at the rear)                                                                                                       |                     |                     |                     |                            |                   |                                            |                   |                   |
| Insulation resistance          | >1000M Ohm to 1000VDC                                                                                                   |                     |                     |                     |                            |                   |                                            |                   |                   |
| Dielectric strength            | 2000VAC 50Hz for 1 Minute                                                                                               |                     |                     |                     |                            |                   |                                            |                   |                   |
| Noise immunity                 | 1000V (IEC 801-4, II) plastic housing, 500V (IEC801-4, I) metal housing                                                 |                     |                     |                     |                            |                   |                                            |                   |                   |
| Protection degree              | IP67                                                                                                                    | IEC IP65            |                     |                     | IEC IP67                   |                   |                                            |                   |                   |
| Materials                      | housing: plastic body - polyamide (nylon), metal body - nickel-plated brass, lenses: acrylic, cable exit: polycarbonate |                     |                     |                     |                            |                   |                                            |                   |                   |
| Operating temperature          | -25° + 70°C (without freeze)                                                                                            |                     |                     |                     |                            |                   |                                            |                   |                   |
| Interference by external light | 3000 lux (artificial light), 10000 lux (sunlight)                                                                       |                     |                     |                     |                            |                   |                                            |                   |                   |
| Tightening torque              | 1Nm (10 kgcm), (plastic housing) 40Nm (408 kgcm) (metal housing)                                                        |                     |                     |                     |                            |                   |                                            |                   |                   |
| Ambient humidity               | 35-85% r.h.                                                                                                             |                     |                     |                     |                            |                   |                                            |                   |                   |
| Weight (approx.)               | 100g (plastic) 120g (metal)                                                                                             |                     |                     |                     |                            |                   | 200g (plastic) 240g (metal)                |                   |                   |

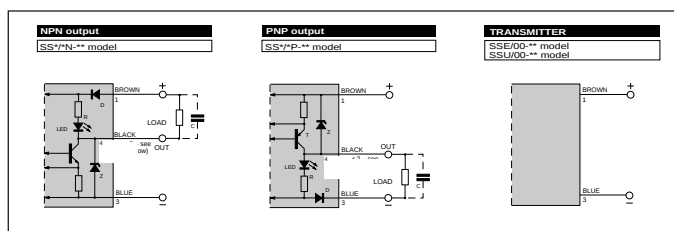
<sup>(1)</sup> referred to 100x100mm white matt paper; <sup>(2)</sup> referred to 200x200mm white matt paper; <sup>(3)</sup> with ø80mm reflector (RL110 supplied separately); <sup>(4)</sup> minimum detectable target ø7.5mm; <sup>(5)</sup> minimum detectable target ø4mm; <sup>(6)</sup> minimum detectable target ø1mm

## Options and ordering codes

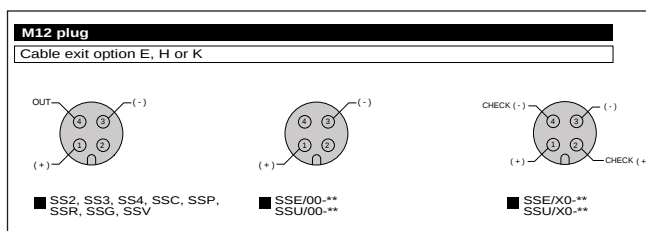
## Plug In Types



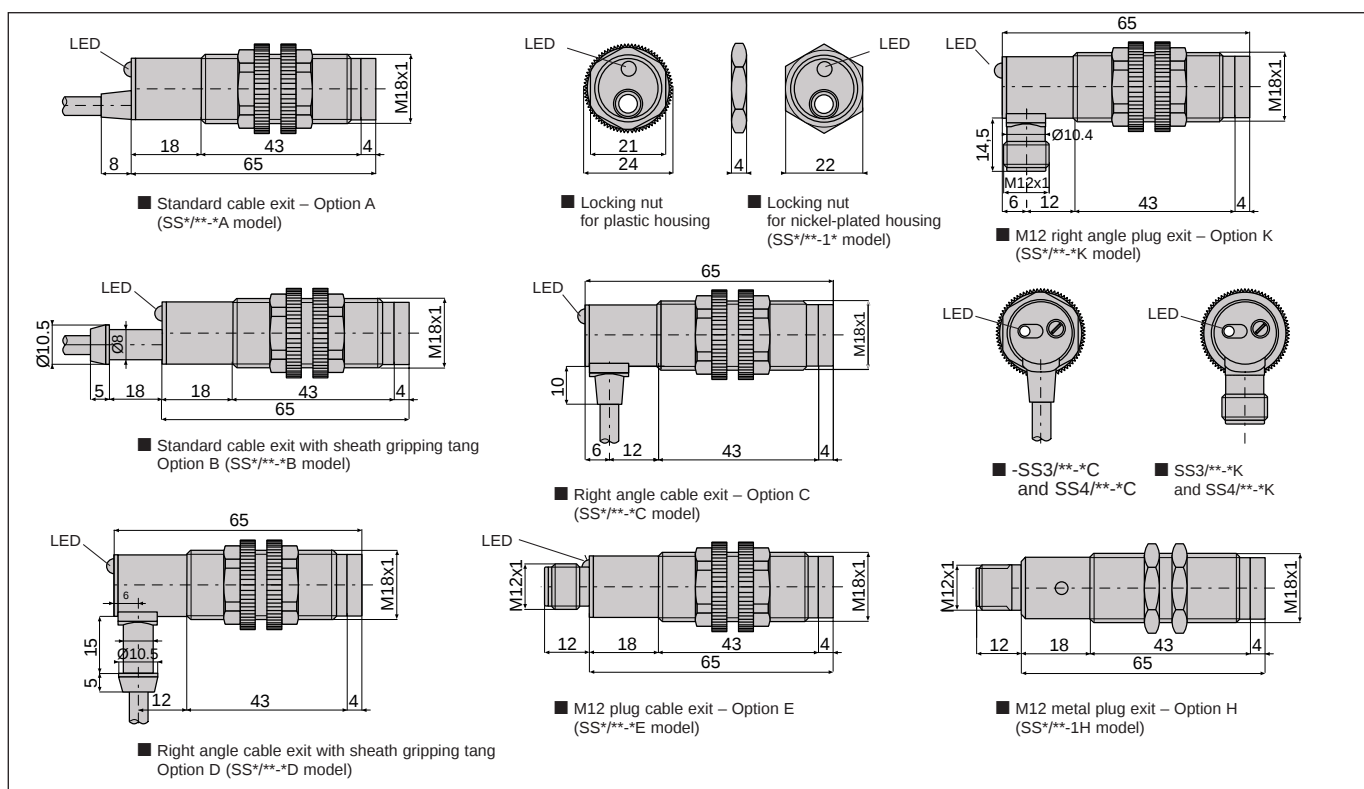
## Output circuit



## Plug-pin connections



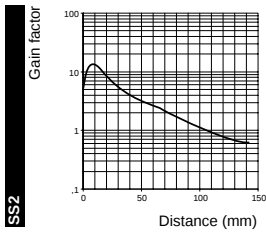
## Dimensions (mm)



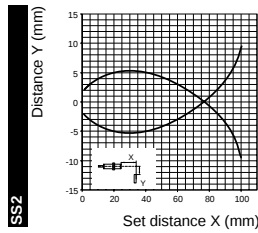
Red LED showing the output state; SSE and SSU models equipped with LED showing the presence of power supply.  
Cable: ø4.7mm, 2m length, 0.34mm<sup>2</sup> conductor section, PVC material.

## Characteristic curves

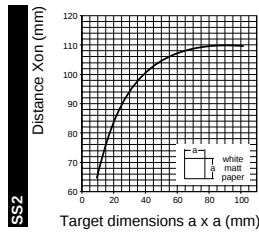
■ Excess gain



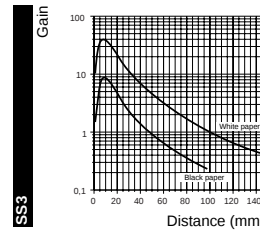
■ Parallel displacement



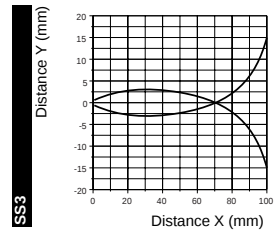
■ Distance/target size



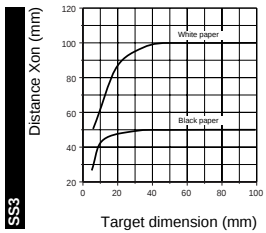
■ Excess gain



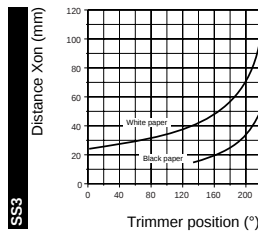
■ Parallel displacement



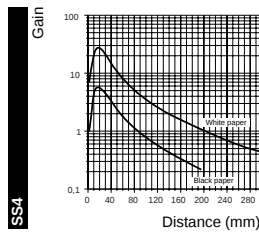
■ Distance/target size



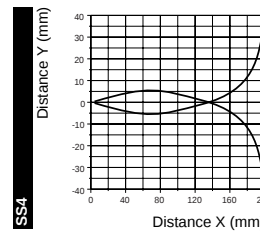
■ Trimmer linearity



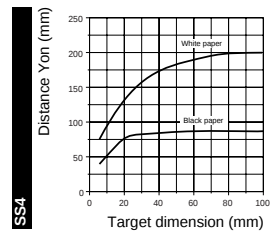
■ Excess gain



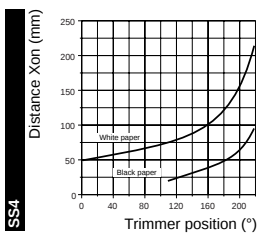
■ Parallel displacement



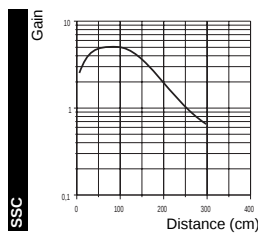
■ Distance/target size



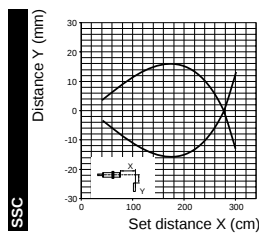
■ Trimmer linearity



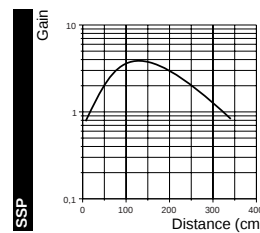
■ Excess gain



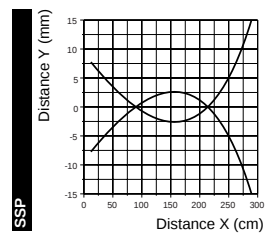
■ Parallel displacement



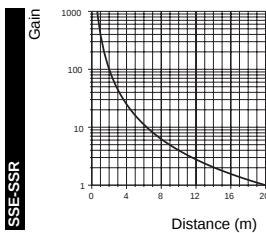
■ Excess gain



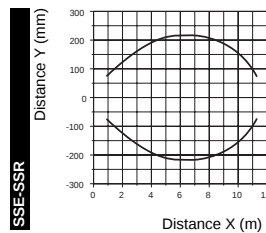
■ Parallel displacement



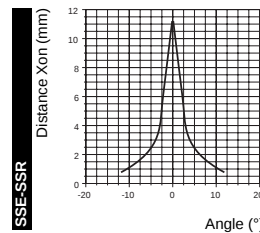
■ Excess gain



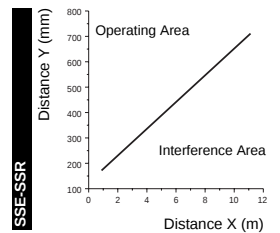
■ Parallel displacement



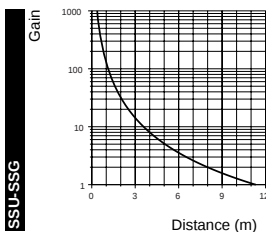
■ Angular displacement



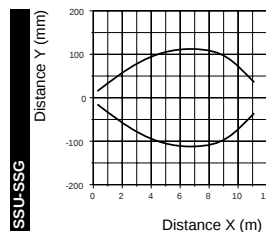
■ Mutual interference



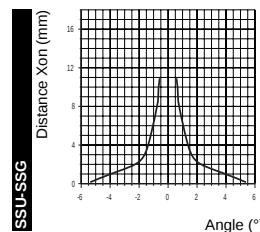
■ Excess gain



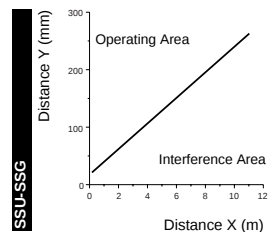
■ Parallel displacement



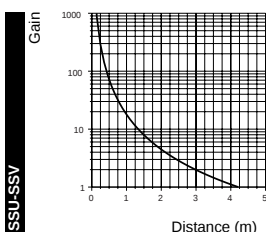
■ Angular displacement



■ Mutual interference



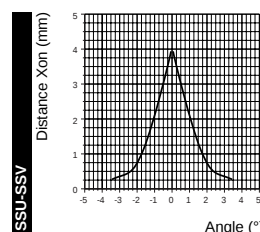
■ Excess gain



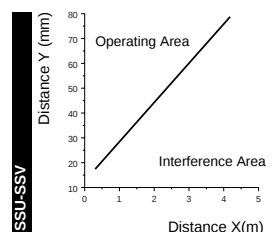
■ Parallel displacement



■ Angular displacement



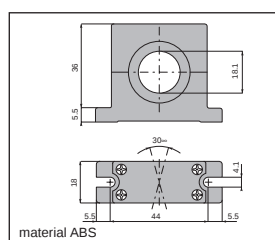
■ Mutual interference



## Accessories

| Type                      | Code           |
|---------------------------|----------------|
| Swing mount bracket       | ST02           |
| Axial mount bracket       | ST18-A         |
| Right-angle mount bracket | ST18-C         |
| Antidust front            | ST30           |
| Right angle beam adapter  | ST03           |
| Shutter                   | STOS*          |
| Protective front          | ST50           |
| Reflectors                | see RL leaflet |

### Swing mount bracket ø18mm

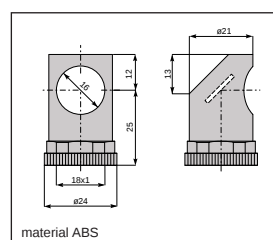


For easy mounting and alignment of retro-reflective and through-beam photoelectric switches ø18mm:

- 1 fasten the mount bracket and lightly tighten the 4 self-tapping screws
- 2 direct the photoelectric switch to find the optimum position. The accessory allows rotation in all directions at an angle of 15° max.
- 3 clamp the 4 screws in the defined position

15°

### Right angle beam adapter ø18mm



For directing the photoelectric detection at 90° to the photoelectric switch optical axes for ø18mm\* sensors.

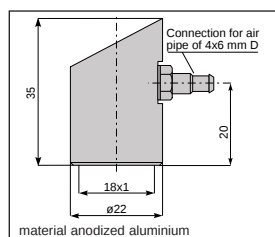
This accessory consists of an internal threaded body to be screwed on the optical head of the photoelectric switch.

The mirror inside the body is set at 45° to the optical axes of the sensor allowing detection at 90°.

The sensitivity loss is approx. 20-30%.

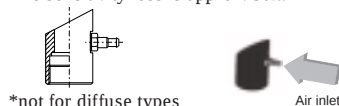
\*Not for diffuse types.

### Antidust front ø18mm



This is used to prevent dust or other deposits on the lenses of photoelectric switches ø18mm\*, thus ensuring constant detection is maintained. It consists of a threaded body with a side air inlet pipe.

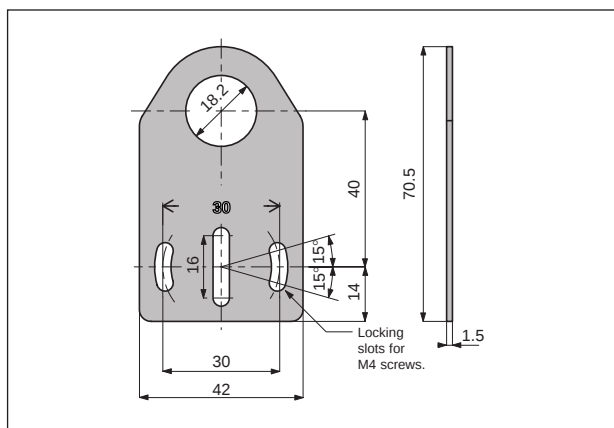
The sensitivity loss is approx. 30%.



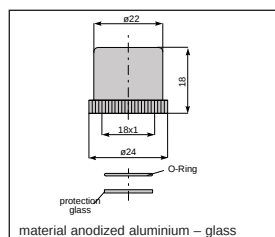
\*not for diffuse types

Air inlet

### Axial mount bracket (ST18-A model)



### Protective front ø18mm



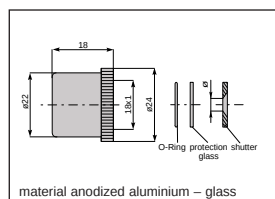
For the protection of the lenses of photoelectric switches ø18mm\*. It allows use of the sensor even in particularly aggressive conditions (presence of chemical solvents etc.)

The system consists of a threaded metal body, an O-ring and a protection glass.

The sensitivity loss is approx. 25%.

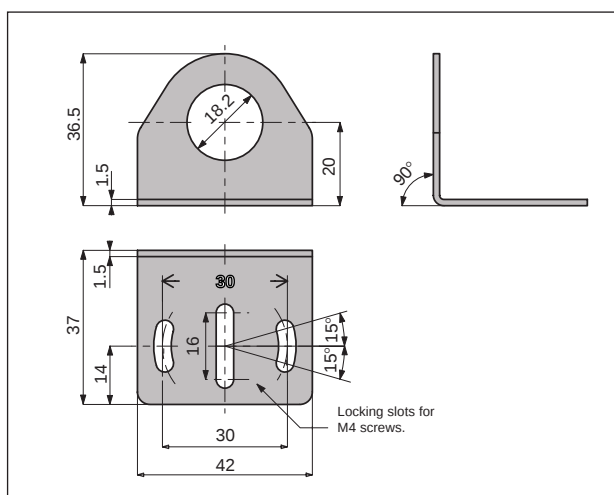
\*not for diffuse types

### Shutter ø18mm



This accessory, available for through-beam photoelectric switches ø18mm, reduces the emitted beam allowing the detection of small targets (down to 1mm). The shutter consists of a threaded ring nut, a protection glass, an O-ring and an aperture to be screwed on the optical head of both transmitter and receiver.

### Right angle mount bracket (ST18-A model)



| Shutter code                  | STOS2 | STOS3 | STOS4 | STOS6 | STOS8 |
|-------------------------------|-------|-------|-------|-------|-------|
| Ø shutter aperture (mm)       | 2     | 3     | 4     | 6     | 8     |
| SSE/SSR sensing range (m)     | N/A   | 1     | 1.5   | 3.5   | 6.5   |
| Ø min. detectable object (mm) | N/A   | 1.5   | 2     | 3     | 4     |
| SSU/SSG sensing range (m)     | 1     | 2.5   | 4.5   | N/A   | N/A   |
| Ø min. detectable object (mm) | 1     | 1.5   | 2     | N/A   | N/A   |