M18 DC Photoelectric Switches with optional diffuse sensitivity adjustment

SS

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

S S 2 / A N – 0 A

Photoelectric switches ø18mm	S S		
10cm diffuse	2	A	Standard cable exit
10cm diffuse with sens. adjust.	3	C	Right angle cable exit
20cm diffuse with sens. adjust.	4	0	Plastic housing
20cm diffuse	5	N	NPN output type
40cm diffuse with sens. adjust.	6	P	PNP output type
40cm diffuse	7	O	Transmitter
2m retro-reflective	C		
2m polarised retro-reflective	P		
Standard transmitter	E		
8m standard receiver	R		
NO output state	A		
Transmitter without CHECK	O		

PRICE INFORMATION AND ORDERING

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(1)	10cm(1)	20cm(2)	40cm(2)	2m(3)	2m(3)	8m(4)	8m(5)	3m(6)
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)		

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

Options and ordering codes

Plug In Types

S S 2 / A N – 0 E

Photoelectric switches ø18mm	S S	
10cm diffuse	2	
10cm diffuse with sens. adjust.	3	
20cm diffuse with sens. adjust.	4	
2m retro-reflective	C	
2m polarised retro-reflective	P	
Standard transmitter	E	
8m standard receiver	R	
NO output state	A	
Transmitter without CHECK	O	
	E	M12 plastic plug
	K	M12 right-angle plug
	0	Plastic housing
	N	NPN output type
	P	PNP output type
	O	Transmitter

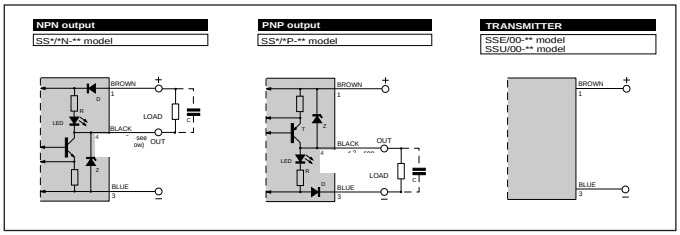
PRICE INFORMATION AND ORDERING

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.

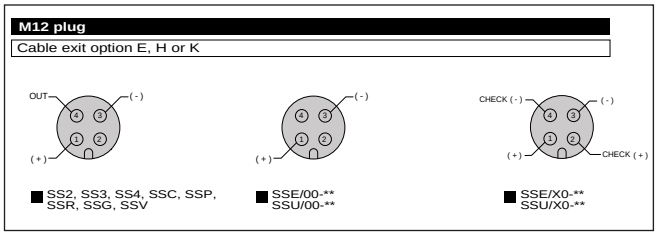
Note: SS3 and SS4 models are available with only type C or K cable exits (right angle cable and M12 right angle plug).

Connectors – please see page 332

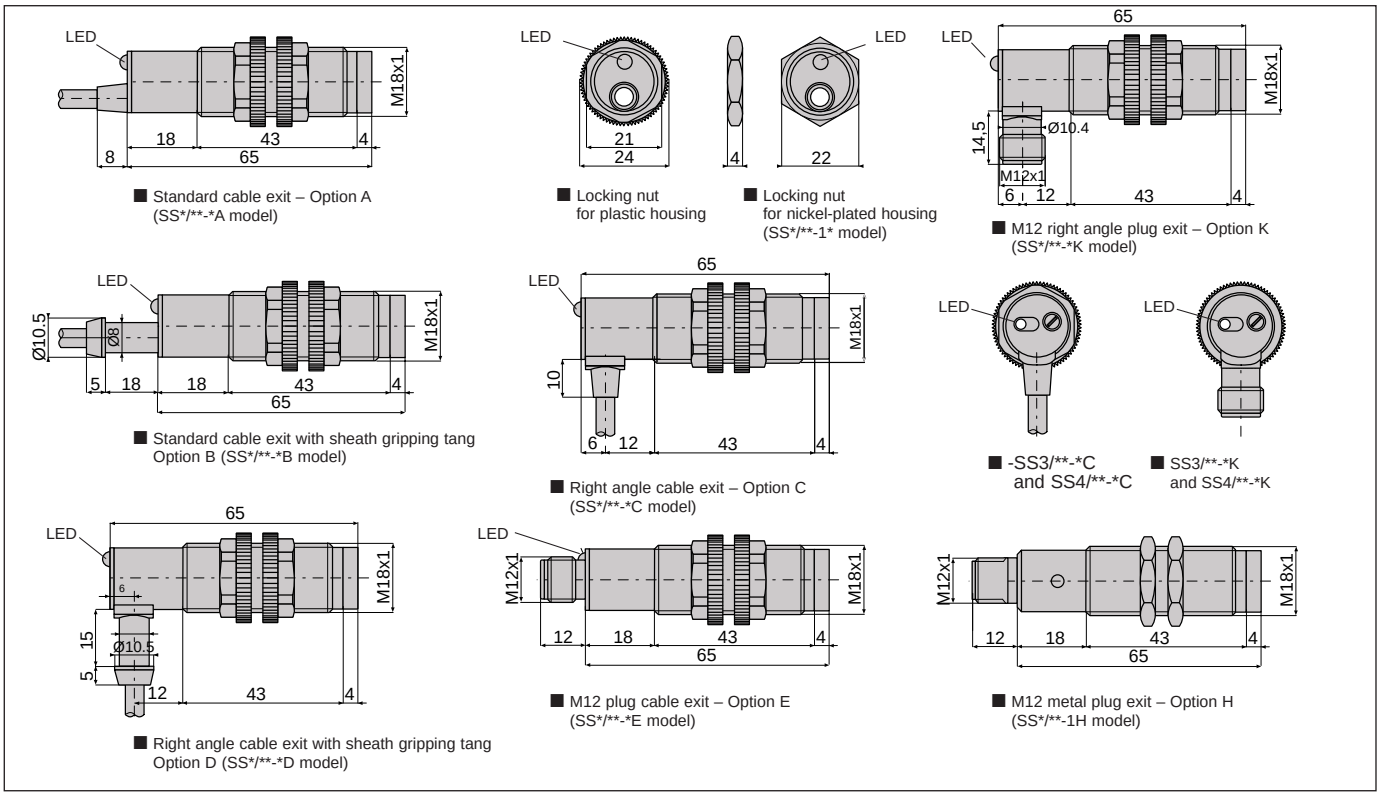
Output circuit



Plug-pin connections



Dimensions (mm)

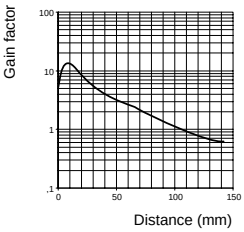


Red LED showing the output state; SSE and SSU models equipped with LED showing the presence of power supply.
Cable: ø4.7mm, 2m length, 0.34mm² conductor section, PVC material.

Characteristic curves

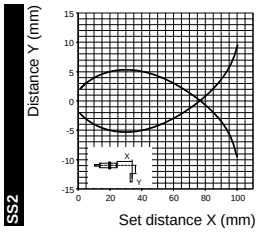
■ Excess gain

SS2



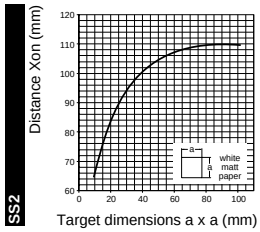
■ Parallel displacement

SS2



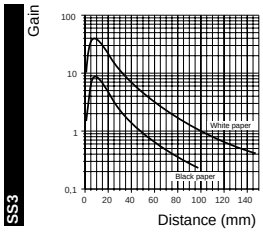
■ Distance/target size

SS2



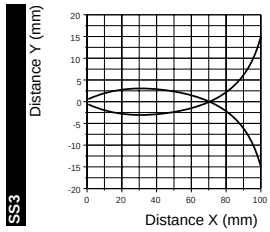
■ Excess gain

SS3



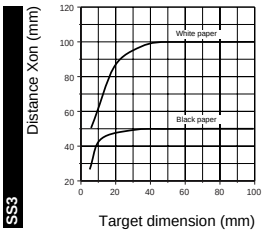
■ Parallel displacement

SS3



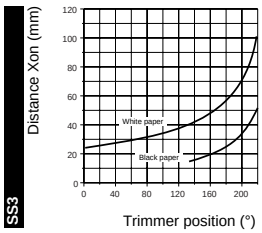
■ Distance/target size

SS3



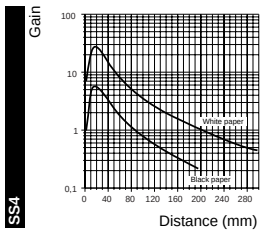
■ Trimmer linearity

SS3



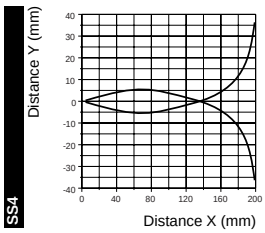
■ Excess gain

SS4



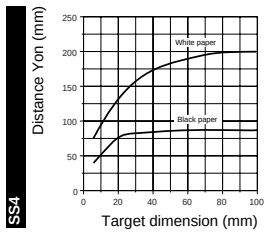
■ Parallel displacement

SS4



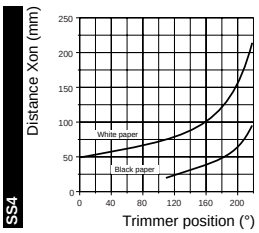
■ Distance/target size

SS4



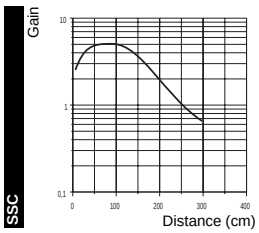
■ Trimmer linearity

SS4



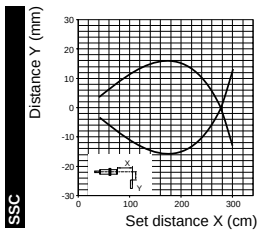
■ Excess gain

SSC



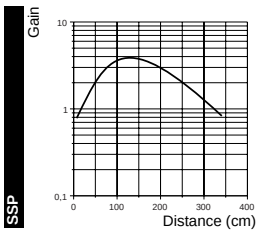
■ Parallel displacement

SSC



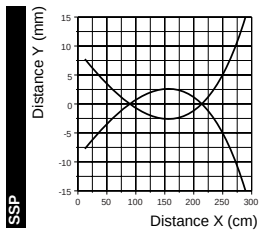
■ Excess gain

SSP



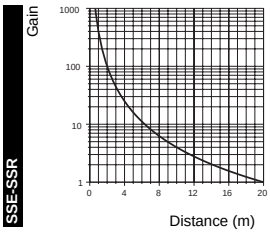
■ Parallel displacement

SSP



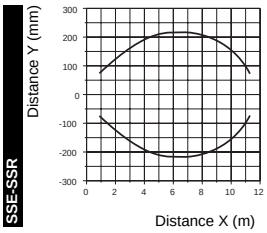
■ Excess gain

SSE-SSR



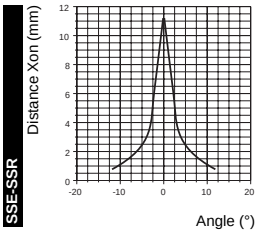
■ Parallel displacement

SSE-SSR



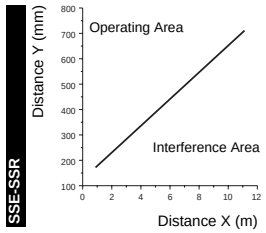
■ Angular displacement

SSE-SSR



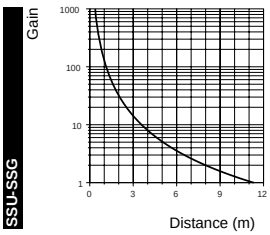
■ Mutual interference

SSE-SSR



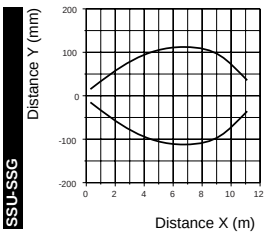
■ Excess gain

SSU-SSG



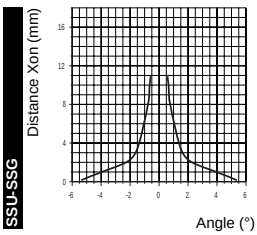
■ Parallel displacement

SSU-SSG



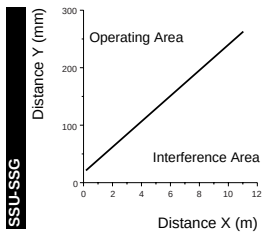
■ Angular displacement

SSU-SSG



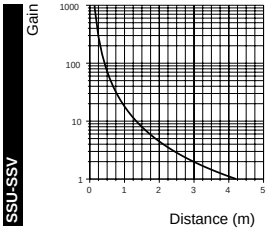
■ Mutual interference

SSU-SSG



■ Excess gain

SSU-SSV

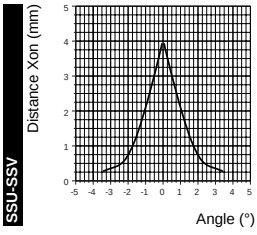


■ Parallel displacement

SSU-SSV

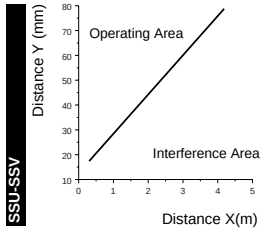
■ Angular displacement

SSU-SSV



■ Mutual interference

SSU-SSV

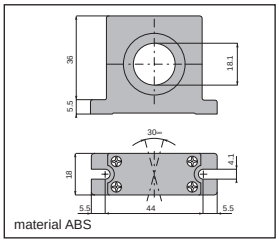


Accessories

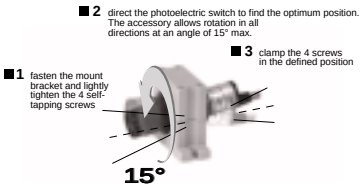
Type	Code
Swing mount bracket	ST02
Axial mount bracket	ST18-A
Right-angle mount bracket	ST18-C
Antidust front	ST30
Right angle beam adapter	ST03
Shutter	STOS*
Protective front	ST50
Reflectors	see RL leaflet

PRICE INFORMATION AND ORDERING

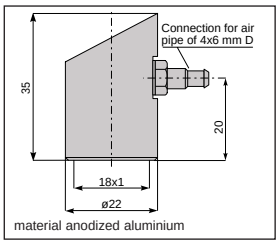
Swing mount bracket ø18mm



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



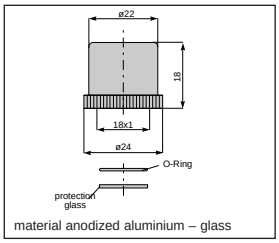
Antidust front ø18mm



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

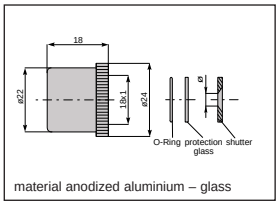
Protective front ø18mm



For the protection of the lenses of photoelectric switches ø18mm*. It allows use of the sensor even in particularly aggresive 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

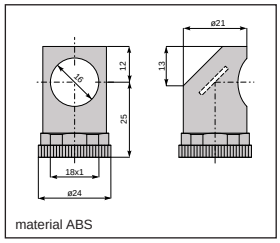
Shutter ø18mm



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.

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

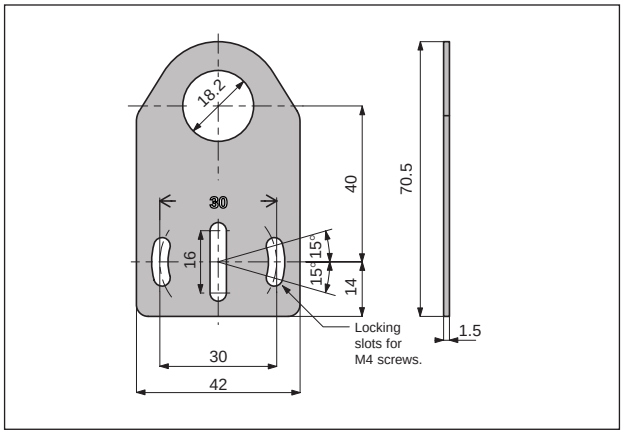
Right angle beam adapter ø18mm



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.

Axial mount bracket (ST18-A model)



Right angle mount bracket (ST18-A model)