S5 SERIES
INSTRUCTION MANUAL

CONTROLS

OUTPUT LED
The red LED indicates the output status.

STABILITY LED (S5-5-x)
The green LED ON indicates that the received signal has a reserve greater than 30% compared to the output switching value.

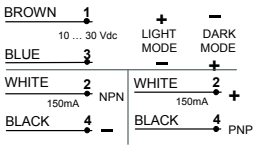
TRIMMER (S5-x-B3/C30/C35/C60/D14/E1/F8/F12)
The trimmer can be used to adjust sensitivity; the operating distance increases turning the trimmer clockwise.

WARNING: *The trimmer rotation is limited to 270° by a mechanical stop. Do not apply excessive torque when adjusting (max 40 Nmm).*

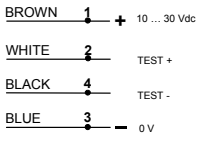
POWER ON LED (S5-x-G8/G12)
The red LED indicates that the sensor is operating.

CONNECTIONS

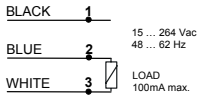
S5-5-x (4 wires)



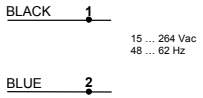
S5-5-G8/G12 (4 wires)



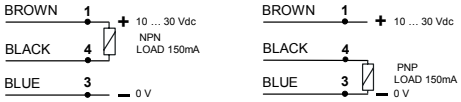
S5-1-x



S5-1-G8



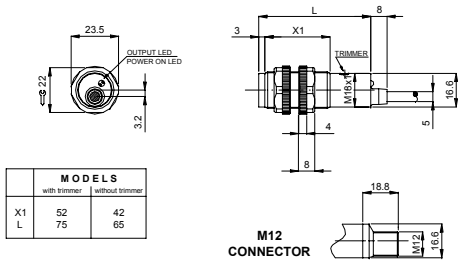
S5-5-x (3 wires)



M12 CONNECTOR

DIMENSIONS

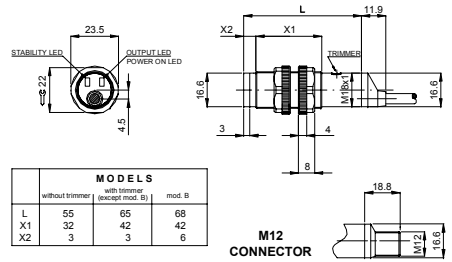
AC AXIAL VERSION



MODELS	with trimmer	without trimmer
X1	52	42
L	75	65

M12 CONNECTOR

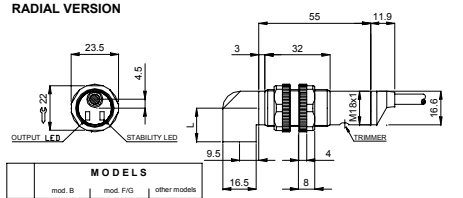
DC AXIAL VERSION



MODELS	without trimmer	with trimmer (except mod. B)	mod. B
L	55	65	68
X1	32	42	42
X2	3	3	6

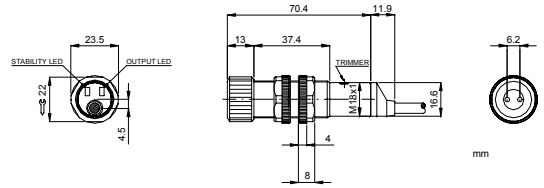
M12 CONNECTOR

RADIAL VERSION



MODELS	mod. B	mod. F/G	other models
L	19.5	20.5	16.5

FIBRE OPTIC VERSION



TECHNICAL DATA

	S5-5-x		S5-1-x	
	AXIAL VERSION	RADIAL VERSION	AXIAL VERSION	RADIAL VERSION
Power supply:	10 … 30 Vdc limit values		15 … 264 Vac (48 … 62 Hz) limit values	
Ripple:	2 Vpp max.		-	
Current consumption (output current excluded):	30 mA max.		10 mA max.	
Output:	NPN/PNP selectable; 30 Vdc max. (short-circuit protection at 200 mA)		SCR + bridge rectifier – 264 Vac	
Output current:	150 mA max.		100 mA max.	
Output saturation voltage:	2.5 V max. / 1.2 V max. mod. L2			
Rated insulation voltage:	-		250 Vac (test 1500 Vac 1 minutes)	
Output leakage:	50µA at 30 Vdc		1mA max. at 264 Vac	
Response time:	1 ms max. 2 ms max. mod. F8/F12/G8/G12 6 ms max. mod. L2		20 ms max.	
Switching frequency:	500 Hz max. 250 Hz max. mod. F8/F12/G8/G12 175 Hz max. mod. L2		25 Hz max.	
Indicators:	OUTPUT LED (RED) / STABILITY LED (GREEN) / POWER ON LED (RED) mod. G8/G12			
Setting:	sensitivity trimmer mod. B3/C30/C35/C60/D14/E1/F8/F12			
Operating temperature:	-25 … 55 °C			
Storage temperature:	-25 … 70 °C			
Electric shock protection:	Class 2		Class 1	
Operating distance (minimum):	A4: 0.1 … 4 m on R2 B3: 0.1 … 3 m on R2 C10: 1 … 10 cm C35: 1 … 35 cm C60: 1… 60 cm D14: 10 … 20 mm D15: 10 … 20 mm F12/G12: 0 … 12 m L2: 2 … 15 mm T1: 0.1 … 0.8 m on R2 E1 (OF-18): 22 mm E1 (OF-19): 85 mm	A4: 0.1 … 4 m on R2 B3: 0.1 … 3 m on R2 C10: 1 … 10 cm C35: 1 … 35 cm C60: 1… 60 cm D15: 10 … 20 mm	A2: 0.1 … 2 m on R2 C8: 1 … 8 cm C30: 1 … 30 cm D14: 10 … 20 mm D15: 10 … 20 mm F8/G8: 0 … 8 m	
Emission type:	INFRARED (880 nm) / RED (660 nm) mod. B3/D14/E1			
Ambient light rejection:	according to EN 60947-5-2			
Vibration:	10 … 55 Hz, 1.5 mm amplitude in each X, Y, Z axis for 2 hours			
Shock resistance:	500 ms (approx. 50 G) 3 shock in each 3 axis			
LIGHT/DARK selection:	by inverting the power supply wires (4 wires versions)			
Housing:	ABS UL 94V-O (TYPE 1 ENCLOSURE)			
Connector:	Polycarbonate		ABS UL 94V-O	
Lenses:	PMMA plastic			
Protection class:	IP67			
Connections:	2 m cable ∅ 5 mm / M12 4-pole connector			
Weight:	100 g. max. cable versions / 25 g. max. connector versions			

SETTING

The following procedures are valid for LIGHT mode operation.

Alignment S5-x-A2/A4/B3/T1
Position the sensor and reflector on opposite sides.
Find the points where the red LED (OUT) is switched ON and OFF in both vertical and horizontal positions, and fix the sensor in the centre between these points.
B/T models: Turn the sensitivity trimmer to maximum; if necessary reduce sensitivity in order to detect very small or transparent targets. In order to improve alignment, repeat the procedure detailed above whilst progressively reducing the sensitivity.

Alignment S5-x-F8/G8/F12/G12/E1 (E/R fibres)
Position the sensors on opposite sides.
Turn the sensitivity trimmer to maximum. Find the points where the red LED (OUT) is switched ON and OFF in both vertical and horizontal positions, and fix the sensor in the centre between these points. Optimum operation is obtained when both LEDs switch ON.
If necessary, reduce sensitivity using the trimmer, in order to detect very small targets. In order to improve alignment, repeat the procedure detailed above whilst progressively reducing the sensitivity.

Alignment S5-x-C30/C35/C60/D14/E1 (proximity fibres)
Position the sensor and turn the sensitivity trimmer at minimum: the green LED is ON and the red LED is OFF.

Place the target opposite the sensor. Turn the sensitivity trimmer clockwise until the red LED turns ON *(Target detected state, pos.A)*.
Remove the target, the red LED turns OFF. Turn the trimmer clockwise until the red LED turns ON *(Background detected state, pos.B)*.
The trimmer reaches maximum if the background is not detected.
Turn the trimmer to the intermediate position C, between the two positions A and B. The green LED must be ON.

Alignment S5-x-C8/C10/D15/L2
The operating distance range of these sensors is factory preset: please consider this feature when positioning.

TEST FUNCTION (S5-x-G8/G12)

The TEST+ and TEST- inputs can be used to inhibit the emitter and verify that the system is correctly operating.
The receiver output should switch when the test is activated while the beam is uninterrupted.
The inputs activating voltage range is 10 … 30 Vdc, whilst respecting the polarity.

DECLARATION OF CONFORMITY
We DATASENSOR S.p.A. declare under our sole responsibility that these products are conform to the 89/336 CEE, 73/23 CEE Directives and successive amendments.

WARRANTY
DATASENSOR S.p.A. warrants its products to be free from defects.
DATASENSOR S.p.A. will repair or replace, free of charge, any product found to be defective during the warranty period of 36 months from the manufacturing date.
This warranty does not cover damage or liability deriving from the improper application of DATASENSOR products.

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826000176 Rev.F

S5-5-xxx-4/5x SERIES
INSTRUCTION MANUAL

CONTROLS

OUTPUT LED
The yellow LED indicates the output status.

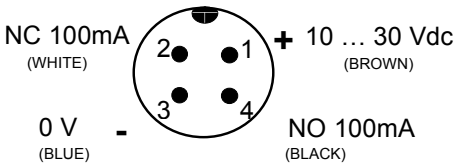
STABILITY LED (S5-5-B/E)
The green LED ON indicates that the received signal has a reserve greater than 30% compared to the output switching value.

TRIMMER (S5-5-B/E)
The trimmer can be used to adjust the sensitivity; the operating distance increases turning the trimmer clockwise.

WARNING: *The trimmer rotation is limited to 270° by a mechanical stop. Do not apply excessive torque when adjusting (max 40 Nmm).*

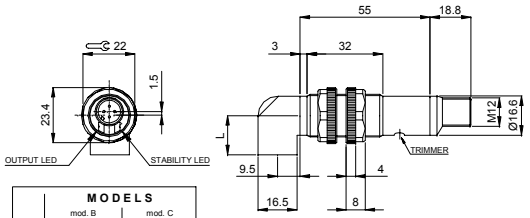
CONNECTIONS

M12 CONNECTOR



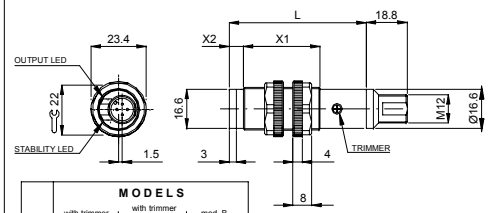
DIMENSIONS

RADIAL VERSION



MODELS	mod. B	mod. C
L	19.5	16.5

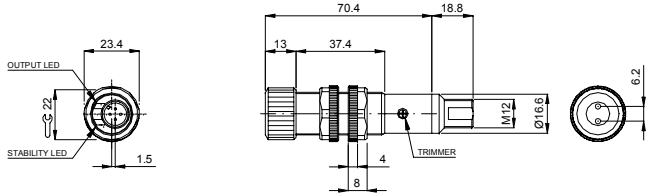
AXIAL VERSION



MODELS	with trimmer	with trimmer (except mod. B)	mod. B
L	55	65	68
X1	32	42	42
X2	3	3	6

mm

FIBRE OPTIC VERSION



TECHNICAL DATA

	AXIAL VERSION	RADIAL VERSION
Power supply:	10 … 30 Vdc limit values	
Ripple:	2 Vpp max.	
Current consumption (output current excluded):	30 mA max.	
Output:	NC and NO; PNP or NPN (short-circuit protection)	
Output current:	100 mA max.	
Output saturation voltage:	2 V max.	
Response time:	1 ms max.	
Switching frequency:	500 Hz max.	
Indicators:	OUTPUT LED (YELLOW) / STABILITY LED (GREEN) mod.B/E	
Setting:	sensitivity trimmer mod. B/E	
Operating temperature:	-25 … 55 °C	
Storage temperature:	-25 … 70 °C	
Electric shock protection:	Classe 2	
Operating distance (minimum):	B3: 0.1 … 3 m on R2 C10: 1 … 10 cm E (OF-18): 22 mm E (OF-19): 85 mm	B3: 0.1 … 3 m on R2 C10: 1 … 10 cm
Emission type:	INFRARED (880 nm) / RED (660 nm) mod. B1,5/B3/D14/E1	
Ambient light rejection:	according to EN 60947-5-2	
Vibration:	10 … 55 Hz, 1.5 mm amplitude in each X, Y, Z axis for 2 hours	
Shock resistance:	500 ms (approx. 50 G) 3 shock in each 3 axis	
Operation mode:	LIGHT mode mod.S5-5-C/E and DARK mode mod.S5-5-B	
Housing:	ABS UL 94V-O (TYPE ENCLOSURE)	
Connector:	Polycarbonate	
Lenses:	PMMA plastic	
Protection class:	IP67	
Connections:	M12 4-pole connector	
Weight:	25 g. max.	

SETTING

Alignment S5-5-B
Position the sensor and reflector on opposite sides.
Turn the sensitivity trimmer to maximum. Find the points where the yellow LED (OUT) is switched ON and OFF in both vertical and horizontal positions, and fix the sensor in the centre between these points. Optimum operation is obtained when both LEDs switch ON.
If necessary, reduce the sensitivity in order to detect very small targets.
In order to improve the alignment, repeat the procedure detailed above progressively reducing the sensitivity.

Alignment S5-5-E (OF-19 E/R fibres)
Position the fibre tips on opposite sides.
Turn the sensitivity trimmer to maximum. Find the points where the yellow LED (OUT) is switched ON and OFF in both vertical and horizontal positions, and fix the sensor in the centre between these points. Optimum operation is obtained when both LEDs switch ON.
If necessary, reduce the sensitivity using the trimmer, in order to detect very small targets. In order to improve the alignment, repeat the procedure detailed above progressively reducing the sensitivity.

Alignment S5-5-E (OF-18 proximity fibres)
Position the sensor and turn the sensitivity trimmer at minimum:
the green LED is ON and the yellow LED is OFF.
Place the target opposite the fibre tip.
Turn the sensitivity trimmer clockwise until the yellow LED turns ON *(Target detected state, pos.A)*.
Remove the target, the yellow LED turns OFF.
Turn the trimmer clockwise until the yellow LED turns ON *(Background detected state, pos.B)*.
The trimmer reaches maximum if the background is not detected.
Turn the trimmer to the intermediate position C, between the two positions A and B. The green LED must be ON.

Alignment S5-5-C
The operating distance range of these sensors is factory preset: please consider this feature when positioning.

DECLARATION OF CONFORMITY
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826000981 Rev.A

S5W SERIES
INSTRUCTION MANUAL

CONTROLS

OUTPUT LED
The red LED indicates the output status.

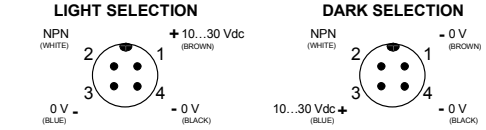
TRIMMER
The trimmer can be used to adjust sensitivity; the operating distance increases turning the trimmer clockwise.

WARNING: *The trimmer rotation is limited to 270° by a mechanical stop. Do not apply excessive torque when adjusting (max 40 Nmm).*

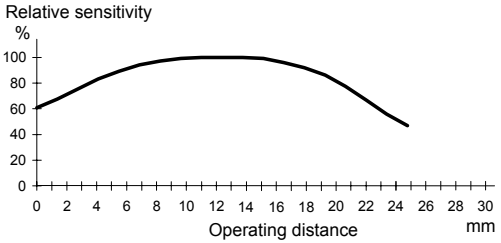
CONNECTIONS

PNP OUTPUT

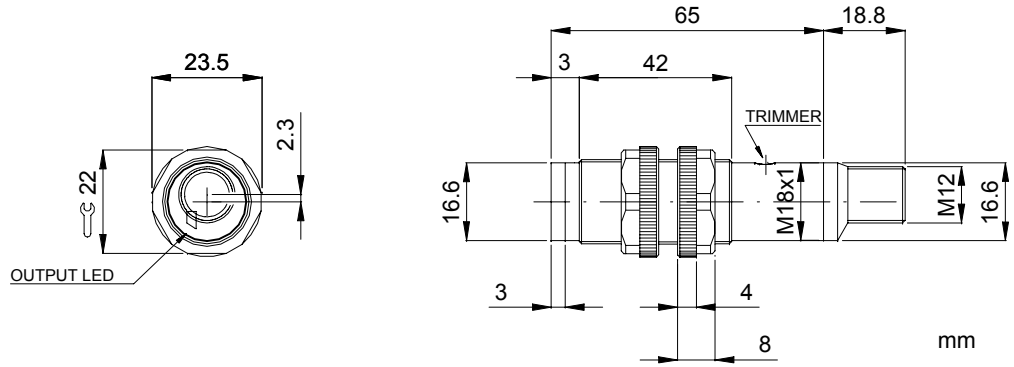
NPN OUTPUT



DETECTION DIAGRAM



DIMENSIONS



TECHNICAL DATA

Power supply:	10 … 30 Vdc limit values
Ripple:	2 Vpp max.
Current consumption (output current excluded):	30 mA max.
Output:	NPN/PNP selectable; 30 Vdc max. (short-circuit protection at 200 mA)
Output current:	150 mA max.
Output saturation voltage:	2.5 V max.
Output leakage:	50µA at 30 Vdc
Response time:	333 µs max.
Switching frequency:	1500 Hz max.
Indicators:	OUTPUT LED (RED)
Setting:	sensitivity trimmer
Operating temperature:	-25 … 55 °C
Storage temperature:	-25 … 70 °C
Electric shock protection:	Class 2
Operating distance (minimum):	10 … 12 mm
Minimum spot dimension:	∅4 mm
Depth of field:	± 2 mm
Emission type:	LED with white light (400-700 nm)
Ambient light rejection:	according to EN 60947-5-2
Vibration:	10 … 55 Hz, 1.5 mm amplitude in each X, Y, Z axis for 2 hours
Shock resistance:	500 ms (approx. 50 G) 3 shock in each 3 axis
LIGHT/DARK selection:	by inverting the power supply wires (4 wires versions)
Housing:	ABS UL 94V-O (TYPE 1 ENCLOSURE)
Connector:	Polycarbonate
Lenses:	PMMA plastic
Protection class:	IP67
Connections:	M12 4-pole connector
Weight:	25 g. max. connector versions

SETTING

Alignment procedure with dark mark on light background.
The following procedures are valid for DARK mode operation.
Position the sensor and turn the sensitivity trimmer at maximum.
Place the mark opposite the sensor.
Turn the coarse sensitivity trimmer unclockwise until red LED turns ON *(Mark detected state)*.
Place the background opposite the sensor and the red LED turns OFF.

Alignment procedure with light mark on dark background.
The following procedures are valid for LIGHT mode operation.
Position the sensor and turn the sensitivity trimmer at maximum.
Place the mark opposite the sensor.
Turn the coarse sensitivity trimmer unclockwise until red LED turns ON *(Mark detected state)*.
Place the background opposite the sensor and the red LED turns OFF.

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826000912 Rev.C