

## S20 SERIES INSTRUCTION MANUAL

### CONTROLS

#### OUTPUT LED (S20-x-B/C/F/M)

The yellow LED indicates the output status.

#### STABILITY LED (S20-x-B/C/F)

The green LED ON indicates that the received signal has a safety margin greater than 30% compared to the output switching value.

#### TRIMMER (S20-x-B/C/F)

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 (S20-x-G)

The green LED indicates that the sensor is operating.

#### READY/ALARM BI-COLOUR LED (S20-x-M)

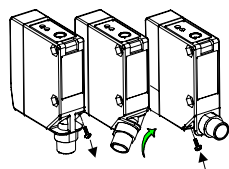
During functioning, the green LED ON indicates a normal operating condition; red blinking indicates an overload condition. See the "SETTING" paragraph for setup procedure indications.

#### SET PUSHBUTTON (S20-x-M)

The pushbutton activates the setup procedure.

### INSTALLATION

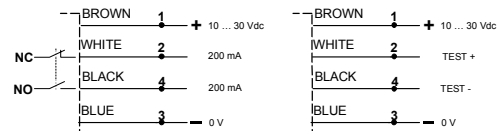
The M12 connector or cable exit can be rotated 90° by loosening the locking screw. Tighten the locking screw when finished.



### CONNECTIONS

#### S20-x-B/C/M/F

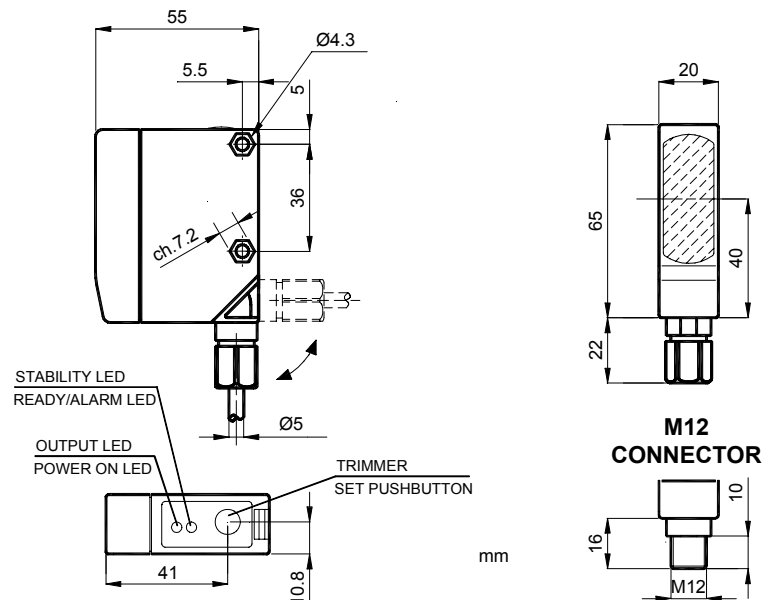
#### S20-x-G



#### M12 CONNECTOR



### DIMENSIONS



### TECHNICAL DATA

	S20-x-B	S20-x-C	S20-x-F/G	S20-x-M
Power supply:	10 ... 30 Vdc; reverse polarity protection			
Ripple:	2 Vpp max.			
Current consumption (output current excluded):	40 mA max.			50 mA max.
Output:	NC and NO; NPN or PNP; 30 Vdc max. (short-circuit protection)			
Output current:	200 mA max.			
Output saturation voltage:	1V max. NPN versions / 2V max. PNP versions			
Response time:	1 ms max.			
Switching frequency:	500 Hz max.			
Indicators:	OUTPUT LED (yellow) mod.B/C/F STABILITY LED (green) mod.B/C/F POWER ON LED (green) mod.G			OUTPUT LED (yellow) READY/ALARM LED (green/red)
Setting:	sensitivity trimmer			SET pushbutton
Data retention:				EEPROM non-volatile memory
Operating temperature:	-25 ... 55 °C			
Storage temperature:	-25 ... 70 °C			
Electric shock protection:	Class 2			
Operating distance (minimum):	see TAB.1	1 ... 200 cm	0 ... 50 m	10 ... 50 cm
Emission type:	RED (660 nm)	INFRARED (880 nm)		RED (660 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			
DARK/LIGHT selection:	LIGHT mode on NO output			
Housing:	ABS UL 94V-O (TYPE 1 ENCLOSURE)			
Lenses:	PMMA plastic			
Protection class:	IP66			
Connections:	2 m cable Ø 5 mm / M12 4-pole connector			
Weight:	130 g. max. cable versions / 50 g. max. connector versions			

### TEST FUNCTION (S20-x-G)

The TEST+ and TEST- 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.

### SETTING

The following procedures are valid for LIGHT mode operation.

#### Alignment S20-x-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 sensitivity in order to detect very small targets. In order to improve alignment, repeat the procedure detailed above whilst progressively reducing the sensitivity.

#### Alignment S20-x-F/G

Position the sensors 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 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 S20-x-C

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 sensor.

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 S20-x-M

Place the target opposite the sensor at the required max. distance.

Press the SET pushbutton until the READY/ALARM LED turns OFF.

Release the pushbutton and wait for the READY/ALARM LED to turn ON again. Don't move the target during this phase.

If the READY/ALARM LED flashes red and green the setup procedures has failed due to insufficient contrast or excessive distance.

If both the yellow LED and the READY/ALARM LED (in green) turn ON, a safe operation has been obtained; in this case the sensor is set at the required distance, considering the hysteresis range.



TAB.1: S20-x-B max. operating distance table (meters).

		REFLECTOR					
		R1	R2	R3	R4	R5	R6
B		4.2	7	6	9	9	11

#### 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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