

## S6 SERIES INSTRUCTION MANUAL

### CONTROLS

#### OUTPUT LED

The red LED indicates the output status.

#### STABILITY LED (S6/S6T/S6R-5-M25)

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

#### SENSITIVITY TRIMMER (S6/S6T/S6R-x-A/B/C/F/T)

#### ADJUSTMENT SCREW (S6/S6T/S6R-5-M25)

This control can be used to adjust sensitivity (trimmer) or cutoff distance (screw); the operating distance increases turning the control clockwise.

#### DARK/LIGHT TRIMMER (S6-1-A/B/C/F/T)

The DARK/LIGHT mode can be set rotating the trimmer counterclockwise or clockwise.

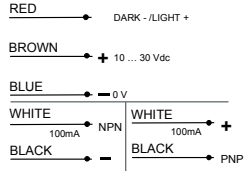
**WARNING:** The trimmers rotation is limited to 270° by a mechanical stop. Do not apply excessive torque when adjusting (max 40 Nmm).

#### POWER ON LED (S6/S6T-x-G)

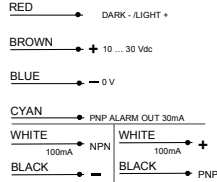
The red LED indicates that the sensor is operating.

### CONNECTIONS

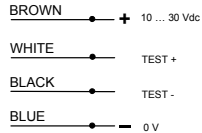
#### S6-5-A/B/C/M/T



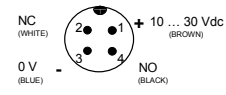
#### S6-5-F



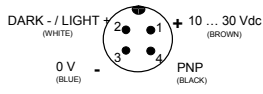
#### S6-5-G



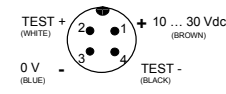
#### S6R-5-A/B/C/F/M/T



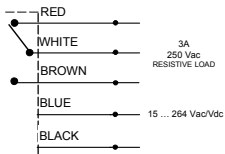
#### S6T-5-A/B/C/F/M/T



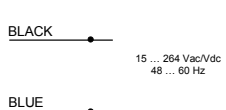
#### S6T-5-G



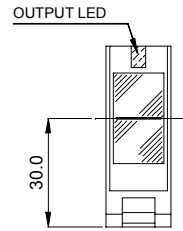
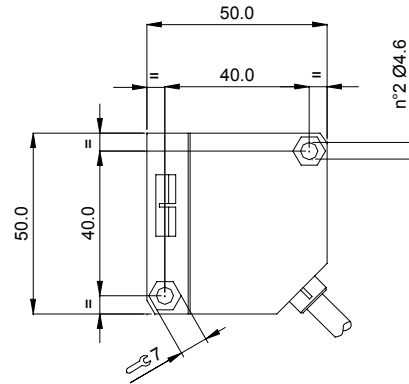
#### S6-1-A/B/C/F/T



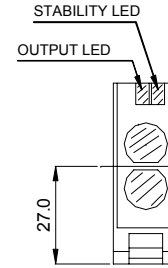
#### S6-1-G



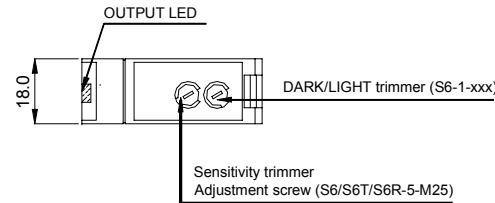
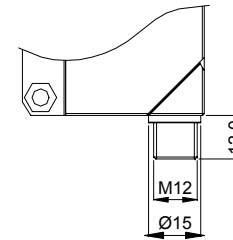
### DIMENSIONS



#### S6/S6T/S6R-5-M25



#### M12 CONNECTOR S6T/S6R-5-xx



### TECHNICAL DATA

	S6/S6T/S6R-5-xx	S6-1-xx
Power supply:	10 ... 30 Vdc limit values	15 ... 264 Vac (48 ... 60 Hz) limit values
Ripple:	2 Vpp max.	-
Current consumption (output current excluded):	30 mA max.	40 mA max.
Output:	S6: NPN/PNP; 30 Vdc max. S6T: PNP; 30 Vdc max. S6R: NPN or PNP NC/NO; 30 Vdc max.	Relay 1 NO and NC contact 250 Vac, 30 Vdc min. applicable load: 5 Vdc, 10 mA
Output current:	100 mA max. (short-circuit protection)	3 A max. (resistive load)
Output saturation voltage:	1.5 V max. (NPN/PNP output)	-
Response time:	1 ms max. / 2 ms max. mod. F/G	30 ms max.
Switching frequency:	500 Hz max. / 250 Hz max. mod. F/G	2 Hz max.
Indicators:	OUTPUT LED (RED) / STABILITY LED (GREEN) mod. M25 / POWER ON LED (RED) mod. G	
Setting:	sensitivity trimmer excluding mod. G/M10 adjustment screw mod. M25 sensitivity trimmer excluding mod. G dark/light trimmer excluding mod. G	
Operating temperature:	-25 ... 55 °C	
Storage temperature:	-25 ... 70 °C	
Electric shock protection:	Class 2	Class 1
Operating distance (minimum):	A6 0.1 ... 6 m on R2 / B5 0.1 ... 5 m on R2 / T1: 0.1 ... 1 m on R2 C90: 1 ... 90 cm / C200: 1 ... 200 cm M10: 3 ... 10 cm / M25: 3 ... 25 cm F20/G20: 0 ... 20 m	
Emission type:	INFRARED (880 nm) / RED (660 nm) mod. B/T/M10	
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:	cable or connector	trimmer
Housing:	ABS UL 94V-0 (TYPE 1 ENCLOSURE)	
Lenses:	PMMA plastic	
Protection class:	IP65	
Connections:	2 m cable Ø 6 mm vers. S6-1 and Ø 5 mm vers. S6-5 / M12 4-pole connector vers. S6T/S6R	
Weight:	160 g. max. cable versions / 40 g. max. connector versions	

### SETTING

The following procedures are valid for LIGHT mode operation.

#### Alignment S6/S6T/S6R-x-A/B/T

Position the sensor and reflector 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.

If necessary, reduce sensitivity using the trimmer, 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 S6/S6T/S6R-x-F/G

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.

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 S6/S6T/S6R-x-C

Position the sensor and turn the sensitivity trimmer at minimum: the red LED is OFF.

Place the target opposite the sensor. Turn the sensitivity trimmer clockwise until 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.

#### Alignment S6/S6T/S6R-5-M25

Position the sensor and turn the adjustment screw to maximum.

Place the target opposite the sensor at a slightly greater distance than desired. Turn the screw counterclockwise until the sensor switches.

Verify the adjustment moving the target closer and further the sensor; tune the adjustment if necessary.

It is recommended to operate with the stability LED turned ON.



### TEST FUNCTION (S6/S6T-5-G)

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.

### ALARM FUNCTION (S6/S6T-5-F)

The alarm output switches ON whenever the received signal remains without a safety margin (greater than 30% compared to the output switching level) for longer than 3 seconds.

### 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.

DATASENSOR S.p.A. Via Lavino 265  
40050 Monte S. Pietro - Bologna - Italy  
Tel: +39 051 6765611 Fax: +39 051 6759324  
http://www.datasensor.com e-mail: info@datasensor.com

DATASENSOR S.p.A. cares for the environment: 100% recycled paper.  
DATASENSOR S.p.A. reserves the right to make modifications and improvements without prior notification.



## S6 Photoelectric sensor Lichtschranke

### INSTRUCTION MANUAL BEDIENUNGSANLEITUNG

#### MODEL SELECTION TYP AUSWAHL

##### S6T-5-M25-ASI

ASI Slave integrated Proximity  
with Background Suppression

ASI Slave Integriertem Lichttaster  
mit Hintergrundaussblendung

Adjustable scanning range:  
Tastweite einstellbar:  
5 ... 25 cm.

##### S6T-5-B3-ASI

ASI Slave integrated Polarised Retroreflex

ASI Slave Integriertem Polarisiertes Reflexions-  
Lichtschranke

Adjustable scanning range:  
Tastweite einstellbar:  
0.1 ... 3 m.

#### TECHNICAL DATA TECHNISCHE DATEN

Supply voltage as for ASI.  
Versorgungsspannung über ASI.

Consumption - Stromaufnahme: 30 mA max.

Emission - Sender:  
I.R. 880 nm (S6T-5-M25-ASI)  
Red - Rot 660 nm (S6T-5-B3-ASI)

Response time - Ansprechzeit: 1 ms max.

Switching frequency - Schaltfrequenz: 500 Hz

Operating temperature - Umgebungstemperatur:  
-25 ... +55 °C

Storing temperature - Lagerungstemperatur:  
-25 ... +70 °C

Protection class - Schutzart: IP65

Safety class - Schutzklasse: III

Housing - Gehäuse:  
ABS UL 94V-O (TYPE 1 ENCLOSURE)

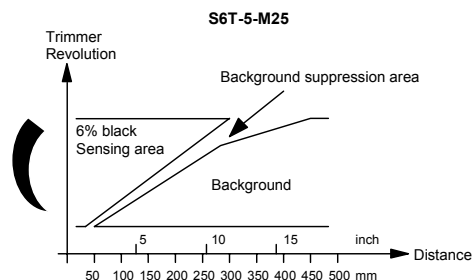
ASI Slave Profil: S-1.1

I/O Code - E/A Code: Hex 1

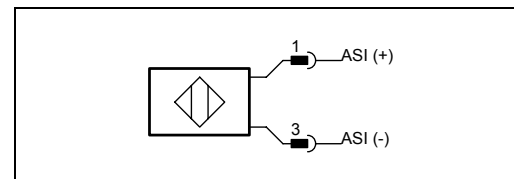
ID Code: Hex 1

Slave Address - Slave Adresse: 0  
**ADVICE:** remember to program slave address  
before installation.  
**HINWEIS:** vor Inbetriebnahme Slave Adresse  
programmieren.

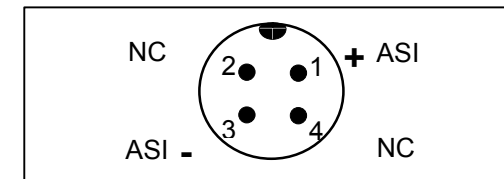
#### SENSITIVITY CONTROL EMPFINDLICHKEITSEINSTELLER



#### CONNECTION DIAGRAM ANSCHLUSS SCHEMA



#### M12 CONNECTOR M12 STECKERVERSION



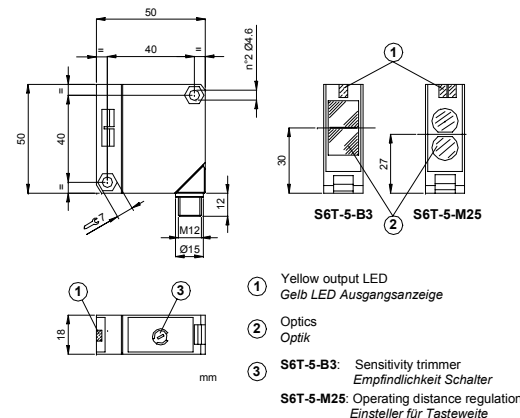
#### DATA BIT MEANING BEDEUTUNG DATENBITS

	BIT = 0	BIT = 1
<b>D0</b>	Object detection * Objekt detektion **	
<b>D1</b>	Not Used - Nicht Verwendet	Not Used - Nicht Verwendet
<b>D2</b>	Not Used - Nicht Verwendet	Not Used - Nicht Verwendet
<b>D3</b>	Not Used - Nicht Verwendet	Not Used - Nicht Verwendet

\* **DARK FUNCTION:** D0 = 0, Light Reflection. D0 = 1, No Light Reflection.  
\*\* **DUNKELSCHALTUNG:** D0 = 0, Licht Reflexion. D0 = 1, Keine Licht Reflexion.

\* **LIGHT FUNCTION:** D0 = 0, No Light Reflection. D0 = 1, Light Reflection.  
\*\* **HELLSCHALTUNG:** D0 = 0, Keine Licht Reflexion. D0 = 1, Licht Reflexion.

#### DIMENSIONS ABMESSUNGEN



#### 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.

DATASENSOR S.p.A. Via Lavino 265  
40050 Monte S. Pietro - Bologna - Italy  
Tel: +39 051 6765611 Fax: +39 051 6759324  
<http://www.datasensor.com> e-mail: [info@datasensor.com](mailto:info@datasensor.com)

DATASENSOR S.p.A. cares for the environment: 100% recycled paper.  
DATASENSOR S.p.A. reserves the right to make modifications and improvements without prior notification.

# DATASENSOR



## S6R-5-M10/M25/M50

Background suppression proximity



## S6R-5-N20

Foreground and background suppression proximity

### INSTRUCTION MANUAL

#### CONTROLS

##### OUTPUT LED

The red LED indicates the output status.

##### STABILITY LED (S6R-5-M25/M50/N20)

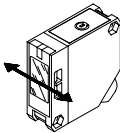
The green LED ON indicates that the received signal has a reserve greater than 30% compared to the output switching value.

##### ADJUSTMENT SCREW (S6R-5-M25/M50/N20)

This control can be used to adjust the foreground and/or background suppression distance.

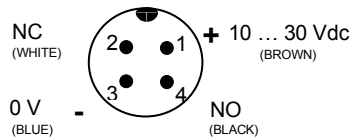
#### INSTALLATION

The target must move orthogonally respect to the short side of the lens, to get the correct reading.

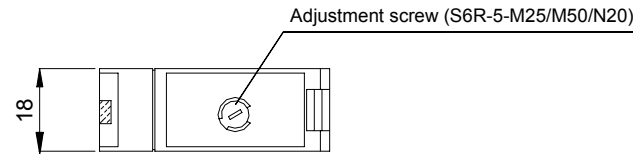
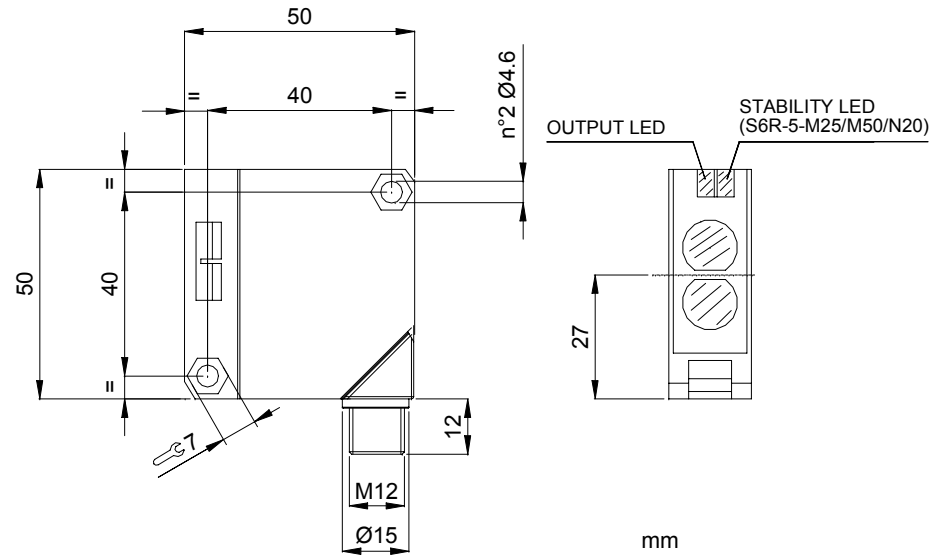


#### CONNECTIONS

The connections are configured in compliance with the standard EN 60947-5-2.



#### DIMENSIONS



#### TECHNICAL DATA

Power supply:	10 ... 30 Vdc limit values
Ripple:	2 Vpp max.
Current consumption (output current excluded):	30 mA max.
Outputs:	PNP or NPN NO/NC; 30 Vdc max.
Output current:	100 mA max. (short-circuit protection)
Output saturation voltage:	1.5 V max. (NPN/PNP output)
Response time:	1ms max.
Switching frequency:	500Hz max.
Indicators:	OUTPUT LED (RED) / STABILITY LED (GREEN)
Setting:	adjustment screw (S6R-5-M25/M50/N20)
Operating temperature:	-25 ... 55 °C
Storage temperature:	-25 ... 70 °C
Electric shock protection:	Class 2
Operating distance (minimum):	3...10cm (S6R-5-M10) / 3 ... 25cm (S6R-5-M25) / 10 ... 50cm (S6R-5-M50) 5...20cm foreground suppression area (S6R-5-N20) 12...110cm background suppression (S6R-5-N20)
Emission type:	INFRARED LED 880nm (S6R-5-M20/M25/N20) RED LED (S6R-5-M10)
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 NO/NC output
Housing:	ABS UL 94V-O (TYPE 1 ENCLOSURE)
Lenses:	PMMA plastic
Mechanical protection:	IP65
Connections:	M12 4-pole connector
Weight:	40 g. max.

#### SETTING

##### S6R-5-M10 setting

Position the sensor in front of the background.  
Move the sensor on the background until the red output LED turns off (move away if the output LED is ON).  
The sensor is now ready to detect any object inside the operating range (output LED turns on).

##### S6R-5-M25/M50 setting

Place the background opposite the sensor.  
Turn the adjustment screw counterclockwise until the RED OUTPUT LED turns OFF and the STABILITY LED turns ON.  
During this phase it is very important to not move the background and/or the sensor, to avoid any setting failure.  
Place the object in the detection area and verify that the STABILITY LED turns ON and the switching has occurred.

##### S6R-5-N20 setting

Place the target opposite the sensor.  
Turn the adjustment screw counterclockwise, until the RED OUTPUT LED turns OFF and the STABILITY LED turns ON.  
Turn the adjustment screw clockwise until the RED OUTPUT LED and the STABILITY LED turns ON.  
The OUTPUT LED has to turn OFF when the target is moved closer to the sensor (foreground suppression area).

#### 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.

DATASENSOR S.p.A. Via Lavino 265  
40050 Monte S. Pietro - Bologna - Italy  
Tel: +39 051 6765611 Fax: +39 051 6759324  
<http://www.datasensor.com> e-mail: [info@datasensor.com](mailto:info@datasensor.com)



DATASENSOR S.p.A. cares for the environment: 100% recycled paper.  
DATASENSOR S.p.A. reserves the right to make modifications and improvements without prior notification.

826001071 Rev.A

#### CONTROLS

##### OUTPUT LED

The yellow LED indicates the output status.

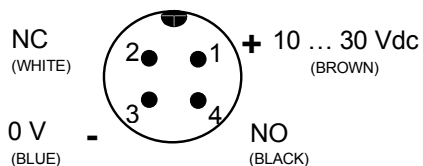
##### SENSITIVITY TRIMMER

These controls allow the precise adjustment of sensitivity and switching threshold for the detection of marks on different coloured backgrounds or grey scale.

**WARNING:** The trimmer rotation is limited to 270° (by a mechanical stop). Do not exceed this limit and particularly not apply a torsion over 40 Nmm.

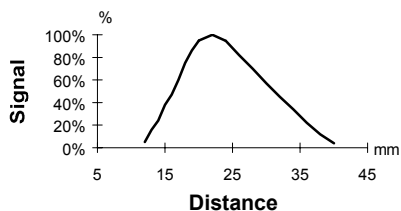
#### CONNECTIONS

The connections are configured in compliance with the standard EN 60947-5-2.

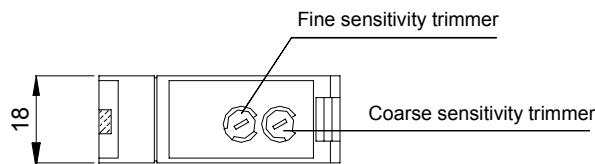
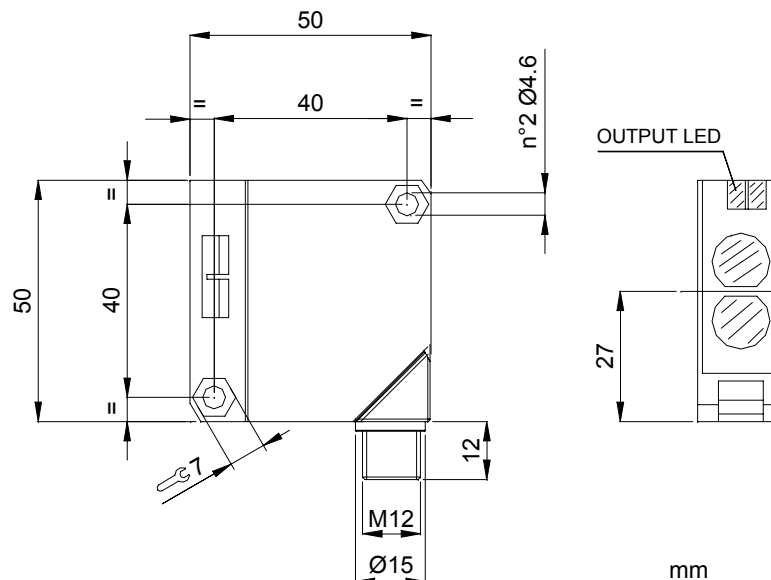


#### DETECTION DIAGRAM

##### S6R-5-W22



#### DIMENSIONS



#### SETTING

##### Alignment of S6R-5-W22

Position the sensor and turn the fine sensitivity trimmer to the center:

##### Alignment procedure with light mark on dark background:

Position the sensor and turn the coarse sensitivity trimmer at maximum. Place the background under the sensor's spot. Turn the coarse sensitivity trimmer counterclockwise until the yellow LED turns OFF (Background detection state).



Place the mark under the sensor's spot: the yellow LED turns ON when the mark is detected. Turn the fine sensitivity trimmer if the contrast between the mark and the background results minimum or difficult the detection.

##### Alignment procedure with dark mark on light background:

Position the sensor and turn the coarse sensitivity trimmer at maximum. Place the mark under the sensor's spot. Turn the coarse sensitivity trimmer counterclockwise until the yellow LED turns OFF (Mark detection state).



Place the background under the sensor's spot: the yellow LED has to turn ON when the background detected. Turn the fine sensitivity trimmer if the contrast between mark and the background results minimum or difficult the detection. If you want to associate the ON output state to the dark mark detection it is necessary to connect to pin 2 (NC output). In this case the LED follows inversely the output status, being in OFF mode.

#### TECHNICAL DATA

Power supply:	10 ... 30 Vdc limit values
Ripple:	2 Vpp max.
Current consumption (output current excluded):	30 mA max.
Output:	PNP or NPN NO/NC; 30 Vdc max.
Output current:	100 mA max. (short-circuit protection)
Output saturation voltage:	1.5 V max. (NPN/PNP output)
Response time:	100 µs max.
Switching frequency:	5kHz max
Indicators:	OUTPUT LED (YELLOW)
Setting:	two sensitivity trimmer
Operating temperature:	-25 ... 55 °C
Storage temperature:	-25 ... 70 °C
Electric shock protection:	Class 2
Operating distance (minimum):	22mm
Minimum spot dimension:	Ø2mm
Depth of field:	± 2 mm
Emission type:	LED with white light 400-700nm
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:	LIGHT mode on NO output / DARK mode on NC output
Housing:	ABS UL 94V-O (TYPE 1 ENCLOSURE)
Lenses:	PMMA plastic
Protection class:	IP65
Connections:	M12 4-pole connector
Weight:	40 g. max.

##### 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.

DATASENSOR S.p.A. Via Lavino 265  
40050 Monte S. Pietro - Bologna - Italy  
Tel: +39 051 6765611 Fax: +39 051 6759324  
<http://www.datasensor.com> e-mail: [info@datasensor.com](mailto:info@datasensor.com)



DATASENSOR S.p.A. cares for the environment: 100% recycled paper. DATASENSOR S.p.A. reserves the right to make modifications and improvements without prior notification.