



**S81-M**  
Background suppressor with laser emission  
and time of flight measurement



**INSTRUCTION MANUAL**

**CONTROLS**

- ⬇ OUT LED (yellow)**  
The yellow LED ⬇ ON indicates the activation of the ⬇ output.
- ⬆ OUT LED (yellow)**  
The yellow LED ⬆ ON indicates the activation of the ⬆ output.
- POWER ON/ALARM LED (green)**  
The green LED blinking indicates received signal absence or distance target outside the measurement range.  
The green LED on indicates the power of the sensor.
- ⬇ OUT PUSH-BUTTON**  
The teach-in procedure of the digital threshold of the ⬇ output is activated by pressing the ⬇ push-button.
- ⬆ OUT PUSH-BUTTON**  
The teach-in procedure of the digital threshold of the ⬆ output is activated by pressing the ⬆ push-button.

See the “THRESHOLD SETTING” paragraph for digital threshold teach-in procedure

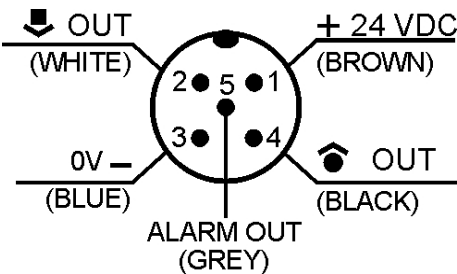


**INSTALLATION**

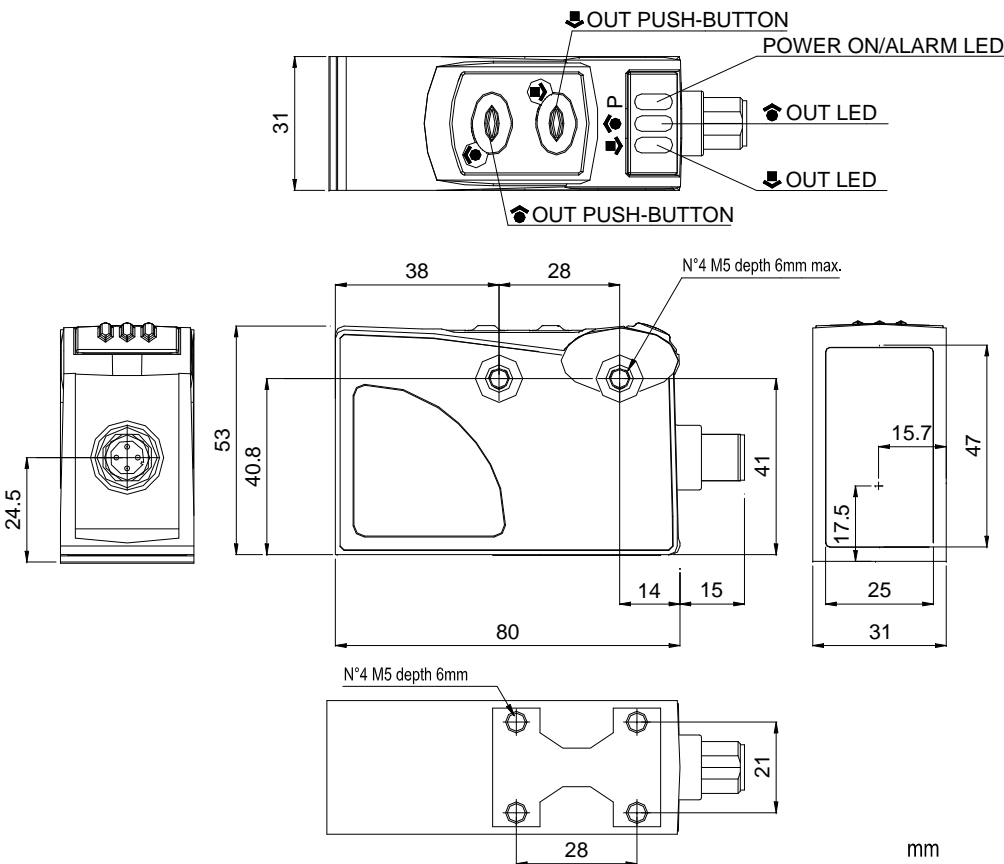
The sensor can be positioned using threaded M5 holes with max. 6 mm. depth.  
Do not apply excessive torque when adjusting (max 2.2 Nm).

The operating distance is measured starting from the front surface of the sensor optics.

**CONNECTIONS**



**DIMENSIONS**



**TECHNICAL DATA**

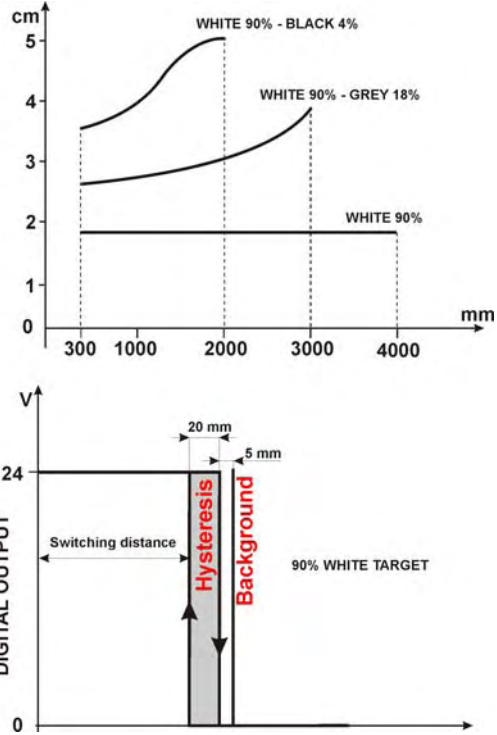
	S81-M-PPC	S81-M-NNC
Power supply:	24 +/- 20% VDC (limit values)	
Ripple:	2 Vpp max.	
Consumption (output current excluded):	120 mA max (100 mA @ 24 V)	
Outputs:	2 PNP outputs 30 VDC max. (short-circuit protection) 1 alarm output PNP	2 NPN outputs 30 VDC max. (short-circuit protection) 1 alarm output NPN
Switching mode	LIGHT	
Output current:	100 mA max	
Measurement range:	300 ... 4000 mm (90% white) 300 ... 3000 mm(18% gray) 300 ... 2000 mm (4% black)	
White 90% hysteresis	< 30 mm	
Withe 90% -grey 18% hysteresis	< 40 mm	
White 90% - black4% hysteresis	< 50 mm	
Temperature drift::	< 1 mm/°C	
Response time:	5 ms	
Switching frequency:	80 Hz	
Indicators:	⬇ OUT LED (yellow) / ⬆ OUT LED (yellow) / POWER ON-ALLARM (green)	
Setting:	⬆ OUT and ⬇ OUT push-buttons	
Warm-up:	15 min.	
Operating temperature:	0 ... 50 °C	
Storage temperature:	-20 ... 70 °C	
Dielectric strength:	500 VAC 1 min between electronics parts and housing	
Insulating resistance:	20 MΩ 500 VDC between electronics parts and housing	
Typical spot dimension:	Ø 3 mm at 2 m - Ø 5 mm at 4 m	
Emission type:	RED LASER (λ = 665nm): Class 2 EN 60825-1 (1994) +A1(2002) +A2(2001)	
Ambient light rejection:	According to EN 60947-5-2	
Vibrations:	0.5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)	
Shock resistance:	11 ms (30 G) 6 shock for every axis (EN60068-2-27)	
Housing material:	ABS	
Lens material:	PMMA	
Mechanical protection:	IP67	
Connections:	M12 5-pole connector	
Weight:	92 g. max.	

**THRESHOLD SETTING**

The sensor uses the patent-covered EASY TOUCH™ technology that allows a rapid and safe self-setting of the product.

**EASY TOUCH™**  
Place the background or the object to be suppressed inside the operating range.  
Press the ⬇ OUT push-button until the ⬇ OUT LED is OFF.  
The sensor is now ready to detect all objects in the operating field distinguishing them from the suppressed background (⬇ LED OUT turns ON).  
Repeat, if necessary, the same procedure for ⬆ ouput.  
Both digital outputs switch in the light mode.  
When the target is inside the detection threshold the corresponding output is at 24 V.  
Viceversa, if the measured target is outside the detection threshold, the corresponding output is at 24 V.  
The switching thresholds are set by default at 3700 mm.

**TYPICAL DETECTION DIAGRAMS**



**SAFETY WARNINGS**

All the safety electrical and mechanical regulations and laws have to be respected during sensor functioning. The sensor has to be protected against mechanical damages. The sensor has to be protected against mechanical damages.  
Place the given labels in a visible position close to the laser emission.  
Do not look directly into the laser beam!  
Do not point the laser beam towards people!  
Eye irradiation for over 0.25 seconds is dangerous; refer to class 2 standard (EN60825-1).  
These sensors are not conform to safety applications!



	<b>EX-II-3-D T6</b>
	Temperature class: T6 (<85°C)
	Max. Power consumption 1500 mW at 30 VDC
	Max. Internal capacitance 750 pF
Internal inductance: negligible	

**DECLARATION OF CONFORMITY**  
We DATASENSOR S.p.A. declare under our sole responsibility that these products are conform to the 2004/108/CE, 2006/95/CE 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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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.





## S81-Y

Distance sensor with laser emission  
and time of flight measurement



## INSTRUCTION MANUAL

### CONTROLS

#### OUT LED (yellow)

The yellow LED ON indicates the activation of the output.

#### OUT LED (yellow)

The yellow LED ON indicates the activation of the output.

#### POWER ON/ALARM LED (green)

The green LED blinking indicates received signal absence or distance target outside the measurement range.  
The green LED on indicates the power of the sensor.

#### OUT PUSH-BUTTON

The teach-in procedure of the digital threshold of the output is activated by pressing the push-button.

#### OUT PUSH-BUTTON

The teach-in procedure of the digital threshold of the output is activated by pressing the push-button.



See the "THRESHOLD SETTING" paragraph for digital threshold teach-in procedure

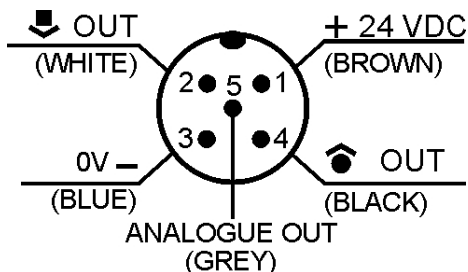
### INSTALLATION

The sensor can be positioned using threaded M5 holes with max. 6 mm depth.

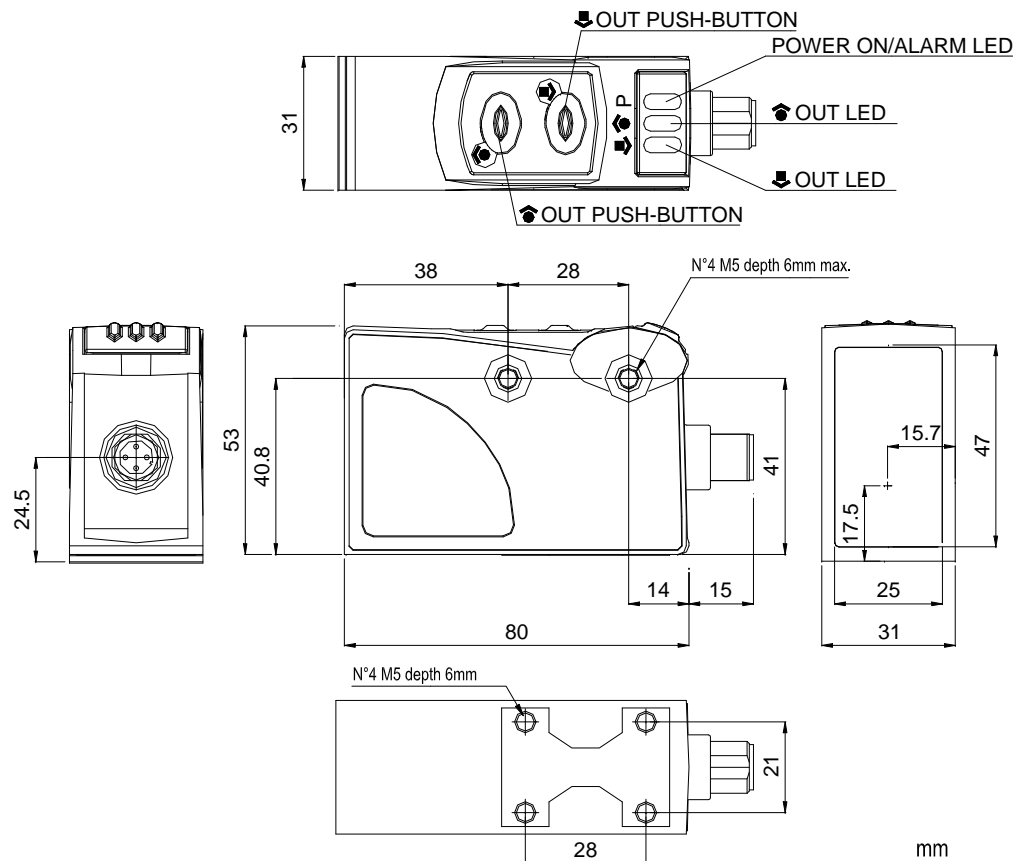
Do not apply excessive torque when adjusting (max 2.2 Nm).

The operating distance is measured starting from the front surface of the sensor optics.

### CONNECTIONS



### DIMENSIONS



### TECHNICAL DATA

	S81-Y-PPV	S81-Y-NNV
Power supply:	24 +/- 20% VDC limit values	
Ripple:	2 Vpp max.	
Consumption (output current excluded):	120 mA max (100 mA @ 24 V)	
Outputs:	2 PNP or NPN outputs 30 VDC max. (short-circuit protection)  analogue output with 0-10 V (max. output current = 10 mA - 1 kΩ minimum resistance load)	2 PNP or NPN outputs 30 VDC max. (short-circuit protection)  analogue output with 0-10 V (max. output current = 10 mA - 1 kΩ minimum resistance load)
Switching mode	Light	Light
Output current:	100 mA max.	
Measurement range:	300 ... 4000 mm (90% white) 300 ... 3000 mm (18% gray) 300 ... 2000 mm (4% black)	
Linearity:	<1% (24 VDC, 25 °C, with 90% white target)	
Repeatability:	+/- 4mm	
Hysteresis:	20 mm	
Temperature drift:	< 1 mm/°C	
Response time:	5 ms	
Switching frequency:	80 Hz	
Indicators:	OUT LED (yellow) / OUT LED (yellow) / POWER ON-ALLARM (green)	
Setting:	OUT and OUT push-buttons	
Warm-up:	15 min.	
Operating temperature:	0 ... 50 °C	
Storage temperature:	-20 ... 70 °C	
Dielectric strength:	500 VAC 1 min., between electronics and housing	
Insulating resistance:	20 MΩ 500 VDC, between electronics and housing	
Typical spot dimension:	Ø 3 mm at 2 m - Ø 5 mm at 4 m	
Emission type:	RED LASER (λ = 665nm): Class 2 EN 60825-1 (1994) +A1(2002) +A2(2001),	
Ambient light rejection:	According to EN 60947-5-2	
Vibrations:	0.5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)	
Shock resistance:	11 ms (30 G) 6 shock for every axis (EN60068-2-27)	
Housing material:	ABS	
Lens material:	PMMA	
Mechanical protection:	IP67	
Connections:	M12 5-pole connector	
Weight:	92 g. max.	

### THRESHOLD SETTING

The sensor uses the patent-covered EASY TOUCH™ technology that allows a rapid and safe self-setting of the product.

#### EASY TOUCH™

Place the background or the object to be suppressed inside the operating range.

Press the OUT push-button until the OUT LED is OFF.

The sensor is now ready to detect all objects in the operating field distinguishing them from the suppressed background (LED OUT turns ON). Repeat, if necessary, the same procedure for output.

Both digital outputs switch in light mode: when the target detected is inside the acquired threshold, the related output is high.

Viceversa the output is low when the target detected is outside the threshold.

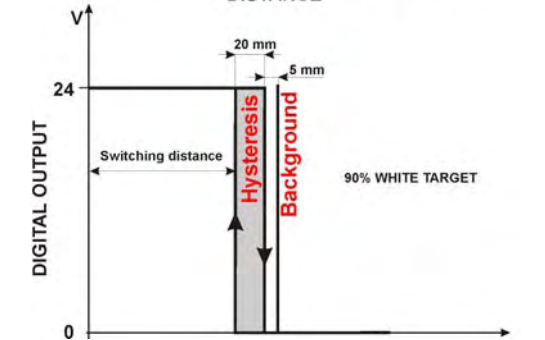
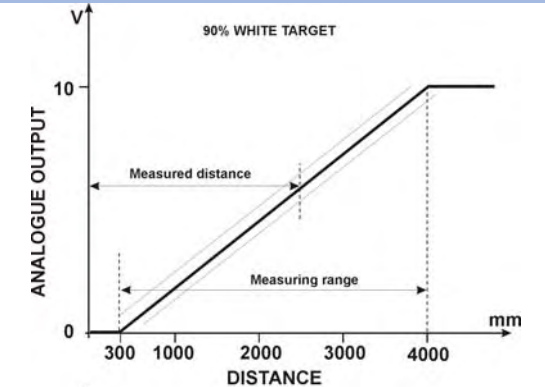
Switching thresholds are set by factory at value 3700 mm.

Both digital outputs switch in the light mode.

When the target is inside the detection threshold the corresponding output is at 24 V. Viceversa, if the measured target is outside the detection threshold, the corresponding output is at 24 V.

The switching thresholds are set by default at 3700 mm.

### TYPICAL DETECTION DIAGRAMS



### SAFETY WARNINGS

All the safety electrical and mechanical regulations and laws have to be respected during sensor functioning. The sensor has to be protected against mechanical damages. The sensor has to be protected against mechanical damages.

Place the given labels in a visible position close to the laser emission.

Do not look directly into the laser beam!

Do not point the laser beam towards people!

Eye irradiation for over 0.25 seconds is dangerous; refer to class 2 standard (EN60825-1). These sensors are not conform to safety applications!



#### EX-II-3-D T6

Temperature class: T6 (<85°C)  
Max. Power consumption 1500 mW at 30 Vdc  
Max. Internal capacitance 750 pF  
Internal inductance: negligible

#### DECLARATION OF CONFORMITY

We DATASENSOR S.p.A. declare under our sole responsibility that these products are conform to the 2004/108/CE, 2006/95/CE 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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