S8-PH/MH…M53

Background suppression for shiny objects

INSTRUCTION MANUAL

CLASS 2 EN 60825-1
LASER PRODUCT

CONTROLS

OUTPUT LED (yellow)
The yellow LED ON indicates the output status.

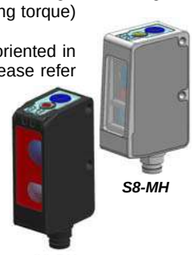
POWER ON LED (green)
The green LED ON indicates the powering status and the laser emission presence.

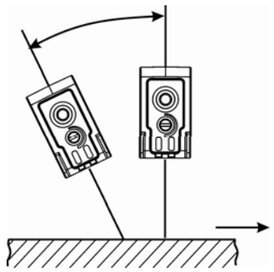
DISTANCE ADJUSTMENT TRIMMER (ADJ.)
The multiturn trimmer with clutch (8 turns) adjusts the suppression distance through the mechanical variation of the optic triangulation angle.
The operating distance increases rotating the trimmer in a clockwise direction.
Please refer to the “SETTING” paragraph for the correct procedure.

TEACH-IN PUSH-BUTTON
The push-button allows acquiring the background.
Please refer to the “SETTING” paragraph for the correct procedure.

INSTALLATION

The sensor can be positioned by means of the two housing holes using two screws (M3x18 or longer, 0.8 Nm maximum tightening torque) with washers.
Several fixing brackets are available which can be oriented in various positions to ease the sensor installation, (please refer to the accessories listed in the general catalogue).
The operating distance is measured from the front surface of the sensor optics.

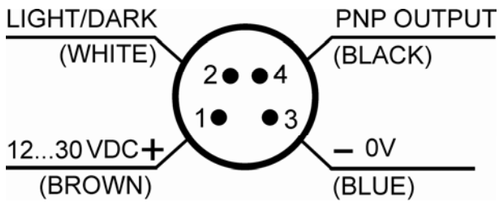




In the presence of moving backgrounds like conveyor belts, especially having a dark or shiny surface, the best object detection performance can be obtained by mounting the sensor at an angle (max 30°) with respect to the horizontal plane, as shown in the figure.

CONNECTIONS

M8 CONNECTOR



TECHNICAL DATA

Power supply:	12 … 30 VDC Class 2 (Type 1 for S8-MH) UL508
Ripple:	2 Vpp max.
Consumption (output current excluded):	30 mA max
Outputs:	PNP; 30 Vdc max. (short-circuit protection)
Output current:	100 mA (overload protection)
Output saturation voltage:	≤ 2 V
Response time:	1 ms
Switching frequency:	500 Hz
Emission type:	RED LASER (λ = 645…665nm): Class 2 IEC 60825-1, Class II CDRH 21 CFR PART 1040.10 Pulsed emission: pot. max ≤ 5 mW; pulse duration = 3 μs; frequency = 10 kHz
Operating distance (typical values):	50...150 mm
Setting:	8-turns distance adjustment trimmer – Background suppression push-button
LIGHT/DARK selection:	white wire
Indicators:	OUTPUT LED (YELLOW) / POWER ON LED (GREEN)
Operating temperature:	-10 … 55 °C
Storage temperature:	-20 … 70 °C
Dielectric strength:	⧈: 1500 VAC 1 min between electronic parts and housing
Insulating resistance:	>20 MΩ 500 VDC between electronic parts and housing
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 shocks per every axis (EN60068-2-27)
Housing material:	ABS (S8-PH) / INOX AISI 316L (S8-MH)
Lens material:	PMMA window; PC lens
Mechanical protection:	IP67 (S8-PH) / IP67, IP69K (S8-MH)
Connections:	M8 4-pole connector
Weight:	12 g. max. (S8-PH) / 70 g. max (S8-MH)

SETTING

LIGHT/DARK MODE SETTING

LIGHT MODE setting	***DARK MODE setting***
Connect the LIGHT/DARK signal (white wire) to 0V or leave unconnected. The output is ON with the object in the sensing area and OFF on the background.	Connect the LIGHT/DARK signal (white wire) to +VDC. The output is OFF with the object in the sensing area and ON on the background.

BACKGROUND ACQUISITION PROCEDURE
The S8-PH…M53 sensor allows detection of shiny objects without the false commutations typical of traditional background suppression sensors. To function correctly it is necessary to perform the Background Acquisition Procedure at power up as described below.

1. Activation Background Acquisition Procedure: press TEACH-IN push-button for 1 sec until OUT LED (yellow) turns OFF.
   The output (black wire) turns OFF and the yellow LED signals the commutations of a standard background suppressor.
2. Background suppression from the detection area (CUT-OFF): position the sensor in front of the background at a distance within its Operating Range. Turn the Distance Adjustment Trimmer in a clockwise direction until OUT LED (yellow) turns ON, then turn in a counter clockwise direction to turn OFF yellow OUT LED (Background **NOT** Detected Condition).
3. Background Acquisition: press TEACH-IN push-button for 1 sec. The sensor acquire the background. Successful Background Acquisition is indicated by a short blink of the laser emitter. If the yellow LED blinks, the background acquisition procedure has failed.
   Press TEACH-IN push-button in the counter-clockwise direction and repeat the procedure from step 2.

Hysteresis setting
After background acquisition detection, the sensor is ready to detect any object that passes through the detection area. To obtain the best working for the application it is possible select 4 hysteresis levels. During the hysteresis setting the yellow OUT LED blinks with different frequency to indicate the hysteresis level and the digital output indicate the sensor’s commutation.

1. Position the sensor in front of the background
2. Press TEACH-IN push-button for 3 sec until OUT LED (yellow) turns ON. The yellow OUT LED start to blink with different frequency depending from the hysteresis level:

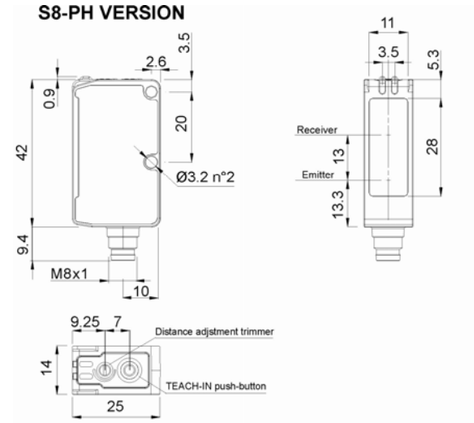
OUT LED BLINKING	HYSTERESIS	BACKGROUND FEATURE
SLOW	LOW	Stable background and optimum shiny objects reading
MIDDLE SLOW	MIDDLE LOW	Little variable background and good shiny objects reading
MIDDLE FAST	MIDDLE HIGH	Moving background and good shiny objects reading
FAST	HIGH	Moving and color variable background and reading of almost all shiny objects

3. Verify the there are not false commutation on the background through digital output, otherwise pass on upper hysteresis level pressing the push-button for 1 sec.
4. Press the TEACH-IN push-button for 3 sec (OUT LED turns OFF and then turns ON) to confirm the hysteresis level.
   Successful hysteresis setting is indicated by a short blink of the laser emitter.
5. Verify the shiny objects reading.

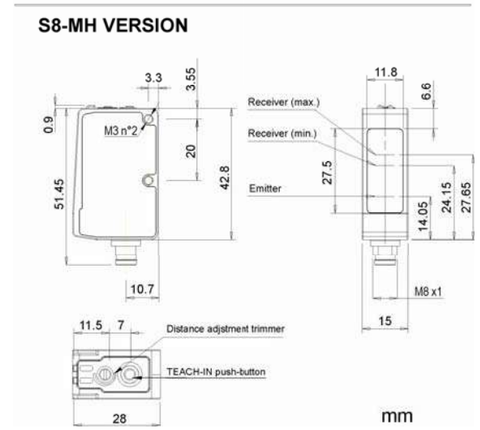
NOTE: With special fixed backgrounds, the S8-PH/MH…M53 sensor detectes correctly also trasparent objects.

DIMENSIONS

S8-PH VERSION



S8-MH VERSION



ADDITIONAL FUNCTIONS

AUTO-ADAPTIVE FUNCTION
During normal operation, a commutation threshold auto-adjustment function is active. At intervals of 1 minute from the last acquisition, the sensor checks if the background signal has changed significantly, and if necessary, updates the commutation value. This function compensates for slow variations of the background caused for example by surface deterioration over time, and therefore avoids repeating the manual background acquisition procedure periodically.

SAFETY PRECAUTIONS

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.
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!
These sensors are not to be used for safety applications!

The sensors are NOT safety devices, and so MUST NOT be used in the safety control of the machines where installed.

DECLARATION OF CONFORMITY
We Datalogic Automation declare under our sole responsibility that these products are conform to the 2004/108/CE and successive amendments.

WARRANTY
Datalogic Automation warrants its products to be free from defects.
Datalogic Automation 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 Datalogic Automation products.

DATALOGIC AUTOMATION cares for the environment: 100% recycled paper.
DATALOGIC AUTOMATION reserves the right to make modifications and improvements without prior notification.

826000134 Rev.D

DATALOGIC

S8-PR…M
Background suppression

S8-PR…B
Polarised retroreflex

S8-PR…C
Diffuse proximity

S8-PR…F/G
Receiver/Emitter

INSTRUCTION MANUAL

CONTROLS

OUTPUT LED (yellow) (S8…B/C/M/F)
The yellow LED ON indicates the output status.
POWER ON LED (green)
The green LED ON indicates the powering status and the laser emission presence.
DISTANCE ADJUSTMENT TRIMMER (ADJ.) (S8…M)
The multiturn trimmer with clutch (8 turns) adjusts the suppression distance through the mechanical variation of the optic triangulation angle.
The operating distance increases rotating the trimmer in a clockwise direction.
Please refer to “SETTING” paragraph for the correct use procedure.
SENSITIVITY TRIMMER (ADJ.) (S8..B/C/F)
The sensitivity and operating distance can be adjusted using this trimmer.
See the “SETTING” paragraph for procedure indications.
LIGHT/DARK TRIMMER
The light/dark mode is selected using a mono-turn trimmer.
Please refer to “SETTING” paragraph for the correct use procedure.
***WARNING:** the maximum mechanical rotation range of the trimmer is 240°. Do not force over of the maximum and minimum positions.*

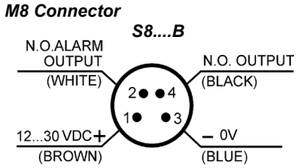
INSTALLATION

The sensor can be positioned by means of the two housing holes using two screws (M3x18 or longer, 0.8Nm maximum tightening torque) with washers.
Various orientable fixing brackets to ease the sensor positioning are available (please refer to the accessories listed in the general catalogue).
The operating distance is measured from the front surface of the sensor optics.

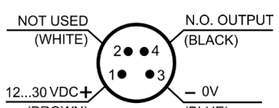
CONNECTIONS

M8 Connector

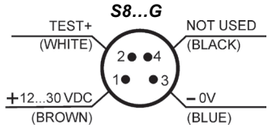
S8....B



S8....M/C/F

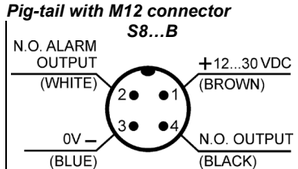


S8…G

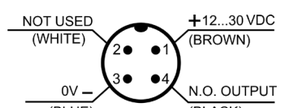


Pig-tail with M12 connector

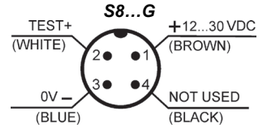
S8…B



S8....M/C/F



S8…G



TECHNICAL DATA

	S8…M	S8…B	S8…C	S8…F	S8…G
Power supply:	12 … 30 VDC				
Ripple:	2 Vpp max.				
Consumption (output current excluded):	35 mA max	30 mA max		20 mA max	15 mA max
Outputs / Alarm output (only B):	PNP or NPN N.O.; 30 Vdc max. (short-circuit protection)				-
Output current:	100 mA (overload protection)				-
Output saturation voltage:	≤ 2 V				-
Response time:	1ms	500 us			
Switching frequency:	500Hz	1KHz			
Emission type:	RED (660 nm)			-	RED (660 nm)
Operating distance (typical values):	50..300mm	5m on R2, 7m on R5 (EG2)	50cm on 90% white target (EG2)	25m (30m max)	
Regulations	8-turn distance adjustment trimmer	Mono-turn sensitivity adjustment trimmer			-
LIGHT/DARK selection:	Monoturn trimmer				-
Indicators:	OUTPUT LED (yellow) / POWER ON LED (green)				POWER ON LED (green)
Operating temperature:	-10 … 55 °C				
Storage temperature:	-20 … 70 °C				
Dielectric strength:	⧈: 1500 Vac 1 min. between electronics and housing				
Insulating resistance:	>20 MΩ 500 Vdc between electronics and housing				
Ambient light rejection:	according to EN 60947-5-2				
Vibrations:	0.5 mm amplitude, 10 … 55 Hz frequency, for each axis (EN60068-2-6)				
Shock resistance:	11 ms (30 G) 6 shocks for each axis (EN60068-2-27)				
Housing material:	ABS				
Lens material:	Window in glass; lens in PC				
Mechanical protection:	IP67				
Connections:	M8 4-pole connector / cable with M12 4-pole connector with 150 mm length and ∅ 4 mm (pig-tail)				
Weight:	12 g. max. connector version / 50 g. pig-tail version				

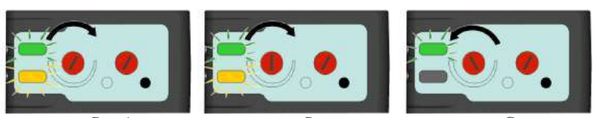
SETTINGS

DARK/LIGHT SETTING

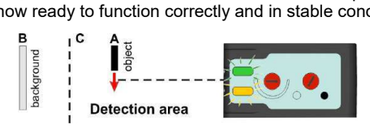
Rotate trimmer in an anti-clockwise direction to set the LIGHT mode (output ON with the reflector).
Rotate trimmer in a clockwise direction to set the DARK mode (output ON in presence of the object).

SUPPRESSION DISTANCE SETTING (S8...M)

1. *Object detection (Light mode)*
Position object to detect in front of the sensor at the distance required.
Turn distance adjustment trimmer (ADJ) to minimum: yellow LED OFF.
Rotate trimmer in a clockwise direction until the yellow LED turns ON.
Object detection condition (pos.A).



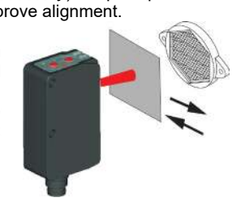
2. *Background suppression*
Remove object and ensure that the background is in front of the sensor: yellow LED OFF.
Rotate trimmer in a clockwise direction until the yellow LED turns ON: *background detection condition* (pos.B).
The trimmer reaches maximum level with yellow LED OFF if the background is outside the operating range.
Rotate trimmer in an anticlockwise direction until yellow LED turns OFF: *condition where background is outside operating range* (pos.C).
3. *Setting and control*
Rotate trimmer in an anti-clockwise direction until the trimmer reaches an intermediate point between position A and C.
If position A and C are close to each other, leave trimmer on position C.
The sensor is now ready to function correctly and in stable conditions.



SENSITIVITY SETTING (S8...B)

Alignment:
- Position and align the sensor and reflector on opposite side at the desired distance.
- Rotate sensitivity adjustment trimmer (ADJ.) to maximum point (clockwise direction).
- Move the sensor vertically and horizontally to determine the powering on and powering off points of the yellow LED (OUT) and fix the sensor in the middle of these two points.
- To detect very small objects, reduce the sensitivity using the specific trimmer (*if necessary*). Repeat procedure reducing progressively the sensitivity to improve alignment.

Control:
- Enter object laterally in the detection area and check that the yellow LED turns ON (in dark mode).
- remove object and check that the yellow LED turns OFF immediately (in dark mode).



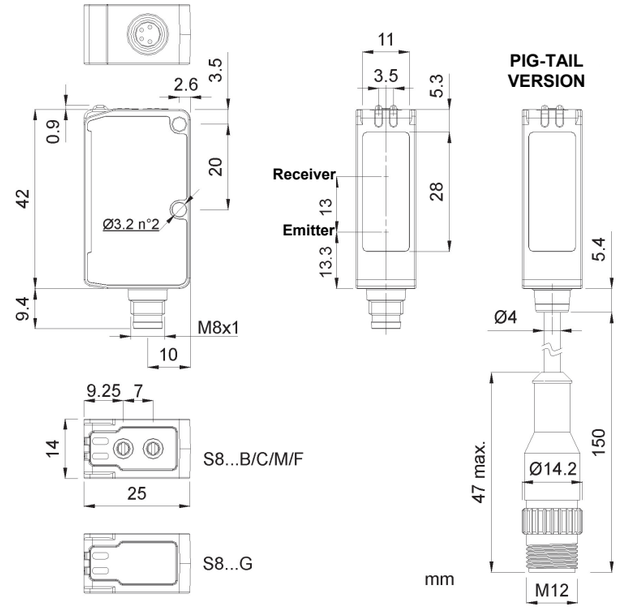
SETTINGS (S8...C)

Turn the sensitivity trimmer to minimum: the yellow LED is OFF (light mode). Position the target to detect in front of 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 sensitivity 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.

SETTINGS (S8...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. 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.

DIMENSIONS



PERFORMANCES (S8..B)

TAB.1: Operative distance

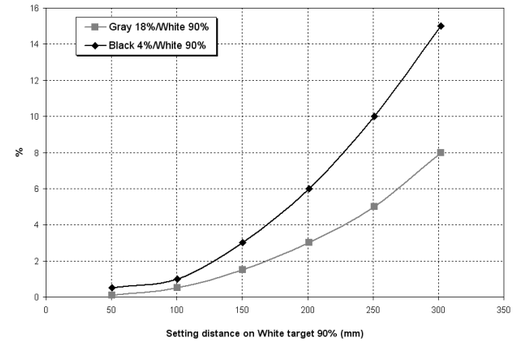
REFLECTOR

R2	R5	RT3970 (60x40mm)
5 m	7 m	2 m

On RT3970 the sensor performances are strongly influenced by the dimensions used.

DETECTION DIAGRAM (S8…M)

Gray 18%/White 90% and black4%/White 90% difference



DIAGNOSTIC FUNCTIONS (S8…G)

TEST+ input
The TEST+ input can be used to inhibit the emitter and verify that the system is correctly operating. The TEST function is activated if the TEST+ input is connected to a voltage between 12…30V, whereas if the TEST+ input is connected to GND or it is not connected the function is disactivated.

Datasensing S.r.l.
Strada S. Caterina 235 - 41122 Modena - Italy
Tel: +39 059 420411 - Fax: +39 059 253973 - www.datasensing.com

The warranty period for this product is 36 months. See General Terms and Conditions of Sales for further details.

For information about the disposal of Waste Electrical and Electronic Equipment (WEEE), please refer to the website at www.datasensing.com.

806000360 Rev. A

DATALOGIC

S8-PR…T

Polarised retroreflex for transparents

S8-PR…W

Contrast sensor

INSTRUCTION MANUAL

CONTROLS

OUTPUT LED (yellow)
The yellow LED indicates the output status.

READY LED (green) (S8W)
The green LED ON indicates normal functioning.

POWER ON LED (green) (S8T)
The green LED ON indicates the powering status.

SET PUSH-BUTTON (S8W)
The acquisition procedure is activated by pressing the SET push-button.
The control obtained with the SET push-button can be made externally with the REMOTE input.

DELAY TRIMMER (S8W)
The digital output's delay is selected/deselected by a monoturn trimmer.

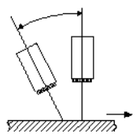
SENSITIVITY TRIMMER (ADJ.) (S8T)
The sensitivity and thus the operating distance are adjusted by a monoturn trimmer.

LIGHT/DARK TRIMMER (S8T)
The light/dark mode is selected by a monoturn trimmer.

Please refer to "SETTING" paragraph for the correct use procedures.
WARNING: *the maximum mechanical rotation range of the trimmer is 240°. Do not force over of the maximum and minimum positions.*

INSTALLATION

The sensor can be positioned by means of the two housing holes using two screws (M3x18 or longer, 0.8Nm maximum tightening torque) with washers.
Various orientable fixing brackets to ease the sensor positioning are available (please refer to the accessories listed in the general catalogue).

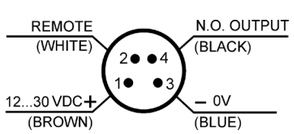


The operating distance is measured from the front surface of the sensor optics.
S8W - Mark detection on a reflective surface is improved adjusting the beam direction to 5° … 20° from surface axis.

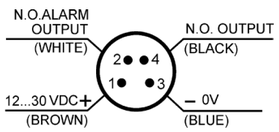
CONNECTIONS

M8 connector

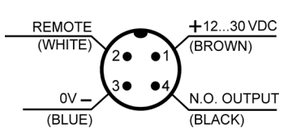
S8W

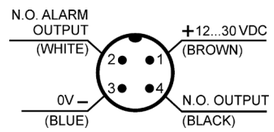


S8T



Pig-tail with M12 connector





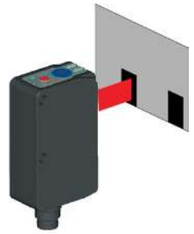
TECHNICAL DATA

	S8W	S8T
Power supply:	12 … 30 VDC (Class 2 UL508) (reverse polarity protected)	
Ripple:	2 Vpp max.	
Consumption (output current excluded):	30 mA max	15 mA max
Outputs / Alarm output only for S8T:	PNP or NPN N.O.; 30 VDC max. (short-circuit protection) Pull-down/up resistance = 47 KΩ	PNP or NPN N.O.; 30 VDC max. (short-circuit protection)
Output current:	100 mA (overload protection)	
Output saturation voltage:	≤ 2 V	
Response time:	50 µs	250 us
Switching frequency:	10 kHz	2 KHz
Emission type:	blue (465 nm) / green (520 nm) / red (630 nm) with automatic selection	red (660 nm)
Spot dimension:	3x1 mm^2	-
Operating distance (typical values):	9 mm	0.8 m (EG2); 1 m (EG1) on R2 reflector
Depth of field:	± 2 mm	-
LIGHT/DARK selection:	Automatic	Mono-turn trimmer
Delay OFF 20msec selection:	Mono-turn DELAY trimmer	-
Indicators:	OUTPUT LED (yellow) / READY LED (green)	OUTPUT LED (yellow) / READY LED (green)
Operating temperature:	-10 … 55 °C	
Storage temperature:	-20 … 70 °C	
Dielectric strength:	⧈: 1500 VAC 1 min. between electronics and housing	
Insulating resistance:	>20 MΩ 500 Vdc between electronics and housing	
Ambient light rejection:	according to EN 60947-5-2	
Vibrations:	0.5 mm amplitude, 10 … 55 Hz frequency, for each axis (EN60068-2-6)	
Shock resistance:	11 ms (30 G) 6 shocks for each axis (EN60068-2-27)	
Housing material:	ABS	
Lens material:	Window in glass; lens in PC	
Mechanical protection:	IP67	
Connections:	M8 4-pole connector / 150 mm ∅ 4 mm cable with M12 4-pole connector (pig-tail)	
Weight:	12 g. max. connector version / 50 g. pig-tail version	

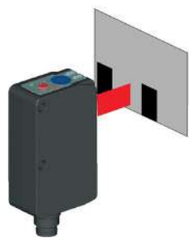
S8W SETTING

ACQUISITION

Mark detection
The DARK/LIGHT mode is automatically selected by the sensor.
Place mark in front of the sensor spot and press SET until the green READY LED turns off.
The sensor functions alternating red, green and blue emissions.
Do not move the mark during this phase.



Background detection
Place background in front of the sensor spot and press SET again.
The sensor functions alternating red, green and blue emissions.
Do not move the background during this phase.



If the READY LED turns permanently ON the acquisition was successful. If the LED blinks slowly the acquisition failed due to insufficient contrast. Press SET and the sensor returns to the previous setting. Repeat procedure from the beginning.

DELAY SETTING

The delay extends the minimum output activation to 20 ms allowing the slower interface systems to detect also shorter pulses.

Delay activation
- *Rotate trimmer in an anti-clockwise direction.*

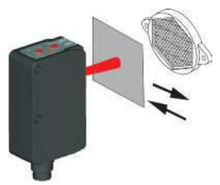
Delay deactivation
- *Rotate trimmer in a clockwise direction.*

S8T SETTING

SENSITIVITY ADJUSTMENT

Alignment:
- Position and align the sensor and reflector on opposite side at the desired distance.
- Rotate sensitivity adjustment trimmer (ADJ.) to maximum point (clockwise direction).
- Move the sensor vertically and horizontally to determine the powering on and powering off points of the yellow LED (OUT) and fix the sensor in the middle of these two points.
- To detect very small objects, reduce the sensitivity using the specific trimmer (*if necessary*). Repeat procedure reducing progressively the sensitivity to improve alignment.

Control:
- Enter object laterally in the detection area and check that the yellow LED turns ON (in dark mode).
- remove object and check that the yellow LED turns OFF immediately (in dark mode).

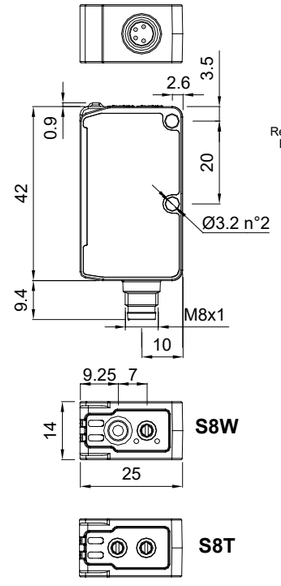


LIGHT/DARK MODE SETTING

Light mode setting
Rotate trimmer in an anti-clockwise direction to set the LIGHT mode (output ON with the reflector).

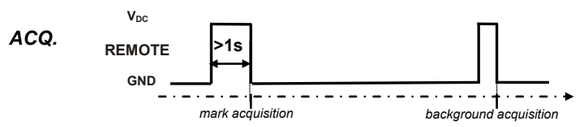
Dark mode setting
Rotate trimmer in a clockwise direction to set the DARK mode (output ON in presence of the object).

DIMENSIONS



OTHER FUNCTIONS

S8W – REMOTE input
The REMOTE signal carries-out acquisition functions without using the SET push-button.
The REMOTE wire connected to +Vdc is equal to pressing the SET pus-button, connected to GND or not connected is equal to not pressing the SET push-button.



S8T – ALARM output
The alarm output is active (ON) when the received signal remains without safety margin for 0.5 second (30% respect to output switching value).

The sensors are NOT safety devices, and so MUST NOT be used in the safety control of the machines where installed.

Datasensing S.r.l.
Strada S. Caterina 235 - 41122 Modena - Italy
Tel: +39 059 420411 - Fax: +39 059 253973 - www.datasensing.com

The warranty period for this product is 36 months. See General Terms and Conditions of Sales for further details.

For information about the disposal of Waste Electrical and Electronic Equipment (WEEE), please refer to the website at www.datasensing.com.

806000370 Rev. A

S8-PH…M Laser

Background suppression

INSTRUCTION MANUAL

CONTROLS

OUTPUT LED (yellow)
The yellow LED ON indicates the output status.

POWER ON LED (green)
The green LED ON indicates the powering status and the laser emission presence.

DISTANCE ADJUSTMENT TRIMMER (ADJ.)
The multiturn trimmer with clutch (8 turns) adjusts the suppression distance through the mechanical variation of the optic triangulation angle.
The operating distance increases rotating the trimmer in a clockwise direction.
Please refer to “SETTING” paragraph for the correct use procedure.

LIGHT/DARK TRIMMER
The light/dark mode is selected using a mono-turn trimmer.
Please refer to “SETTING” paragraph for the correct use procedure.

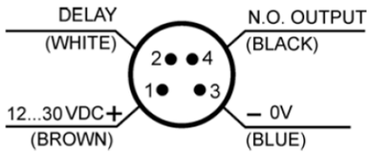
WARNING: *the maximum mechanical rotation range of the trimmer is 240°. Do not force over of the maximum and minimum positions.*

INSTALLATION

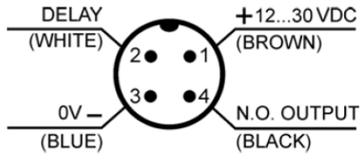
The sensor can be positioned by means of the two housing holes using two screws (M3x18 or longer, 0.8Nm maximum tightening torque) with washers.
Various orientable fixing brackets to ease the sensor positioning are available (please refer to the accessories listed in the general catalogue).
The operating distance is measured from the front surface of the sensor optics.

CONNECTIONS

M8 connector



Pig-tail with M12 connector



TECHNICAL DATA

Power supply:	12 … 30 Vdc
Ripple:	2 Vpp max.
Consumption (output current excluded):	30 mA max
Outputs:	PNP or NPN N.O.; 30 VDC max. (short-circuit protection)
Output current:	100 mA (overload protection)
Output saturation voltage:	≤ 2 V
Response time:	100 μs
Switching frequency:	5 kHz
Emission type:	RED LASER (λ = 645…665nm): Class EN 60825-1 (2014), Class II CDRH 21 CFR PART 1040.10 Pulsed emission: pot. max ≤ 5 mW; pulse duration = 3 μs; frequency = 20 kHz
Focalisation point:	110 mm
Spot dimension:	< 0.2 mm (a 110 mm)
Operating distance (typical values):	20…200 mm
Setting:	8-turn distance adjustment trimmer
LIGHT/DARK selection:	Mono-turn trimmer
Difference (90% white / 4% black)	< 5 % (refer to DETECTION DIAGRAM)
Hysteresis (90% white):	< 1 %
Indicators:	OUTPUT LED (YELLOW) / POWER ON LED (GREEN)
Operating temperature:	-10 … 55 °C
Storage temperature:	-20 … 70 °C
Dielectric strength:	⧈: 1500 VAC 1 min between electronic parts and housing
Insulating resistance:	>20 MΩ 500 VDC between electronic parts and housing
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 shocks per every axis (EN60068-2-27)
Housing material:	ABS
Lens material:	PMMA window; PC lens
Mechanical protection:	IP67
Connections:	M8 4-pole connector / 150 mm cable ∅ 4 mm with M12 4-pole connector (pig-tail)
Weight:	12 g. max. connector version / 35 g. pig-tail version

SETTING

LIGHT MODE SETTING

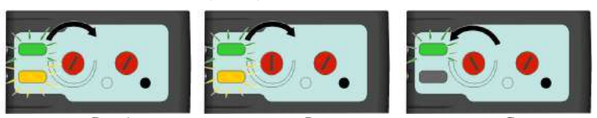
Rotate trimmer in an anti-clockwise direction to set the LIGHT mode (output ON when object is detected).

DARK MODE SETTING
Rotate trimmer in a clockwise direction to set the DARK mode (output ON with background).

SUPPRESSION DISTANCE SETTING

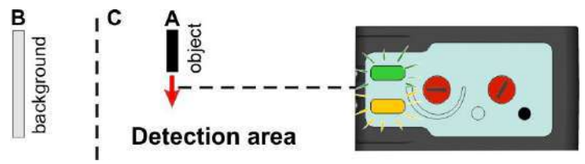
1.*Object detection*
Position object to detect in front of the sensor at the distance required.
Turn distance adjustment trimmer (ADJ) to minimum: yellow LED OFF.

Rotate trimmer in a clockwise direction until the yellow LED turns ON.
Object detection condition (pos.A).



2.*Background detection*
Remove object and ensure that the background is in front of the sensor: yellow LED OFF.
Rotate trimmer in a clockwise direction until the yellow LED turns ON: *background detection condition* (pos.B).
The trimmer reaches maximum level with yellow LED OFF if the background is outside the operating range.
Rotate trimmer in an anticlockwise direction until yellow LED turns OFF: *condition where background is outside operating range* (pos.C).

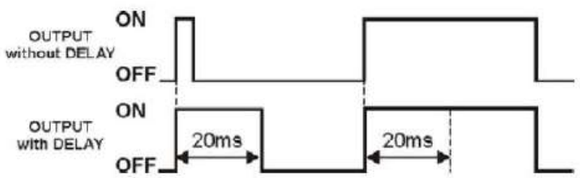
3.*Setting and control*
Rotate trimmer in an anti-clockwise direction until the trimmer reaches an intermediate point between position A and C.
If position A and C are close to each other, leave trimmer on position C.
The sensor is now ready to function correctly and in stable conditions.



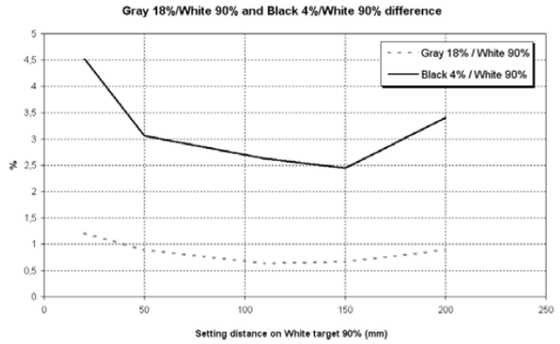
DELAY SETTING
The DELAY extends to 20ms the minimum duration of the output activation allowing even slower interfacing systems to detect shorter pulses.

Delay activation
- Connect Delay signal (white wire) to power supply.

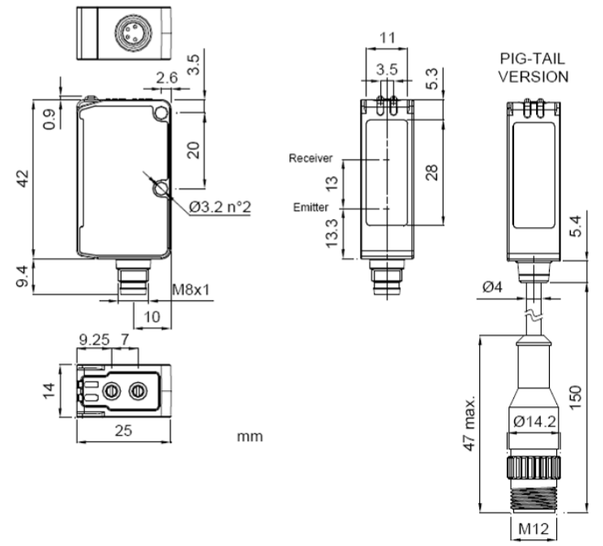
Delay de-activation
- Connect Delay signal (white wire) to 0V or leave it disconnected.



DETECTION DIAGRAM



DIMENSIONS



SAFETY PRECAUTIONS

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

Datasensing S.r.l.
Strada S. Caterina 235 - 41122 Modena - Italy
Tel: +39 059 420411 - Fax: +39 059 253973 - www.datasensing.com

The warranty period for this product is 36 months. See General Terms and Conditions of Sales for further details.

For information about the disposal of Waste Electrical and Electronic Equipment (WEEE), please refer to the website at www.datasensing.com.

806000340 Rev. A

DATALOGIC

S8-PR…U

Luminescence sensor

INSTRUCTION MANUAL

CONTROLS

OUTPUT LED (yellow)
The yellow LED ON indicates the output status.

READY LED (green)
The green LED ON indicates the powering status.

SET PUSH-BUTTON
A long pressure on the push-button activates the teach procedure.
The REMOTE input allows the external control of the SET push-button.

DARK/LIGHT TRIMMER
The light/dark mode is selected by a monoturn trimmer.

Please refer to the “SETTING” paragraph to get the correct setting procedure.
WARNING: *the maximum mechanical rotation range of the trimmer is 240°.*
Do not force over of the maximum and minimum positions.

INSTALLATION

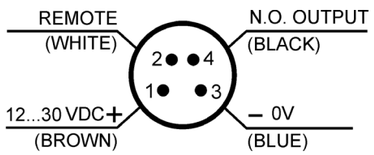
S8-PR:
The sensor can be positioned by means of the two housing holes using two screws (M3x18 or longer, 0.8Nm maximum tightening torque) with washers.

Various orientable fixing brackets to ease the sensor positioning are available (please refer to the accessories listed in the general catalogue).
The operating distance is measured from the front surface of the sensor optics.

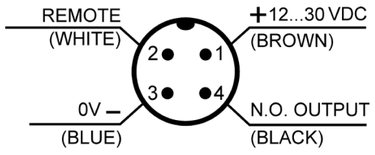
S8-PR

CONNECTIONS

M8 connector



Pig-tail with M12 connector



TECHNICAL DATA

	S8-PR…U
Power supply:	12 … 30 VDC Class 2 UL508
Ripple:	2 Vpp max.
Current consumption (output current excluded):	30 mA max
Outputs:	PNP or NPN N.O.; 30 VDC max. (short-circuit protection) Pull-down/up resistance = 47 KΩ
Output current:	100 mA (overload protection)
Output saturation voltage:	≤ 2 V
Response time:	250 µs / 1 ms
Switching frequency:	500Hz / 2 kHz (according to sensitivity)
Emission type:	LED UV (375 nm)
Spot dimension:	Ø 2 mm a 15 mm
Operating distance (typical values):	10…30 mm
LIGHT/DARK selection:	Mono-turn trimmer
Indicators:	OUTPUT LED (YELLOW) / READY LED (GREEN)
Operating temperature:	-10 … 55 °C
Storage temperature:	-20 … 70 °C
Dielectric strength:	⧈: 1500 VAC 1 min. between electronics and housing
Insulating resistance:	>20 MΩ 500 Vdc between electronics and housing
Ambient light rejection:	according to EN 60947-5-2
Vibrations:	0.5 mm amplitude, 10 … 55 Hz frequency, for each axis (EN60068-2-6)
Housing material:	ABS
Lens material:	Window in glass; lens in PC
Mechanical protection:	IP67
Connections:	M8 4-pole connector / 150 mm ∅ 4 mm cable with M12 4-pole connector (pig-tail vers.)
Weight:	12 g. max. (connector vers.) / 50 g. max.pig-tail (pig-tail vers.)

SETTINGS

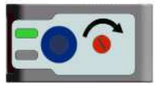
LIGHT/DARK MODE SETTING

LIGHT mode setting
Rotate trimmer in an anti-clockwise direction to set the LIGHT mode (output ON on fluorescent mark).

LIGHT

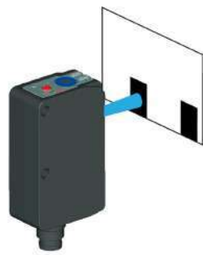
DARK mode setting
Rotate trimmer in a clockwise direction to set the DARK mode (output ON on background).

DARK

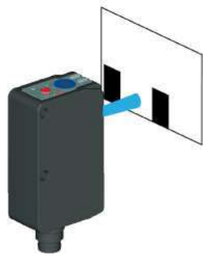


EASY TOUCH ACQUISITION
Place mark in front of the sensor spot and press SET until the green READY LED turns off.
If the READY LED turns permanently ON the acquisition was successful.
If the LED blinks slowly the acquisition failed due to insufficient signal.

Press SET and the sensor returns to the previous setting.
If the Easy Touch acquisition fails due to insufficient signal, try using Mark-Background procedure described below.



MARK-BACKGROUND ACQUISITION
Mark acquisition
Place mark in front of the sensor spot and press SET until the green READY LED turns on again (3 sec).
Background acquisition
Place background in front of the sensor spot and press SET again.
If the READY LED turns permanently ON the acquisition was successful.
If the LED blinks slowly the acquisition failed due to insufficient contrast.
Press SET and the sensor returns to the previous setting.

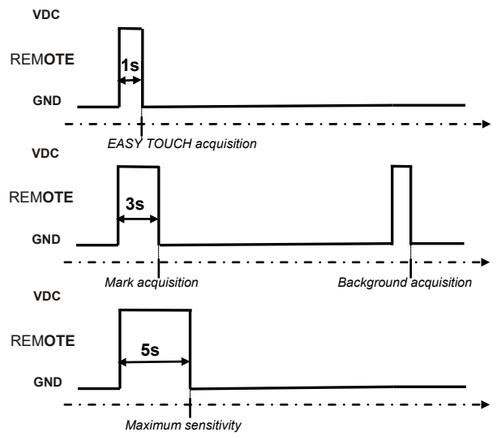


During detection if the luminescence is very low, the sensor increase his sensitivity with a frequency of 500Hz (LED READY green blinks two times at the end of teach procedure).

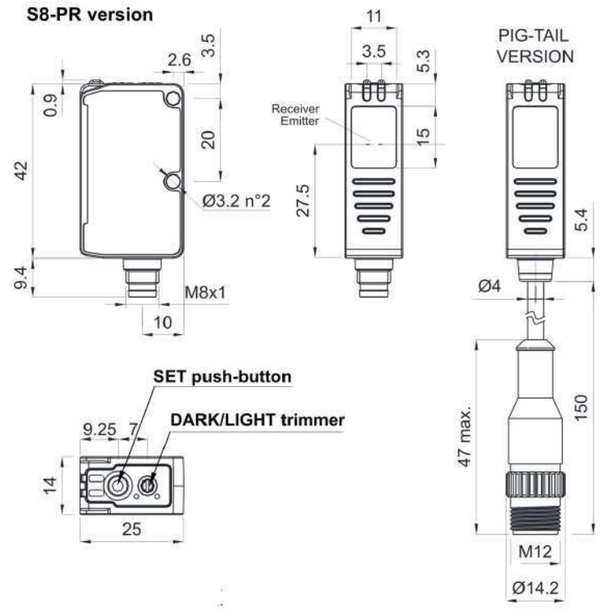
OTHER FUNCTIONS

MAXIMUM SENSITIVITY WITH MAXIMUM FREQUENCY SETTING
To set maximum sensitivity with maximum frequency, press SET push-button for 5 sec. with LED READY green turns off again.

REMOTE INPUT
The REMOTE signal carries-out acquisition functions without using the SET push-button.
The REMOTE wire connected to +VDC is equal to pressing the SET pus-button, connected to GND or not connected is equal to not pressing the SET push-button.



DIMENSIONS



The sensors are NOT safety devices, and so MUST NOT be used in the safety control of the machines where installed.

Datasensing S.r.l.
Strada S. Caterina 235 - 41122 Modena - Italy
Tel: +39 059 420411 - Fax: +39 059 253973 - www.datasensing.com

The warranty period for this product is 36 months. See General Terms and Conditions of Sales for further details.

For information about the disposal of Waste Electrical and Electronic Equipment (WEEE), please refer to the website at www.datasensing.com.

806000390 Rev. A

DATALOGIC

S8-PR…W13

Contrast sensor

INSTRUCTION MANUAL

CONTROLS

OUTPUT LED (yellow)
The yellow LED ON indicates the output status.

READY LED (green)
The green LED ON indicates the powering status.

SET PUSH-BUTTON
A long pressure on the push-button activates the teach procedure.
The REMOTE input allows the external control of the SET push-button.

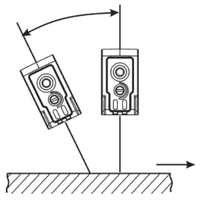
DARK/LIGHT TRIMMER (only for dynamic setting)
The light/dark mode is selected by a monoturn trimmer.

Please refer to the “SETTING” paragraph to get the correct setting procedure.
WARNING: *the maximum mechanical rotation range of the trimmer is 240°.*
Do not force over the maximum and minimum positions.

INSTALLATION

S8-PR:
The sensor can be positioned by means of the two housing holes using two screws (M3x18 or longer, 0.8Nm maximum tightening torque) with washers.

Various orientable fixing brackets to ease the
sensor positioning are available (please refer to the accessories listed in the general catalogue).The operating distance is measured from the front surface of the sensor optics.

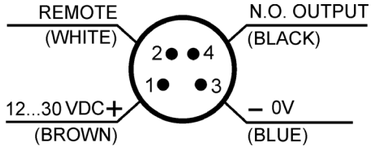


S8-PR

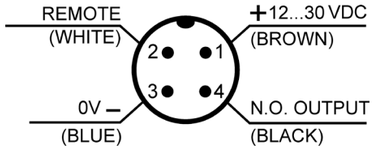
Mark detection on a reflective surface is improved adjusting the beam direction to 5° … 20° from surface axis.

CONNECTIONS

M8 connector



Pig-tail with M12 connector



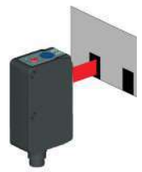
TECHNICAL DATA

	S8-PR…W13
Power supply:	12 … 30 VDC Class 2 UL508
Ripple:	2 Vpp max.
Current consumption (output current excluded):	30 mA max
Outputs:	PNP or NPN N.O.; 30 VDC max. (short-circuit protection) Pull-down/up resistance = 47 KΩ
Output current:	100 mA (overload protection)
Output saturation voltage:	≤ 2 V
Response time:	20 µs
Switching frequency:	25 kHz
Emission type:	BLUE (465 nm) / GREEN (520 nm) / RED (630 nm) with automatic selection
Spot dimension:	3x1 mm^2
Operating distance (typical values):	9 mm
Depth of field:	± 3 mm
LIGHT/DARK selection:	Mono-turn trimmer (only for dynamic setting)
Indicators:	OUTPUT LED (YELLOW) / READY LED (GREEN)
Operating temperature:	-10 … 55 °C
Storage temperature:	-20 … 70 °C
Dielectric strength:	⧈: 1500 VAC 1 min. between electronics and housing
Insulating resistance:	>20 MΩ 500 Vdc between electronics and housing
Ambient light rejection:	according to EN 60947-5-2
Vibrations:	0.5 mm amplitude, 10 … 55 Hz frequency, for each axis (EN60068-2-6)
Shock resistance:	11 ms (30 G) 6 shocks for each axis (EN60068-2-27)
Housing material:	ABS
Lens material:	Window in glass; lens in PC
Mechanical protection:	IP67
Connections:	M8 4-pole connector / 150 mm ∅ 4 mm cable with M12 4-pole connector (pig-tail vers.)
Weight:	12 g. max. (connector vers.) / 50 g. max.pig-tail (pig-tail vers.)

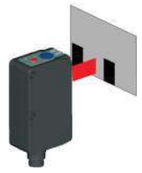
SETTINGS

MARK-BACKGROUND ACQUISITION

Mark acquisition
The DARK/LIGHT mode is automatically selected by the sensor.
Place mark in front of the sensor spot and press SET push-button until the green READY LED turns off (1 sec).
The sensor functions alternating red, green and blue emissions.
Do not move the mark during this phase.



Background acquisition
Place background in front of the sensor spot and press SET push-button again.
The sensor functions alternating red, green and blue emissions.
Do not move the mark during this phase.



DYNAMIC ACQUISITION
Use the dynamic setting to detect moving target. The sensor sets automatically the threshold value during target movement. The DARK/LIGHT mode has to be previously set.

LIGHT/DARK MODE SETTING

LIGHT mode setting
Rotate trimmer in an anti-clockwise direction to set the LIGHT mode (clear mark on dark background).

LIGHT

DARK mode setting
Rotate trimmer in a clockwise direction to set the DARK mode mode (dark mark on clear background).

DARK

Dynamic detection

Position the sensor spot in front of the target to detect.

Press SET push-button until the green READY LED turns off (3sec) and keep it pressed.

To end the dynamic detection procedure release the SET push-button.
The sensor functions alternating red, green and blue emissions.

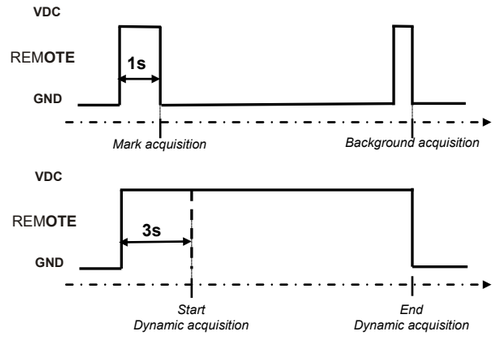
SETTING RESULT

The switching threshold is typically placed 25% below the mark. If the sensing conditions are accepted, at the end of teach procedure the READY LED blinks x2 for 3sec. If SET push-button is pressed in this 3 seconds the switching threshold is placed in the midpoint between the mark and the background. If the READY LED blinks fast the acquisition failed for to insufficient contrast. Press SET push-button and the sensor returns to the previous setting

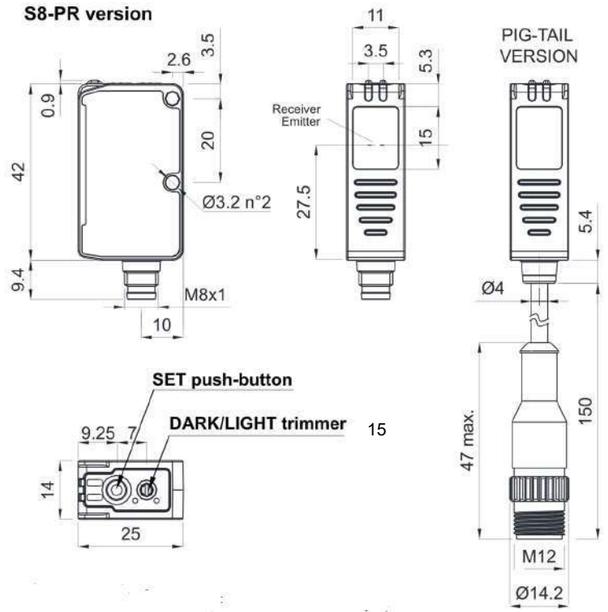
OTHER FUNCTIONS

KEYLOCK function (keyboard lock)
The KEYLOCK function (keyboard lock) allows to deactivate the SET push-button avoiding accidental changes in the sensor setting.
If at sensor powering the REMOTE wire is connected to +Vdc for at least 1 sec., the ***keylock*** function is activated and the push-button is no longer active.
To deactivate the ***keylock***, the sensor must be turned off and repowered with the REMOTE wire not connected or connected to GND.

REMOTE input
Different detection functions can be made with the REMOTE signal, without using the SET push-button.
The REMOTE wire connected to +VDC is equal to pressing the SET push-button, it connected to GND or not connected is equal to not pressing the SET push-button.
The connection duration of the REMOTE wire to +VDC determines the detected type requested:



DIMENSIONS



sensors are NOT safety devices, and so MUST NOT be used in the safety control of the machines where installed.

Datasensing S.r.l.
Strada S. Caterina 235 - 41122 Modena - Italy
Tel: +39 059 420411 - Fax: +39 059 253973 - www.datasensing.com

The warranty period for this product is 36 months. See General Terms and Conditions of Sales for further details.

For information about the disposal of Waste Electrical and Electronic Equipment (WEEE), please refer to the website at www.datasensing.com.

806000420 Rev. A

S8 IO-Link

Instruction Manual

IO-Link®

CONTROLS

OUTPUT LED (yellow)
The yellow LED indicates the output status.

READY LED (green)
The green LED ON indicates normal functioning.

SET PUSH-BUTTON
The acquisition procedure is activated by pressing the SET push-button. The control obtained with the SET push-button can be made externally with the REMOTE input. Set Pin 2 as REMOTE through IO-Link.

DELAY TRIMMER (W03)
The digital output's delay is selected/deselected by a monoturn trimmer.

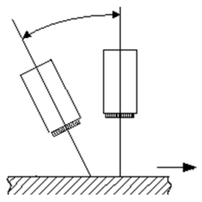
LIGHT/DARK TRIMMER (T53, B53, U03)
The light/dark mode is selected by a monoturn trimmer.

Please refer to "Settings" for the correct use procedures.

CAUTION: the max. mechanical rotation range of the trimmer is 240°. Do not force over of the maximum and minimum positions.

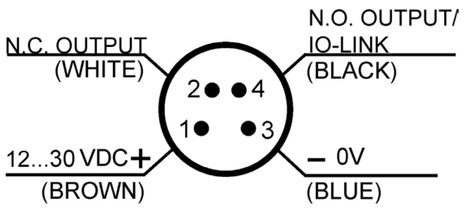
INSTALLATION

The sensor can be positioned by means of the two housing holes using two screws (M3X18 or longer, 0.8Nm max. tightening torque) with washers.
Various orientable fixing brackets to ease the sensor positioning are available (please refer to the accessories listed in the general catalogue).



The operating distance is measured from the front surface of the sensor optics.
Mark detection on a reflective surface is improved adjusting the beam direction to 5° … 20° from surface axis.

CONNECTIONS



Datasensing S.r.l.
Strada S. Caterina 235 - 41122 Modena - Italy
Tel. +39 059 420411 - Fax +39 059 253973
web: www.datasensing.com
email: info@datasensing.com

The warranty period for this product is 36 months. See General Terms and Conditions of Sales for further details.

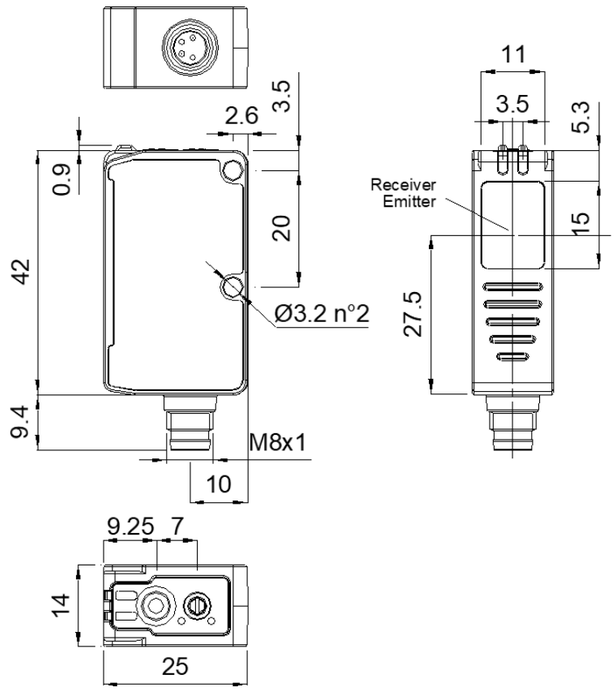
For information about the disposal of Waste Electrical and Electronic Equipment (WEEE), please refer to the website at www.datasensing.com.

806000350 Rev. A

TECHNICAL DATA

Power Supply	12 ... 30 VDC (Class 2 UL508) (reverse polarity protected)
Ripple	2 Vpp max.
Current consumption (output current excluded)	40 mA max.
Output / Alarm output (S8T only)	PNP or NPN N.O.; 30 VDC max. (short-circuit protection) Pull-down/up resistance = 47 KΩ
Output current	100 mA max. (overload protection)
Output saturation voltage	≤ 2 V
Response time	50 µs (W03, B53) 250 µs (T53) 250 µs / 1 ms (U03)
Switching frequency	10 kHz (W03, B53) 2 kHz (T53) 500 Hz / 2 kHz (U03)
Emission type	**W03**: blue (465nm) / green (520nm) / red (630nm) with automatic selection **U03:** UV LED (375nm) **T53**: red LED (630nm) **B53:** red laser (λ = 645...665nm): Class1 EN 60825-1, Class II CDRH 21 CFR PART 1040.10 Pulsed emission: max. power ≤ 1 mW; pulse duration = 4.4 µs; frequency = 40KHz
Spot dimension	3x1 mm² (W03) / Ø 2 mm at 15 mm (U03)
Operating distance (typical values)	9 mm (W03), 10...30 mm (U03) 2 m (EG2) on R2 reflector (T53) 0...10 m on R2 reflector (B53)
Depth of field (W03)	± 2 mm
LIGHT/DARK selection	Automatic (W03) / Monoturn trimmer (B53, T53, U03)
Delay selection	DELAY monoturn trimmer (W03)
Indicators	OUTPUT LED (yellow) / READY LED (green)
Operating temperature	-10 ... 55 °C
Storage temperature	-20 ... 70 °C
Dielectric strength	1500 VAC 1 min. between electronics and housing
Insulating resistance	>20 MΩ 500 VDC between electronics and housing
Ambient light rejection	according to EN 60947-5-2
Vibrations	0.5 mm amplitude, 10…55 Hz frequency, for each axis (EN60068-2-6)
Shock resistance	11 ms (30 G) 6 shocks for each axis (EN60068-2-27)
Housing material	ABS
Lens material	Window in PMMA; lens in PC
Mechanical protection	IP67
Connections	M8 4-pole connector
Weight	12 g. max

DIMENSIONS



SETTINGS

W03 Models

FINE ACQUISITION

Mark detection
The Light/Dark mode is automatically selected by the sensor.
Place the mark in front of the sensor spot and press the SET button until the READY LED turns off or send the IO-Link Standard command "SP1 Teach TP1".
The sensor functions alternating red, green and blue emissions.
Do not move the mark during this phase.

Background detection
Place the background in front of the sensor spot and press the SET button again or send the IO-Link Standard command "SP1 Teach TP2".
The sensor functions alternating red, green and blue emissions.
Do not move the background during this phase.

If the READY LED turns permanently ON the acquisition was successful. If the READY LED blinks quickly the acquisition failed due to insufficient contrast. Press the SET button and the sensor returns to the previous setting. Repeat procedure from the beginning. Teach-in status can be read on IO-Link parameter "TI Result".

DYNAMIC ACQUISITION

Use dynamic acquisition to acquire moving marks. The sensor detects the contrast between the mark and the moving background, and automatically sets the threshold value. Place the sensor spot in front of the target to be detected. Press the SET button until the READY LED lights up again (3 s) or send the IO-Link Standard command "Teach Dynamic". To end the acquisition press the SET button or send the IO-Link Standard command "Teach Dynamic End".
The sensor functions alternating red, green and blue emissions.

LIGHT/DARK SWITCHING (W03)

Pressing the SET button for 5 s inverts the Light/Dark mode. Alternatively, the "SSC1/SSC2 Config" IO-Link parameters can be used.

PNP SETTING

Press the SET button for 10 s to reset Pin 4 in PNP mode. Use this feature if Pin 4 is set in NPN mode and the sensor must be connected again to an IO-Link master.

DELAY SETTING

Delay activation
Rotate the trimmer counterclockwise.

Delay deactivation
Rotate the trimmer clockwise.

When the trimmer is enabled, the IO-Link Standard parameter "Delay Settings" can be used for delay configuration.

U03 Models

EASY TOUCH ACQUISITION

Place the mark in front of the sensor spot and press the SET button until the READY LED turns off. If the READY LED turns permanently ON the acquisition was successful. If the READY LED blinks quickly the acquisition failed due to insufficient contrast.
Press the SET button and the sensor returns to the previous setting. Alternatively, use the IO-Link Standard command "SP1 Single Value Teach" for Easy Touch Acquisition.

If the Easy Touch acquisition fails due to insufficient contrast, try again using the Mark-Background Acquisition described below.

MARK-BACKGROUND ACQUISITION

Mark Acquisition
Place the mark in front of the sensor spot and press the SET button until the READY LED turns back on (3 s).

Background Acquisition
Place the background in front of the sensor spot and press the SET button again. If the READY LED turns permanently ON the acquisition was successful. If the READY LED blinks quickly the acquisition failed due to insufficient contrast. Press the SET button and the sensor returns to the previous setting.

Alternatively, use IO-Link Standard command "SP1 Teach TP1" for Mark Acquisition and "SP1 Teach TP2" for Background Acquisition.

MAX. SENSITIVITY SETTING

To set the maximum sensitivity, press the SET button for 5 s until the READY LED turns off again. Alternatively, use the IO-Link Standard command "Max. Sensitivity".

PNP SETTING

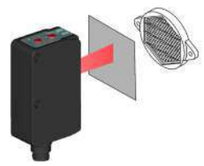
Press the button for 10 s to reset Pin 4 in PNP mode. Use this feature if Pin 4 is set in NPN mode and the sensor must be connected again to an IO-Link master.

B53 / T53 Models

SENSITIVITY SETTING

Sensitivity allignment and setting:

- Place the sensor and the reflector on opposite sides at the desired distance and aligned. Set the maximum sensitivity for easier alignment.
- Move the sensor vertically and horizontally to determine the powering on and powering off points of the OUTPUT LED and fix the sensor in the middle of these two points.
- Press the SET button until the READY LED turns off. The sensor acquires the reflector. Alternatively, use the IO-Link Standard command "SP1 Single Value Teach". If the READY LED turns permanently ON the acquisition was successful. If the READY LED blinks quickly the acquisition failed due to insufficient contrast. Press the SET button and the sensor returns to the previous setting. Repeat the procedure after checking the alignment of the sensor with the reflector and the operating distance.



Check:

- Enter the detection area laterally with the object and check that the OUTPUT LED turns on (in Dark mode).
- Remove the object and check that the OUTPUT LED turns off immediately (in Dark mode).

MAX. SENSITIVITY SETTING

To set the maximum sensitivity, press the SET button until the READY LED turn on again (3 s) or use the IO-Link Standard command "Max. Sensitivity".

PNP SETTING

Press the SET button for 10 s to reset Pin 4 in PNP mode. Use this feature if Pin 4 is set in NPN mode and the sensor must be connected again to an IO-Link master.

SWITCHING THRESHOLD AUTOMATIC ADJUSTMENT (T53)

The sensor automatically adjusts the switching threshold. In case of dirty optics or reflector the received signal decreases, after 1 minute of low signal the sensor automatically adjusts the switching threshold to compensate for such variation avoiding a continuous cleaning of the optics. If the received signal is too low to be adjusted by the sensor, the output remains swtiched on and the optical parts must be cleaned.

LIGHT/DARK MODE SETTING (B53, T53, U03)

Light mode setting
Rotate the trimmer counterclockwise to set the Light mode (sensor ON with the reflector).

Dark mode setting
Rotate the trimmer clockwise to set the Dark mode (sensor ON in presence of an object).

Alternatively, the IO-Link Standard commands "SSC1/SSC2 Config" can be used.

OTHER FUNCTIONS

REMOTE input
The REMOTE signal carries out acquisition functions without using the SET push-button. The REMOTE wire connected to +Vdc is equal to pressing the SET push-button, connected to GND or not connected is equal to not pressing the SET push-button.

DO Pin (Pin 2) can be configured as REMOTE input using Output Type IO-Link parameter.

S8
IO-Link® parameters

PHYSICAL LAYER

Description	
IO-Link Revision	1.1
SIO Modus	YES
Min Cycle Time	2.3 ms
Transmission Rate	38.4 kbit/s (COM2)
Process Data Length	PDInput: 4 Bit / 5 Bit (**B53**) PDOutput: Not used
M-Sequence Capability	PREOPERATE: TYPE_0 OPERATE: TYPE_2_1 ISDU: supported

FEATURES

Description	
Block Parameter	YES
Data Storage	YES
Supported Access Locks	Parameter (write) access Data Storage
Profile Characteristic	Device Profile: Smart Sensor Function Class: Device Identification Function Class: Switching Signal Channel Function Class: Device Diagnosis Function Class: Teach Channel Function Class: Teach-in Single Value

SERVICE DATA

The following ISDUs will not be saved via Data Storage: Device Access Locks (index 0xC), Teach-in Channel (index 0x3A), Emitter Status (index 0x51) Keylock (index 0x58)

System Parameters							
Index (dec)	**Parameter Object Name**	**Lenght**	**Subindex (offset)**	**Value/Range**	**Description**	**Data Type**	**Access***
0x000C (12)	Device Access Locks	2 octets		Bit 1: Data Storage (0 = unlocked, 1 = locked)	Standardized Device locking functions: Bit 0: Parameter (write) access (Not used) Bit 1: Data Storage Bit 2: Local parameterization (Not used) Bit 3: Local user interface (Not used) Bit 4-15: Reserved	RecordT	R/W
0x000D (13)	Profile Characteristics	2 octets 2 octets 2 octets 2 octets 2 octets 2 octets		0x0001 0x8000 0x8001 0x8003 0x8004 0x8007	Smart Sensor Profile Device Identification Switching Signal Channel (SSC) Device Diagnosis Teach Channel Teach-in single value	ArrayT of UIntegerT16	RO
0x000E (14)	PDInput Descriptor	3 octets 3 octets 3 octets 3 octets 3 octets		0x01.0x01.0x00 0x01.0x01.0x01 0x01.0x01.0x02 0x01.0x01.0x03 0x01.0x01.0x04	SSC1 (OUT0) SSC2 (OUT1) TEACH STATUS FLAG Switch Counter Alarm (**B53**)	ArrayT of OctetStringT3	RO

Identification Parameters								
Index (dec)	**Parameter Object Name**	**Lenght**	**Subindex (offset)**	**Value/Range**	**Description**	**Data Type**	**Access***	**Remark**
0x0010 (16)	Vendor Name	9 octets		DATALOGIC	Informative	StringT	RO	
0x0011 (17)	Vendor Text	19 octets		Empower your vision		StringT	RO	
0x0012 (18)	Product Name	14 octets		*See "Device variant collection"*	Detailed product name	StringT	RO	
0x0013 (19)	Product ID	5 octets		*See "Device variant collection"*	Product identification	StringT	RO	
0x0014 (20)	Product Text	15 ÷ 22 octets		*See "Device variant collection"*		StringT	RO	
0x0015 (21)	Serial Number	9 octets			Unique serial number	StringT	RO	
0x0016 (22)	Hardware Revision	5 octets		RevAE		StringT	RO	
0x0017 (23)	Firmware Revision	5 octets		1.0.1		StringT	RO	
0x0018 (24)	Application Specific Tag	32 octets		*** (default)	Tag application defined by user	StringT	R/W	Saved in non-volatile memory
0x0019 (25)	Function Tag	32 octets		*** (default)	Additional tag for device function identification	StringT	R/W	Saved in non-volatile memory
0x001A (26)	Location Tag	32 octets		*** (default)	Additional tag for device function identification	StringT	R/W	Saved in non-volatile memory

**RO = read only, WO = write only, R/W = read/write*

Observation / Diagnostic Parameters								
Index (dec)	**Parameter Object Name**	**Lenght**	**Subindex (offset)**	**Value/Range**	**Description**	**Data Type**	**Access***	**Remark**
0x0028 (40)	Process Data Input	1 octet			Read last valid Process Data Input from PDin channel	Device specific	RO	
0x0041 (65)	Analog Signal	2 octets			Read analog signal	UIntegerT	RO	
0x0052 (82)	Device Temperature	2 octets 2 octets 2 octets 2 octets 2 octets	1(64) 2(48) 3(32) 4(16) 5(0)		Device temperature actual Device min. temperature since powerup Device max. temperature since powerup Device min. temperature during lifetime Device max. temperature during lifetime	IntegerT IntegerT IntegerT IntegerT IntegerT	RO RO RO RO RO	
0x0053 (83)	Device Temperature Threshold	2 octets 2 octets	1(16) 2(0)		Device min. temperature threshold Device max. temperature threshold	IntegerT IntegerT	R/W	Saved in non-volatile memory every hour. Events are generated if the device temperature exceeds the thresholds.
0x0057 (87)	Operating Hours	4 octets 4 octets 4 octets	1(64) 2(32) 3(0)	0...(2^32)-1	Operating Hours: device operating hours. Not resettable by user. Operating Hours Maintenance: device operating hours, reset on system command “Confirm Maintenance”. Operating Hours Power Up: Time in hours since power up.	UIntegerT UIntegerT UIntegerT	RO RO RO	
0x0024 (36)	Device Status	1 octet		0x00 → Device is operating properly 0x01 → Maintenance Required 0x02 → Out of specification 0x03 → Functional Check 0x04 → Failure	Contains current status of the device	UIntegerT	RO	
0x0025 (37)	Detailed Device Status	3 octets			Information about currently pending Events. Implemented as dynamic list.	UIntegerT	RO	
0x0051 (81)	Emitter Status	1 octet		0x00 = Emitter OFF 0x01 = Emitter ON	Contains current statuts of the emitter	BooleanT	RO	
0x0059 (89)	RGB selection (**W03**)	1 octet		0x01 = Red emission 0x02 = Green emission 0x03 = Blue emission	Select emission type	UIntegerT	R/W	Saved in non-volatile memory
0x005A (90)	Frequency Selection (**U03**)	1 octet		0x00 = 2 kHz (default) 0x01 = 500 Hz	Select frequency	UIntegerT	R/W	
0x005E (94)	Delta (**B53, T53**)	1 octet		0 = low (default T53) 1 = medium (default B53) 2 = high	Set the delta between the signal measured on the reflector and the thresholds. “Low” is preferred for transparent object detection.	UIntegerT	R/W	Saved in non-volatile memory

Teach-in Parameters								
Index (dec)	**Parameter Object Name**	**Lenght**	**Subindex (offset)**	**Value/Range**	**Description**	**Data Type**	**Access***	**Remark**
0x003A (58)	TI Select	1 octet		0x00 = SSC1 (default, C/Q pin and DO pin)	Selection for Teach-in channel (volatile)	UIntegerT	R/W	C/Q and DO outputs are antivalent. Teach SSC1 equals to teach SSC2
0x003B (59)	TI Result	1 octet	1(0) 2(4) 3(5)	Teach-in State Flag SP1 TP1 Flag SP2 TP1	See IO-Link Smart Sensor Profile	UIntegerT BooleanT BooleanT	RO	
0x003C (60)	SSC1 Param	2 octets 2 octets	1(16) 2(0)	**U03**: 220...1950 (default = 512) **W03**: 220...1950 (default = 1280) **T53**: 181...1950 (default = 196) **B53**: 215...1950 (default = 215) Not used	Switching threshold	UIntegerT	R/W	Saved in non-volatile memory Setting a higher threshold reduces the operating distance progressively to 0 (output always active)
0x003D (61)	SSC1 Config	1 octet 1 octet 2 octets	1(24) 2(16) 3(0)	0x00: High Active (default **U03**) 0x01: Low Active (default **W03, T53, B53**) 0x01: Single Point (default) 0 = low hysteresis (default) 1 = medium hysteresis 2 = high hysteresis	C/Q pin configuration	UIntegerT UIntegerT UIntegerT	R/W	Saved in non-volatile memory
0x003E (62)	SSC2 Param	2 octets 2 octets	1(16) 2(0)	**U03**: 220...1950 (default = 512) **W03**: 220...1950 (default = 1280) **T53**: 181...1950 (default = 196) **B53**: 215...1950 (default = 215) Non used	Switching threshold	UIntegerT	R/W	Saved in non-volatile memory Setting a higher threshold reduces the operating distance progressively to 0 (output always active)
0x003F (63)	SSC2 Config	1 octet 1 octet 2 octets	1(24) 2(16) 3(0)	0x00: High Active (default **W03, T53, B53**) 0x01: Low Active (default **U03**) 0x01: Single Point (default) 0 = low hysteresis (default) 1 = medium hysteresis 2 = high hysteresis	DO pin configuration	UIntegerT UIntegerT UIntegerT	R/W	Saved in non-volatile memory
0x0040 (64)	Sensitivity selection	1 octet		0 ..7 Sensitivity **U03** default = 3 **W03** default = 5 **T53** default = 7 **B53** default = 7	Sensitivity	UIntegerT	R/W	Saved in non-volatile memory

**RO = read only, WO = write only, R/W = read/write*

Device Specific Parameters								
Index (dec)	**Parameter Object Name**	**Lenght**	**Subindex (offset)**	**Value/Range**	**Description**	**Data Type**	**Access***	**Remark**
0x0048 (72)	Delay Settings	1 octet 1 octet	1(8) 2(0)	0 = no DELAY (default **U03, T53, B53**) 0x1 = Delay ON/OFF 0x2 = Delay ON 0x4 = Delay OFF (default **W03**) 0...(2^8)-1 20 (default)	Select Delay mode (OFF) Delay value = Delay [ms]	UIntegerT UIntegerT	R/W R/W	Saved in non-volatile memory. Max. Value 255 ms
0x00B4 (180)	Output type	1 octet 1 octet	1(8) 2(0)	0x01 = PNP (default) 0x02 = NPN 0x03 = Push Pull 0x01 = PNP (default) 0x02 = NPN 0x03 = Push Pull 0x04 = Input	Output type of C/Q pin when in SIO mode Output type of DO pin	UIntegerT UIntegerT	R/W R/W	Saved in non-volatile memory
0x0058 (88)	Keylock	1 octet		0x0 = All enabled (default) 0x1 = Push Button disabled 0x2 = Trimmer disabled 0x3 = All disabled	Keylock	UInterT	R/W	Saved in non-volatile memory

Standard Command					
Index (dec)	**Command Name**	**Lenght**	**Value (dec)**	**Description**	**Access***
0x0002 (2)	SP1 Single Value Teach	1 octet	0x41 (65)	Reflector Acquisition (**B53, T53**) / EASY Acquisition (**U03**)	WO
0x0002 (2)	SP1 Teach TP1	1 octet	0x43 (67)	Acquisition FINE: Mark Detection (**W03, U03**) (refer to User's Manual)	WO
0x0002 (2)	SP1 Teach TP2	1 octet	0x44 (68)	Acquisition FINE: Background Detection (**W03, U03**) (refer to User's Manual)	WO
0x0002 (2)	Teach Dynamic / Max. Sensitivity	1 octet	0x4B (75)	Dynamic acquisition (**W03**) / Max. Sensitivity (**T53, B53, U03**)	WO
0x0002 (2)	Teach Dynamic End	1 octet	0x4F (79)	Exit from Dynamic Detection (**W03**)	WO
0x0002 (2)	Restore Factory Settings	1 octet	0x82 (130)	Restore factory settings (Device Access Locks, Application Specific Tag, Function Tag, Location Tag, SSC1 Param, SSC1 Config, SSC2 Param, SSC1 Config, Delay Settings, Sensitivity selection, Output type, RGB selection (**W03**), Frequency Selection (**U03**), Switch counter settings, Switch counter values, Keylock)	WO
0x0002 (2)	Confirm Maintenance	1 octet	0xA5 (165)	Reset Maintenance parameters (Operating Hours Maintenance, Minimum device temperature since powerup, Maximum device temperature since powerup, Device Status, Detailed Device Status)	WO
0x0002 (2)	Disable/enable emission	1 octet	0xB0 (176)	Toggle emission (enable / disable emission)	WO
0x0002 (2)	Start / Stop Ping	1 octet	0xAF (175)	Feature to identify the sensor by yellow LED blinking	WO

Events					
Event code (dec)	**Event name**	**Event mode**	**Event type**	**Device status**	**Remarks**
0x4220 (16928)	Temperature underrun	Appears / Disappears	Warning	Out of specification	
0x4210 (16912)	Temperature overrun	Appears / Disappears	Warning	Out of specification	
0x5100 (20736)	General power supply fault	Appears / Disappears	Error	Failure	
0x7710 (30480)	Short circuit - Check installation	Appears / Disappears	Error	Failure	
0x8C40 (35904)	Maintenance required - Lens cleaning	Appears / Disappears	Notification	Maintenance required	**B53** only
0x8CA0 (36900)	Laser fault	Appears / Disappears	Error	Failure	**B53** only

**RO = read only, WO = write only, R/W = read/write*

PROCESS DATA

Process Data Input

Bit offset	Byte 0							
	7	6	5	4	3	2	1	0
	Not used			ALARM (**B53**)	COUNTER EXCEED THRESHOLDS	TEACH-IN	SSC2 (DO pin)	SSC1 (C/Q pin)

DEVICE VARIANT COLLECTION

Product name	Product ID	Product text
S8-PR-5-W03-0Z	00004	Contrast sensor
S8-PR-5-T53-0Z	00005	Reflex transparent
S8-PR-5-B53-OZ	00006	Reflex polarized laser
S8-PR-5-U03-OZ	00007	Luminescence sensor

EXTENDED PARAMETERS

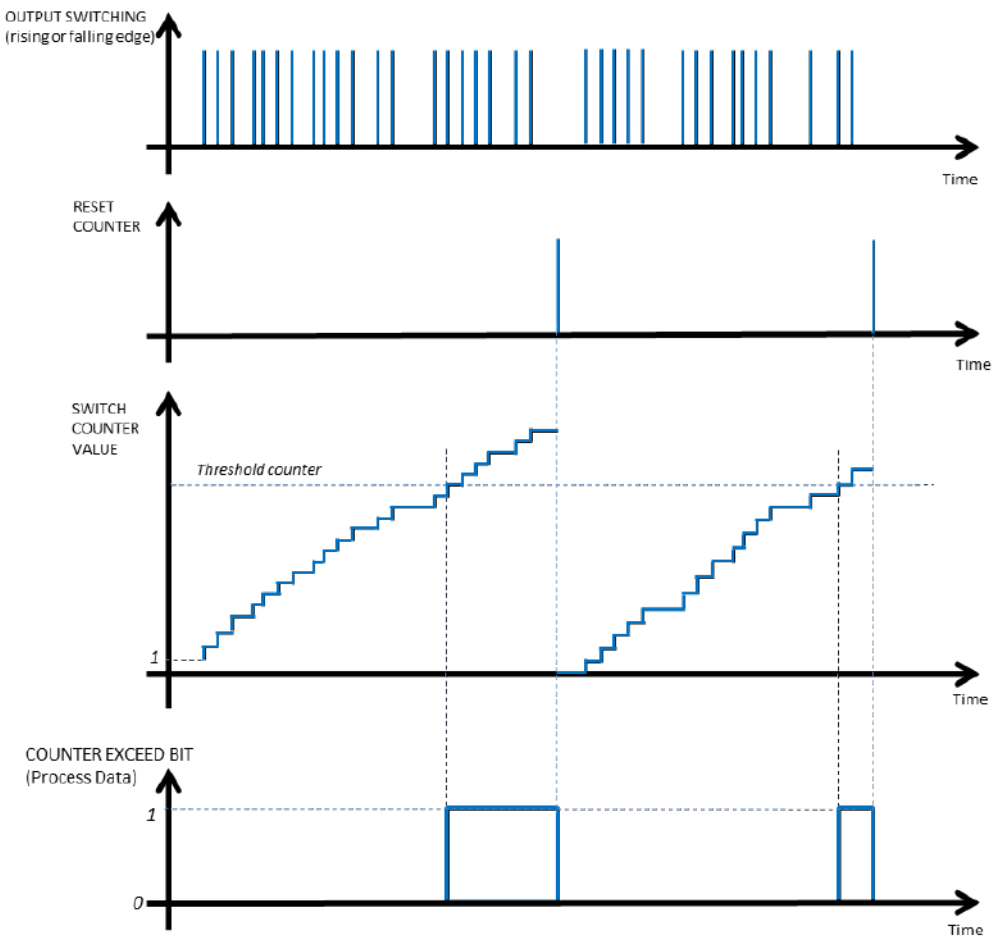
Switch Counter

Index (dec)	Parameter Object Name	Lenght	Subindex (offset)	Value/Range	Description	Data Type	Access*	Remark
0x00B6 (182)	Switch counter settings	1 octet 1 octet 2 octets	1(24) 2(16) 3(0)	0: OFF (default) 1: Counter (STATIC) 2: Counter (AUTO) 0: Output Rising Edge (default) 1: Output Falling Edge 0-32000 (default = 0)	Mode Trigger counter Threshold counter	UIntergerT Boolean UIntegerT	RW RW RW	Saved in non-volatile memory. Stop or reset the running counter before changing configuration, then re-enable the counter with Set counter commands. *Rising and falling egdes are referred to DO pin.
0x00B7 (183)	Switch counter values	1 octet 2 octets	1(16) 2(0)	0: counting UP (default) 1: counting DOWN 2: counting INACTIVE -32,768..32,767	Counting direction Switch counter value	UIntegerT IntegerT	RO RO	

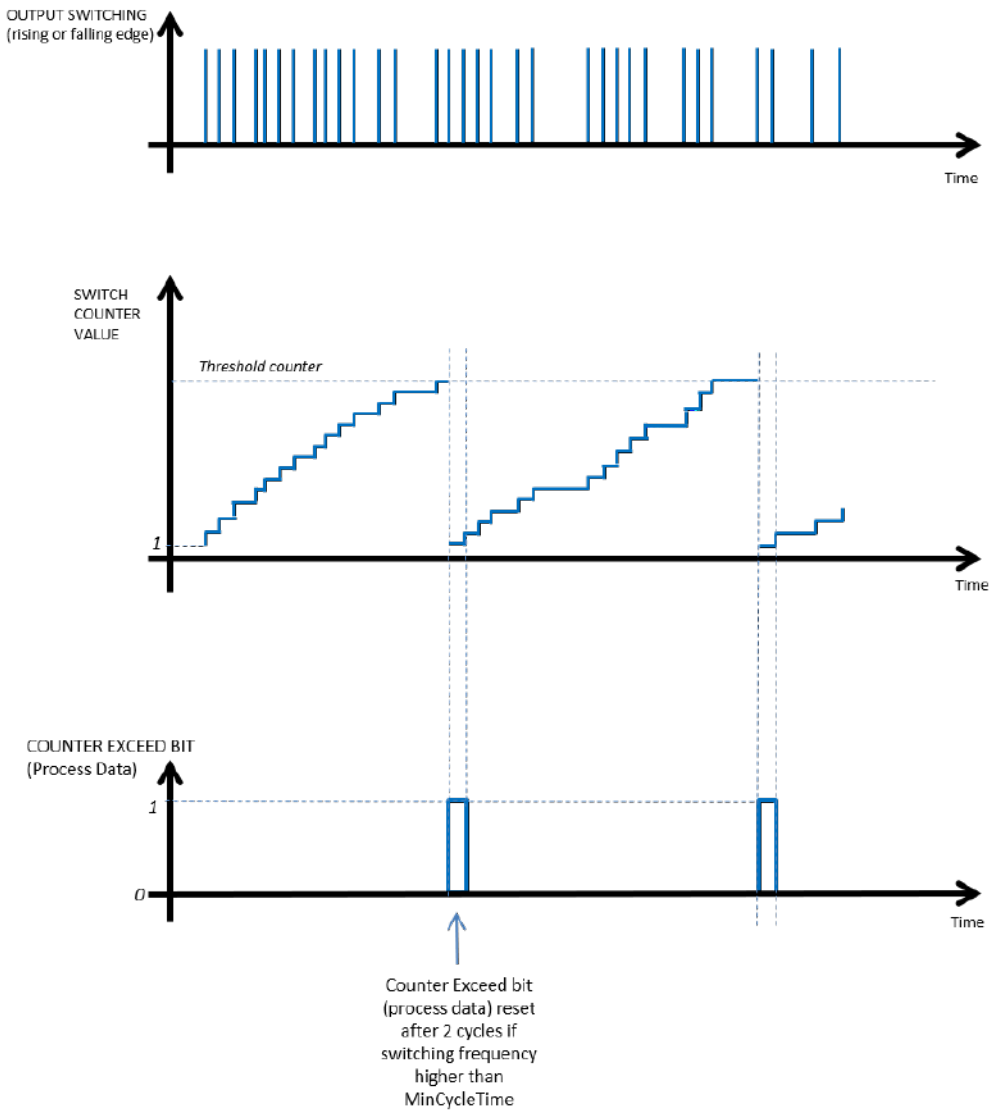
Index (dec)	Parameter Object Name	Lenght	Value (dec)	Description	Access
0x0002 (2)	Reset counter	1 octet	0xA0(160)	Reset counter value	WO
0x0002 (2)	Enable counter UP	1 octet	0xA1(161)	Enable counter and start count UP (counter value is not reset. Reset counter command to zero the value)	WO
0x0002 (2)	Enable counter DOWN	1 octet	0xA2(162)	Enable counter and start count DOWN (counter value is not reset. Reset counter command to zero the value)	WO
0x0002 (2)	Stop counter	1 octet	0xA3(163)	Freeze the counting functions (all commutations are neglected: counting INACTIVE). Enable counter to resume the counting function.	WO

COUNTING DIRECTION UP

COUNTER MODE - static

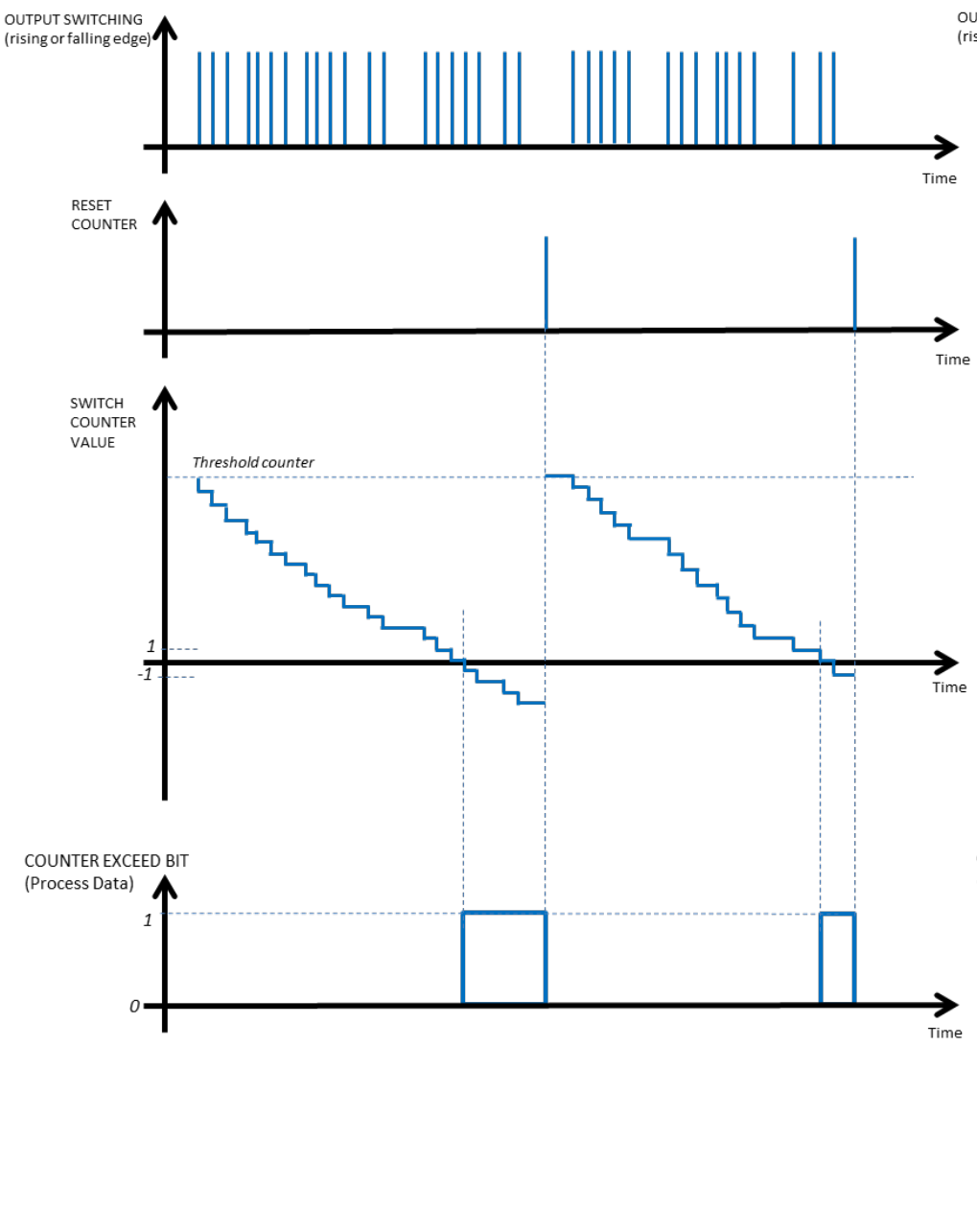


COUNTER MODE - auto

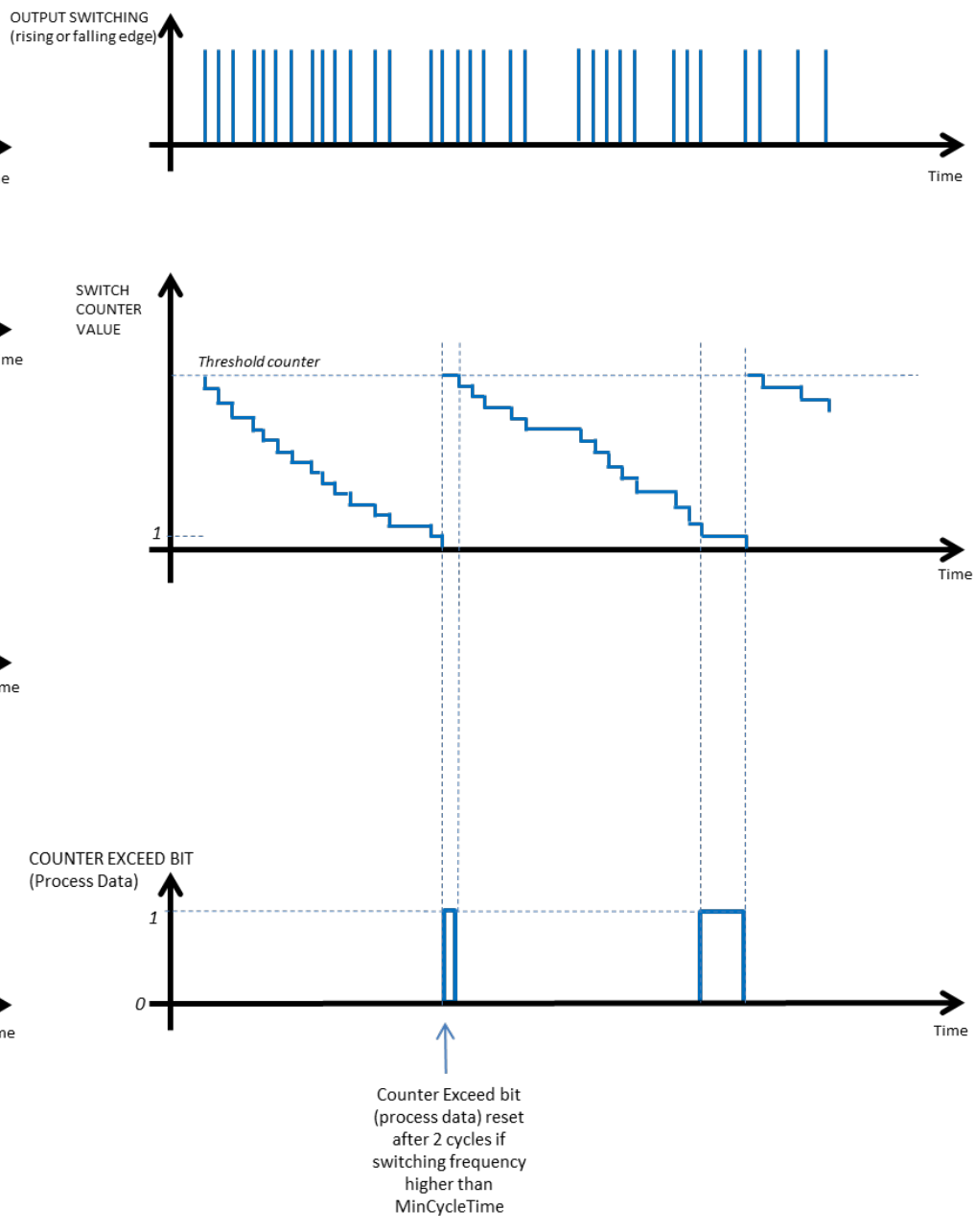


COUNTING DIRECTION DOWN

COUNTER MODE - static



COUNTER MODE - auto



EN

CE Compliance

CE marking states the compliance of the product with essential requirements listed in the applicable European directive. Since the directives and applicable standards are subject to continuous updates, and since the manufacturer promptly adopts these updates, therefore the EU declaration of conformity is a living document. The EU declaration of conformity is available for competent authorities and customers through the manufacturer's commercial reference contacts. Since April 20th, 2016 the main European directives applicable to the products require inclusion of an adequate analysis and assessment of the risk(s). This evaluation was carried out in relation to the applicable points of the standards listed in the Declaration of Conformity. These products are mainly designed for integration purposes into more complex systems. For this reason, it is under the responsibility of the system integrator to do a new risk assessment regarding the final installation.

Warning
This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

IT

Conformità CE

La marcatura CE dichiara la conformità del prodotto con i requisiti essenziali elencati nella direttiva europea applicabile. Essendo le direttive e le normative applicabili soggette a continui aggiornamenti, e dato che il costruttore adotta immediatamente tali aggiornamenti, la dichiarazione di conformità CE è un documento vivo. La dichiarazione di conformità CE è disponibile per le autorità competenti e i clienti tramite i contatti commerciali di riferimento al costruttore. Dal 20 aprile 2016, le principali direttive europee applicabili ai prodotti richiedono l'inserimento di un'adeguata analisi e valutazione del/i rischi(o). Tale valutazione è stata realizzata in relazione ai punti applicabili delle normative elencate nella Dichiarazione di Conformità. Questi prodotti sono progettati principalmente per essere integrati in sistemi più complessi. Per questo motivo, l'integratore di sistemi è responsabile della realizzazione di una nuova valutazione dei rischi riguardante l'installazione finale.

Attenzione
Si tratta di un prodotto di Classe A. In un ambiente domestico questo prodotto può generare interferenze radio. In tal caso è necessario prendere le dovute misure.

DE

EG-Konformität

Die CE-Kennzeichnung bestätigt die Konformität des Produkts mit den wesentlichen Anforderungen der geltenden europäischen Richtlinien. Da die Richtlinien und anwendbaren Normen laufend aktualisiert werden und der Hersteller diese Aktualisierungen umgehend übernimmt, ist die EU-Konformitätserklärung ein fortschreitendes Dokument. Die EU-Konformitätserklärung ist für zuständige Behörden und Kunden über die Handelskontakte von dem Hersteller erhältlich. Seit dem 20. April 2016 erfordern die wichtigsten für diese Produkte anwendbaren Europäischen Richtlinien die Integration einer angemessenen Analyse und der Bewertung der Risiken. Diese Bewertung wird in Bezug auf die anwendbaren Punkte der in der Konformitätserklärung aufgelisteten Normen durchgeführt. Diese Produkte werden in erster Linie für die Integration in komplexere Systeme ausgelegt. Aus diesem Grund liegt es in der Verantwortung des Systemintegrators, eine neue Risikobewertung der Endinstallation vorzunehmen.

Warnung
Dies ist ein Produkt nach Klasse A. In einem häuslichen Umfeld kann dieses Produkt Funkstörungen auslösen, gegebenenfalls hat der Benutzer dann angebrachte Maßnahmen zu ergreifen.

FR

Conformité CE

La marque CE indique la conformité du produit aux exigences essentielles énoncées dans la directive européenne applicable. Les directives et les normes applicables sont sujettes à des mises à jour de manière continue et le constructeur adopte rapidement ces mises à jour ; la déclaration de conformité UE est par conséquent un document vivant. La déclaration de conformité UE est disponible aux autorités compétentes et aux clients à travers les interlocuteurs commerciaux de référence des constructeurs. Depuis le 20 Avril 2016 les principales directives européennes applicables aux produits exigent l'inclusion d'une analyse et d'une évaluation adéquates du/des risque/s. Cette évaluation a été réalisée en relation avec les points applicables des normes indiquées dans la Déclaration de Conformité. Ces produits sont principalement conçus à des fins d'intégration dans des systèmes plus complexes. Pour cette raison, il est de la responsabilité de l'intégrateur de système d'effectuer une nouvelle évaluation des risques concernant l'installation finale.

Avertissement
Ceci est un produit de Classe A. Dans un environnement domestique, ce produit peut provoquer des interférences radio auquel cas l'utilisateur peut se trouver dans l'obligation de prendre des mesures adéquates.

ES

Conformidad CE

La marca CE establece la conformidad del producto con los requisitos fundamentales enumerados en la directiva europea aplicable. Debido a que las directivas y normativas aplicables están sujetas a actualización continua, como el constructor adopta estas actualizaciones de inmediato, la declaración de conformidad UE es un documento activo. La declaración de conformidad UE está disponible para las autoridades competentes y para los clientes a través de los contactos comerciales de referencia del constructor. Desde el 20 de abril de 2016, las principales directivas europeas aplicables a los productos exigen la inclusión de un idóneo análisis y evaluación de riesgos. Esta evaluación ha sido efectuada sobre los puntos aplicables de la normativa indicada en la Declaración de Conformidad. Estos productos han sido diseñados a fin de ser integrados en sistemas más complejos. Por ello, es responsabilidad del integrador del sistema efectuar una nueva evaluación de riesgos relativa a la instalación final.

Advertencia
Este es un producto de Clase A. En un entorno doméstico, este producto puede causar interferencias radioeléctricas; en este caso, el usuario debería tomar medidas adecuadas.

NL

EU-conformiteitsverklaring

Met de CE-markering wordt verklaard dat het product voldoet aan de essentiële eisen zoals vermeld in de toepasselijke Europese richtlijnen. Daar de richtlijnen en de toepasselijke normen onderhevig zijn aan voortdurende aanpassingen, en de fabrikant deze aanpassingen direct toepast, is de EU-conformiteitsverklaring een levend document. De EU-conformiteitsverklaring is beschikbaar voor bevoegde autoriteiten en klanten via contactgegevens voor commerciële referentie. Sinds 20 april 2016 vereisen de belangrijkste Europese richtlijnen de inclusie van een adequate risicoanalyse- en beoordeling. Deze beoordeling werd uitgevoerd met betrekking tot de toepasselijke punten van de normen zoals vermeld in de Conformiteitsverklaring. Deze producten zijn voornamelijk ontworpen voor integratie in complexere systemen. Om deze reden is het de verantwoordelijkheid van de systeemintegrator om een nieuwe risicobeoordeling uit te voeren met betrekking tot de definitieve installatie.

Waarschuwing
Dit is een Klasse A product. In een woonomgeving kan dit product radiostoring veroorzaken, in welk geval de gebruiker mogelijk verplicht is om adequate maatregelen te treffen.