DATALOGIC

# TL46-W

***Contrast sensor***

## INSTRUCTION MANUAL

## CONTROLS


**OUT LED *(yellow)***
The red LED indicates the output status.

**READY LED *(green)***
During functioning, the green LED permanently ON indicates a normal operating condition; fast blinking indicates an output overload condition.

**MARK PUSH-BUTTON**
The mark detection procedure is activated by pressing MARK push-button.

**BKGD PUSH-BUTTON**
The background detection procedure is activated by pressing BKGD push-button.

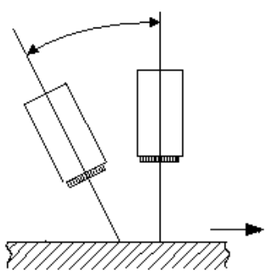
**See the "SETTING" paragraph for setup procedure indications.**

## INSTALLATION

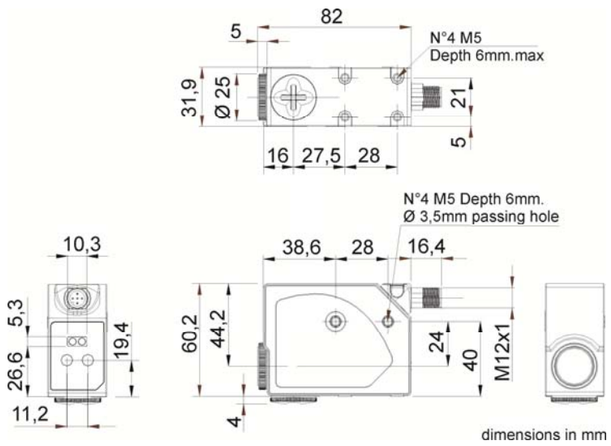
The sensor can be positioned by means the two Ø3.5mm housing's holes using or threaded M5 holes with 6mm max. depth.
**Warning:** the use of excessively long screws can damage the product.

The connector can be oriented at five different positions, rotating the block.
The position chosen is guaranteed by a mechanical blocking system.
The rotation can be carried-out even after sensor installation as the connector block is completely self-contained inside the housing.

The operating distance is measured starting from the lens front face.
The reading direction can be changed inverting the cap and lens.
Mark detection on a reflective surface is improved adjusting the beam direction to 5° … 20° from surface axis.



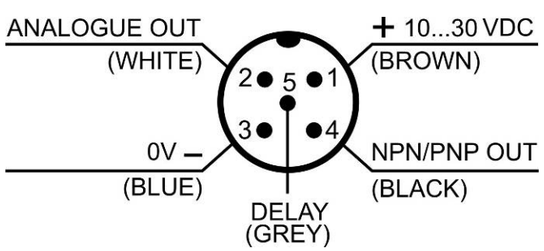
## DIMENSIONS




## TECHNICAL DATA

| | |
|---|---|
| Power supply: | 10…30 Vdc limit values |
| Ripple: | 2 Vpp max. |
| Current consumption *(output current excluded)*: | 50 mA max. @ 24Vcc |
| Output: | 1 PNP/NPN selectable output<br>30 Vdc max. *(short-circuit protection)*<br>*(PNP is the default configuration)* |
| Output current: | 100 mA max. |
| Output saturation voltage: | ≤ 2 V |
| Response time: | 33 µs |
| Switching frequency: | 15 kHz |
| Analogue output: | 0 … 5 V<br>2.2 V on white target 90% ± 10% |
| Analogue output impedance: | 2.2 kΩ<br>*(short-circuit protection)* |
| Delay: | 0 / 20 ms<br>selectable via delay input |
| Dark/light selection | automatic |
| Indicators: | OUT LED (yellow) / READY LED (green) |
| Operating temperature: | -10 … 55 °C |
| Storage temperature: | -20 … 70 °C |
| Electric shock protection: | double insulation ⧈ |
| Operating distance: | 9 mm |
| Depth of field: | ± 3 mm |
| Minimum spot dimension: | 1.5x5 mm |
| Emission type: | blue (465 nm) / green (520 nm) / red (630 nm)<br>with automatic selection |
| 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 shock for each axis<br>(EN60068-2-27) |
| Housing material: | aluminium |
| Lens material: | PMMA |
| Mechanical protection: | IP67 |
| Connections: | M12 5-pole connector |
| Weight: | 170 g. max. |
| AtEx 2014/34/EU: | II 3G EX nA II T6 ;<br>II 3D EX tD A22 IP67 T85°C |

## CONNECTIONS

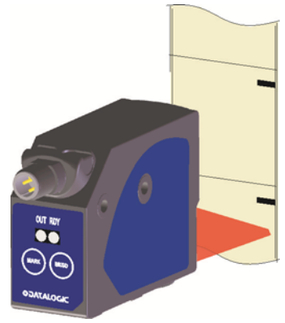



## SETTING

***DETECTION (MARK-BACKGROUND)***

- *Position mark in front of the sensor light spot and press MARK push-button* until the READY LED (green) turns OFF.
  *The sensor detects the mark alternating the red, green and blue emissions.*
  *Avoid mark movements during this phase.*

- *Position the background in front of the sensor light spot and press BKGD push-button. The sensor detects the mark alternating the red, green and blue emissions. Avoid background movements during this phase.*



*The DARK/LIGHT operating mode is automatically selected by the sensor.*
*Dark mark - light background = dark mode; light mark - dark background = light mode.*

*If the READY LED is permanently ON, the detection is successful.*
*If the LED blinks slowly, the detection has failed due to insufficient contrast.*
*The sensor returns to the previous setting by pressing MARK or BKGD push-button.*
*Repeat the procedure from the beginning.*

***PNP/NPN OUTPUT SETTING***
The digital output can be PNP or NPN configured.
- *To change output press MARK and BKGD contemporaneously for 2 sec.*

- *The setting is signalled by the status change of the READY LED.*
  *If the READY LED turns off after a 1 sec. pressure, release push-buttons only after the re-powering of the LED (2sec).*

- *The output setting is signalled by the READY LED. Releasing the push-buttons, the READY LED blinks once if the PNP output is set, blinks twice if the NPN output is set.*

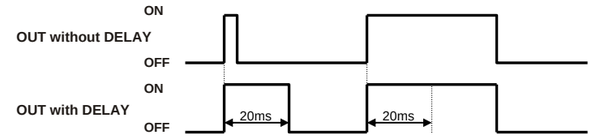
| *1 sec pressure of MARK and BKGD* | *10 sec pressure of MARK and BKGD* | *Release of push-buttons* |
|---|---|---|
| ● ● | ● ● | ✸ |

***OUTPUT OVERLOAD***
The digital output overload is signalled by the rapid blinking of the READY LED.

## ACCESSORY FUNCTIONS

**ANALOGUE output**
The analogue output supplies a voltage proportional to the signal received by the sensor. The voltage supplied is 0 ÷ 5 V.
The maximum voltage is obtained with reflective objects; on 90% white the voltage is equal to 2.2 V.

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




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

***Delay deactivation***
- *Connect Delay signal (grey wire) to 0V or leave unconnected.*

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

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Helpful links at www.datalogic.com: **Contact Us, Terms and Conditions, Support**.

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

Under current Italian and European laws, Datalogic is not obliged to take care of product disposal at the end of its life. Datalogic recommends disposing of the product in compliance with local laws or contacting authorised waste collection centres.



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