



TL46-A 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.

INDICATORS ARROWS (orange)

The arrows show the direction of knob rotation to adjust threshold.

LIGHT/DARK SWITCH

Switch to select LIGHT/DARK operation mode.

SENSITIVITY ADJUSTMENT KNOB

The knob rotation change the sensors sensitivity. Clockwise rotation → Increase sensitivity. Counterclockwise rotation → decrease sensitivity.

See the "SETTING" paragraph for setup procedure indications.



INSTALLATION

The sensor can be positioned by means the two Ø3.5 mm 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.

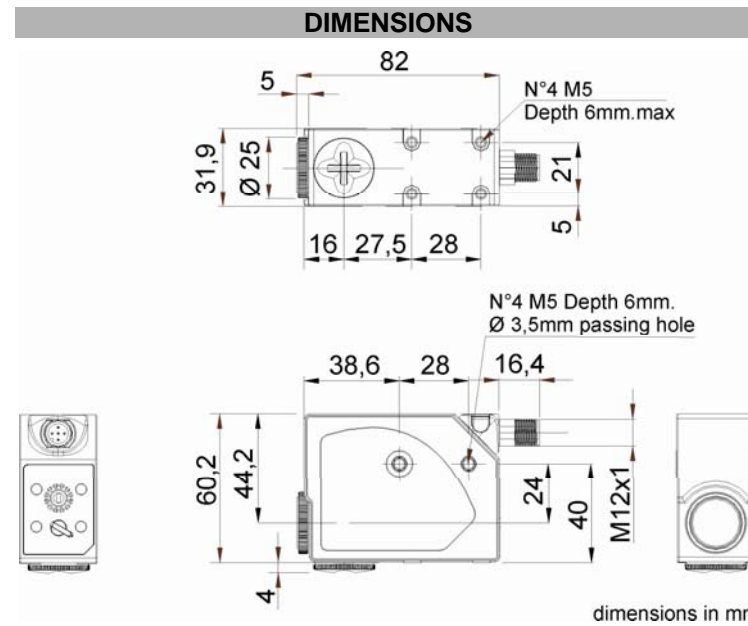
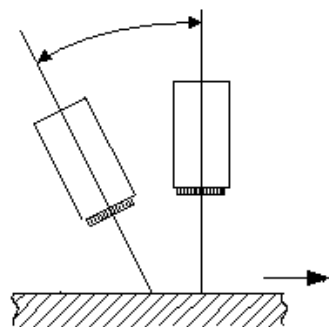
The rotation can be carried-out even after sensor installation as the connector block is completely self-contained inside the housing.



The operating distance is measured starting from the lens front face.

The reading direction can be changed inverting the cap and lens.

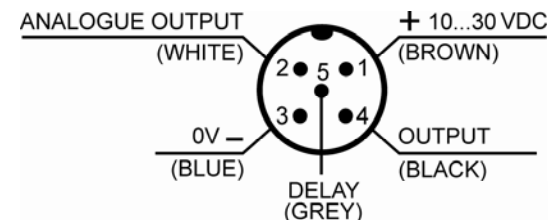
Mark detection on a reflective surface is improved adjusting the beam direction to 5° ... 20° from surface axis.



TECHNICAL DATA

Power supply:	10...30 VDC limit values Class 2 (Type 1) UL508
Ripple:	2 Vpp max.
Current consumption (output current excluded):	40 mA max. @ 24 VDC
Output:	PNP o NPN 30 VDC max. (short-circuit protection)
Output current:	100 mA max.
Output saturation voltage:	≤ 2 V
Response time:	25 μs
Switching frequency:	20 kHz
Analogue output:	0 ... 5 V 2.2 V on white target 90% ± 10%
Analogue output impedance:	2.2 kΩ (short-circuit protection)
Delay:	0 / 20 ms selectable via delay input
Light-dark selection:	switch
Indicators:	OUT LED (yellow) / READY LED (green) / INDICATORS ARROWS (orange)
Operating temperature:	-10 ... 55 °C
Storage temperature:	-20 ... 70 °C
Electric shock protection:	double insulation <input type="checkbox"/>
Operating distance:	9 mm
Depth of field:	± 3 mm
Minimum spot dimension:	1.5x5 mm
Emission type:	TL46-A-4xx: WHITE (400-700 nm) TL46-A-6xx: RED (630 nm)
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 (EN60068-2-27)
Housing material:	aluminium
Lens material:	mirror
Mechanical protection:	IP67
Connections:	M12 5-pole connector
Weight:	170 g. max.

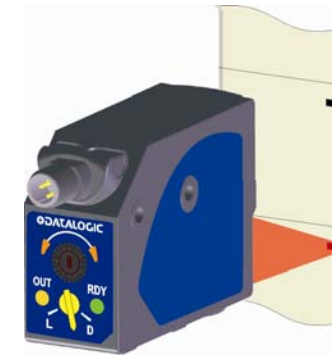
CONNECTIONS



SETTING

SENSITIVITY ADJUSTMENT

- Select the function mode through light-dark switch.
- The setting procedure is faster rotating the sensitivity knob quickly (application with high contrasts), otherwise rotate the knob slowly to detect difficult contrast.
- Position mark in front of the sensor light spot and rotate the sensitivity adjustment knob until the OUT LED is ON. The orange arrows indicate the direction of rotation. When the sensor reach the maximum/minimum sensitivity the indicator arrows blink. During adjustment phase the READY LED (green) turns OFF.



LIGHT mode



Rotate the sensitivity adjustment knob in clockwise direction until OUT LED turns ON.

DARK mode



Rotate the sensitivity adjustment knob in counterclockwise direction until OUT LED turns ON.

Position the background in front of the sensor light spot and rotate the sensitivity adjustment knob until the OUT LED is ON.



LIGHT mode



Rotate the sensitivity adjustment knob in clockwise direction until OUT LED turns ON.

DARK mode



Rotate the sensitivity adjustment knob in counterclockwise direction until OUT LED turns ON.

Rotate the knob in opposite direction for 1/2 the number of turns required to detect the background. Position mark in front of the sensor light spot to verify the correct commutation of the output.

At the end of the setting phase the READY LED (green) turns ON: the sensors had set the new sensitivity.

LIGHT mode



Rotate the sensitivity adjustment knob in counterclockwise direction.

DARK mode



Rotate the sensitivity adjustment knob in clockwise direction.

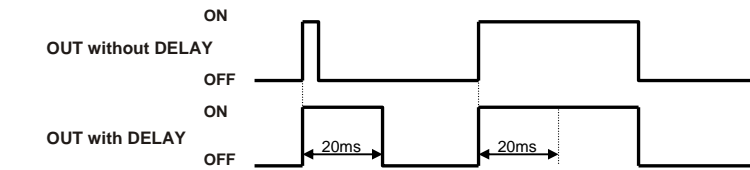
ACCESSORY FUNCTIONS

ANALOGUE output

The analogue output supplies a voltage proportional to the signal received by the sensor. The voltage supplied is 0 ÷ 5V. 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.

OUTPUT OVERLOAD

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

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.

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