

## TL50 SERIES

The **TL50** contrast sensor line offers the best solution for all the applications where cost reduction is requested, without compromising the excellent detection performances. The optimised optics of these sensors, the RGB LED emission with automatic colour selection and the very fine resolution, allow the detection of the weakest contrast of colours or grayscale between mark and background, or between different objects or surfaces. The high resolution is not a limit for the detection speed, reaching 33 ms response time and 15 kHz switching frequency. Thanks to the compact dimensions and multiple fixing holes with metallic inserts present in standard positions, the sturdy ABS plastic housing is fully compatible and can replace the most traditional contrast sensors, as well as offering an interesting cost reduction.

The special PMMA plastic lens, that can be fixed either in an axial or lateral position, is suitable for sensor use in the food industry, where the presence of glass parts must be avoided.



## HIGHLIGHTS

- High resolution and RGB LED emission with automatic colour selection
- Very fast switching frequency and low response time
- Easy sensor setting by means of two pushbuttons Mark/Bkgd
- Sturdy plastic housing with standard dimensions and fixing holes

## APPLICATIONS

Packaging lines



Contrast reading

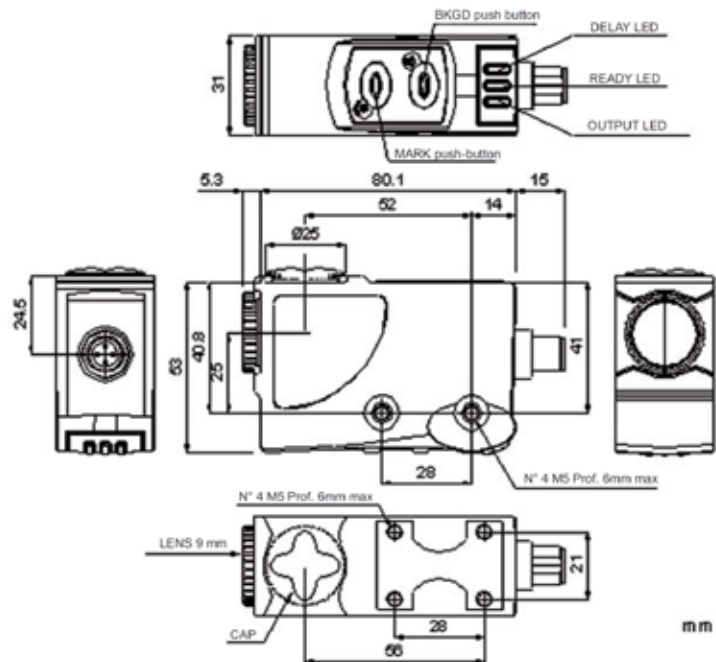


The acquisition of the mark and background signals is made by pressing the MARK and BKGD push-buttons.

The switching threshold level is set automatically between the mark and background values.

The Dark/Light operating mode is selected by the sensor on the ground of the lower or higher mark reflectivity with respect to the background. When the green LED turns on the setting has been successfully completed and the sensor is ready, whereas the LED blinking indicates a setting failure or an insufficient contrast between mark and background.

## DIMENSIONS



## INDICATORS AND PUSH-BUTTONS



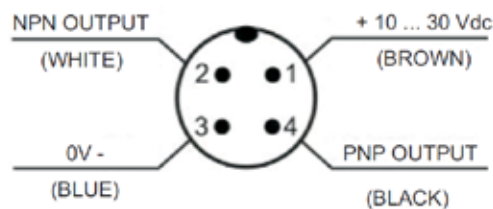
- A yellow OUTPUT LED
- B green READY LED
- C orange DELAY LED
- D MARK push-button
- E BKGD push-button

## ACCESSORIES

For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

Refer also to **Connectors** of the **General Catalogue**.

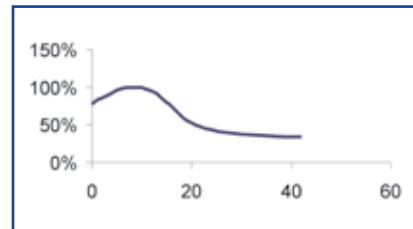
## CONNECTIONS



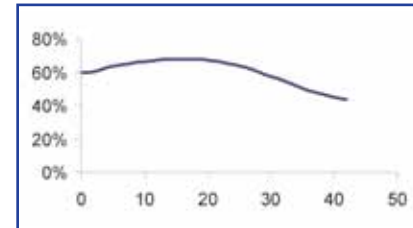
## TECHNICAL DATA

|                               |                                                           |
|-------------------------------|-----------------------------------------------------------|
| <b>Power supply:</b>          | 10 ... 30 Vdc <sup>1</sup> , reverse polarity protection  |
| <b>Ripple:</b>                | 2 Vpp max.                                                |
| <b>Consumption:</b>           | 50 mA max. at 24Vdc                                       |
| <b>Light emission:</b>        | RGB LED (630nm red, 520nm green, 465nm blue) <sup>2</sup> |
| <b>Spot dimension:</b>        | 1.5 x 5 mm at 9 mm                                        |
| <b>Operating distance:</b>    | 9 mm                                                      |
| <b>Depth of field:</b>        | ± 3 mm (with standard 9 mm lens)                          |
| <b>Setting:</b>               | MARK push-button                                          |
|                               | BKGD push-button                                          |
| <b>Indicators:</b>            | yellow OUTPUT LED                                         |
|                               | green READY LED                                           |
|                               | orange DELAY LED                                          |
| <b>Output type:</b>           | 1 PNP output / 1 NPN output                               |
| <b>Output current:</b>        | 100 mA max.                                               |
| <b>Saturation voltage:</b>    | ≤2 V                                                      |
| <b>Response time:</b>         | 33 μs                                                     |
| <b>Switching frequency:</b>   | 15 kHz                                                    |
| <b>Operating mode:</b>        | dark/light automatic                                      |
| <b>Timing function:</b>       | 0 ... 20 ms selectable                                    |
| <b>Connections:</b>           | 4-pole M12 connector                                      |
| <b>Electrical protection:</b> | class 2                                                   |
| <b>Mechanical protection:</b> | IP67                                                      |
| <b>Protection devices:</b>    | A, B <sup>3</sup>                                         |
| <b>Housing material:</b>      | ABS                                                       |
| <b>Lens material:</b>         | PMMA                                                      |
| <b>Weight:</b>                | 90 g max.                                                 |
| <b>Operating temperature:</b> | -10...55°C                                                |
| <b>Storage temperature:</b>   | -20...70°C                                                |
| <b>Reference standard:</b>    | EN 60947-5-2                                              |

## DETECTION DIAGRAMS



Standard 9 mm lens  
(1,5 x 5 mm spot on the focus distance)



Accessory 18 mm lens  
(2 x 7 mm spot on the focus distance)



## TECHNICAL NOTES

<sup>1</sup> Limit values

<sup>2</sup> Average life of 100.000 h with TA = +25 °C

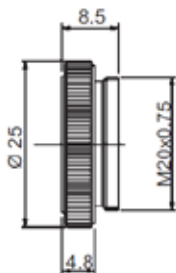
<sup>3</sup> A - reverse polarity protection

B - overload and short-circuit protection

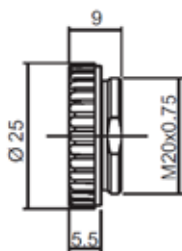
## MODEL SELECTION AND ORDER INFORMATION

| MODEL      | OPERATING DISTANCE | ORDER N°  |
|------------|--------------------|-----------|
| TL50-W-815 | 9 mm               | 954651000 |

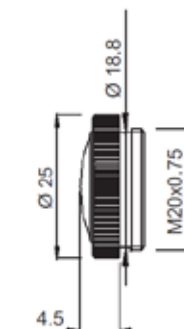
## ACCESSORY LENSES



Lens No.9 glass



Lens No.9 PMMA



Lens 18 mm glass

mm

## ACCESSORY SELECTION AND ORDER INFORMATION

| MODEL            | DESCRIPTION                  | ORDER N°  |
|------------------|------------------------------|-----------|
| Lens No.9 glass  | glass lens with 9 mm focus   | 95ACC2670 |
| Lens No.9 PMMA   | plastic lens with 9 mm focus | 95ACC2540 |
| Lens No.18 glass | glass lens with 18 mm focus  | 95ACC2680 |

Please refer also to **Sensor Accessories**

The company endeavours to continuously improve and renew its products; for this reason the technical data and contents of this catalogue may undergo variations without prior notice. For correct installation and use, the company can guarantee only the data indicated in the instruction manual supplied with the products.