

**OF340184**

**OPTICAL SENSORS • COLOR SENSORS**

The functioning of the color sensors is based on the evaluation of the red, green and blue components of the light reflected by the objects to be measured, or from the emitted radiation of the 'self-luminous' object (for example, LEDs, automobile tail lights, halogen lamps, fluorescent lamps, etc.). For this purpose, a so-called 3-fold receiver is integrated in the unit next to an on / off switchable white light or UV-light. This receiver works according to the True Color principle. This means that the evaluation of the light hitting the receiver is similar to the color perception of the human eye. This is a prerequisite for the reliable differentiation of objects or luminous objects by their color and brightness. For testing fluorescent materials the use of sensors with UV-light source is recommended. The use under adverse environmental conditions is possible through the use of additional fiber optics. The interaction between a precise detection and a high switching frequency distinguishes the devices. Thus, they are an ideal tool for process and quality control.



**MECHANICAL DATA**

|                              |                        |
|------------------------------|------------------------|
| Ambient temperature          | -20 °C ... 55 °C       |
| Degree of protection (IP)    | IP64                   |
| Fiber optics core material   | Quartz glass           |
| For damp environments        | Yes                    |
| Housing coating              | Anodised               |
| Housing design               | Cylinder, screw-thread |
| Housing material             | Aluminium              |
| Sensor diameter              | 52 mm                  |
| Sensor length                | 115 mm                 |
| Storage temperature          | 85 °C                  |
| Storage temperature          | -20 °C                 |
| Thread pitch                 | 1.5 mm                 |
| Thread size, metric          | 34                     |
| With fiber optics connection | Yes                    |

**ELECTRICAL DATA**

|  |                    |
|--|--------------------|
| EMC test in acc. with                                | DIN EN 60947-5-2   |
| Equipment protection class                           | Protection class 3 |
| Max. number of measurements for averaging            | 32768              |
| Max. output current                                  | 100 mA             |
| Measurement frequency in alternating light operation | 20000 Hz           |
| Measurement frequency in constant light operation    | 35000 Hz           |
| Measurement frequency in flash mode                  | 5000 Hz            |
| No-load current                                      | 160 mA             |
| Number of digital inputs                             | 1                  |
| Number of LEDs                                       | 5                  |
| Number of pins                                       | 8                  |

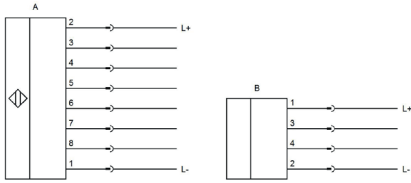
**ELECTRICAL DATA**

|  |   |
|--|---|
| Number of pins of the communication interface    | 4   |
| Number of switching outputs                      | 5   |
| Operating voltage                                | 21.6 V ... 26.4 V   |
| Overload protection                              | Yes   |
| Pulse stretching                                 | 100 ms  |
| Rated control supply voltage $U_s$ at DC         | 21.6 V ... 26.4 V   |
| Reverse polarity protection                      | Yes   |
| Selectable amplifier stages                      | 8   |
| Sensing range                                    | 1 mm ... 500 mm   |
| Setting procedure                                | Parameterization  |
| Standard for interfaces                          | RS-232  |
| Switching frequency                              | 60000 Hz  |
| Temperature drift                                | $\Delta X/\Delta T$ ; $\Delta Y/\Delta T$ typ. 0.2 digits/°C (< 0.01% / °C) |
| Type of communication interface                  | Connector M5  |
| Type of electrical connection                    | Connector M9  |
| Type of plug-in contact, communication interface | Female (socket)   |
| Type of switching function                       | Push-pull   |
| Type of switching output                         | PNP/NPN   |
| Voltage type                                     | DC  |
| With communication interface, RS-232             | Yes   |
| With external teach                              | Yes   |
| With external trigger                            | Yes   |
| With LED display                                 | Yes   |
| With time function                               | Yes   |

**OPTICAL DATA**

|                                      |                           |
|--------------------------------------|---------------------------|
| Alternating light operation          | Yes                       |
| Color distance                       | $\Delta E \geq 0.5$       |
| Color spaces                         | X Y INT siM (Lab)         |
| Constant light operation             | Yes                       |
| Detection of luminescent substances  | Yes                       |
| Flash mode                           | Yes                       |
| For transmitted light applications   | Yes                       |
| Light source                         | White light               |
| Luminescence detection               | Yes                       |
| Max. ambient light                   | 5000 lx                   |
| Measuring method for color detection | Active tristimulus method |
| True color                           | Yes                       |

## CONNECTION



**Colors:** A: M9: 1 = WH (white), 2 = BN (brown), 3 = GN (green), 4 = YE (yellow), 5 = GY (gray), 6 = PK (pink), 7 = BU (blue), 8 = RD (red)

**Functions:** A: M9: 1 = L-, 2 = L+, 3 = In 0, 4 = OUT 0, 5 = OUT 1, 6 = OUT 2, 7 = OUT 3, 8 = OUT 4

B: M5: 1 = L+, 2 = L-, 3 = RxD, 4 = TxD

## DIMENSIONAL DRAWING

### INSTALLATION



Mounting / Installation may only be carried out by a qualified electrician!

### DISPOSAL



### SAFETY WARNINGS

Before initial operation, please make sure to follow all safety instructions that may be provided in the product information!