# *Retro-reflective sensors with coaxial optics, in a metal housing*

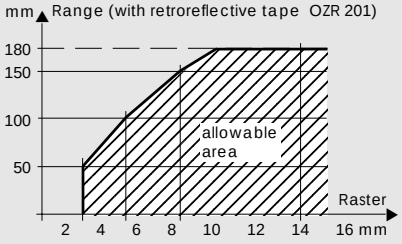
- **Robust die-cast zinc housing**
- ***Light reserve warning indicator***
- ***Dual transistor outputs,* NPN or PNP**
- ***Short-circuit protection, reverse polarity protection,* and *power-up output suppression***
- ***Test input* (option)**
- **Connections: Cable, 2 meter**
  **Connector, M8**
  **Connector, Torson, on 20 cm long cable (option)**
- **EMC tested according to IEC 801 and EN50081-1/EN 50082-2**

CE

| **Product designation**[1] | **ORA 2NA 100 I3** | **ORA 2NA 500 I3** | **ORA 2PA 100 I3** | **ORA 2PA 500 I3** |
|---|---|---|---|---|
| Output | NPN (light- and dark-on) | | PNP (light- and dark-on) | |
| Connection | Cable 2 m | Connector M8 | Cable 2 m | Connector M8 |
| Range adjustment | Yes | | | |
| **Optical data** [2] | | | | |
| *Range* | 0...1 m (retroreflector OZR 001) | | | |
| Emitter | Infrared-LED, 950 nm, pulsed | | | |
| **Electrical data** [2] | | | | |
| Supply voltage $U_S$ | 10...45 VDC | | | |
| Allowable ripple | +/- 10% of $U_S$ | | | |
| Current consumption (without load) | < 20 mA | | | |
| Max. load current $I_L$ | 250 mA | | | |
| Residual voltage | < 1,6 V | | | |
| Max. switching frequency | 1000 Hz | | | |
| **Environmental data** | | | | |
| *Sealing* | IP 67 | | | |
| Temperature $T_A$ (operating and storage) | -20...+60 °C | | | |
| Weight | ca. 150 g | ca. 85 g | ca. 150 g | ca. 85 g |

| **Option** [1] | | |
|---|---|---|
| *Test input:* emitter on | + $U_S$ or open | |
| emitter off | < 1,5 V | < $U_S$ - 8 V |

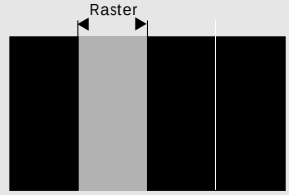
1) For product designation of sensors with options see designation code on page 67.
2) When not otherwise noted, all technical data at $T_A$ = 25 °C and $U_S$ = 24 V.




**Optical resolution**

**ORA as a code reader**

The retro-reflective sensor with coaxial optics is particularly suitable for simple identification applications. For identification purposes a code raster, created from retroreflective tape OZR 201 and nonreflecting surfaces, is necessary. The range for reading this code is dependent on the raster width (☛ Optical resolution).

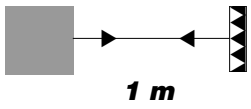



Nonreflecting surfaces
(light-on output: not energized)
Retroreflective tape OZR 201
(Light-on output: energized)

**Code for identification applications**

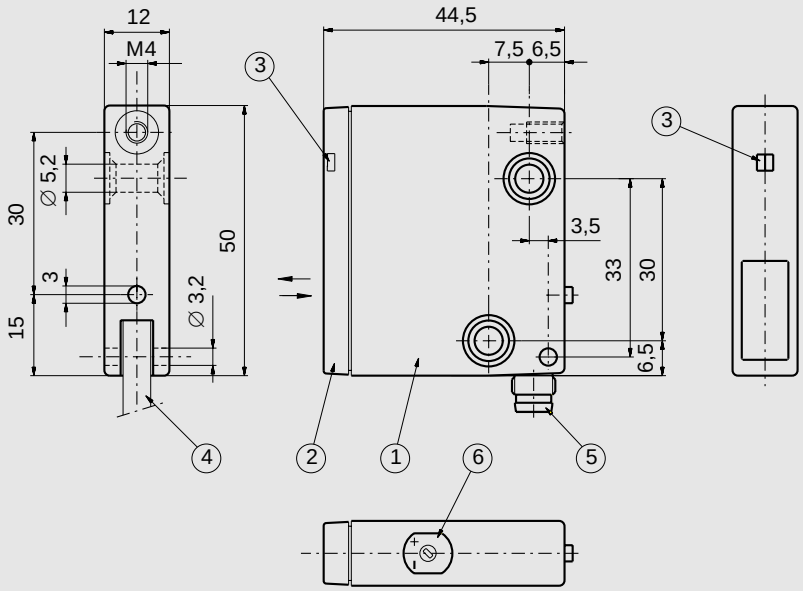
10...45 VDC

NPN / PNP
light-on and
dark-on output



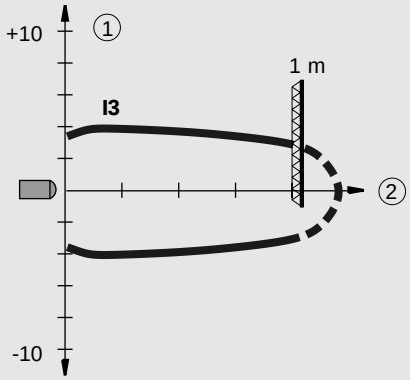

# ORA
# code reader

### Dimensions (50 mm x 44,5 mm x 12 mm)

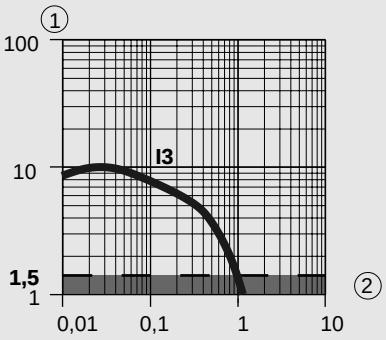



① Housing
② Lens/filter
③ Function indicator
④ Cable
⑤ Connector M8
⑥ Range adjustment

### Optical diagrams



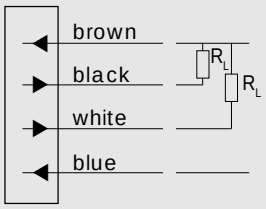

**Typical beam diameter**
(with retroreflector OZR 001)
① Diameter in (cm)
② Range in (m)




**Typical excess gain curve**
(with retroreflector OZR 001)
① Gain factor
② Range in (m)

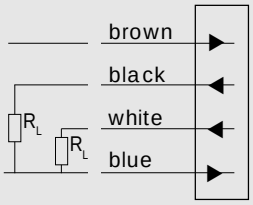
### Wiring diagram

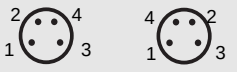
**NPN output**




⊕ Supply voltage 10...45 V
Light-on output
Dark-on output
⊖ Supply voltage

**PNP output**




Connector M8 | Connector Torson

| Connection for connector M8 | Wire color | Connection for test input |
|---|---|---|
| 1 | brown | Supply+ |
| 2 | white | Test input |
| 3 | blue | Supply- |
| 4 | black | Output |

Light-on output:
Output energized when no object is present.

Dark-on output:
Output energized when object is present.



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