

## Technical Data

### General specifications

|                  |                                                                                                                               |                                                       |
|------------------|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| Sensor range     | on black (6 %): up to 36 mm<br>on Kodak white, reflection factor 90% up to 120 mm<br>with LLR 04-1.6-0.5-WC3 fiberoptic cable |                                                       |
| Adjustment range |                                                                                                                               | 0 ... 120 mm on Kodak white, reflection factor 90%    |
| Reference target |                                                                                                                               | 100 mm x 100 mm on Kodak white, reflection factor 90% |
| Light source     |                                                                                                                               | LED                                                   |
| Light type       |                                                                                                                               | modulated visible red light , 660 nm                  |

### Functional safety related parameters

|                                |  |       |
|--------------------------------|--|-------|
| MTTF <sub>d</sub>              |  | 770 a |
| Mission Time (T <sub>M</sub> ) |  | 20 a  |
| Diagnostic Coverage (DC)       |  | 0 %   |

### Indicators/operating means

|                     |                                                                                                                                                      |                                                                                               |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| Operation indicator | LED green, statically lit Power on , Undervoltage indicator: Green LED, pulsing (approx. 0.8 Hz) , short-circuit : LED green flashing (approx. 4 Hz) |                                                                                               |
| Function indicator  |                                                                                                                                                      | LED yellow, lights up with receiver lit ; flashes when falling short of the operating reserve |
| Control elements    |                                                                                                                                                      | Sensitivity adjuster, light/dark switch                                                       |

### Electrical specifications

|                        |                |                |
|------------------------|----------------|----------------|
| Operating voltage      | U <sub>B</sub> | 10 ... 30 V DC |
| Ripple                 |                | max. 10 %      |
| No-load supply current | I <sub>0</sub> | max. 40 mA     |

### Output

|                     |                                                                                                                                                          |                                                                                              |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| Switching type      | light/dark on switchable<br>The switching modes specified in the "Electrical Connection" section apply to L/D switches in the "D" position (dark switch) |                                                                                              |
| Signal output       |                                                                                                                                                          | 2 push-pull (4 in 1) outputs, complementary, short-circuit proof, reverse polarity protected |
| Switching voltage   |                                                                                                                                                          | max. 30 V DC                                                                                 |
| Switching current   |                                                                                                                                                          | max. 100 mA                                                                                  |
| Voltage drop        | U <sub>d</sub>                                                                                                                                           | ≤ 2.5 V DC                                                                                   |
| Switching frequency | f                                                                                                                                                        | 1000 Hz                                                                                      |
| Response time       |                                                                                                                                                          | 0.5 ms                                                                                       |

### Conformity

|                  |              |
|------------------|--------------|
| Product standard | EN 60947-5-2 |
|------------------|--------------|

### Approvals and certificates

|                  |                                                                                                                           |                                                                                        |
|------------------|---------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| Protection class | II, rated voltage ≤ 50 V AC with pollution degree 1-2 according to IEC 60664-1 functional insulation acc. to DIN EN 50178 |                                                                                        |
| UL approval      |                                                                                                                           | cULus Listed 57M3 (Only in association with UL Class 2 power supply; Type 1 enclosure) |
| CCC approval     |                                                                                                                           | CCC approval / marking not required for products rated ≤ 36 V                          |

### Ambient conditions

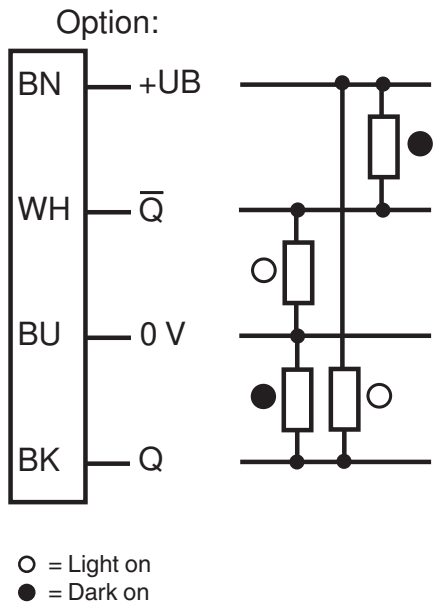
|                     |                               |                                |
|---------------------|-------------------------------|--------------------------------|
| Ambient temperature | -20 ... 60 °C (-4 ... 140 °F) |                                |
| Storage temperature |                               | -40 ... 75 °C (-40 ... 167 °F) |

### Mechanical specifications

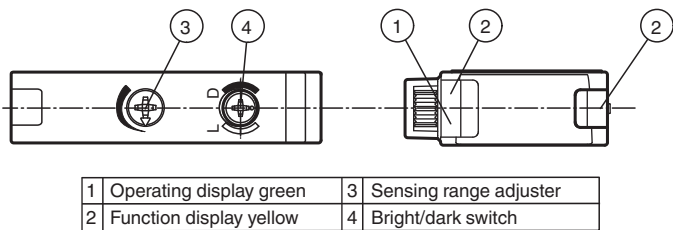
|                      |  |                              |
|----------------------|--|------------------------------|
| Housing width        |  | 31 mm                        |
| Housing height       |  | 56.5 mm                      |
| Housing depth        |  | 13.6 mm                      |
| Fiber optic adapter  |  | 04                           |
| Degree of protection |  | IP67                         |
| Connection           |  | 2 m fixed cable , 5-pin      |
| Material             |  |                              |
| Housing              |  | Aluminum , Delta-Seal coated |
| Optical face         |  | Fiber optic connection       |
| Mass                 |  | 50 g                         |

Release date: 2023-04-04 Date of issue: 2023-04-04 Filename: 249784\_eng.pdf

Connection Assignment



Assembly



Accessories

|  |                         |                                                            |
|--|-------------------------|------------------------------------------------------------|
|  | LCR 04-1,6-0,5-Z1       | Glass fiber optic - diffuse with PVC covering              |
|  | LLR 04-1,6-0,5-G(M6x30) | Glass fiber optic - diffuse with metal silicone covering   |
|  | LCR 04-1,6-0,5-WC 3     | Glass fiber optic - diffuse with PVC covering              |
|  | LLR 04-1,6-0,5-W C3     | Glass fiber optic - diffuse with metal silicone covering   |
|  | LCE 04-1,6-1,0-Z1       | Glass fiber optic - thru-beam with PVC covering            |
|  | LCE 04-1,6-1,0 G        | Glass fiber optic - thru-beam with PVC covering            |
|  | LLE 04-1,6-1,0-G        | Glass fiber optic - thru-beam with metal silicone covering |
|  | LCE 04-1,6-1,0-W C3     | Glass fiber optic - thru-beam with PVC covering            |
|  | LLE 04-1,6-1,0-W C3     | Glass fiber optic - thru-beam with metal silicone covering |