

RTFR 25B

Diffuse reflection light scanner with fading

en 02-2014/05 50108925-01



5 ... 650mm



- Diffuse reflection light scanner with visible red light
- Small and compact construction with robust plastic housing, protection class IP 67/IP 69K for industrial application
- Fast alignment through *brightVision*®
- A²LS - Active Ambient Light Suppression
- Push-pull switching outputs
- High switching frequency for detection of fast events
- Scanning range adjustment via potentiometer

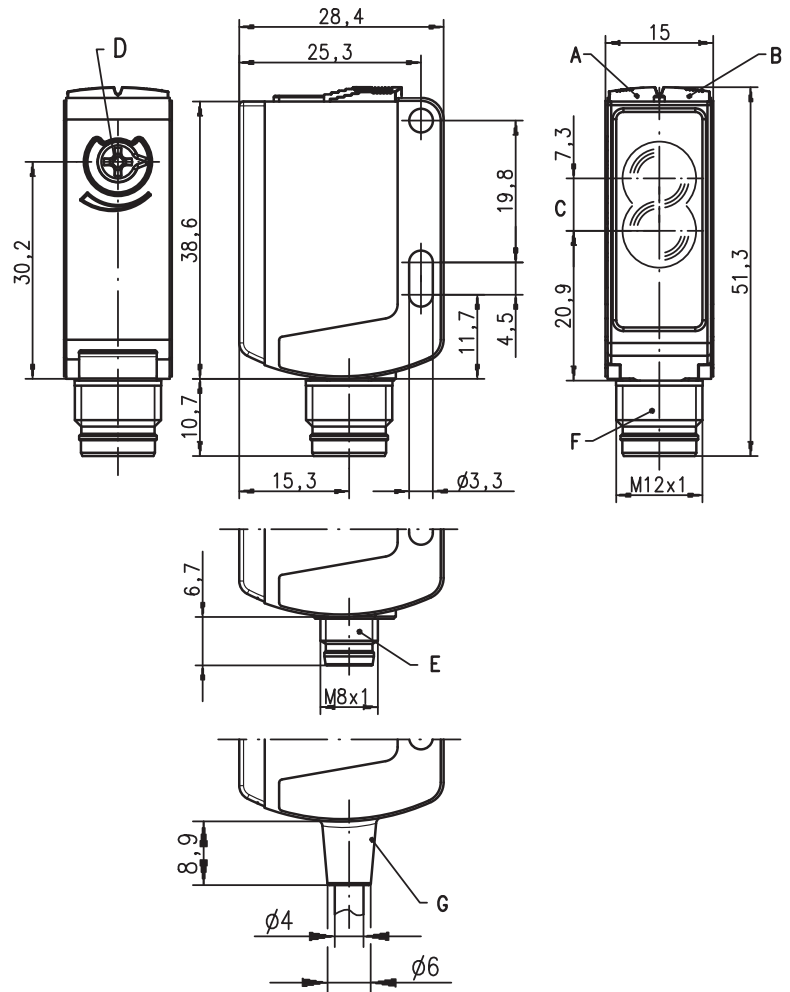


Accessories:

(available separately)

- Mounting systems (BT 25, UMS 25...)
- Cable with M8 or M12 connector (K-D ...)

Dimensioned drawing



- A** Indicator diode green
- B** Indicator diode yellow
- C** Optical axis
- D** Scanning range adjustment
- E** Connector M8x1
- F** Connector M12x1
- G** Cable

Electrical connection

RTFR 25B/66-S8
RTFR 25B/66-S12
RTFR 25B/66, 200-S12
RTFR 25B/66

| | | | |
|-------------|---|---|-------|
| 10-30V DC + | 1 | ■ | br/BN |
| ● ○ ⊗ | 2 | ■ | ws/WH |
| GND | 3 | ■ | bl/BU |
| ○ ● ⊗ | 4 | ■ | sw/BK |

Specifications

Optical data

| | |
|---|--------------------------------------|
| Typ. scanning range limit ¹⁾ | 0 ... 650mm |
| Scanning range ²⁾ | see tables |
| Light source ³⁾ | LED (modulated light) |
| Wavelength | 620nm (visible red light, polarised) |

Timing

| | |
|-----------------------|---------|
| Switching frequency | 500Hz |
| Response time | 1ms |
| Delay before start-up | ≤ 300ms |

Electrical data

| | |
|---------------------------------------|--------------------------------------|
| Operating voltage U_B ⁴⁾ | 10 ... 30VDC (incl. residual ripple) |
| Residual ripple | ≤ 15% of U_B |
| Bias current | ≤ 20mA |
| Switching output ⁵⁾ | .../66 |
| Function characteristics | 2 push-pull switching outputs |
| Signal voltage high/low | light/dark switching |
| Output current | ≥ ($U_B - 2V$)/≤ 2V |
| Scanning range | max. 100mA |
| | adjustable with potentiometer |

Indicators

| | |
|------------|------------------------------|
| Green LED | ready |
| Yellow LED | Reflection (object detected) |

Mechanical data

| | |
|--------------|--|
| Housing | plastic (PC-ABS) |
| Optics cover | plastic (PMMA) |
| Weight | with connector: 15g |
| | with 200mm cable and connector: 30g |
| | with 2m cable: 55g |
| | cable 2m (cross section 4x0.21mm ²), |
| | connector M8 or M12, |
| | cable 0.2m with connector M8 or M12 |

Connection type

Environmental data

| | |
|-----------------------------------|--|
| Ambient temp. (operation/storage) | -30°C ... +55°C/-30°C ... +60°C |
| Protective circuit ⁶⁾ | 2, 3 |
| VDE safety class ⁷⁾ | II |
| Protection class | IP 67, IP 69K |
| Light source | free group (in accordance with EN 62471) |
| Standards applied | IEC 60947-5-2 |
| Certifications | UL 508, C22.2 No.14-13 ⁴⁾ ⁸⁾ |

- 1) Typ. scan. range limit/adjustment range: max. achievable scanning range/adjustment range for light objects (white 90%)
- 2) Scanning range: recommended scanning range for objects with different diffuse reflection
- 3) Average life expectancy 100,000h at an ambient temperature of 25°C
- 4) For UL applications: for use in class 2 circuits according to NEC only
- 5) The push-pull switching outputs must not be connected in parallel
- 6) 2=polarity reversal protection, 3=short-circuit protection for all transistor outputs
- 7) Rating voltage 50V
- 8) These proximity switches shall be used with UL Listed Cable assemblies rated 30V, 0.5A min, in the field installation, or equivalent (categories: CYJV/CYJV7 or PVVA/PVVA7)



fading: black/white error < 50%

Example:

Setting 600mm, white 90%

- **Detection:**
Object with 6% black is detected at approx. 330mm
- **Situation in background:**
Object with 90% white is no longer detected at a distance > 690mm

For setting < 300mm against white 90%, objects (<18% diffuse reflection) are no longer detected

Tables

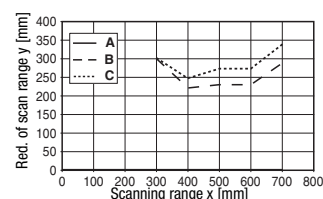
| | | | |
|---|----|-----|-----|
| 1 | 0 | 600 | 650 |
| 2 | 1 | 370 | 380 |
| 3 | 15 | 330 | 350 |

| | |
|---|-----------|
| 1 | white 90% |
| 2 | grey 18% |
| 3 | black 6% |

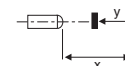
| | |
|--|--------------------------------|
| | Scanning range [mm] |
| | Typ. scanning range limit [mm] |

Diagrams

Typ. black/white behaviour



- A white 90%
- B grey 18%
- C black 6%



Remarks

● Intended use:

The light scanners are optical electronic sensors for optical, contactless detection of objects.

Operate in accordance with intended use!

- ⚠ This product is not a safety sensor and is not intended as personnel protection.
- ⚠ The product may only be put into operation by competent persons.
- ⚠ Only use the product in accordance with the intended use.

- With the set scanning range, a tolerance of the scanning range limits is possible depending on the reflection properties of the material surface.

RTFR 25B

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Order guide

| Selection table | | Order code → | | | |
|--------------------|---|---------------------------------------|--------------------------------------|-----------------------------------|---|
| Equipment ↓ | | RTFR 25B/66-S12 Part No. 501 08472 | RTFR 25B/66-S8 Part No. 501 08474 | RTFR 25B/66 Part No. 501 08475 | RTFR 25B/66-200-S12 Part No. 501 08473 |
| Switching output | 2 x Push-pull switching output | ● | ● | ● | ● |
| | 1 x PNP output | | | | |
| | 2 x PNP output | | | | |
| Switching function | 1 PNP light switching and NPN dark switching output | ● | ● | ● | ● |
| | 1 PNP dark switching and NPN light switching output | ● | ● | ● | ● |
| | 1 x PNP light switching output | | | | |
| | 1 x PNP dark switching output | | | | |
| | 1 warning output | | | | |
| Connection | M8 connector, 4-pin | | ● | | |
| | M12 connector, 4-pin | ● | | | |
| | cable 2.000 mm | | | ● | |
| | cable 200 mm with M8 connector, 4-pin | | | | |
| | cable 200 mm with M12 connector, 4-pin | | | | ● |
| Indicators | green LED: ready | ● | ● | ● | ● |
| | yellow LED: light path free | ● | ● | ● | ● |
| Options | scanning range adjustment via potentiometer | ● | ● | ● | ● |
| | activation input | | | | |
| | for direct connection to AS-i I/O coupling modules | | | | |
| | black/white error < 50% | ● | ● | ● | ● |

