

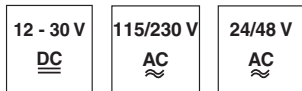


## FRK 78

## Diffuse reflection light scanner with background suppression



50 ... 800 mm



- With PNP switching output and/or relay outputs
- Light/dark switching in each device
- Universal connection via terminals
- Additional plug-in time module

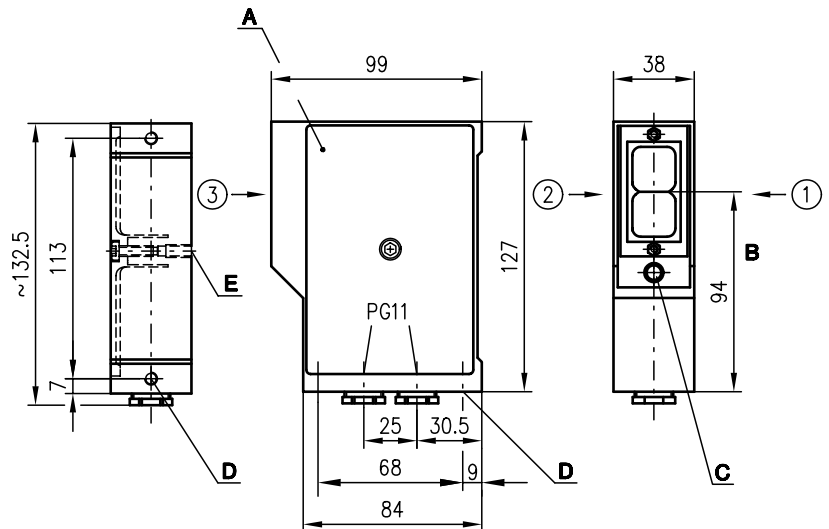


### Accessories:

(available separately)

- Mounting systems (BT 16, UMS 78)
- Fastening adapter BT 08
- Diaphragm BL 04
- Time module transient pulses ZK 7810
- Time module slow operation and release ZK 7820
- Alignment aid ARH 2

### Dimensioned drawing

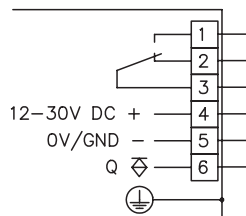


- A** Removable lid • cheese head screw DIN 6912 M5x16 (machined)
- B** Optical axis
- C** Indicator diodes
- D** Device fixture M6x9
- E** Device fixture M6x12

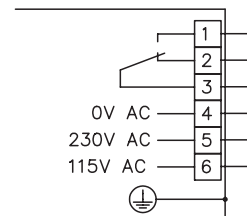
Preferred entry direction for objects ① + ② + ③

### Electrical connection

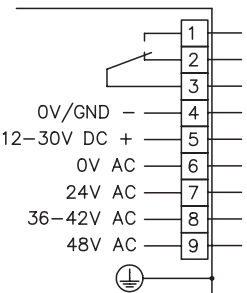
FRK 78/4 R-800



FRK 78/7-800



FRK 78/7-800-24-48V



We reserve the right to make changes • 78\_d01e.fm

## Specifications

### Optical data

|                              |                       |
|------------------------------|-----------------------|
| Scanning range <sup>1)</sup> | 50 ... 800mm          |
| Adjustment range             | 140 ... 1000mm        |
| Light source                 | LED (modulated light) |
| Wavelength                   | 880nm                 |

### Timing

|                            |                                   |
|----------------------------|-----------------------------------|
| Sensor switching frequency | 100Hz (PNP)<br>20Hz (relay)       |
| Sensor response time       | 5ms (PNP)<br>approx. 25ms (relay) |
| Delay before start-up      | ≤ 200ms                           |

### Electrical data

|                          |   |
|--------------------------|---|
| Operating voltage $U_B$  | 12 ... 30VDC, 115/230VAC, 24/48VAC                  |
| Power consumption        | approx. 600mW (PNP)<br>approx. 3.5VA (relay)        |
| Residual ripple          | ≤ 15% of $U_B$                                      |
| Bias current             | ≤ 70mA (PNP / NPN)<br>max. 120mA (relay)            |
| Switching output         | PNP transistor output, relay: 1 change-over contact |
| Function characteristics | Light/dark switching through sliding switch         |
| Signal voltage high/low  | $\geq (U_B - 2V) \leq 2V$ (PNP)                     |
| Output current           | max. 100mA (PNP)                                    |
| Switching voltage, relay | max. 240VAC with resistive load                     |
| Switching current, relay | max. 2.5AAC with resistive load                     |

### Indicators

|         |                        |
|---------|------------------------|
| LED red | light path interrupted |
|---------|------------------------|

### Mechanical data

|                 |                                 |
|-----------------|---------------------------------|
| Housing         | diecast aluminium               |
| Weight          | transmitter 600g, receiver 600g |
| Optics          | glass lens                      |
| Connection type | screw terminals                 |

### Environmental data

|   |                                 |
|---|---------------------------------|
| Ambient temp. (operation/storage) <sup>2)</sup> | -20°C ... +60°C/-30°C ... +70°C |
| Protective circuit <sup>3)</sup>                | 1, 2, 3                         |
| VDE safety class <sup>4)</sup>                  | I, all-insulated                |
| Protection class                                | IP 65                           |
| LED class                                       | 1 (acc. to EN 60825-1)          |
| Standards applied                               | IEC 60947-5-2                   |

### Options

|                              |  |
|------------------------------|--|
| <b>De-humidifying system</b> | to prevent condensation on the optics due to temperature changes |
|------------------------------|--|

- 1) Scanning range: adjustable through spindle drive inside the housing
- 2) -30°C with operating voltage continuously applied
- 3) 1=transient protection, 2=polarity reversal protection, 3=short circuit protection
- 4) Rating voltage 250VAC

## Order guide

| Selection table                            |              | Order code →                         |                                    |  |  |  |  |  |  |  |
|--|--------------|--------------------------------------|------------------------------------|--|--|--|--|--|--|--|
| Equipment ↓                                |              | FRK 78/4 R-800<br>Part No. 500 00590 | FRK 78/7-800<br>Part No. 500 00591 | FRK 78/7-800-24-48 V<br>Part No. 500 00365 |  |  |  |  |  |  |
| Housing                                    | metal        | ●                                    | ●                                  | ●  |  |  |  |  |  |  |
| Scanning range                             | 300mm        | ●                                    | ●                                  | ●  |  |  |  |  |  |  |
| Connection                                 | terminals    | ●                                    | ●                                  | ●  |  |  |  |  |  |  |
| Features                                   |              |                                      |                                    |  |  |  |  |  |  |  |
| Voltage supply                             | 12 ... 30VDC | ●                                    |                                    | ●  |  |  |  |  |  |  |
|  | 115/230VAC   |                                      | ●                                  |  |  |  |  |  |  |  |
|  | 24/48VAC     |                                      |                                    | ●  |  |  |  |  |  |  |
| Switching output                           | PNP          | ●                                    |                                    |  |  |  |  |  |  |  |
|  | relay        | ●                                    | ●                                  | ●  |  |  |  |  |  |  |
| Time modules ZK 7810, ZK 7820 retrofitable |              | ●                                    | ●                                  | ●  |  |  |  |  |  |  |

## Tables

## Diagrams

## Remarks

Operation without relay through splitting of bridge "B" (FRK 78/4 R-800).

The standard devices (see table) are expandable through plug-in time modules:

- Time module ZK 7810 (transient pulses), slow operation and pulse length adjustable from 0.1 s ... 5s.
- Time module ZK 7820 (slow operation and release), slow operation and release separately adjustable from 0.2s ... 10s.

See figure for adjustment:

