# F series
Photoelectric sensors
for DIN-rail mounting

## features

- **Models with trimmer sensitivity**
- **Models with Teach-In**
- **Double dgital display**
- **High switching frequency**
- **Approvals: CE**

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- **Application notes**
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- **Catalogue / Manuals**



## code description

F 1 R / 0 P - 0 A

| | | |
|---|---|---|
| series | F | Optical fibres amplifier |
| type | 1 | Standard model, trimmer sens. adj. |
| | 2 | High speed model, trimmer sens. ajd. |
| | 6 | Digital models double display |
| emission | R | Red emission |
| LO / DO output | 0 | LO/DO selectable output |
| PNP / NPN output | P | PNP output |
| | N | NPN output |
| housing | 0 | Plastic housing |
| cable exit | A | Cable exit 2 m |

## available models

| output | adjustment | switching frequency | PNP output | NPN output |
|---|---|---|---|---|
| cable | trimmer | standard | F1R/0P-0A | F1R/0N-0A |
| | | high speed | F2R/0P-0A | F2R/0N-0A |
| | Teach-In | standard | F6R/0P-0A | F6R/0N-0A |

# technical specification

| | standard<br>F1R/0*-0A | high speed<br>F2R/0*-0A | digital<br>F6R/0*-0A |
|---|---|---|---|
| |  | | |
| nominal sensing distance | depending on fibre used 36 mm | | |
| emission | red (680 nm) | | red (650 nm) |
| diffential travel | ≤15 % | | |
| repeat accuracy | 5 % | | |
| operating voltage | 12...24 Vdc | | |
| ripple | ≤10 % | | |
| no-load supply current | < 35 mA | | < 40 mA |
| load current | 50 mA max | | |
| leakage current | < 10 µA | | |
| output voltage drop | 1 V max | | |
| output type | NPN or PNP - LO / DO selectable | | |
| responce time | 200 µs max | ON: 20 µs OFF: 30 µs | 1ms |
| power on delay | ≤ 200 ms | | |
| power supply protections | polarity reversal | | |
| output electrical protections | short circuit | | |
| sensitivity adjustment | trimmer (8 giri) | | Teach-In |
| operative Temperature range | -25...+55° C (without freeze) | | |
| storage temperature | -30...+70° C (without freeze) | | |
| EMC | in conformity with the EMC Directive according to EN 60947-5-2 | | |
| interference by external light | 10.000 lux (incandescent lamp)<br>20.000 lux (sunlight) | | |
| protection degree | IP50 (according to: IEC 60529) | | |
| LEDs | orange (output active)<br>green (n.4 - received signal level)<br>red (no received signal) | | orange (output active)<br>8 bits display (n.4 red: incidentsignal;<br>n.4 green: threshold level) |
| housing material | PBT (housing); PC (cover) | | |
| weight (approximate) | 70 g (approx.) | | |

# value tabel

The values shown in the following tables are measured, by using our CF/CB1 optical fibre, set to obtain an hysteresis of about 15% with all type of amplifier.

# glass optical fibres CV series (mm)

| F1 series | | F2 series | | F6 series | | models |
|---|---|---|---|---|---|---|
| - | - | 70 | 90 | - | - | CV-CB1 |
| | | | | | | CV-CB3 |
| 410 | 500 | 200 | 240 | 800 | 925 | CV-RB4 |
| | | | | | | CV-RB6 |

## plastic optical fibres cf series (mm)

| F1 series | | F2 series | | F6 series | | models |
|---|---|---|---|---|---|---|
| ON 90 % | OFF 90 % | ON 90 % | OFF 90 % | ON 90 % | OFF 90 % | |
| 0 | 0 | 0 | 0 | 0 | 0 | CF/CA1 |
| 40 | 47 | 15 | 18 | 100 | 115 | CF-CA2 |
| | | | | | | CF-CA4 |
| 100 | 130 | 60 | 68 | 300 | 350 | CF-RA4 |
| | | | | | | CF-RA7 |
| 150 | 180 | 70 | 90 | 300 | 345 | CF-CB1 |
| | | | | | | CF-CB3 |
| 410 | 500 | 200 | 240 | 800 | 925 | CF-RB3 |
| | | | | | | CF-RB4 |
| | | | | | | CF-RB6 |
| 4,000 | 4,000 | 2,400 | 2,800 | > 4.000 EX.G. = 12 | | CF-RB9 |
| | | | | | | CF-RBA |
| 50 | 58 | 20 | 25 | 90 | 115 | CF-CC1 |
| 350 | 400 | 190 | 220 | 600 | 690 | CF-RC6 |
| 2,200 | 2,600 | 1,600 | 1,900 | > 4,000 EG = 12 | | CF-RC9 |
| | | | | | | CF-RCA |

## accessories for CF series optical fibres (mm)

| series F1 | series F2 | series F6 | model fibres | models |
|---|---|---|---|---|
| Sn | Sn | Sn | CF-RB3-20 | |
| 400 | 200 | 800 | CF-RB3-20 | AF/ER9 |
| 1,500 | 1,000 | 3,000 | CF-RBA-**<br>CF-RCA-20 | ST28 |

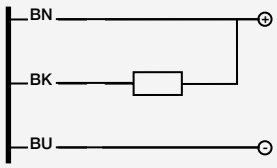
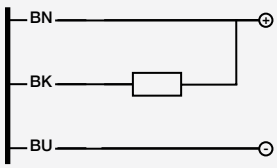
## modular fibres for any application AF series (mm)

| series F1 | series F2 | series F6 | models |
|---|---|---|---|
| Sn | Sn | Sn | |
| 1,500 | 700 | 3.000 | AF/ER4 |
| 2,200 | 1,000 | 4,500 | AF/ER5 |
| 4,500 | 2,000 | 6,000 | AF/ER6 |
| | | | AF/ER7 |

## accessories for CV series optical fibres (mm)

| series F1 | series F2 | series F6 | models |
|---|---|---|---|
| Sn | Sn | Sn | |
| - | 20 | - | AF/FC1 |
| | 30 | | AF/FC2 |
| 3,000 | 2,000 | 6,000 | AF/ER1 |
| 4,000 | 3,000 | 8,000 | AF/ER2 |
| 10,000 | 8,000 | 14,000 | AF/ER3 |

## electrical diagrams of the connections

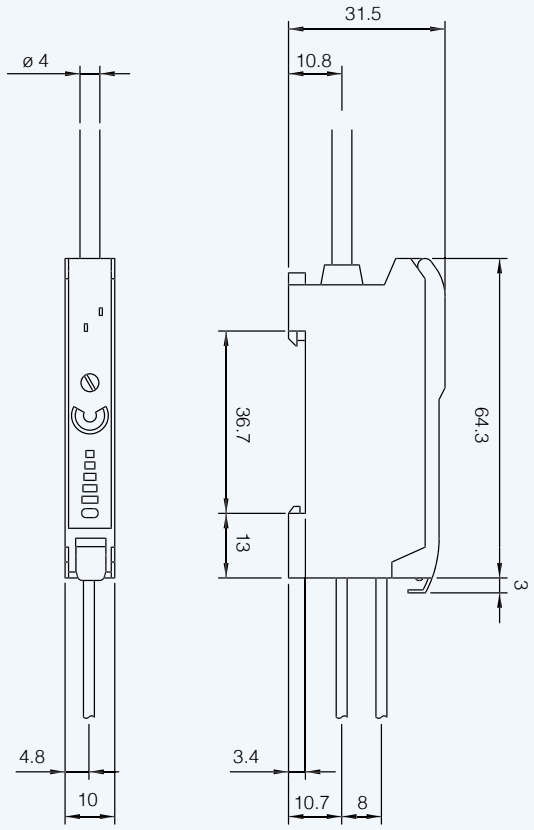
| NPN | PNP |
|---|---|
|  |  |



| | |
|---|---|
| BN | brown |
| BU | blue |
| BK | black |
| WH | withe |
| PK | pink |
| GY | gray |

## dimensions (mm)

### F1,F2




### F6