



# CX0 series

Area sensors with high resolution and compact housing



Area sensor  
high resolution

## features

- Total crossbeam through all the optics
- Crossed area 160 and 320mm
- Pitch 5mm and 10mm
- Operating distance up to 3m (for 5mm pitch) and 6m (for 10mm pitch)
- 2 digital NPN and PNP outputs (teach-in model available only with PNP logic) NO/NC configurable
- Available with Teach in adjustment or with external trimmer
- High switching frequency to detection
- Intrinsic synchronism by cable (Teach-in models)



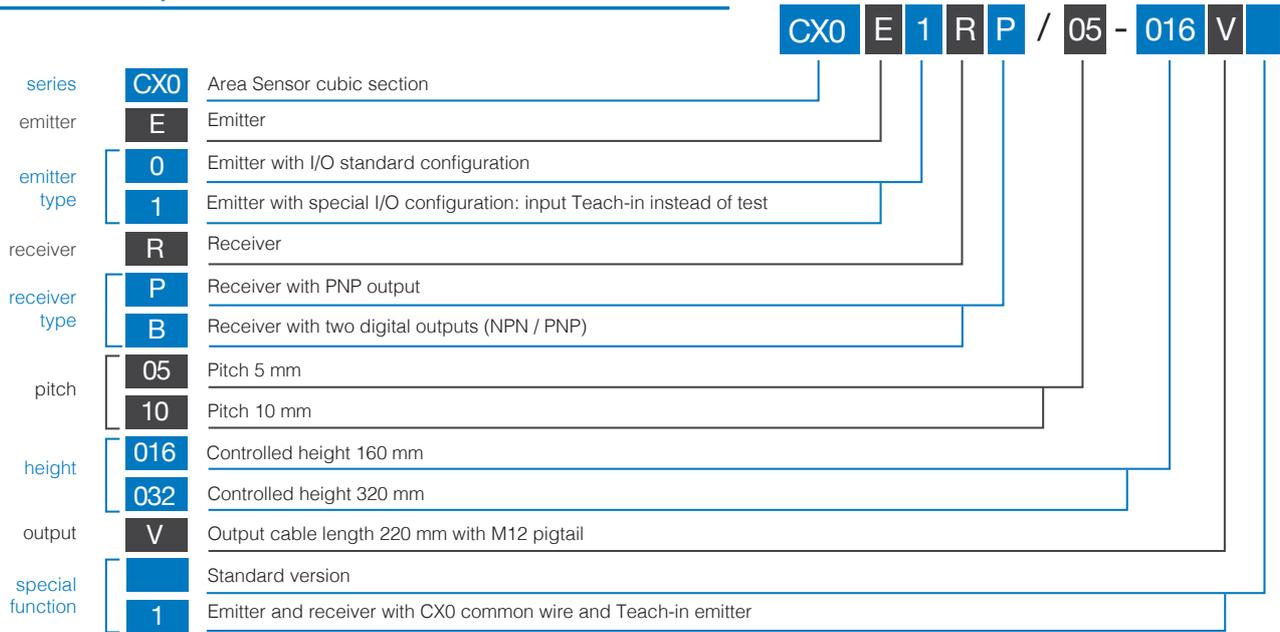
## web contents



- Application notes
- Photos
- Catalogue / Manuals



## code description



## available models

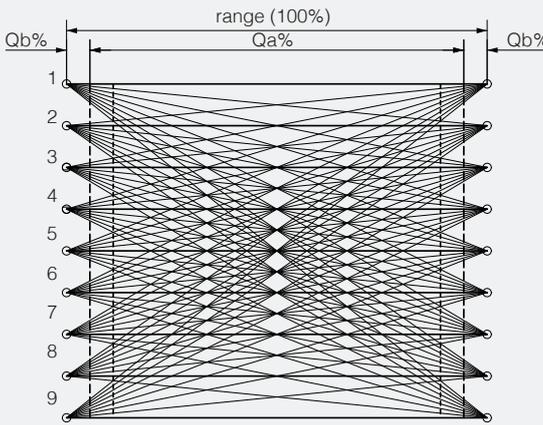
| OUTPUT |           |        | INPUT    |      |                                 | beams number | pitch (mm) | plot (P/I) <sup>(3)</sup> | working range (m) | detection height (h) | KIT (E + R) <sup>(2)</sup> |                 |
|--------|-----------|--------|----------|------|---------------------------------|--------------|------------|---------------------------|-------------------|----------------------|----------------------------|-----------------|
| state  | logic     | output | blanking | test | adjustment                      |              |            |                           |                   |                      |                            |                 |
| NO/NC  | NPN + PNP | 2      | -        | ●    | External Trimmer <sup>(1)</sup> | 32           | 5          | I                         | 0.3...3           | 160 mm               | CX0E0RB/05-016V            |                 |
|        |           |        |          |      |                                 | 17           | 10         |                           | 0.5...6           |                      | CX0E0RB/10-016V            |                 |
|        |           |        |          |      |                                 | 32           | 5          |                           | 1...6             | 320 mm               | CX0E0RB/10-032V            |                 |
|        | PNP       | 1      |          | -    | -                               | Teach-In     | 32         |                           | 5                 | 0.3...3              | 160 mm                     | CX0E1RP/05-016V |
|        |           |        |          |      |                                 |              | 17         |                           | 10                | 0.5...6              | 160 mm                     | CX0E1RP/10-016V |
|        |           |        |          |      |                                 |              | 32         |                           | 10                | 1...6                | 320 mm                     | CX0E1RP/10-032V |

<sup>(1)</sup> External trimmer ST 140 sold separately <sup>(2)</sup> Sales code; single code (emitter or receiver) not available <sup>(3)</sup> Plot: P = parallel beams, I = crossed beams

CX0

| CX0E*R*/**..***   |  |
|---|--|
|  |  |
| nominal sensing distance  | 0.3 ... 3 m (beam pitch 5 mm, detection height 160 mm)<br>0.5 ... 6 m (beam pitch 10 mm, detection height 160 mm)<br>1 ... 6 m (beam pitch 10 mm, detection height 320 mm) |
| emission  | 850 nm (beam pitch 5 mm)<br>880 nm (beam pitch ≥10 mm)   |
| operating voltage   | 16.8...30 Vdc  |
| ripple  | < 1.2 Vpp  |
| power consumption (receiver)  | 1...1.5 W  |
| power consumption (emitter)   | 1...1.5 W  |
| outputs   | 1 x PNP, 1 x NPN (CX0RB); 1 x PNP (CX0RP)  |
| output current  | < 100 mA   |
| output voltage drop   | < 1.5 V @ 100 mA   |
| minimum load resistance   | 280 Ω  |
| leakage current   | ≤ 10 µA  |
| tolerated capacitive load   | < 0.7 µF   |
| power on delay  | 200 ms   |
| Teach-In  | < 15 s   |
| response time   | < 6.6 ms Dark On; < 11 ms Light On   |
| operating temperature   | -10°C...55°C   |
| storage temperature   | -25°C...60°C   |
| artificial light rejection  | IEC EN 60947-5-2   |
| ambient light rejection   | IEC EN 60947-5-2   |
| IP mechanical protection  | IP67   |
| humidity  | 95% max (no condensation)  |
| vibrations  | IEC EN 60947-5-2   |
| shocks  | IEC EN 60947-5-2   |
| cable length  | < 20 m   |
| connectors / cables   | 1 x M12, 4 poles, male (CX0E), 1 x M12, 5 poles, male (CX0R)   |
| housing material  | painted aluminium RAL5002  |
| optic materials   | PMMA   |

## MDO (Minimum Detectable Object)

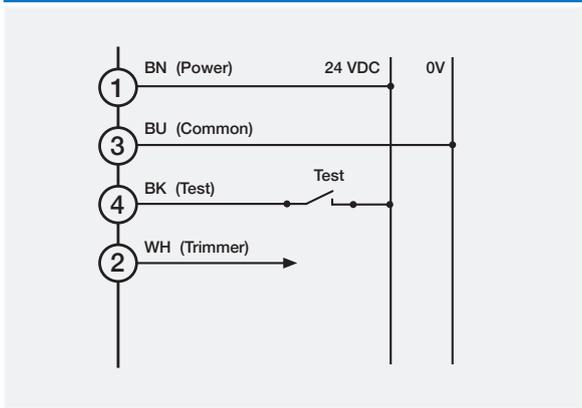
| beams                  | step (mm) | resolution <sup>(1)</sup> (mm) | Qa 17 beams | Qa 32 beams | total crossed-beam   |
|------------------------|-----------|--------------------------------|-------------|-------------|--|
| crossed <sup>(2)</sup> | 5         | 2,5                            | -           | 96%         |  |
|                        | 10        | 5                              | 93%         | 96%         |  |

<sup>(1)</sup> = Resolution detected with ST140 or with Teach Gross

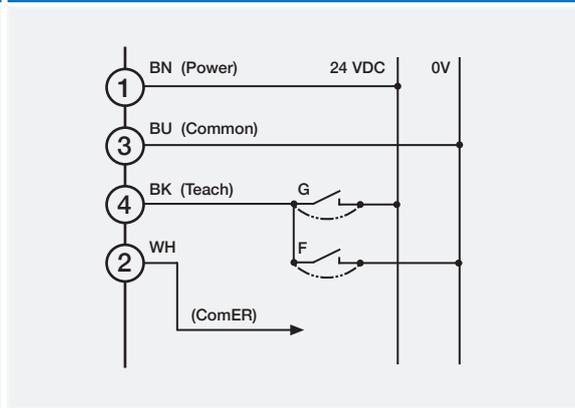
<sup>(2)</sup> = The optics cross beam allows detection of objects with a very small diameter or very thin (such as a sheet of paper or an envelope). For those targets with small diameter, the detecting resolution is less effective exactly in the centre between Emitter and Receiver (see Resolution) as well as at the ends of detection area (near to the sensors); the mentioned detection is obtained in the central area Qa with a width equal to a certain % of the distance between the 2 sensors.

# electric diagrams of the connections

emitter with external trimmer

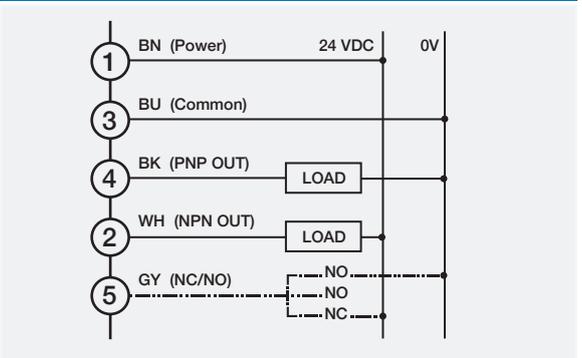


emitter with Teach-In input

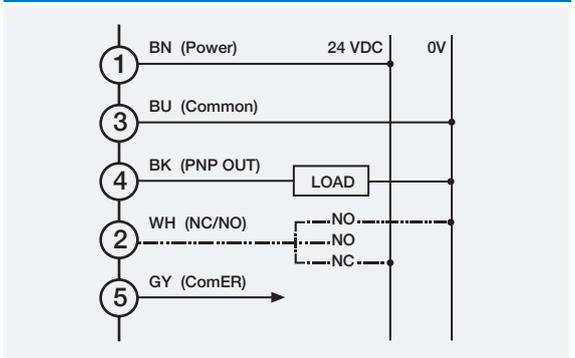


- BU blue
- GY gray
- WH white
- BK black
- BN brown
- RD red
- G gross calibration
- F fine calibration

receiver with PNP and NPN output



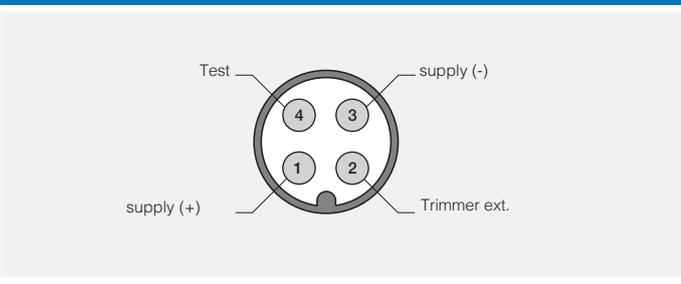
receiver with PNP output and Teach-In function



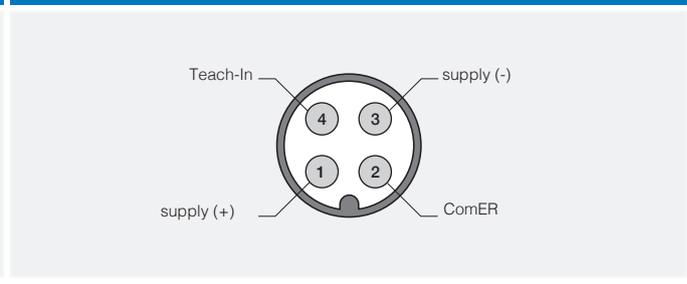
- BU blue
- GY gray
- WH white
- BK black
- BN brown
- RD red

## plugs

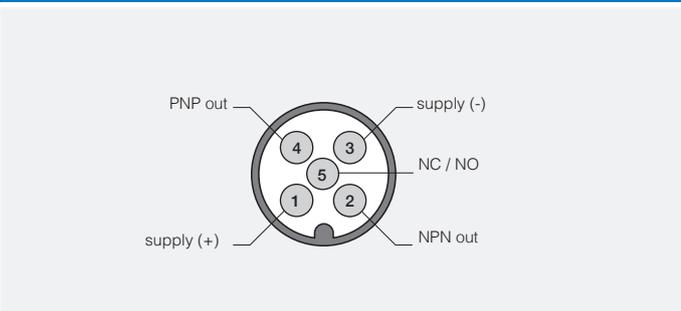
CX0E0/\*\*\_\*\*\_\*\* emitter with external trimmer



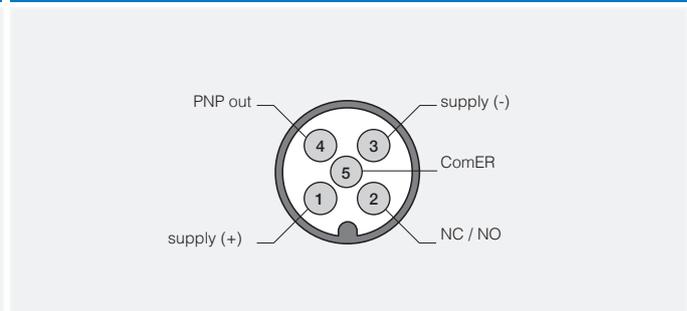
CX0E1/\*\*\_\*\*\_\*\* emitter with Teach-In input



CX0RB/\*\*\_\*\*\_\*\* receiver with PNP and NPN output



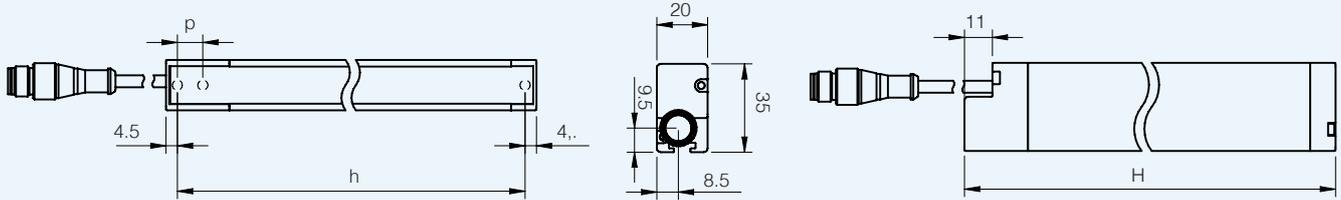
CX0RP/\*\*\_\*\*\_\*\* receiver with PNP output and Teach-In function



## dimensions (mm)

CX0/\*\*\_\*\*

H (barrier height) = h (controlled height) + 9 mm

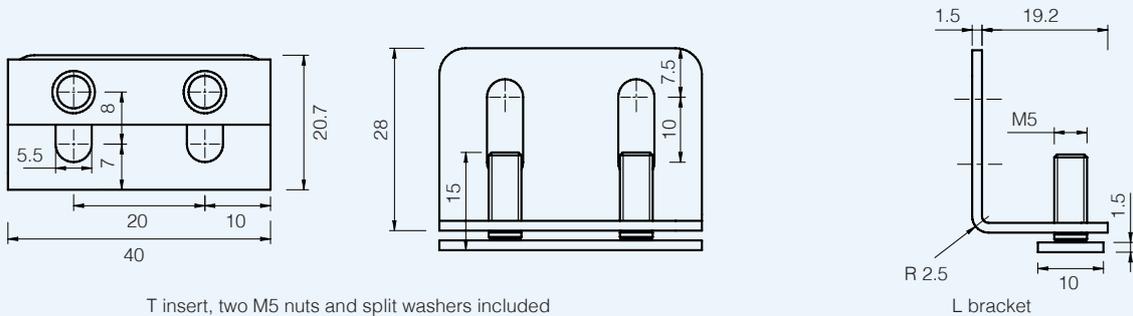


|        |     |     |     |     |     |     |
|--------|-----|-----|-----|-----|-----|-----|
| h (mm) | 160 | 320 | 480 | 640 | 800 | 960 |
| H (mm) | 169 | 329 | 489 | 649 | 809 | 969 |

## dimensions (mm)

accessories included with all models

### accessories fixing kit ST151



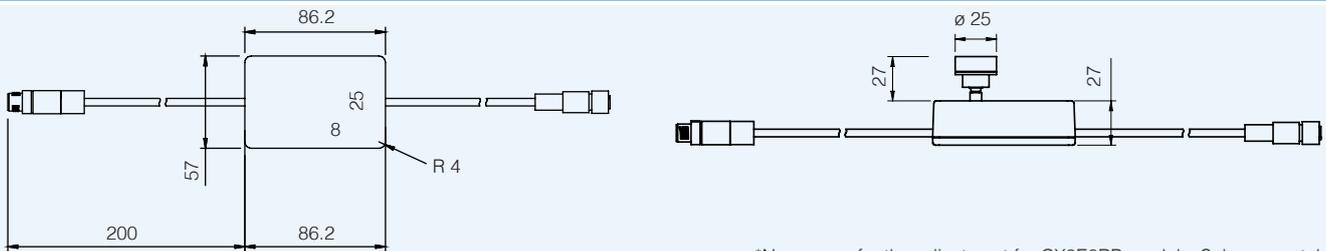
T insert, two M5 nuts and split washers included

| code   | description  |
|--------|--|
| ST4V S | 4 pcs. kit antivibration basement for barriers with 150 mm protected height                    |
| ST8V S | 8 pcs. kit antivibration basement for barriers with protected height from 1,500 mm to 1,050 mm |

## accessories

not included

### accessory for external adjustment ST 140



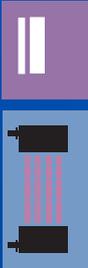
\*Necessary for the adjustment for CX0E0RB models. Sale separately.

| code           | description   |
|----------------|---|
| CD12M/0B-050A1 | power connector M12, 4 wires, female, axial, cable 5 m PVC  |
| CD12M/0B-100A1 | power connector M12, 4 wires, female, axial, cable 10 m PVC |
| CD12M/0B-150A1 | power connector M12, 4 wires, female, axial, cable 15 m PVC |
| CD12M/0B-050A5 | power connector M12, 4 wires, female, axial, cable 5 m PUR  |
| CD12M/0B-100A5 | power connector M12, 4 wires, female, axial, cable 10 m PUR |
| CD12M/0B-150A5 | power connector M12, 4 wires, female, axial, cable 15 m PUR |
| CD12M/0H-050A5 | power connector M12, 5 wires, female, axial, cable 5 m PUR  |
| CD12M/0H-100A5 | power connector M12, 5 wires, female, axial, cable 10 m PUR |
| CD12M/0H-150A5 | power connector M12, 5 wires, female, axial, cable 15 m PUR |



# CX1 series

Area sensors with high resolution and compact housing with digital output



Area sensor  
high resolution

## features

- Crossed beam (parallel beams for height with more of 33 beams)
- Optical synchronization
- Pitch 5mm and 10mm
- Control height up 480mm (pitch 5mm) and up 960mm (pitch 10mm)
- Maximum operating distance up to 3m (for 5mm pitch) and 6m (for 10mm pitch)
- NPN and PNP digital outputs
- For a correct use it is necessary to manually adjustment the emitter (accessory ST140)



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## code description

|               | CX1 | E   | 0 | R | B | / | 05 | - | 016 | V |  |
|---------------|-----|---|---|---|---|---|----|---|-----|---|--|
| series        | CX1 | Area Sensor cubic section                     |   |   |   |   |    |   |     |   |  |
| emitter       | E   | Emitter                                       |   |   |   |   |    |   |     |   |  |
| emitter type  | 0   | Emitter with I/O standard configuration       |   |   |   |   |    |   |     |   |  |
| receiver      | R   | Receiver                                      |   |   |   |   |    |   |     |   |  |
| receiver type | B   | Receiver with two digital outputs (NPN / PNP) |   |   |   |   |    |   |     |   |  |
| pitch         | 05  | Pitch 5 mm                                    |   |   |   |   |    |   |     |   |  |
|               | 10  | Pitch 10 mm                                   |   |   |   |   |    |   |     |   |  |
| height        | 016 | Controlled height 160 mm                      |   |   |   |   |    |   |     |   |  |
|               | 032 | Controlled height 320 mm                      |   |   |   |   |    |   |     |   |  |
|               | 048 | Controlled height 480 mm                      |   |   |   |   |    |   |     |   |  |
|               | 064 | Controlled height 640 mm                      |   |   |   |   |    |   |     |   |  |
|               | 080 | Controlled height 800 mm                      |   |   |   |   |    |   |     |   |  |
| output        | 096 | Controlled height 960 mm                      |   |   |   |   |    |   |     |   |  |
|               | V   | Output cable length 220 mm with M12 pigtail   |   |   |   |   |    |   |     |   |  |

## available models

Area sensor  
high resolution

| OUTPUT |           |        | INPUT    |      |                                 | beams number | pitch (mm) | plug (P/I) <sup>(3)</sup>       | working range (m) | detection height (mm) | KIT (E + R)     |         |     |                 |
|--------|-----------|--------|----------|------|---------------------------------|--------------|------------|---------------------------------|-------------------|-----------------------|-----------------|---------|-----|-----------------|
| state  | logic     | output | blanking | test | adjustment                      |              |            |                                 |                   |                       |                 |         |     |                 |
| NO/NC  | NPN + PNP | 2      | -        | ●    | External Trimmer <sup>(1)</sup> | 33           | 5          | I                               | 0.3...3           | 160                   | CX1E0RB/05-016V |         |     |                 |
|        |           |        |          |      |                                 | 65           |            | P                               |                   | 320                   | CX1E0RB/05-032V |         |     |                 |
|        |           |        |          |      |                                 | 97           |            |                                 |                   | 480                   | CX1E0RB/05-048V |         |     |                 |
|        |           |        |          |      |                                 | -            | ●          | External Trimmer <sup>(1)</sup> | 17                | 10                    | I               | 0.3...6 | 160 | CX1E0RB/10-016V |
|        |           |        |          |      |                                 |              |            |                                 | 33                |                       |                 |         | 320 | CX1E0RB/10-032V |
|        |           |        |          |      |                                 |              |            |                                 | 49                |                       |                 |         | 480 | CX1E0RB/10-048V |
|        |           |        |          |      |                                 |              |            |                                 | 65                |                       | P               |         | 640 | CX1E0RB/10-064V |
|        |           |        |          |      |                                 |              |            |                                 | 81                |                       |                 |         | 800 | CX1E0RB/10-080V |
|        |           |        |          |      |                                 |              |            |                                 | 97                |                       |                 |         | 960 | CX1E0RB/10-096V |

<sup>(1)</sup> External trimmer ST 140 sold separately <sup>(2)</sup> Sales code; single code (emitter or receiver) not available <sup>(3)</sup> Plot: P = parallel beams, I = crossed beams

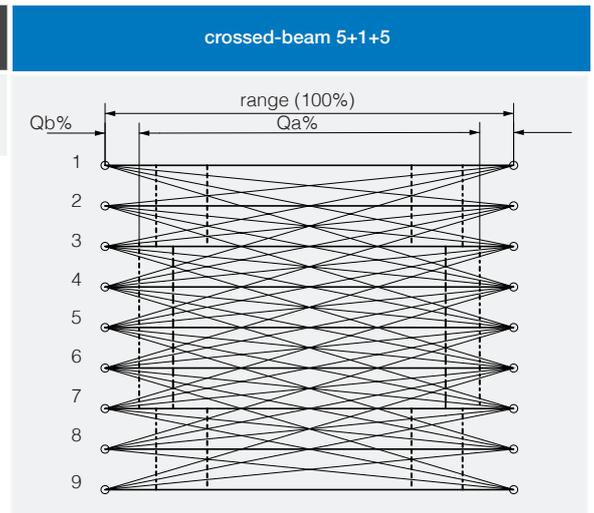
## technical specifications

| CX1E*R*/**-***               |   |
|------------------------------|---|
|                              |  |
| nominal sensing distance     | 0.3 ... 6 m (beam pitch 10 mm)<br>0.3... 3 m (beam pitch 5 mm)                    |
| emission                     | 850 nm (beam pitch 5mm)<br>880 nm (beam pitch ≥10mm)                              |
| operating voltage            | 16.8...30 Vdc   |
| ripple                       | < 1.2 Vpp   |
| power consumption (receiver) | 1...1.5 W   |
| power consumption (emitter)  | 1...1.5 W   |
| output                       | 1 x PNP, 1 x NPN  |
| output current               | < 100 mA  |
| output voltage drop          | < 1.5 V @ 100 mA  |
| minimum load resistance      | 280 Ω   |
| leakage current              | ≤ 10 μA   |
| tolerated capacitive load    | < 0.7 μF  |
| power on delay               | 200 ms  |
| Teach-In                     | < 15 s  |
| response time                | < 17 ms   |
| operating temperature        | -10°C...55°C  |
| storage temperature          | -25°C...60°C  |
| artificial light rejection   | IEC EN 60947-5-2  |
| ambient light rejection      | IEC EN 60947-5-2  |
| IP mechanical protection     | IP67  |
| humidity                     | 95% max (no condensation)   |
| vibrations                   | IEC EN 60947-5-2  |
| shocks                       | IEC EN 60947-5-2  |
| cable length                 | < 20 m  |
| connectors / cables          | 1 x M12, 4 poles, male (CX1E),<br>1 x M12, 5 poles, male (CX1R)                   |
| housing material             | painted aluminium RAL5002   |
| optic materials              | PMMA  |

CX1

# MDO (Minimum Detectable Object)

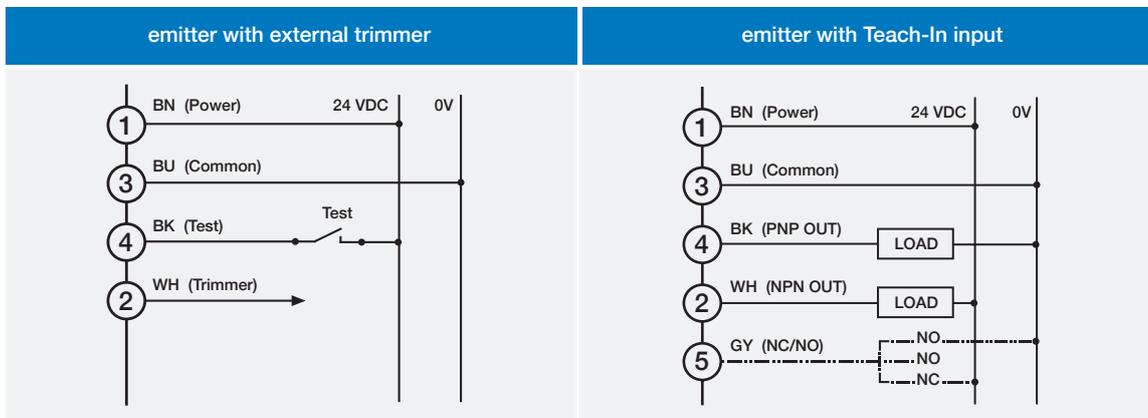
| beams                  | step (mm) | resolution <sup>(1)</sup> (mm) | qa 17 beams | qa 32 beams |
|------------------------|-----------|--------------------------------|-------------|-------------|
| crossed <sup>(2)</sup> | 5         | 2,5                            | -           | 80%         |
|                        | 10        | 5                              | 80%         | 80%         |



Area sensor  
high resolution

<sup>(1)</sup> = Resolution detected with ST140  
<sup>(2)</sup> = The optics cross beam allows detection of objects with a very small diameter or very thin (such as a sheet of paper or an envelope). For those targets with small diameter, the detecting resolution is less effective exactly in the centre between Emitter and Receiver (see Resolution) as well as at the ends of detection area (near to the sensors); the mentioned detection is obtained in the central area Qa with a width equal to a certain % of the distance between the 2 sensors.

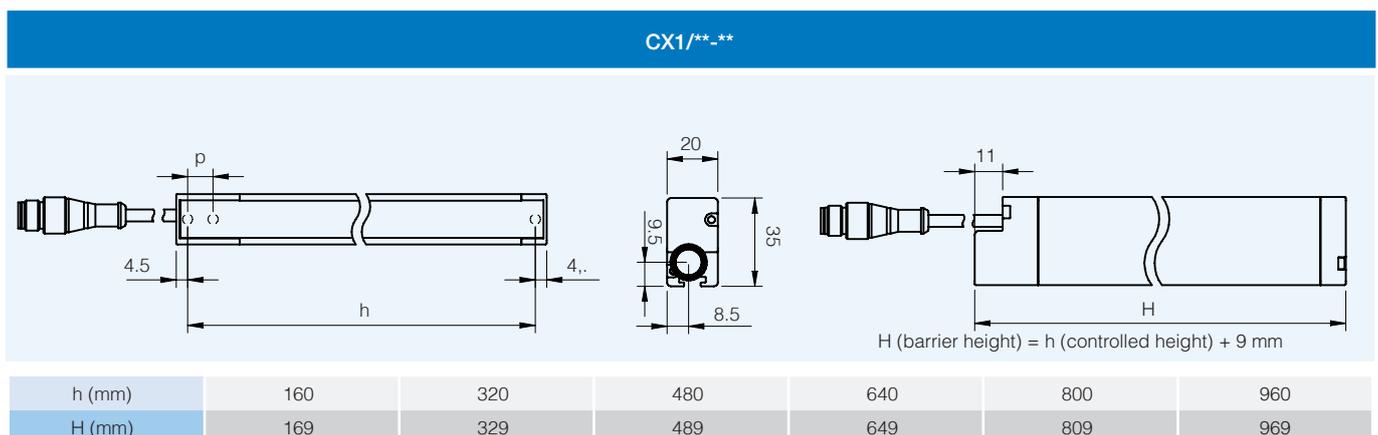
## electric diagrams of the connections



## plugs



## dimensions (mm)



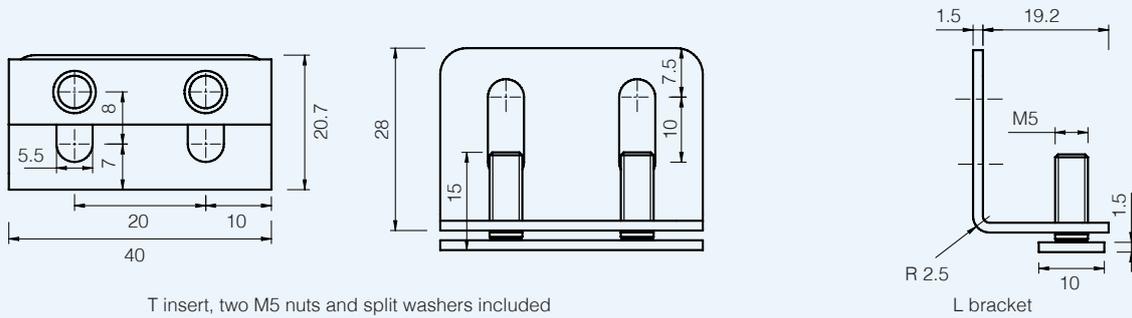
CX1

## dimensions (mm)

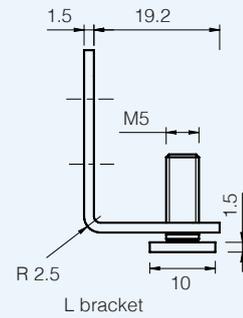
included with all models

Area sensor  
high resolution

### accessories fixing kit ST151



T insert, two M5 nuts and split washers included



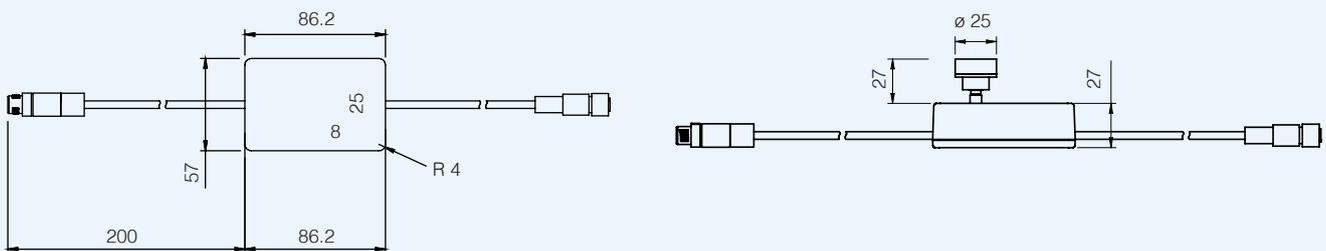
L bracket

| code   | description  |
|--------|--|
| ST4V S | 4 pcs. kit antivibration basement for barriers with 150 mm protected height                    |
| ST8V S | 8 pcs. kit antivibration basement for barriers with protected height from 1,500 mm to 1,050 mm |

## accessories

not included

### accessory for external adjustment ST 140



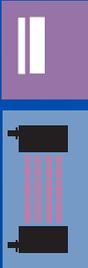
| code           | description   |
|----------------|---|
| CD12M/0B-050A1 | power connector M12, 4 wires, female, axial, cable 5 m PVC  |
| CD12M/0B-100A1 | power connector M12, 4 wires, female, axial, cable 10 m PVC |
| CD12M/0B-150A1 | power connector M12, 4 wires, female, axial, cable 15 m PVC |
| CD12M/0B-050A5 | power connector M12, 4 wires, female, axial, cable 5 m PUR  |
| CD12M/0B-100A5 | power connector M12, 4 wires, female, axial, cable 10 m PUR |
| CD12M/0B-150A5 | power connector M12, 4 wires, female, axial, cable 15 m PUR |
| CD12M/0H-050A5 | power connector M12, 5 wires, female, axial, cable 5 m PUR  |
| CD12M/0H-100A5 | power connector M12, 5 wires, female, axial, cable 10 m PUR |
| CD12M/0H-150A5 | power connector M12, 5 wires, female, axial, cable 15 m PUR |

CX1

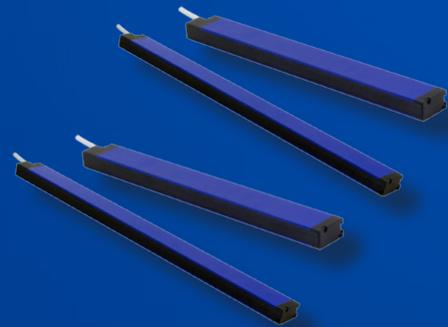


# CX2 series

Area sensors with high resolution and compact housing with digital and analogue output



Area sensor  
high resolution



## features

- Parallel beams and floating crossbeams with variable amplitude
- Synchronization by cable. Pitch 5, 10 and 20mm
- Control height up 480mm (pitch 5mm) and up 960mm (pitch 10mm and 20mm)
- Maximum operating distance up to 3m (for 5mm pitch) and 6m (for 10mm and 20 pitch)
- Digital outputs NPN and PNP ; analogue current output (4...20mA) and analogue voltage output (0..10V), mix outputs : digital PNP and analogue voltage output (0..10V)
- Adjustment by teach-in , 2 levels of adjustment
- Blanking function . Available analogue versions TOP BEAM

## web contents



- Application notes
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## code description

|                  | CX2 | E   | 0 | R | B | / | 05 | - | 016 | V |  |
|------------------|-----|---|---|---|---|---|----|---|-----|---|--|
| series           | CX2 | Area Sensor cubic section   |   |   |   |   |    |   |     |   |  |
| emitter          | E   | Emitter   |   |   |   |   |    |   |     |   |  |
| emitter type     | 0   | Emitter with I/O standard configuration   |   |   |   |   |    |   |     |   |  |
| receiver         | R   | Receiver  |   |   |   |   |    |   |     |   |  |
| receiver type    | A   | Receiver with two analogue outputs (voltage 0...10 V and current 4...20 mA)     |   |   |   |   |    |   |     |   |  |
|                  | B   | Receiver with two digital outputs (NPN and PNP)                                 |   |   |   |   |    |   |     |   |  |
|                  | F   | Receiver with one digital output PNP and one analogue output (voltage 0...10 V) |   |   |   |   |    |   |     |   |  |
| pitch            | 05  | Pitch 5 mm  |   |   |   |   |    |   |     |   |  |
|                  | 10  | Pitch 10 mm   |   |   |   |   |    |   |     |   |  |
|                  | 20  | Pitch 20 mm   |   |   |   |   |    |   |     |   |  |
| height           | 016 | Controlled height 160 mm  |   |   |   |   |    |   |     |   |  |
|                  | 032 | Controlled height 320 mm  |   |   |   |   |    |   |     |   |  |
|                  | 048 | Controlled height 480 mm  |   |   |   |   |    |   |     |   |  |
|                  | 064 | Controlled height 640 mm  |   |   |   |   |    |   |     |   |  |
|                  | 080 | Controlled height 800 mm  |   |   |   |   |    |   |     |   |  |
| output           | 096 | Controlled height 960 mm  |   |   |   |   |    |   |     |   |  |
|                  | V   | Output cable length 220 mm with M12 pigtail                                     |   |   |   |   |    |   |     |   |  |
| special function | TB  | Analogue reading last led TOP BEAM (CX2RA)                                      |   |   |   |   |    |   |     |   |  |

# available models

Area sensor  
high resolution

| OUTPUT |                             |   | INPUT    |      |            | beams number | pitch (mm) | plot (P/I) <sup>(1)</sup> | working range (m) | detection height | KIT (E + R)     |                 |
|--------|-----------------------------|---|----------|------|------------|--------------|------------|---------------------------|-------------------|------------------|-----------------|-----------------|
| state  | logic                       | output  | blanking | test | adjustment |              |            |                           |                   |                  |                 |                 |
| NO/NC  | NPN + PNP                   |   |          |      |            | 33           | 5          | I/P                       | 0.3...3           | 160 mm           | CX2E0RB/05-016V |                 |
|        |                             |   |          |      |            | 65           |            | P                         |                   | 320 mm           | CX2E0RB/05-032V |                 |
|        |                             |   |          |      |            | 97           |            |                           |                   | 480 mm           | CX2E0RB/05-048V |                 |
|        |                             |   |          |      |            | 17           | 10         | I/P                       | 0.3...6           | 160 mm           | CX2E0RB/10-016V |                 |
|        |                             |   |          |      |            | 33           |            |                           |                   | 320 mm           | CX2E0RB/10-032V |                 |
|        |                             |   |          |      |            | 49           |            |                           |                   | 480 mm           | CX2E0RB/10-048V |                 |
|        |                             |   |          |      |            | 65           |            |                           |                   | 640 mm           | CX2E0RB/10-064V |                 |
|        |                             |   |          |      |            | 81           |            |                           |                   | 800 mm           | CX2E0RB/10-080V |                 |
|        |                             |   |          |      |            | 97           |            |                           |                   | 960 mm           | CX2E0RB/10-096V |                 |
|        |                             |   |          |      |            | 9            | 20         | P                         | 0.3...6           | 160 mm           | CX2E0RB/20-016V |                 |
|        |                             |   |          |      |            | 17           |            |                           |                   | 320 mm           | CX2E0RB/20-032V |                 |
|        |                             |   |          |      |            | 25           |            |                           |                   | 480 mm           | CX2E0RB/20-048V |                 |
|        |                             |   |          |      |            | 33           |            |                           |                   | 640 mm           | CX2E0RB/20-064V |                 |
|        |                             |   |          |      |            | 41           |            |                           |                   | 800 mm           | CX2E0RB/20-080V |                 |
|        |                             |   |          |      |            | 49           |            |                           |                   | 960 mm           | CX2E0RB/20-096V |                 |
|        | 33                          | analog voltage output + analog current output | 2        | ●    | ●          | Teach-In     | 33         | 5                         | P                 | 0.3...3          | 160 mm          | CX2E0RA/05-016V |
|        | 65                          |   |          |      |            |              | 320 mm     |                           |                   |                  | CX2E0RA/05-032V |                 |
|        | 97                          |   |          |      |            |              | 480 mm     |                           |                   |                  | CX2E0RA/05-048V |                 |
|        | 17                          |   |          |      |            |              | 10         | P                         | 0.3...6           | 160 mm           | CX2E0RA/10-016V |                 |
|        | 33                          |   |          |      |            |              |            |                           |                   | 320 mm           | CX2E0RA/10-032V |                 |
|        | 49                          |   |          |      |            |              |            |                           |                   | 480 mm           | CX2E0RA/10-048V |                 |
|        | 65                          |   |          |      |            |              |            |                           |                   | 640 mm           | CX2E0RA/10-064V |                 |
|        | 81                          |   |          |      |            |              |            |                           |                   | 800 mm           | CX2E0RA/10-080V |                 |
|        | 97                          |   |          |      |            |              |            |                           |                   | 960 mm           | CX2E0RA/10-096V |                 |
|        | 9                           |   |          |      |            |              | 20         | P                         | 0.3...6           | 160 mm           | CX2E0RA/20-016V |                 |
|        | 17                          |   |          |      |            |              |            |                           |                   | 320 mm           | CX2E0RA/20-032V |                 |
|        | 25                          |   |          |      |            |              |            |                           |                   | 480 mm           | CX2E0RA/20-048V |                 |
|        | 33                          |   |          |      |            |              |            |                           |                   | 640 mm           | CX2E0RA/20-064V |                 |
|        | 41                          |   |          |      |            |              |            |                           |                   | 800 mm           | CX2E0RA/20-080V |                 |
|        | 49                          |   |          |      |            |              |            |                           |                   | 960 mm           | CX2E0RA/20-096V |                 |
| 33     | PNP + analog voltage output |   |          |      |            | 33           | 5          | I/P                       | 0.3...3           | 160 mm           | CX2E0RF/05-016V |                 |
| 65     |                             |   |          |      |            | P            |            | 320 mm                    |                   | CX2E0RF/05-032V  |                 |                 |
| 97     |                             |   |          |      |            |              |            | 480 mm                    |                   | CX2E0RF/05-048V  |                 |                 |
| 17     |                             |   |          |      |            | 10           | I/P        | 0.3...6                   | 160 mm            | CX2E0RF/10-016V  |                 |                 |
| 33     |                             |   |          |      |            |              |            |                           | 320 mm            | CX2E0RF/10-032V  |                 |                 |
| 49     |                             |   |          |      |            |              |            |                           | 480 mm            | CX2E0RF/10-048V  |                 |                 |
| 65     |                             |   |          |      |            |              |            |                           | 640 mm            | CX2E0RF/10-064V  |                 |                 |
| 81     |                             |   |          |      |            |              |            |                           | 800 mm            | CX2E0RF/10-080V  |                 |                 |
| 97     |                             |   |          |      |            |              |            |                           | 960 mm            | CX2E0RF/10-096V  |                 |                 |
| 9      |                             |   |          |      |            | 20           | P          | 0.3...6                   | 160 mm            | CX2E0RF/20-016V  |                 |                 |
| 17     |                             |   |          |      |            |              |            |                           | 320 mm            | CX2E0RF/20-032V  |                 |                 |
| 25     |                             |   |          |      |            |              |            |                           | 480 mm            | CX2E0RF/20-048V  |                 |                 |
| 33     |                             |   |          |      |            |              |            |                           | 640 mm            | CX2E0RF/20-064V  |                 |                 |
| 41     |                             |   |          |      |            |              |            |                           | 800 mm            | CX2E0RF/20-080V  |                 |                 |
| 49     |                             |   |          |      |            |              |            |                           | 960 mm            | CX2E0RF/20-096V  |                 |                 |

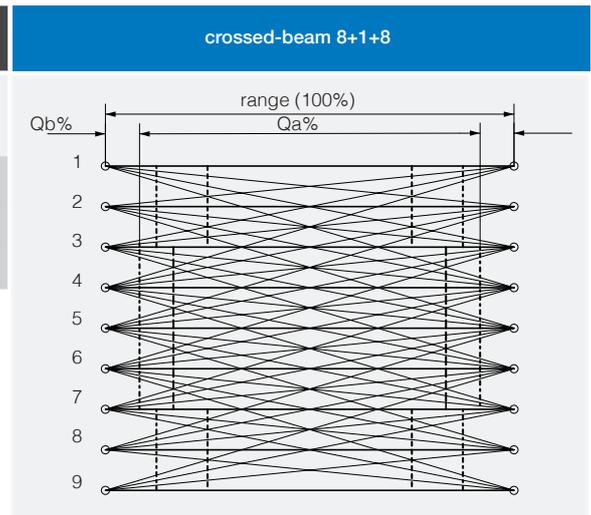
<sup>(1)</sup>Plot: P = parallel beams, I = crossed beams

| CX2E*R*/**_***V              |   |
|------------------------------|---|
|                              |   |
| nominal sensing distance     | 0.1 ... 3 m (beam pitch 5 mm)<br>0.3 ... 6 m (beam pitch 10 mm)   |
| emission                     | 850 nm (beam pitch 5mm)<br>880 nm (beam pitch ≥10mm)  |
| operating voltage            | 16.8...30 Vdc   |
| ripple                       | < 1.2 Vpp   |
| power consumption (receiver) | 1...2.5 W   |
| power consumption (emitter)  | 1...3 W   |
| output                       | 1 x PNP, 1 x NPN (CX2E0RB); 1 x analogue voltage output, 1 x analog current output (CX2E0RA);<br>1 x PNP, 1 X analogue vottage output (CX2E0RF) |
| output current               | < 100 mA  |
| output voltage drop          | < 1.5 V @ 100 mA  |
| minimum load resistance      | 280 Ω   |
| leakage current              | ≤ 10 µA   |
| tolerated capacitive load    | < 0.7 µF  |
| power on delay               | < 3 sec <sup>(1)</sup>  |
| Teach-In                     | (0.5 x N beams) sec   |
| response time                | ((0.2 x (N beams - 1)) + 1) x 2 ms  |
| operating temperature        | -10°C...55°C  |
| storage temperature          | -25°C...60°C  |
| artificial light rejection   | IEC EN 60947-5-2  |
| ambient light rejection      | IEC EN 60947-5-2  |
| IP mechanical protection     | IP67  |
| humidity                     | 95% max (no condensation)   |
| vibrations                   | IEC EN 60947-5-2  |
| shocks                       | IEC EN 60947-5-2  |
| cable length                 | < 20 m  |
| connectors / cables          | 1 x M12, 4 poles, male (CX2E),<br>1 x M12, 8 poles, male (CX2R)   |
| housing material             | painted aluminium RAL5002   |
| optic materials              | PMMA  |

<sup>(1)</sup> Power on delay with blanking function: (1 x N beams) sec

# MDO (Minimum Detectable Object)

| beams                  | step (mm) | resolution <sup>(1)</sup> (mm) | qa 17 beams | qa 32 beams |
|------------------------|-----------|--------------------------------|-------------|-------------|
| crossed <sup>(2)</sup> | 5         | 2,5                            | -           | 93%         |
|                        | 10        | 5                              | 93%         |             |
| parallel               | 5         | 5                              | -           | -           |
|                        | 10        | 10                             |             |             |
|                        | 20        | 20                             |             |             |



<sup>(1)</sup> = resolution detected with Teach Gross

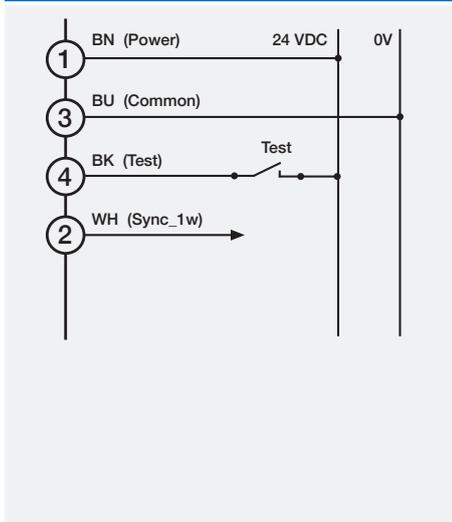
<sup>(2)</sup> = the optics cross beam allows detection of objects with a very small diameter or very thin (such as a sheet of paper or an envelope). For those targets with small diameter, the detecting resolution is less effective exactly in the centre between Emitter and Receiver (see Resolution) as well as at the ends of detection area (near to the sensors); the mentioned detection is obtained in the central area Qa with a width equal to a certain % of the distance between the 2 sensors.

## plugs

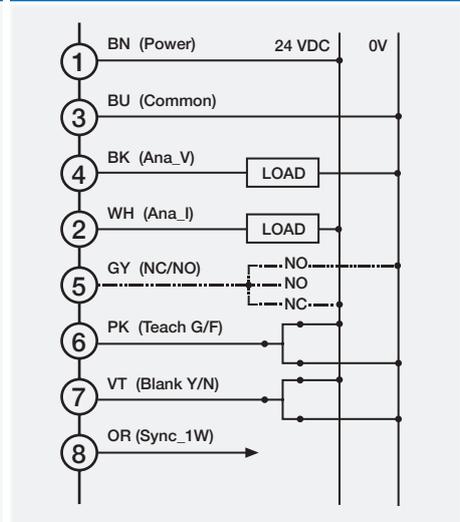
|   |   |
|---|---|
| <b>CX2E0/**-**-** emitter with test input</b>     | <b>CX2RB/**-**-** receiver with PNP and NPN output</b>  |
|   |   |
| <b>CX2RA/**-**-** receiver with analog output</b> | <b>CX2RF/**-**-** receiver PNP with analog output V</b> |
|   |   |

# electric diagrams of the connections

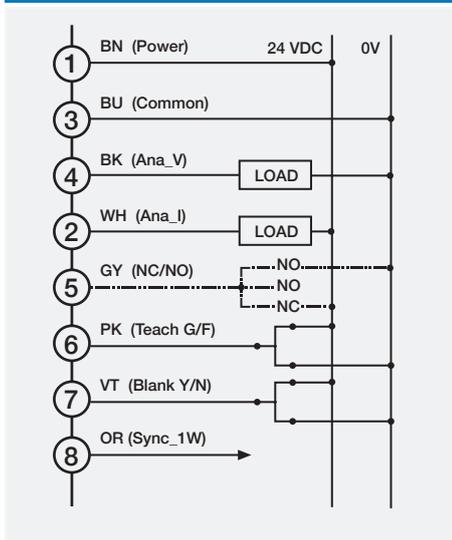
## emitter with test input



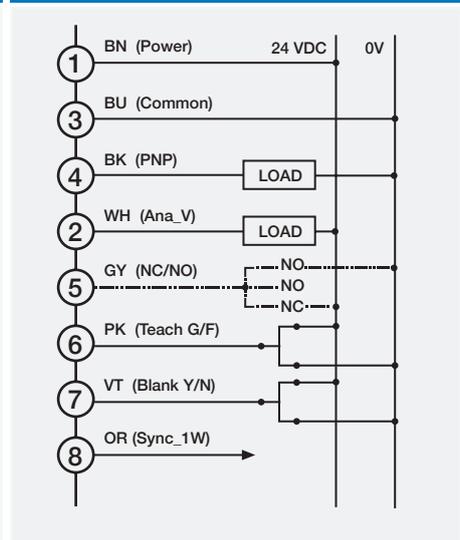
## receiver with PNP and NPN output



## receiver with analog output



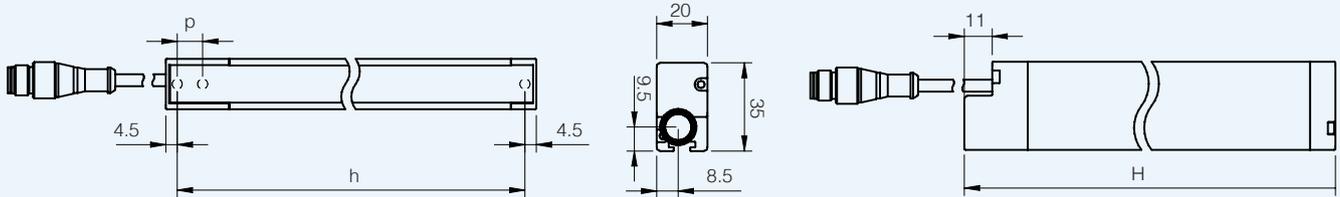
## receiver PNP with analog output V



- |                             |                           |
|-----------------------------|---------------------------|
| <b>G</b> coarse calibration | <b>F</b> fine calibration |
| <b>BK</b> black             | <b>BU</b> blue            |
| <b>BN</b> brown             | <b>GY</b> gray            |
| <b>RD</b> red               | <b>WH</b> white           |
| <b>PK</b> pink              | <b>VT</b> violet          |
| <b>OR</b> orange            |                           |

# dimensions (mm)

## CX2/\*\*\_\*\*



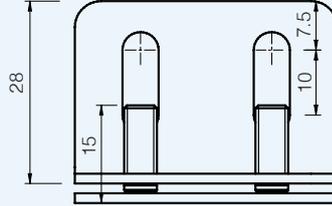
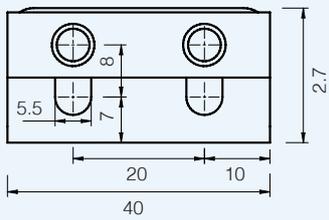
$H$  (barrier height) =  $h$  (controlled height) + 9 mm

|        |     |     |     |     |     |     |
|--------|-----|-----|-----|-----|-----|-----|
| h (mm) | 160 | 320 | 480 | 640 | 800 | 960 |
| H (mm) | 169 | 329 | 489 | 649 | 809 | 969 |

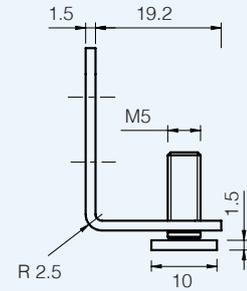
## accessories

included with all models

### accessories fixing kit ST151



T insert, two M5 nuts and split washers included



L bracket

| code   | description  |
|--------|--|
| ST4V S | 4 pcs. kit antivibration basement for barriers with 150 mm protected height                    |
| ST8V S | 8 pcs. kit antivibration basement for barriers with protected height from 1,500 mm to 1,050 mm |



## accessories

not included

| code           | description   |
|----------------|---|
| CD12M/0B-050A1 | power connector M12, 4 wires, female, axial, cable 5 m PVC  |
| CD12M/0B-100A1 | power connector M12, 4 wires, female, axial, cable 10 m PVC |
| CD12M/0B-150A1 | power connector M12, 4 wires, female, axial, cable 15 m PVC |
| CD12M/0B-050A5 | power connector M12, 4 wires, female, axial, cable 5 m PUR  |
| CD12M/0B-100A5 | power connector M12, 4 wires, female, axial, cable 10 m PUR |
| CD12M/0B-150A5 | power connector M12, 4 wires, female, axial, cable 15 m PUR |
| CD12M/0X-050A5 | power connector M12, 8 wires, female, axial, cable 5 m PUR  |
| CD12M/0X-100A5 | power connector M12, 8 wires, female, axial, cable 10 m PUR |
| CD12M/0X-150A5 | power connector M12, 8 wires, female, axial, cable 15 m PUR |