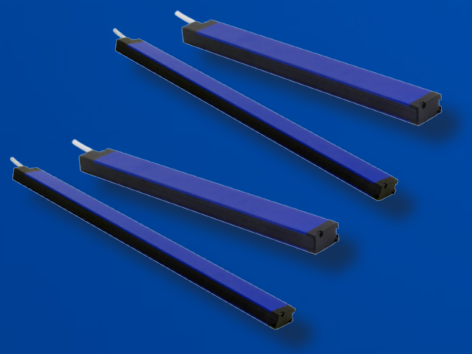
# CX2 series

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

## 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 (pitch10mm 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**
- **Photos**
- **Catalogue / Manuals**

## 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 |
| | 096 | Controlled height 960 mm |
| output | V | Output cable length 220 mm with M12 pigtail |
| special function | TB | Analogue reading last led TOP BEAM (CX2RA) |

# available models

| OUTPUT | | | INPUT | | | beams number | pitch (mm) | plot (P/I) [1] | working range (m) | detection height | KIT (E + R) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| state | logic | output | blanking | test | adjustment | | | | | | |
| NO/NC | NPN + PNP | 2 | ● | ● | Teach-In | 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 | | P | | 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 | | | 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 |
| | analog voltage output + analog current output | | | | | 33 | 5 | | 0.3...3 | 160 mm | CX2E0RA/05-016V |
| | | | | | | 65 | | | | 320 mm | CX2E0RA/05-032V |
| | | | | | | 97 | | | | 480 mm | CX2E0RA/05-048V |
| | | | | | | 17 | 10 | | 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 | | | 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 |
| | 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 | | P | | 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 | | | 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 |

[1] Plot: P = parallel beams, I = crossed beams

# technical specifications

| | 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 votlage 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(1) |
| 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 |

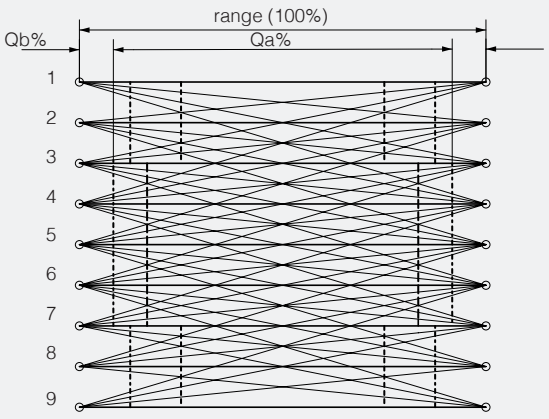
(1) Power on delay with blanking function: (1 x N beams) sec

# MDO (Minimum Detectable Object)

| beams | step (mm) | resolution [1] (mm) | qa 17 beams | qa 32 beams |
|---|---|---|---|---|
| crossed [2] | 5 | 2,5 | - | 93% |
| | 10 | 5 | 93% | |
| parallel | 5 | 5 | - | - |
| | 10 | 10 | | |
| | 20 | 20 | | |

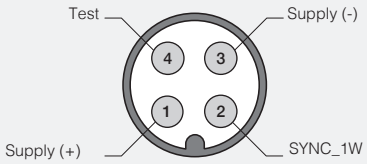
[1] = resolution detected with Teach Gross
[2] = the optics cross beam allows detection of objects with a very small diameter or very thin (such as a sheet of paper or an envelope). For those targets with small diameter, the detecting resolution is less effective exactly in the centre between Emitter 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.

**crossed-beam 8+1+8**

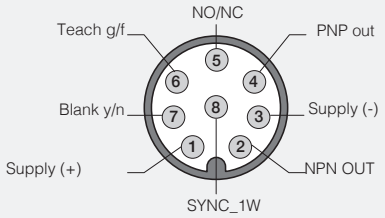



# plugs

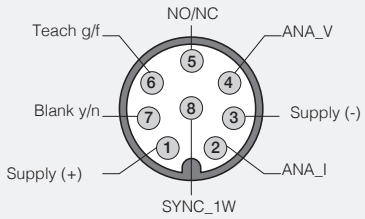
**CX2E0/**-**-**-** emitter with test input**



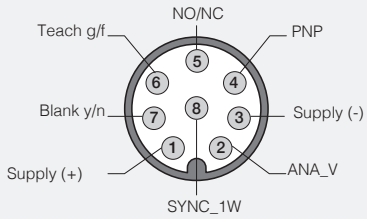

**CX2RB/**-**-**-** receiver with PNP and NPN output**




**CX2RA/**-**-**-** receiver with analog output**

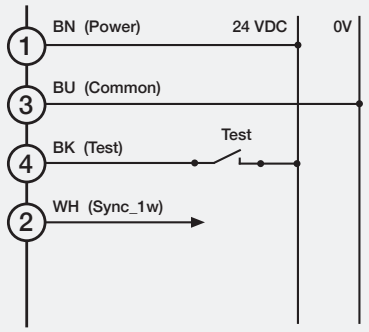



**CX2RF/**-**-**-** receiver PNP with analog output V**

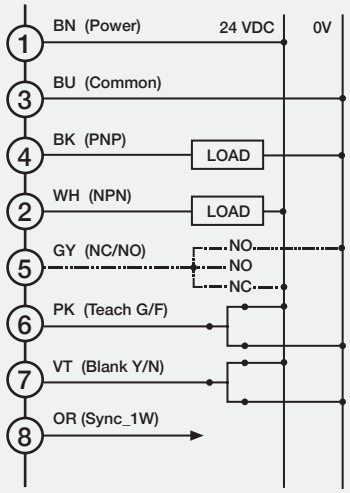


## electric diagrams of the connections

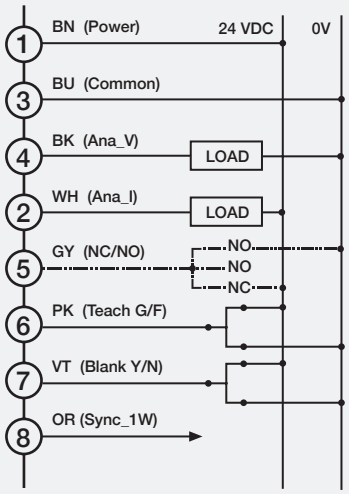
### emitter with test input



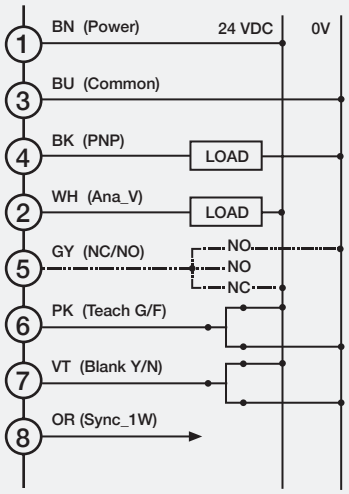

### receiver with PNP and NPN output




### receiver with analog output



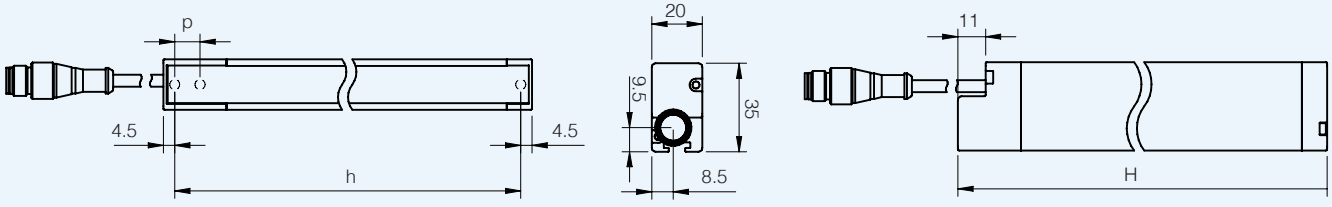

### receiver PNP with analog output V




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

## dimensions (mm)

### CX2/**-**



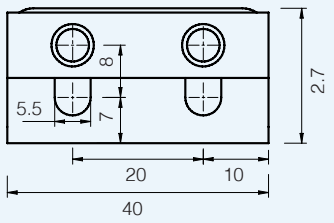

H (barrier height) = h (controlled height) + 9 mm

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

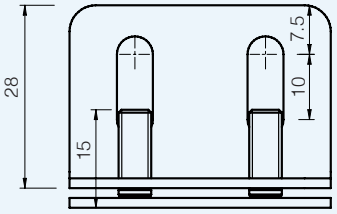
## accessories

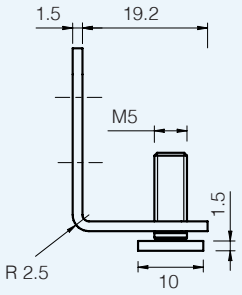
included with all models

### 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 |