

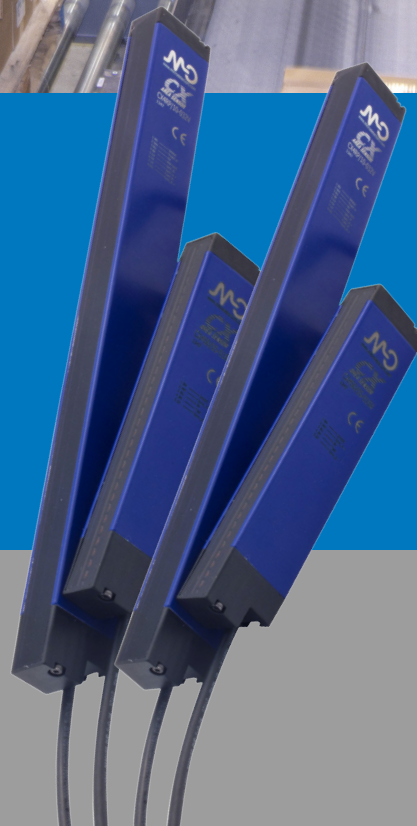


Micro Detectors

Italian Sensors Technology



CX series
high resolution Area Sensor
in compact housing



Area Sensors
Catalogue

Cod. CAT3ECX1478201

Datasheet - CX - english - Ed.01/2015





Products

high resolution
compact housing



Series CX

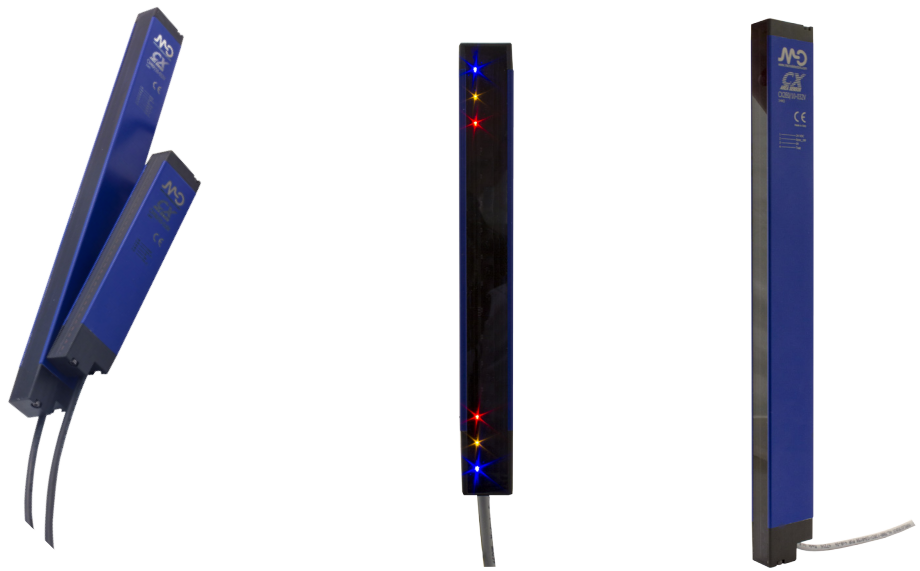
high resolution
compact housing



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market sectors and applications

- logistics/handling
- automated warehouses
- object detection on conveying lines
- presence/absence detection
- objects counting
- height measuring



features

The CX area sensors are medium/high resolution light curtains divided into the following series, according to their main features:

CX0 series:

internal optical synchronization (teach-in by cable)
total crossbeam through all the optics
controlled area from 160 and 320 mm,
pitch 5 mm and 10 mm,
maximum operating distance up to 6 m (for 10 mm pitch) and 3 m (for 5 mm pitch)
2 digital NPN and PNP outputs (teach-in model available only with PNP logic) NO / NC configurable.
For all models without teach-in enabled, it is necessary to manually adjust the emitter (accessory ST 140). It is possible to detect very thick objects.

CX1 series:

optical synchronization,
floating crossbeam with fixed amplitude (5 + 1 + 5),
area height controlled from 160 and 320 mm,
Pitch 5 mm and 10 mm,
maximum operating distance up to 6 m (for 10 mm pitch) and 3 m (for 5 mm pitch)
NPN and PNP digital outputs NO / NC configurable. For a correct use it is necessary to manually adjust the emitter (accessory ST 140)

CX2 series:

synchronization by cable,
parallel beams and floating crossbeams with variable amplitude,
controlled area from 160 and 320 mm,
pitch 5 mm and 10 mm,
maximum operating distance up to 6 m,
double NPN and PNP digital outputs, NO / NC configurable,
2 analogue outputs: Current and Voltage
blinking function available.

approvals



protection degree

IP67



Products

high resolution
compact housing



CX0, CX1, CX2: crossed beams



CX2: parallel beams

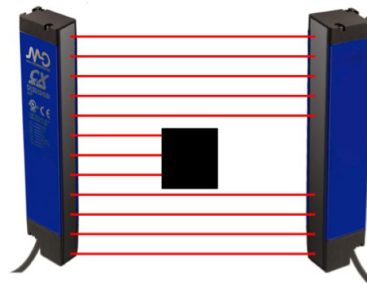
CX Area Sensors in aluminium housing

The CX area sensors are medium and high resolution light curtains divided according to their main features into the following series:

- CX0 series: internal optical synchronization (teach-in via cable), total crossbeams with digital outputs
- CX1 series: optical synchronization, floated crossbeams with fixed amplitude (5 + 1 + 5), with digital outputs
- CX2 series: synchronization by cable, parallel beams or variable amplitude crossbeams, both with digital and analogue outputs current (4-20 mA) and voltage (0-10 V). Blanking function available. Available Heights: 160mm and 320mm.

Thanks to its shape and to the M12 pigtail connector, it is possible to work in a minimum dead zone. Minimum detectable object dimension is 2mm for 5mm pitch CX0 and CX1 and <1 mm for CX2.

¹ the Blanking function allows a certain safety conditions and through some operating modes, to detect the presence or the introduction of opaque objects in the sensor detection zone, without causing any change to output status. This function is therefore particularly useful when the detection area is occupied by a fixed part which must be not detected.



pack content

CD with installation manuals (English + Italian)

ST-151 Accessory area sensors mounting Kit²

² the quantities depend on the height of the curtain/area to be detected: No. 2 height 160 mm; No. 4 height 320mm

further commercial and technical documents available

High resolution pictures

customization already tested

-

minimum quantity that can be ordered

1 couple (emitter + receiver)

CX	0	E	1	R	P	/	05	-	016	V
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CX Area Sensor cubic section 36 x 20 mm

0 Optical internal synchronization; total crossbeams

1 Optical synchronization; crossbeams with floating fixed width (5 + 1 + 5)

2 Synchronization by wire; automatic crossbeams or parallel beams

E Emitter

0 Emitter with I/O standard configuration

1 Emitter with special I/O configuration

R Receiver

P Receiver with PNP output

B Receiver with two digital outputs (NPN / PNP)

A Receiver with two analogue outputs (ANA_V, ANA_I)

05 Pitch 5 mm

10 Pitch 10 mm

016 Controlled area height 160 mm

032 Controlled area height 320 mm

V Output cable length 220mm with M12 pigtail

-

1 Special Function: emitter and receiver with CX0 common wire and Teach-in emitter



Products

high resolution
compact housing

available models - CX0 series

intrinsic synchronization - total crossbeam

OUTPUT			INPUT			beams number	pitch (mm)	working range	detection height	KIT (E + R) ²
state	logic	output	blanking	test	adjustment					
NO/NC	NPN + PNP	2	No	Yes	External Trimmer ¹	32	5	0.3...3 m	160 mm	CX0E0RB/05-016V
						17	10	0.5...6 m	160 mm	CX0E0RB/10-016V
						32	10	1...6 m	320 mm	CX0E0RB/10-032V
	PNP	1		No	Teach-in	32	5	0.3...3 m	160 mm	CX0E1RP/05-016V
						17	10	0.5...6 m	160 mm	CX0E1RP/10-016V
						32	10	1...6 m	320 mm	CX0E1RP/10-032V

¹ External trimmer ST 140 sold separately² Sales code; single code (emitter or receiver) not available

available models - CX1 series

optical syncornization - floating crossbeam fixed width

OUTPUT			INPUT			beams number	pitch (mm)	working range	detection height	KIT (E + R) ²
state	logic	output	blanking	test	adjustment					
NO/NC	NPN + PNP	2	No	Yes	External Trimmer ¹	33	5	0.3... 3 m	160 mm	CX1E0RB/05-016V
						17	10	0.3... 6 m	160 mm	CX1E0RB/10-016V
						33	10	0.3... 6 m	320 mm	CX1E0RB/10-032V

¹ External trimmer ST 140 sold separately² Sales code; single code (emitter or receiver) not available

available models - CX2 series

synchronization function by single cable wire - automatic crossbeam variable width

OUTPUT			INPUT			beams number	pitch (mm)	working range	detection height	KIT (E + R) ²
state	logic	output	blanking	test	adjustment					
NO/NC	NPN + PNP	2	Yes	Yes	Teach-in G/F	33	5	0.1... 3 m	160 mm	CX2E0RB/05-016V
						17	10	0.3... 6 m	160 mm	CX2E0RB/10-016V
						33	10	0.3... 6 m	320 mm	CX2E0RB/10-032V
	Ana_V + Ana_I					33	5	0.1... 3 m	160 mm	CX2E0RA/05-016V
						17	10	0.3... 6 m	160 mm	CX2E0RA/10-016V
						33	10	0.3... 6 m	320 mm	CX2E0RA/10-032V
										CX2E0RA/10-032V



Products

high resolution
compact housing

specifications CX0 series

according to IEC EN 60947-5-2 and IEC EN 60947-5-7



models

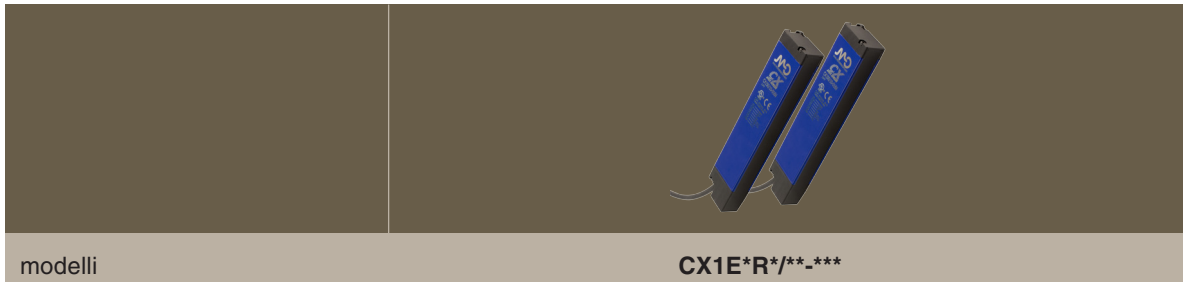
CX0E*R*/**-***



nominal sensing distance S_n	0.3 ... 3 m (beam pitch 5 mm, detection height 160 mm) 0.5 ... 6 m (beam pitch 10 mm, detection height 160 mm) 1 ... 6 m (beam pitch 10 mm, detection height 320 mm)
light emission	850 nm (beam pitch 5 mm) 880 nm (beam pitch ≥ 10 mm)
power supply voltage	16.8...30 Vdc
ripple	< 1.2 Vpp
power consumption (receiver)	1...1.5 W
power consumption (emitter)	1...1.5 W
output	1xPNP, 1xNPN (CX0RB); 1XPNP (CX0RP)
output current (With load)	< 100 mA
output voltage drop	< 1.5 V @ 100 mA
minimum resistance load	280 Ω
leakage current	$\leq 10 \mu\text{A}$
capacitive load	< 0.7 μF
POWER ON Delay	200 ms
Teach-In procedure duration	< 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
standard protection models	IP67
humidity	95% max (no condensation)
vibrations	IEC EN 60947-5-2
shocks	IEC EN 60947-5-2
max. 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
front glass material	PMMA

specifications CX1 series

according to IEC EN 60947-5-2 and IEC EN 60947-5-7



modelli

CX1E*R*/**-***

nominal sensing distance S_n	0.3 ... 6 m (beam pitch 10 mm from the ground ≥ 160 mA) 0.3... 3 m (beam pitch 5 mm, detection height 160 mm)
light emission	850 nm (beam pitch 5mm) 880 nm (beam pitch ≥ 10 mm)
power supply voltage	16.8...30 Vdc
ripple	< 1.2 Vpp
power consumption (receiver)	1...1.5 W
power consumption (emitter)	1...1.5 W
output	1xPNP, 1xNPN
output current (With load)	< 100 mA
output voltage drop	< 1.5 V @ 100 mA
minimum resistance load	280 Ω
leakage current	$\leq 10 \mu\text{A}$
capacitive load	< 0.7 μF
POWER ON Delay	200 ms
Teach-In procedure duration	< 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
standard protection models	IP67
humidity	95% max (no condensation)
vibrations	IEC EN 60947-5-2
shocks	IEC EN 60947-5-2
max. cable length	< 20 m
connectors/cables	1 x M12, 4 poles, male (CX1E), 1 x M12, 5 poles, male (CX1R)
housing material	Painted Aluminium RAL5002
front glass material	PMMA



Products

high resolution
compact housing

specifications CX2 series

according to IEC EN 60947-5-2 and IEC EN 60947-5-7



models

CX2E*R*/**_***V

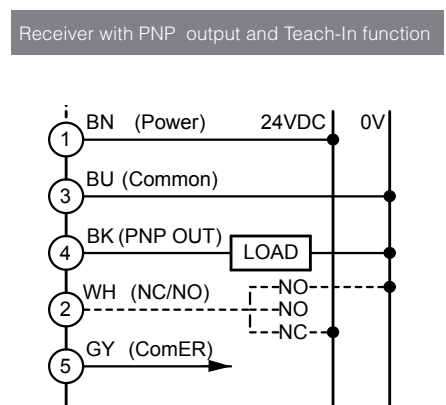
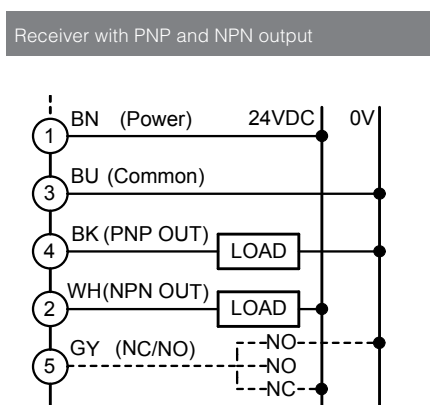
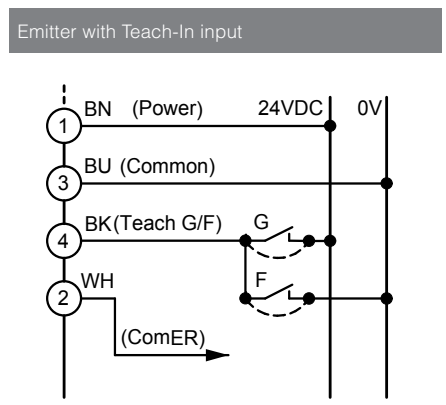
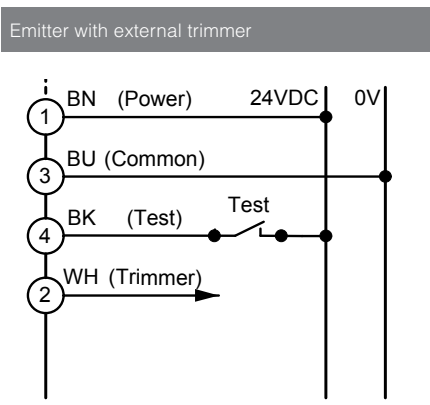
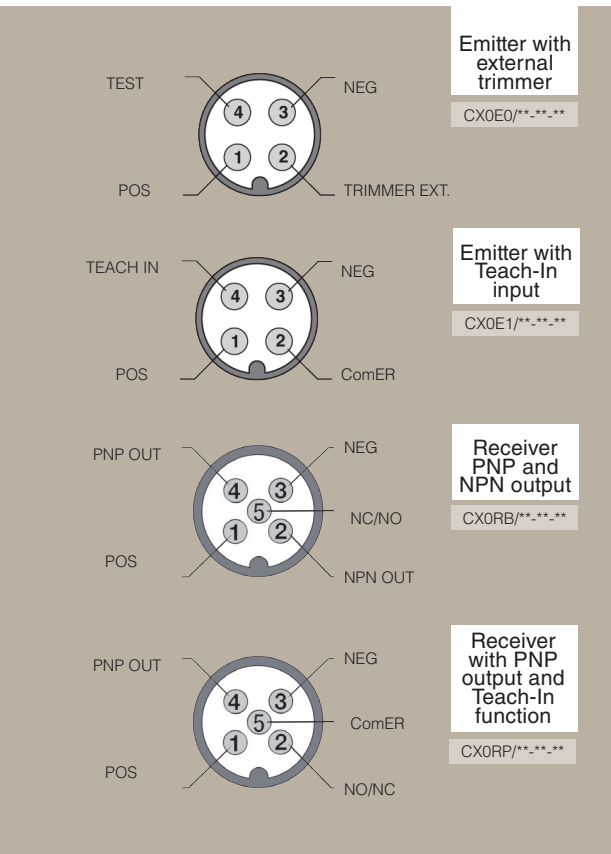


nominal sensing distance S_n	0.1 ... 3 m (beam pitch 5 mm) 0.3 ... 6 m (beam pitch 10 mm)
light emission	850 nm (beam pitch 5 mm) 880 nm (beam pitch 10 mm)
power supply voltage	16.8...30 Vdc
ripple	< 1.2 Vpp
power consumption (receiver)	1...2.5 W
power consumption (emitter)	1...3 W
output	1xPNP, 1xNPN (CX2E0RB); 1xAna_V, 1xAna_I (CX2E0RA)
output current (With load)	< 100 mA
output voltage drop	< 1.5 V @ 100 mA
minimum resistance load	280 Ω
leakage current	$\leq 10 \mu\text{A}$
capacitive load	< 0.7 μF
POWER ON Delay	< 3 sec ⁽¹⁾
Teach-In procedure duration	(0.5 x N beams) sec
response time	$((0.2 \times (N \text{ beams} - 1)) + 1) \times 2 \text{ ms}$
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
standard protection models	IP67
humidity	95% max (no condensation)
vibrations	IEC 60947-5-2
shocks	IEC 60947-5-2
max. cable length	< 20 m
connectors/cables	1 x M12, 4 poles, male (CX2E), 1 x M12, 8 poles, male (CX2R)
housing material	Painted Aluminium RAL5002
front glass material	PMMA

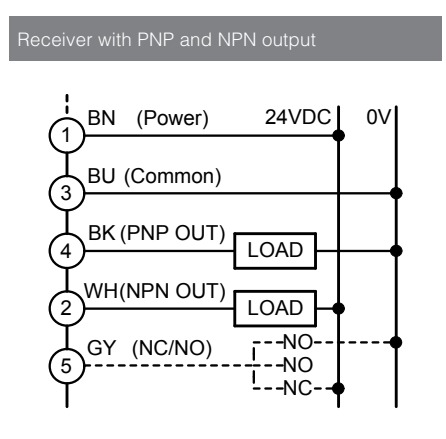
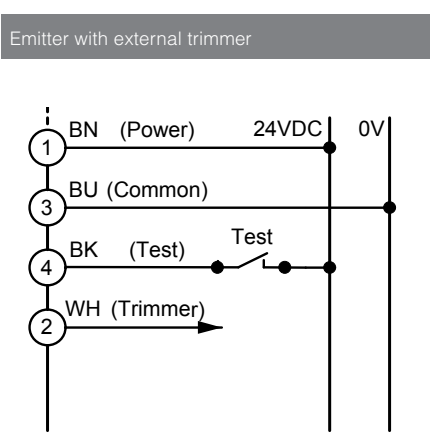
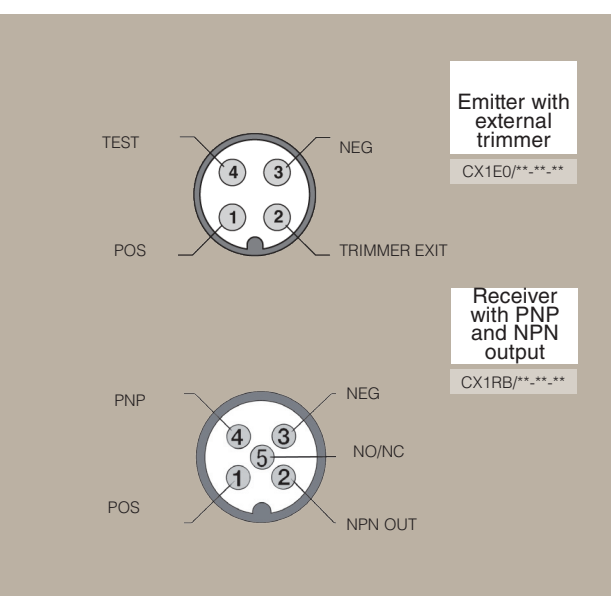
⁽¹⁾ power ON delay with blanking function: (1 x N beams) sec

BN	brown
BK	black
BU	blue
WH	white
GY	gray

electric diagrams of the connections CX0



electric diagrams of the connections CX1





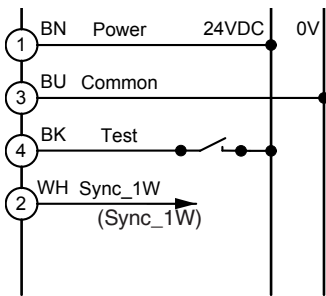
Products

high resolution
compact housing

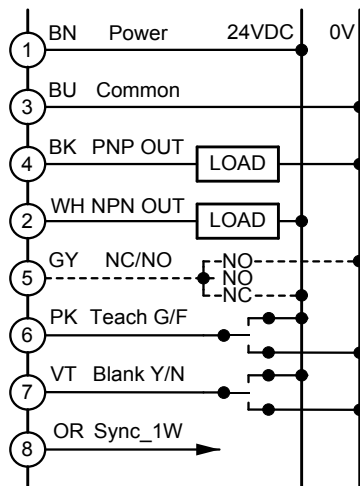
BN brown	GY grey
BK black	PK pink
BU blue	VT violet
WH white	OR orange

electric diagrams of the connections CX2

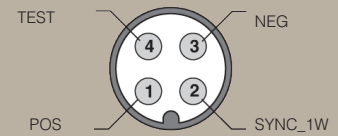
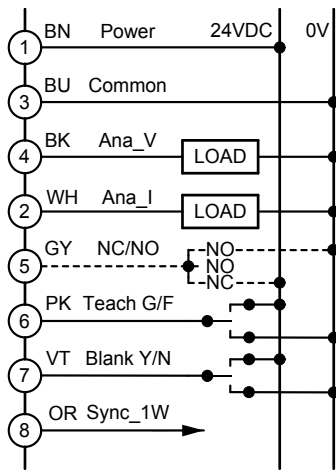
Emitter with test input



Receiver with PNP and NPN output

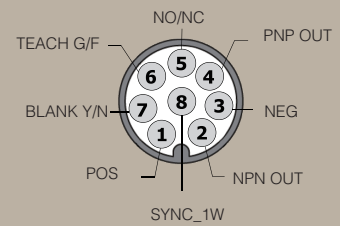


Receiver with analog output



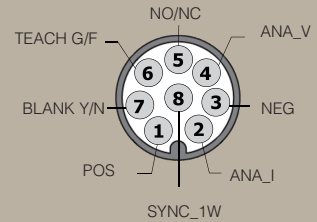
Emitter with test input

CX2E0/**-**-**



Receiver with PNP and NPN output

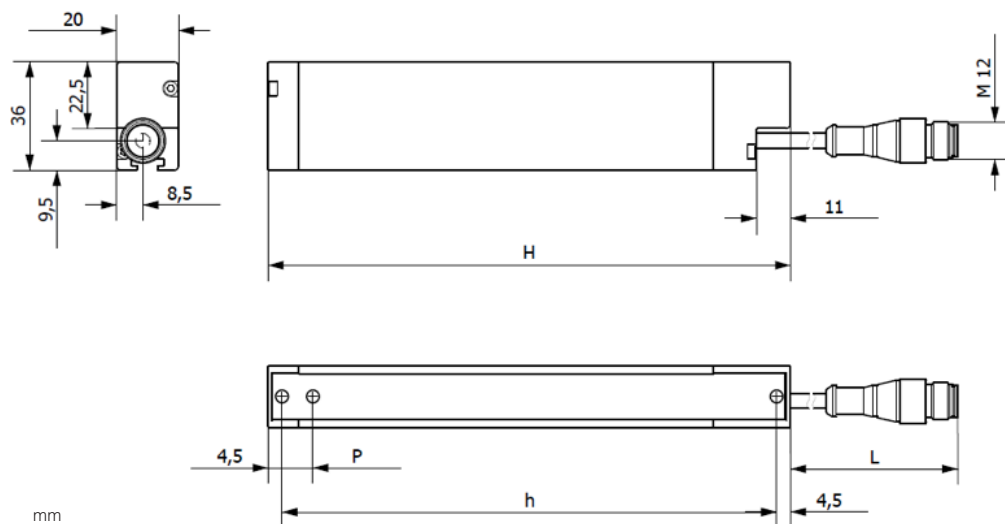
CX2RB/**-**-**



Receiver with analog output

CX2RA/**-**-**

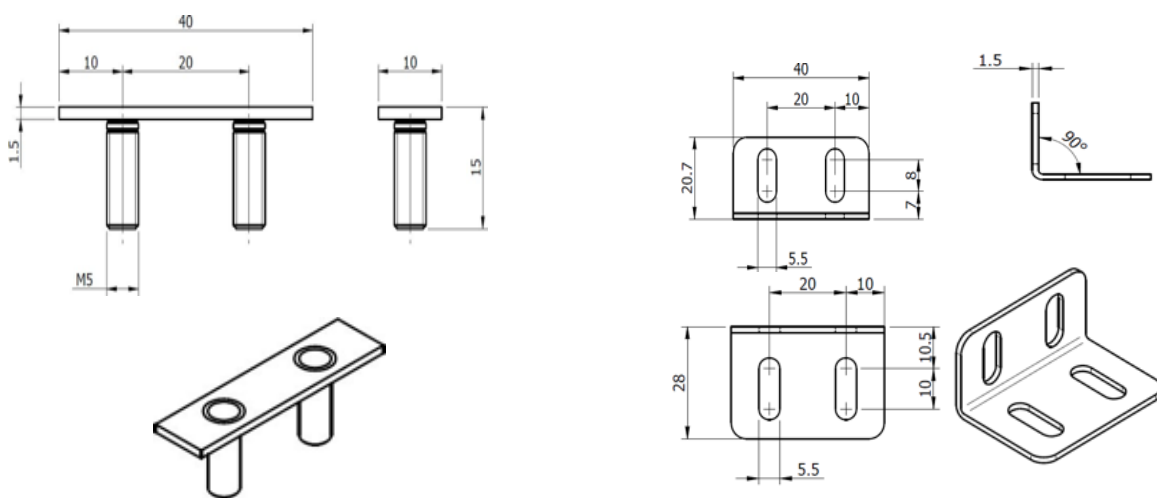
dimensions



$$H \text{ (barrier height)} = (\text{detection height}) + 9 \text{ mm}$$

accessories

Accessories fixing kit ST151



T insert, two M5 nuts and split washers included

L bracket

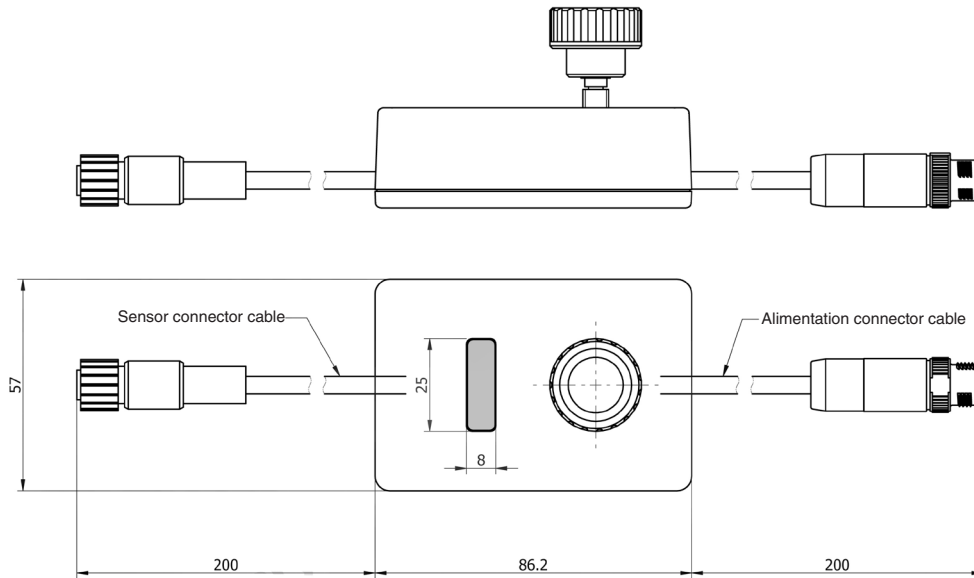
codice	descrizione
ST4V S	4 pcs. kit antivibration basement for barriers with 150 mm protected height
ST8V S	8 pcs. kit antivibration basement for barriers with protected height from 1,500 mm to 1,050 mm



Products

high resolution
compact housing

Accessory for external adjustment ST 140



Connectors

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





Catalogue
Area Sensors



CAT3ECX1478201 CATALOGUE AREA SENSOR CX ENG ED.01/2014

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