BX80 series

High resolution cubic housing area sensor

features

- **Controlled heightt 70 mm**
- **Operating distance up to 2 m**
- **Microprocessor based circuit**
- **Sensitivity adjustment**
- **Strong cubic housing**
- **Special version with metallic enclosure for high-duty use**
- **Protection degree IP67**
- **Complete protection against electrical damages**



web contents

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

IP69K CE cULus Ex

code description

BX80 A / 1 P - 0 H

series	BX80	High resolution area sensor
function	E	Emitter without sensitivity adjustment
	S	Emitter with sensitivity adjustment
	A	Receiver for object detection with limited crossed beam, logic output, NO/NC selectable
	B	Receiver for object detection with extended crossed beam, logic output, NO/NC selectable
range	1	Range 2 m, resolution ø 5-6 mm, response time 10 ms
	2	Range 1.5 m, resolution ø 5-6 mm, response time 10 ms
	3	Range 1 m, resolution ø 5-6 mm, response time 3 ms
	4	Range 0.6 m, resolution ø 3-6 mm, response time 2 ms
	5	Range 0.25 m, resolution ø 2 mm, response time 2 ms
output	P	PNP output
	N	NPN output
	0	Sender
housing	0	PBT standard body, with PC optic window
	1	PBT standard body, with PC optic window + aluminium enclosure with air cooling system
	2	PBT standard body, with PC glass optic window
cable / connector	A	Cable 2 m
	H	M12 male connector
version		Standard version
	2D	All logic output receivers, 100 ms delay on dark/light commutation of logic output
	6X	All the codes with 1 position 3, increased reading distance to 2.5 m
	3E	BX80S/50-0H3E, BX80B/0*-0H3E special version for envelopes detection with the follow spec.: operating distance = 200-500 mm; response time = 10 ms; minimum envelope dimension = 1x70 mm
	9K	Models with IP69K protection
	AN	ATEX models 3 GD
	AT	ATEX models 2 GD

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available models

PBT standard body with PC optic window					receiver	
area (mm)	response time (ms)	distance	distance (mm)	emitter	PNP NO/NC	NPN NO/NC
70	10	0...2 m	Ø 6	BX80S/10-0H	BX80A/1P-0H	BX80A/1N-0H
		0.3...2 m	Ø 5		BX80B/1P-0H	BX80B/1N-0H
		0...1.5 m	Ø 6	BX80S/20-0H	BX80A/2P-0H	BX80A/2N-0H
		0.3...1.5 m	Ø 5		BX80B/2P-0H	BX80B/2N-0H
	3	0...1 m	Ø 6	BX80S/30-0H	BX80A/3P-0H	-
		0.5...1 m	Ø 5		BX80B/3P-0H	-
	2	30...600 mm	Ø 6	BX80S/40-0H	BX80A/4P-0H	-
		550...660 mm	Ø 3		BX80B/4P-0H	-
		90...250 mm	Ø 2	BX80S/50-0H	BX80A/5P-0H	-
	10	200...500 mm	1 X 70	BX80S/50-0H3E	BX80A/5P-0H	-

PBT standard body with PC optic window + aluminium enclosure					receiver
area (mm)	response time (ms)	distance	resolution (mm)	emitter	PNP NO/NC
70	10	0...2 m	Ø 6	BX80S/10-1H	BX80A/1P-1H
		0,3...2 m	Ø 5		BX80B/1P-1H
		0.3...2.5 m		BX80S/10-1H6X	BX80B/1P-1H6X
		0...1.5 m	Ø 6	BX80S/20-1H	BX80A/2P-1H
		0.3...1.5 m	Ø 5		BX80B/2P-1H
	3	0...1 m	Ø 6	BX80S/30-1H	BX80A/3P-1H
		0.5...1 m	Ø 5		BX80B/3P-1H
	2	30...600 mm	Ø 6	BX80S/40-1H	BX80A/4P-1H

PBT standard body, glass optic window					receiver
area (mm)	response time (ms)	distance (m)	resolution (mm)	emitter	PNP NO/NC
70	10	0...2	Ø 6	BX80S/10-2H	BX80A/1P-2H
		0.3...2	Ø 5		BX80B/1P-2H
		0.3...2.5		BX80S/10-2H6X	BX80B/1P-2H6X
		0...1.5	Ø 6	BX80S/20-2H	BX80A/2P-2H
		0.3...1.5	Ø 5		BX80B/2P-2H
	3	0...1	Ø 6	BX80S/30-2H	BX80A/3P-2H

PBT standard body, glass optic window					receiver
area (mm)	response time (ms)	distance	resolution (mm)	emitter	PNP NO/NC
70	3	0...1 m	Ø 6	BX80S/30-2H	BX80A/3P-2H
		0.5...1 m	Ø 5		BX80B/3P-2H
	2	30...600 mm	Ø 6	BX80S/40-2H	BX80A/4P-2H
		90...250 mm	Ø 2	BX80S/50-2H	BX80A/5P-2H
	10	200...500 mm	1 X 70	BX80B/50-2H3E	BX80A/5P-2H

Models with cable exit (2 m): replace H with A in the code (BX80*/**-*H becomes BX80*/**-*A)

technical specification

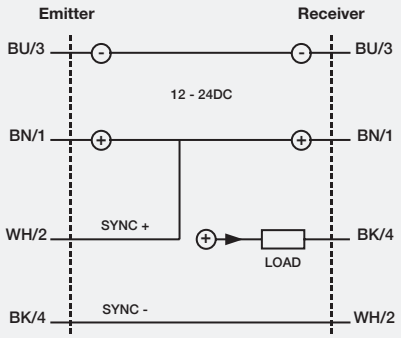
	BX80*/1*-**	BX80*/2*-**	BX80*/3*-**
			
nominal sensing distance	2 m	1,5 m	1 m
response time	max. 10 ms		max. 3 ms
controlled height	70 mm		
n° of beams	12		
beam pitch	6 mm		
minimum detectable object	ø 6 mm (BX80A/*), ø 5 mm (BX80B/*)		
minimum operating distance	0 (BX80A/*), 300 mm (BX80B/1 e BX80B/2), 500 mm (BX80B/3)		
hysteresis	max.15%		
repeatibility	5 %		
tolerance	0/20% of the nominal sensing distance Sn		
operating voltage	12-24 Vcc (standard)		
ripple	10 %		
no-load supply current	50 mA (receiver), 100 mA (emitter)		
load current	100 mA max		
leakage current	10 µA (at max operating voltage)		
voltage drop	1.2 V max. (IL = 100 mA)		
output type	NPN or PNP - NO/NC selectable PNP NO/NC selectable		
connection	M12 4 pin connector cable 2 m,M12 5 pin connector cable 2 m (BX80D/*)		
excess gain	2° (at nominal distance Sn)		
angular displacement	3° (emitter) - 6° (receiver) at Sn distance		
emission	infrared (880 nm)		
power on delay	500 ms		
power supply protections	reversal polarity and voltage transient		
output protections	short circuit (auto reset)		
operating temperature range	-25°...+50°C (without freeze)		
storage temperature	-40°...+80°C		
temperature drift	10% Sr		
external light	1.500 lux max. (incandescent lamp), 4.500 lux max. (sunlight)		
IP mechanical protection	IP67 (IP69K 9K version)		
emitter LED	green (supply), red (alarm sync.), yellow (area state)		
receiver LED	green (supply), red (alignment), yellow (output state)		
housing material	PBT (PC 9K version)		
lens materal	PC		
tightening torque	25 Nm max.		
wight (approximate)	260...300 g connector / 800..820 g cable		

technical specification

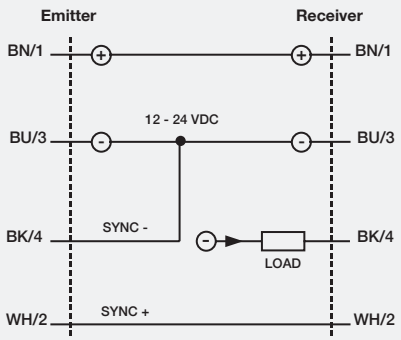
	BX80*/4*-**	BX80*/5*-**
		
nominal sensing distance Sn	0.6 m	0.25 m
response time	max. 2 ms	
controlled height	70 mm	
n° of beams	12	
beam pitch	6 mm	
minimum detectable object	ø 6 mm (BX80A/4), ø 2 mm (BX80B/4), ø 3 mm (BX80D/4)	
minimum operating distance	30 (BX80A/4), 90 mm (BX80B/5), 550 mm (BX80B/4)	
hysteresis	max.15%	
repeatibility	5 %	
tolerance	0/20% of the nominal sensing distance Sn	
operating voltage	12-24 Vcc (standard)	
ripple	10 %	
no-load supply current	50 mA (receiver), 100 mA (emitter)	
load current	100 mA max	
leakage current	10 µA (at max operating voltage)	
voltage drop	1.2 V max. (IL = 100 mA)	
output type	NPN or PNP- NO/NC selectable	
connection	M12 plug 4 pins cable 2 m	
excess gain	2° (at nominal distance Sn)	
angular displacement	3° (emitter) - 6° (receiver) at Sn distance	
emission	infrared (880 nm)	
power on delay	500 ms	
power supply protections	reversal polarity and voltage transient	
output protections	short circuit (auto reset)	
operating temperature range	-25°...+50°C (without freeze)	
storage temperature	-40°...+80°C	
temperature drift	10% Sr	
external light	1,500 lux max. (incandescent lamp), 4,500 lux max. (sunlight)	
IP mechanical protection	IP67 (EN 60529) - IP69K (special models)	
emitter LED	green (supply), red (alarm sync.), yellow (area state)	
receiver LED	green (supply), red (alignment), yellow (output state)	
housing material	PBT (PC 9K version)	
lens materal	PC	
tightening torque	25 Nm max.	
wight (approximate)	260...300 g connector / 800...820 g cable	

electrical diagrams of the connections

NPN output



PNP output

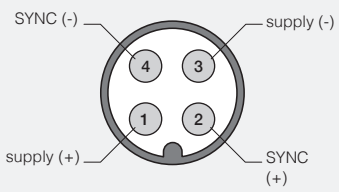


BN	brown
BU	blue
BK	black
WH	white

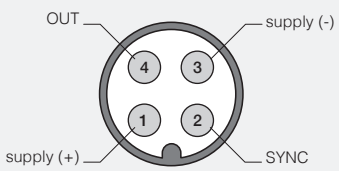
Maximum synchronism cable length : 10 m.

plug

emitter

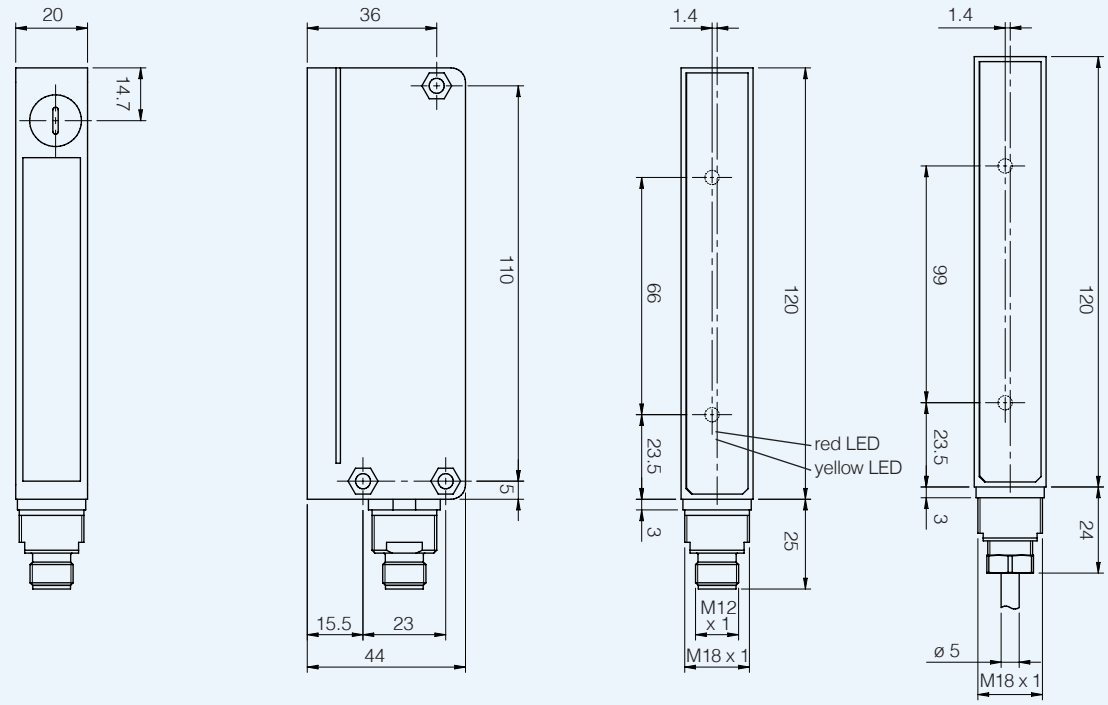


receiver



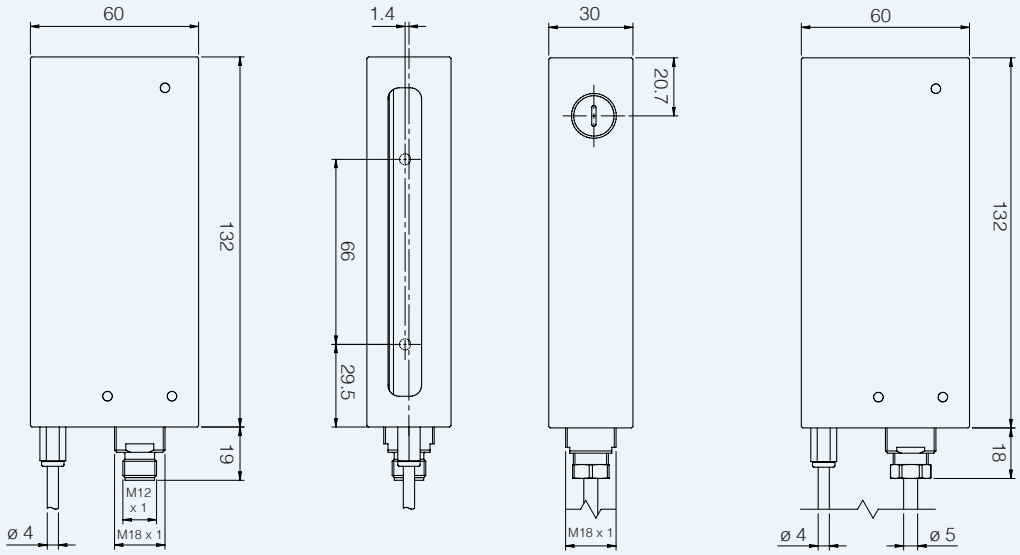
dimensions (mm)

BX80*/**-**

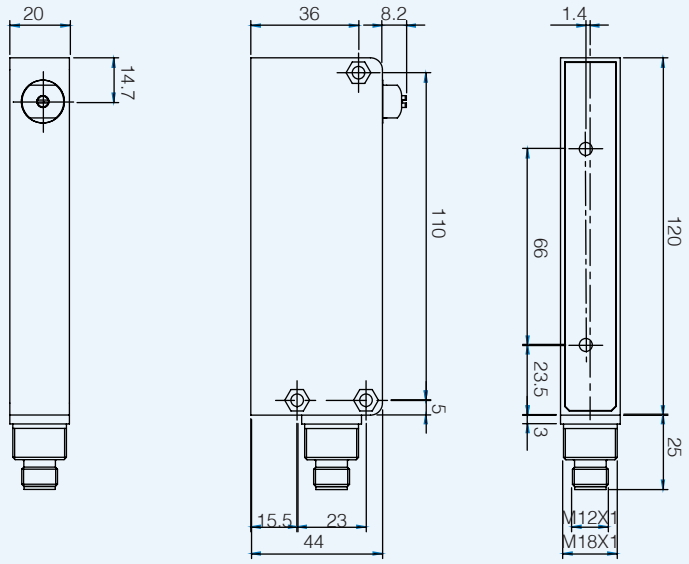


dimensions (mm)

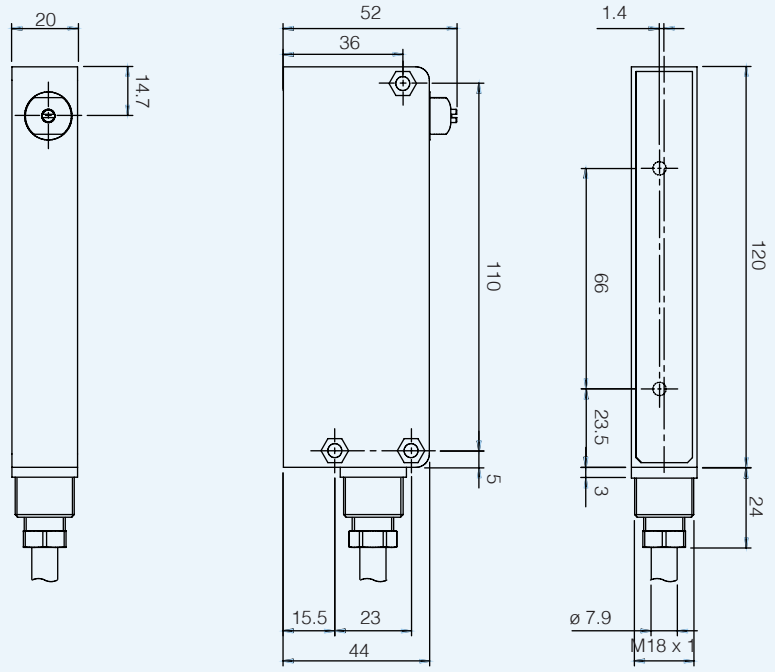
BX80*/**-1H



BX80*/**-0H9K



BX80*/**-AT



diagnostics

LED	state	conditions	check
GREEN receiver Supply	stable on	supply is present and stable	-
	unstable on	supply is present but not stable	supply
	off	no supply or voltage lower than 8Vdc	supply
RED receiver Allignment	full on	no alignment	alignment (1)
	light on	partial alignment or short signal	orientamento (1)
	off	correct alignment and sufficient signal	-
	blinking on	receiver does not function correctly or output short circuit	wiring or failure
YELLOW receiver Supply	on	output in ON state	-
	off	output in OFF state	-
GREEN emitter Supply	stable on	supply is present and stable	-
	unstable on	supply is present but not stable	supply
	off	no supply or voltage lower than 8Vdc	supply
RED emitter Sync. alam	off	synchronism property received	-
	on	syncronism is not received or emitted	wiring or failure
YELLOW emitter Area state	on	engaged area or uncorrect alignment	alignment (1)
	off	free area or correct alignment	-

(1) By free area