

# AREA SENSOR SYSTEMS CATALOG



## ARE-ATX SPECIALTY AREA SENSOR INDEX

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## ULTRA HIGH HIGH RESOLUTION AREA SENSOR

### Technical Specifications



- Controlled Area Height 70 mm
- Operating Distance up to 2 m
- Small Object Detection (ø 5-6 mm)
- Microprocessor Based Circuit
- Analog Output 4-20 mA/0-20 mA
- Sensitivity Adjustment
- Strong Cubic Housing
- Harsh Duty Protection Degree IP67
- Special Version with Additional Metallic Enclosure for Extreme Environments
- Complete protection against electrical damages
- Additional Forced-Air Port



### General description

The ARE and ATX Area Sensors are a unique ultra-high resolution optoelectric series. The Transmitter (ATX) and the Receiver (ARE) devices contain 12 individual optical pairs with cabled synchronism.

The minimum and maximum operating distances depends on the model; with values ranging between (0.25 and 2 meters for the maximum distance) and between (0 and 0.55 meters for the minimum distance).

The controlled area height is 70mm for all models. The optical steps or resolution on standard models are set in increments of 6 mm.

The light/dark response time can be of 2, 3 or 10 ms according to the model. If required, the timing option is available on the receivers (ARTB code): this option allows extending the occupied barrier signal (closed output for the NO models, open output for the NC models).

This ARTB option can be used when the piloted device is not sufficiently fast to be controlled through the minimum length signal that has been considered, or when it is necessary to avoid the output caused by the passage of objects, or parts of objects, with dimensions lower than the minimum resolution.

The ARTB timing option is fixed and equal to 100 ms. The ARE-ATX series is contained in a strong cubic housing; made up of PBT strengthened with fibreglass.



The minimum dimensions of the object of detection, in the models with a capture function, depend on the particular model chosen, the distance between the transmitter and the receiver and on the shape, height, and width values of the object or section of the object to be detected.

The photoelements steps are in 6 mm increments with specific diameters of 4 mm per each of the Area Sensor sets 12 channels.

Thanks to the particular crossed beam scanning system that, depending on the model, can include groups of 2-4 subsequent beams (limited cross beams), or 8 subsequent beams (extended cross beams), it is possible to detect small objects with dimensions up to a minimum of 2 mm diameter.

It is necessary to consider that due to the optical beam pattern, the resolution is different in the controlled areas; higher in the center and lower the closer an object travels towards the edges of the frame. This frame exists within the detection zone between the transmitter and receiver nexus.

The data supplied is in reference to the area included between the transmitter and receiver, with the exception of the two sides, adjacent to the transmitter and receiver, with a width equal to 15% of the distance between the transmitter and receiver.

The type of beam pattern is determined by the specifications of the receiver. In models with measurement function (analog output), the scanning is effected with parallel beams (direct), without crossing. The minimum dimensions of the object of detection will be, in this case, that of 8 mm and the analog output signal will consequently increase and decrease in steps of 6 mm.

The sensitivity adjustment of the transmitter, can be used to achieve operating distances lower than the maximum, in order to detect objects with dimensions lower than standard objects or in the case of transparent and/or semi-transparent materials.

All the sensor functions: (P/R wired synchronism, output protections, timing and alignment) are checked through a sophisticated microprocessor.

Both the transmitter and receiver are equipped with 3 LED's each, with the following functions:

## LED Indicators

### TRANSMITTER

**GREEN LED**

**RED LED**

**YELLOW LED**

power supply  
synchronism absence alarm  
free/occupied area

### RECEIVER

**GREEN LED**

**RED LED**

**YELLOW LED**

power supply  
alignment  
output status

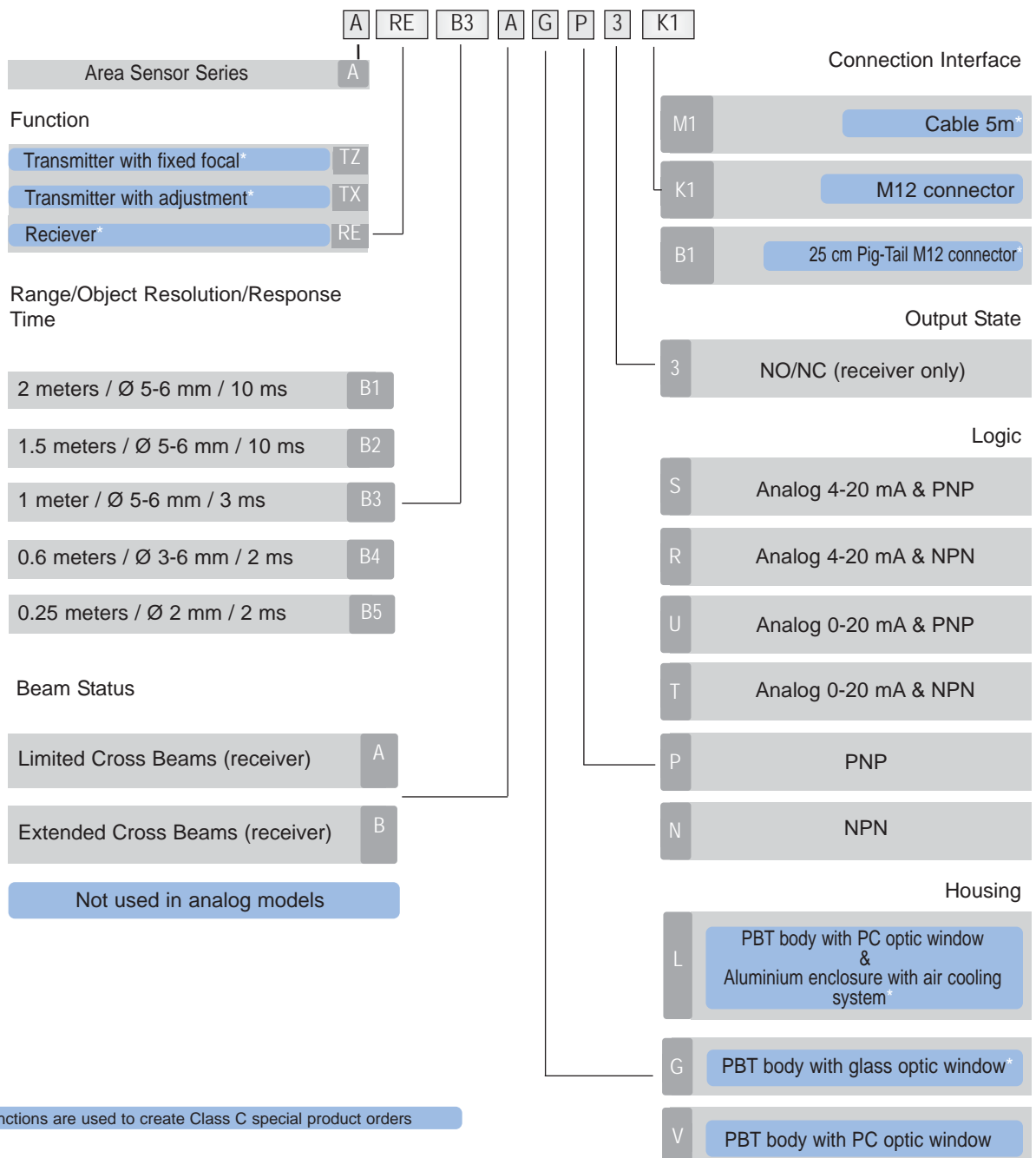
Note: The RED LED on the receiver lights proportionally to the received signal and remains turned off when the signal is optimal.



## Typical Application Notes

- Detection of object presence by different and irregular shapes
- Counting of object being unloaded
- Control of envelopes released from conveyors
- Analog position control
- Presence detection and height control of objects on conveyors

## Parts Matrix



\* Functions are used to create Class C special product orders



## Class A and B Standard Codes

Transmitters	Limited Cross Beam Receivers	Extended Cross Beam Receivers	Analog Receivers
ATXB1SVK1	AREB1AVP3K1	AREB1BAVP3K1	AREB2DVPXB1
ATXB2SVK1	AREB2AVP3K1	AREB2BAVP3K1	AREB4DVPXB1
ATXB3SVK1	AREB3AVP3K1	AREB3BAVP3K1	
ATXB4SVK1	AREB4AVP3K1	AREB1BAVN3K1	
ATXB5SVK1	AREB5AVP3K1	AREB2BAVN3K1	
	AREB1AVN3K1		
	AREB2AVN3K1		

## Transmitter-Receiver Pair Sets

ATXB1SVK1; AREB1AVP3K1	ATXB2SVK1; AREB2AVP3K1	ATXB2SVK1; AREB2DVPXB1
ATXB1SVK1; AREB1AVN3K1	ATXB2SVK1; AREB2AVN3K1	ATXB3SVK1; AREB3AVP3K1
ATXB1SVK1; AREB1BVP3K1	ATXB2SVK1; AREB2BVP3K1	ATXB3SVK1; AREB3BVP3K1
ATXB1SVK1; AREB1BVN3K1	ATXB2SVK1; AREB2BVN3K1	
ATXB4SVK1; AREB4AVP3K1	ATXB4SVK1; AREB4DVPXB1	ATXB5SVK1; AREB5AVP3K1

## Special Parts Codes

Code	Type	Description
ARTB	All Logic output receivers	100 ms delay on dark/light communication of logic output
AREX	Extended Range	Sensing distance 2.5 meters
AREN	ATXBENVK1 AREBENV3K1	Special version for envelope detection with the following specifications: Operating distance = 200-500 mm; Response time = 10 ms; Minimum envelope dimension = 1x70 mm.

All the special code products are class C products

NOTE: The Class C models could be subject to delayed delivery or limits in the quantities to be ordered.

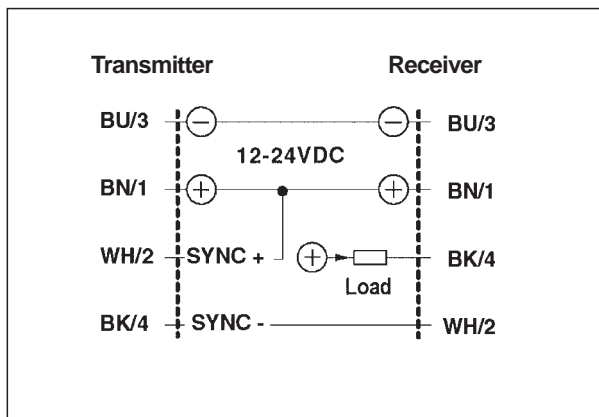


## Technical Specifications

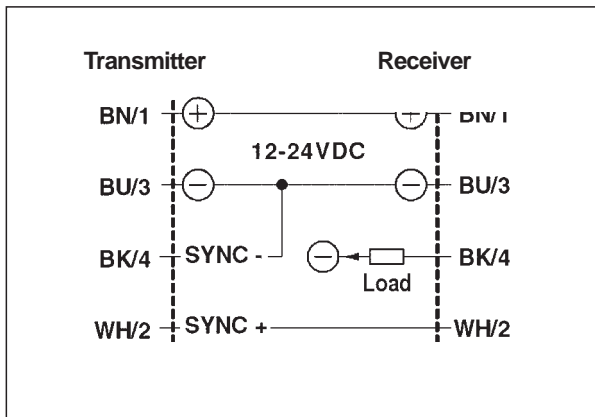
Model		AREB1	AREB2	AREB3	AREB4	AREB5
Nominal sensing distance Sn		2m	1.5m	1m	0.6m	0.25m
Response time		Max 10ms		Max 3ms	Max 2ms	
Controlled area height		70mm				
Beams quantity		12				
Beam's pitch		6 mm				
AREB.A/*	Minimum detect. object	Ø6mm	Ø6mm	Ø 6mm	Ø 6mm	Ø 2mm
	Min. operating distance	0	0	0	30mm	90mm
AREB.B/*	Minimum detect. object	Ø 5mm	Ø 5mm	Ø 5mm	Ø 3mm	-
	Min. operating distance	300mm	300mm	500mm	550mm	-
AREB.D/*	Resolution	+/- 6mm	+/- 6mm	+/- 6mm	+/- 6mm	-
AREB.F/*	Minimum detect. object	8mm	8mm	8mm	8mm	-
Differential travel		Max.15%				
Repeat Accuracy		5%				
Tolerance		0/20% of the nominal sensing distance SN				
Operating voltage		12-24Vdc (standard)				
Ripple		>10%				
No-load supply current		50mA (Receiver), 100mA (Transmitter), 100mA (receiver with analog output)				
Load Current		100mA max				
Leakage current		>10µA (at max operating voltage)				
Voltage drop		1,2Vmax. (IL=100mA)				
Output type	ARE-P/*; ARE-N/*	NPN or PNP - NO / NC Selectable				
	ARE-D/*	Analog 4-20 mA+Logic NPN or PNP NO/NC				
	AREB-F/*	Analog 0-20 mA+Logic NPN or PNP NO/NC				
Connection	K1	Connection M12 4 pin connector, 5m cable				
	B1	Connection M12 5 pin connector, 5m cable				
Excess gain		2 (at nominal sensing distance Sn)				
Angular displacement		3° transmitter 6° receiver-- at Sn distance				
Emission		Infrared (880nm) modulated				
Time delay before availability		500ms				
Electrical Supply Protection		Reverse polarity and voltage transience				
Output protections		Short Circuit (auto reset)				
Operating temperature range		-25+50°C				
Storage temperature		-40+80°C				
Temperature Drift		10%Sr				
External light		15000 lux Max incandescent 20000 lux Max solar				
Protection		IP67 (EN 60529)				
Transmitter LED indicators		Green (supply), Red (alarm sync.) Yellow (area state)				
Receiver's LED indicators		Green (supply) Red (alignment) Yellow (output state)				
Housing material		PBT + 30% FV (Valox) UL94V0				
Lens material		PC				
Tightening torque		25Nm Max				
Weight (approx)		0.26kg-0.30kg (connector), 0.80kg-0.82kg (cable)				

## WIRING DIAGRAMS

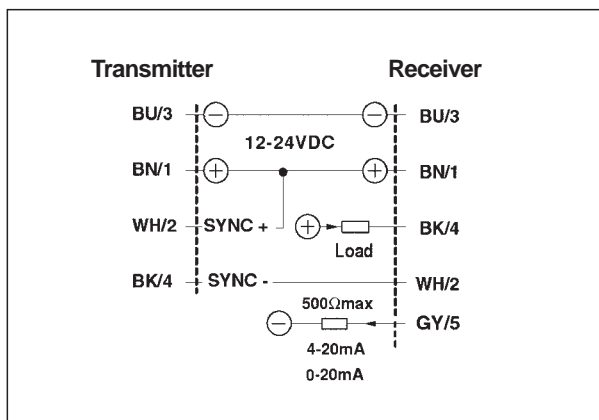
### NPN output



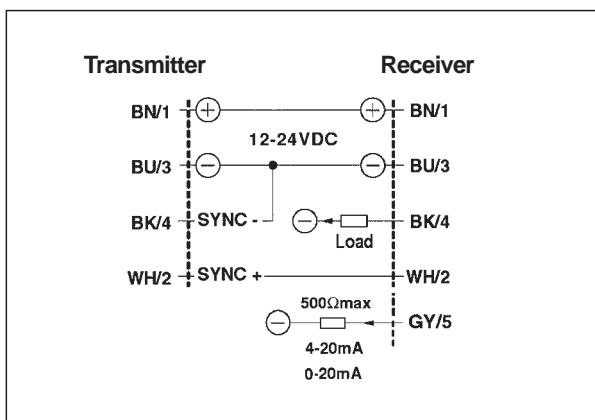
### PNP output



### NPN + analog output



### PNP + analog output



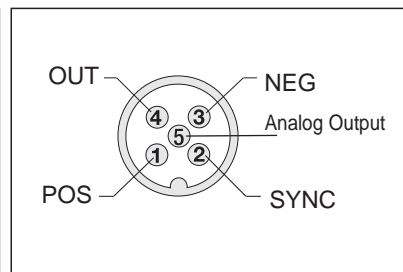
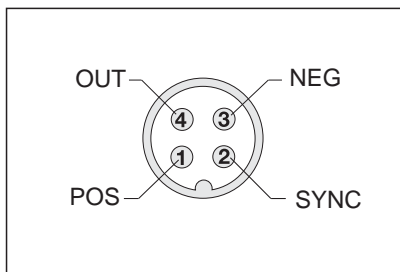
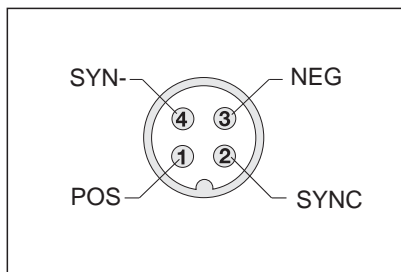
## ELECTRICAL DIAGRAMS OF THE CONNECTIONS

### Connector Output

Transmitter

Receiver

Receiver with Analog Output

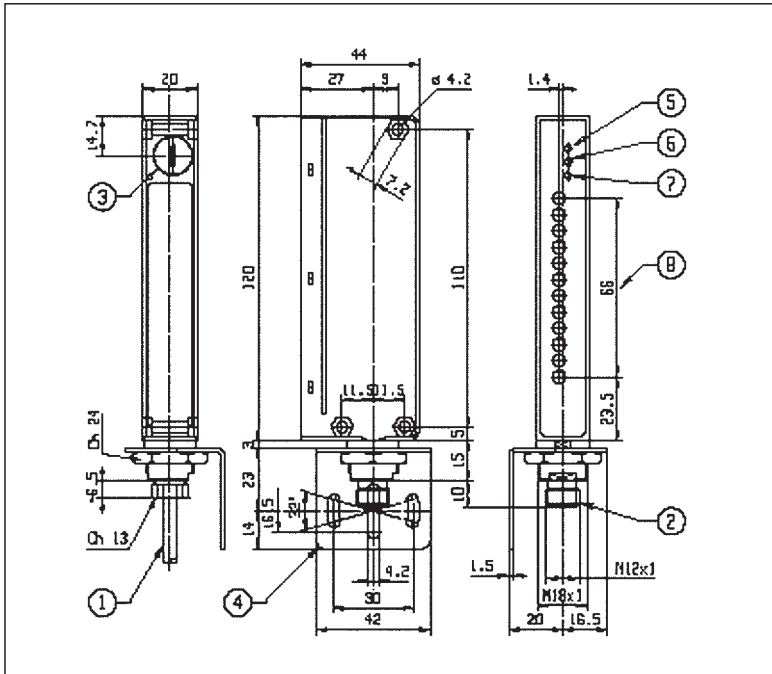






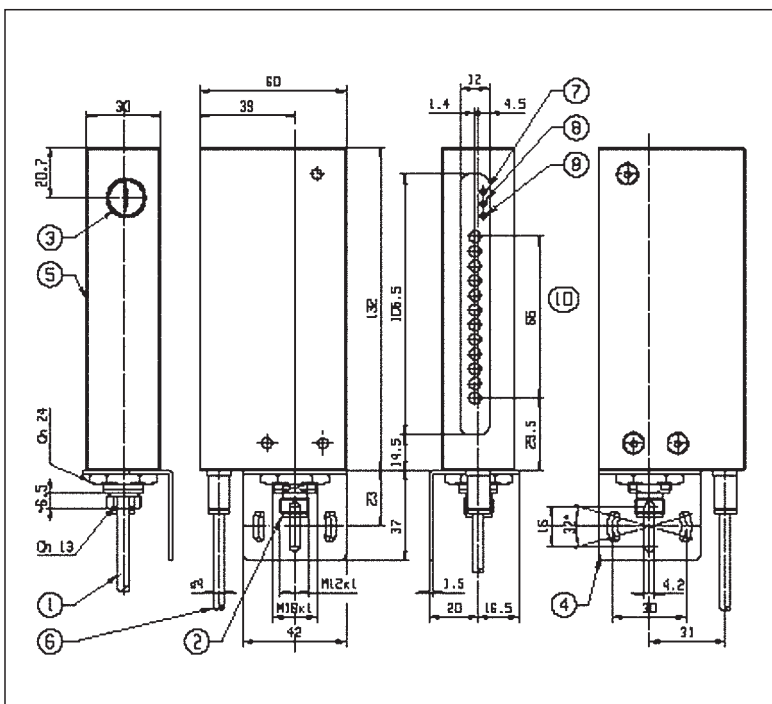
## DIMENSIONS

### ARE/ATX Area Sensor Standard version



- ① Axial Cable Exit (M1)
- ② M12 metal plug cable exit (K1)
- ③ Bottle top covering sensitivity adjustment (transmitter), NO/NC (receiver)
- ④ Mounting bracket INST18C
- ⑤ Green LED
- ⑥ Red LED
- ⑦ Yellow LED
- ⑧ Sensitivity area

### Special Version with Aluminium Enclosure



- ① Axial cable exit (M1)
- ② M12 metal plug cable exit (K1)
- ③ NO/NC Receiver  
Bottle top covering sensitivity adjustment (transmitter), NO/NC (receiver)
- ④ Mounting bracket INST18C
- ⑤ Aluminium protection cover
- ⑥ Air blowing tube  $\varnothing 4 - \varnothing 2$
- ⑦ Green LED
- ⑧ Red LED
- ⑨ Yellow LED
- ⑩ Sensitivity adjustment

