

# DATASENSOR

## AS1 SERIES

### INSTRUCTION MANUAL

# AREAsensor™

### CONTROLS

**OUT LED on receiver (RX)**  
The yellow LED ON indicates the presence of the object into controlled area.

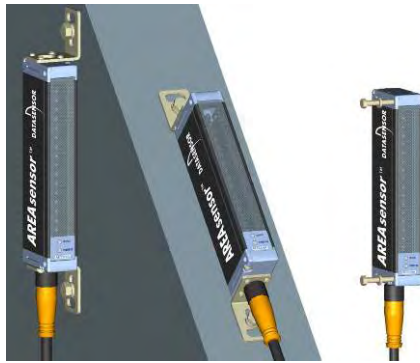
**POWER ON LED on receiver (RX)**  
The green LED ON indicates the optimal device functioning. The fast blinking of the green LED indicates a critical device alignment. Please refer to "DIAGNOSTICS" paragraph for other indications.

**POWER ON LED on emitter (TX)**  
The green LED ON indicates the correct device functioning. Please refer to "DIAGNOSTICS" paragraph for other indications.

### INSTALLATION MODE

#### General information on device positioning

- Align the two receiver (RX) and emitter (TX) units, verifying that their distance is inside the device operating distance, in a parallel manner placing the sensitive sides one in front of the other, with the connectors oriented on the same side. The critical alignment of the unit will be signalled by the fast blinking of the green receiver LED.



- Mount the two receiver and emitter units on rigid supports which are not subject to strong vibrations, using specific fixing brackets and /or the holes present on the device lids.

#### Precautions to respect when choosing and installing the device

- Choose the device according to the minimum object to detect and the maximum controlled area requested.
- In agro-industrial applications, the compatibility of light grid housing material and any chemical agents used in the production process has to be verified with the assistance of the DATASENSOR technical sales support department.
- The AREAscan™ light grids are NOT safety devices, and so MUST NOT be used in the safety control of the machines where installed.

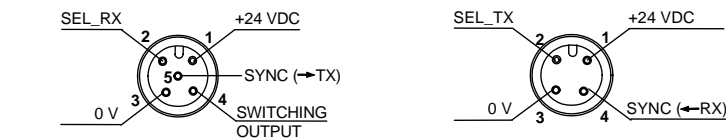
Moreover the following points have to be considered:

- Avoid installation near very intense and / or blinking light sources, in particular near to the receiver unit.
- The presence of strong electromagnetic disturbances can jeopardise the correct functioning of the device. This condition has to be carefully evaluated and checked with the DATASENSOR technical sales support department;
- The presence of smoke, fog and suspended dust in the working environment can reduce the device's operating distance.
- Strong and frequent temperature variations, with very low peak temperatures, can generate a thin condensation layer on the optics surfaces, compromising the correct functioning of the device.
- Reflecting surfaces near the luminous beam of the AREAscan™ device (above, under or lateral) can cause passive reflections able to compromise object detection inside the controlled area.
- If different devices have to be installed in adjacent areas, the emitter of one unit must not interfere with the receiver of the other unit.

#### General information relative to object detection and measurement

- For a correct object detection and / or measurement, the object has to pass completely through the controlled area. Testing the correct detection before beginning the process is suggested. The resolution is non uniform inside the entire controlled area. For example the resolution in the AS1-HR model depends on the scanning program chosen.

### CONNECTIONS

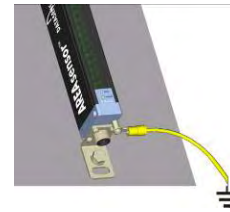


	AS1-HR	AS1-SR		AS1-HR	AS1-SR
<b>RECEIVER (RX):</b> M12 5-pole connector	1 - brown: +24 VDC	+24 VDC	<b>EMITTER (TX):</b> M12 4-pole connector	1 - brown: +24 VDC	+24 VDC
	2 - white: SEL_RX	Not used		2 - white: SEL_TX	Not used
	3 - blue: 0 V	0 V		3 - blue: 0 V	0 V
	4 - black: Switching output	Switching output		4 - black: SYNC	SYNC
	5 - grey: SYNC	SYNC			

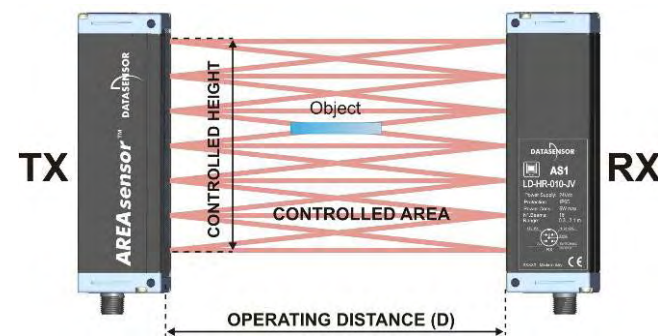
Shielded cables are not foreseen in the standard connection.

Ground connection of the two units is not necessary. If desired, this connection can be obtained replacing the screw provided in the packaging with the one indicated in the drawing, which blocks the lid of the connector side of each unit.

The respect of the connection shown in the drawing, is necessary if ground connection of the entire system is requested.



### FUNCTIONING AND PERFORMANCES



The beam interruption due to the passage of an object inside the controlled area causes the closing of the switching output and the variation of the device analogue output signal. Small objects can be detected (reaching dimensions of only 0.5 mm) and with a reduced surface area.

In particular:

The switching output is always activated when at least one beam is obscured. The status variation is signalled by the yellow receiver LED that turns on.

The device presents inputs (both on TX and Rx units) that consent the selection of the resolution and response time. Low response times correspond to worse resolutions and viceversa.

The device does not require calibration; periodical checks of the resolution and / or measurement are however suggested.

The blinking of the green receiver LED (*stability function*) signals the critical alignment of the units and / or the functioning outside or near the maximum operating distance. In optimal conditions the LED remains on continuously.

The two units are synchronised via cable (SYNC wire). Precarious connections or induced disturbances on the synchronism line can cause device malfunctioning or a temporary blocking.

### DIAGNOSTICS

#### RECEIVER UNIT:

Signal	Status	Cause	Action
OUTPUT POWER ON <b>RECEIVER</b> <b>OUT LED</b>	ON	Switching output. Presence of the object in the controlled area.	
	OFF	Switching output. Controlled area free of objects.	
OUTPUT POWER ON <b>RECEIVER</b> <b>POWER ON LED</b>	ON	Optimal functioning.	
	Fast blinking	Critical alignment of the unit or/and functioning closed to maximum operating distance.	
	Slow blinking	Wrong connections and/or malfunctioning.	<ul style="list-style-type: none"> <li>Verify the output connections and any short-circuits.</li> <li>Switch OFF and switch ON the device.</li> <li>If condition persists, contact Datasensor.</li> </ul>
	OFF	Device is not powered.	<ul style="list-style-type: none"> <li>Verify the connections.</li> <li>If condition persists, contact Datasensor.</li> </ul>

#### EMITTER UNIT:

Signal	Status	Cause	Action
POWER ON <b>EMITTER</b> <b>POWER ON LED</b>	ON	Normal functioning of emission unit.	
	Blinking	Unit malfunctioning.	<ul style="list-style-type: none"> <li>Switch OFF and switch ON the device.</li> <li>If condition persists, contact Datasensor.</li> </ul>
	OFF	Absence of power and/or synchronism with receiver	<ul style="list-style-type: none"> <li>Verify the connections and right value of power supply.</li> <li>If condition persists, contact Datasensor.</li> </ul>

### TECHNICAL DATA

	AS1-LD-HR-010-xx AS1-HD-HR-010-xx	AS1-LD-SR-010-xx AS1-HD-SR-010-xx
Power supply:	24 Vdc ± 15%	
Consumption on emitter unit (TX):	150 mA max.	
Consumption on receiver unit (RX):	40 mA max, load excluded	
Switching output:	1 PNP output	
Switching output current:	100 mA; short-circuit protection	
Output saturation voltage:	≤ 1.5 V at T=25 °C	
Resolution:	up to 0.5 mm	up to 5 mm
Response time:	2.75 - 8 ms	1.75 ms
Operating temperature:	0...+ 50 °C	
Storage temperature:	-25...+ 70 °C	
Operating distance (typical values):	0.3 - 2.1 m (AS1-LD) / 0.8...3 m (AS1-HD)	
Emission type:	INFRARED (880 nm)	
Indicators:	RX: OUT LED (yellow) / POWER ON LED (green) TX: POWER ON LED (green)	
Controlled height:	100 mm	
N° beams:	16	6
Vibrations:	0.5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)	
Shock resistance:	11 ms (30 G) 6 shock for every axis (EN60068-2-27)	
Housing material:	Black electro-painted aluminium	
Lens material:	PMMA	
Mechanical protection:	IP65 (EN 60529)	
Connections:	M12 4-pole connector for TX M12 5-pole connector for RX	
Weight:	300 g.	

### SCANNING PROGRAMS (only for AS1- HR)

The AS1-HR model presents inputs for the selection of the scanning program (SEL\_RX ; SEL\_TX).

The selection is made connecting the input to +24Vdc.

The scanning program is activated only after input selection and device re-powering.

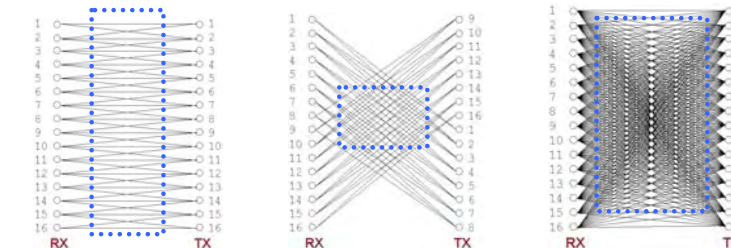
A different scanning program cannot be activated during device functioning.

According to the combination of the inputs selected, the response time or resolution can be preferred, as described in the following table. The standard configuration (SEL\_XX floating inputs) corresponds to the lower resolution and highest response time .

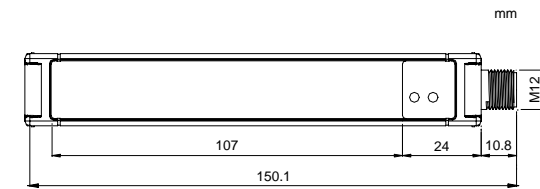
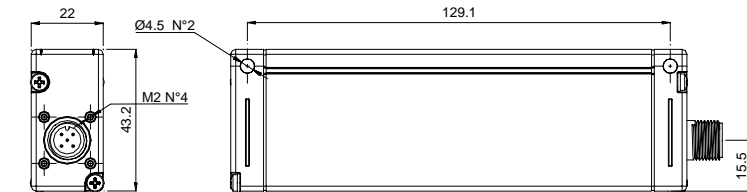
PROG. N°	SEL_RX	SEL_TX	RESOLUTION	RESPONSE TIME (msec )
1	0V or FLOAT	0V or FLOAT	LOW	2.75
2	0V or FLOAT	+24Vdc	M/L	3
3	+24Vdc	0V or FLOAT	M/H	7.75
4	+24Vdc	+24Vdc	HIGH	8

**Resolution figure:** the box indicated the area with highest resolution

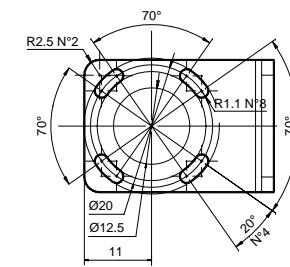
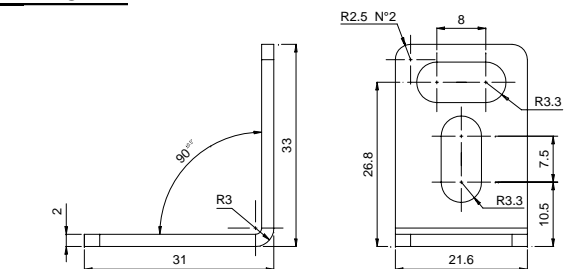
PROGRAM 1	PROGRAM 2	PROGRAM 3 - 4
Ideal for fast detection on entire controlled area, with low resolution.	Ideal for fast detection on entire controlled area, with constant resolution on limited area.	Ideal for detection with high resolution on entire controlled area.



### DIMENSIONS



### FIXING BRACKET



#### DECLARATION OF CONFORMITY

We DATASENSOR S.p.A. declare under our sole responsibility that these products are conform to the 2004/108/CE, 2006/95/CE Directives and successive amendments.



#### WARRANTY

DATASENSOR S.p.A. warrants its products to be free from defects. DATASENSOR S.p.A. will repair or replace, free of charge, any product found to be defective during the warranty period of 36 months from the manufacturing date. This warranty does not cover damage or liability deriving from the improper application of DATASENSOR products.



DATASENSOR S.p.A. cares for the environment: 100% recycled paper. DATASENSOR S.p.A. reserves the right to make modifications and improvements without prior notification.

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