

AS1 SERIES INSTRUCTION MANUAL

CONTROLS

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

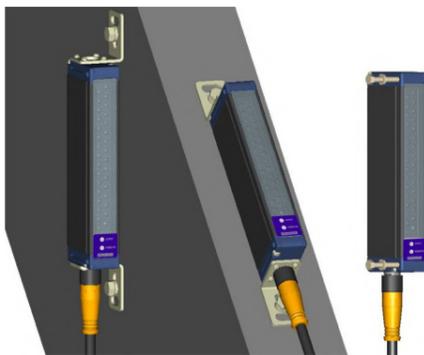
POWER ON LED on receiver (RX)
The green LED ON indicates the optimal device functioning.
The fast blinking of the green LED indicates a critical device alignment.
Please refer to "DIAGNOSTICS" paragraph for other indications.

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 Datasensing 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.

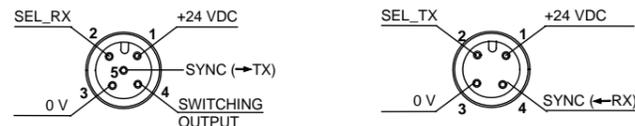
Moreover the following points have to be considered:

- 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 Datasensing 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. For a right functioning of the device, it is recommended to align it correctly and to maintain the minimum distance D_r from any reflecting surface (see the formula in "Technical Data").
- 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.

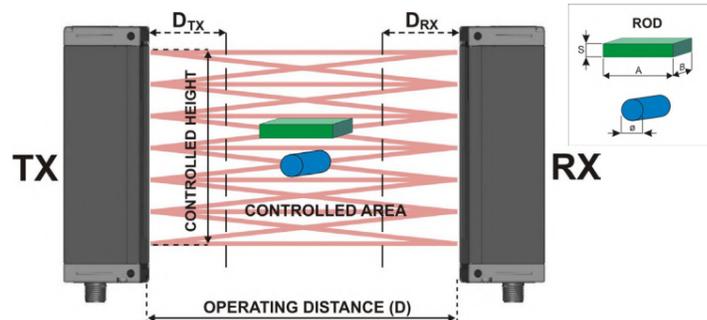
CONNECTIONS



	AS1-HR	AS1-SR		AS1-HR	AS1-SR
RECEIVER (RX): M12 5-pole connector	1 – brown: +24 VDC	+24 VDC	EMITTER (TX): 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
- Use the same power supply for both units: for a correct functioning it's necessary that both units TX and RX have the same voltage reference 0V

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

EMITTER UNIT:

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

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:	see table "Resolution in the zone of max. sensitivity"	
Distance to refl. surface (D _r):	D _r (m) = 0.08+0.22 x (D-0.2)	
Response time:	2.75 – 8 ms	1.75 ms
Operating temperature:	0...+ 50 °C	
Storage temperature:	-25...+ 70 °C	
Operating distance (D) (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.	

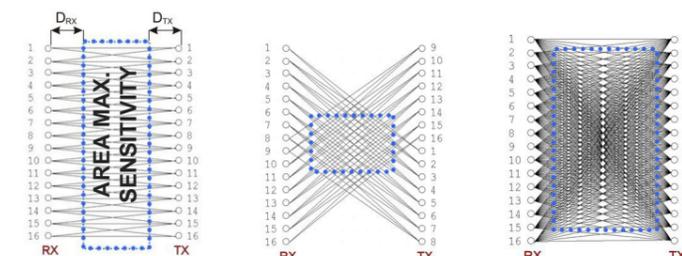
SCANNING PROGRAMS (only for AS1- HR)

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_RX 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.

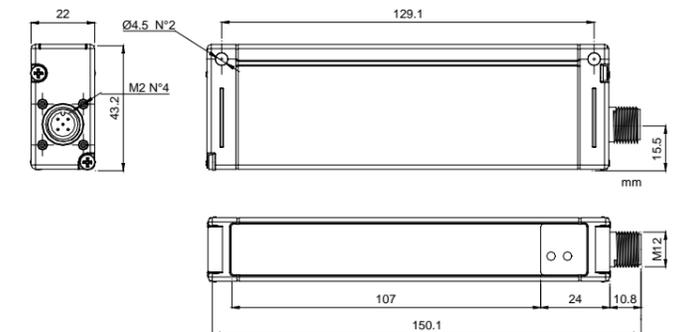


RESOLUTION IN THE ZONE OF MAX. SENSITIVITY

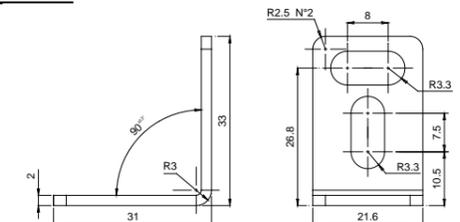
MODEL	FLAT ROD (SxAxB mm)	DTx (cm)	DRx (cm)	D _{min} (cm)	D _{Max} (cm)
AS1-LD-HR-010-J	Scan mode prog 1 → 0,4x100x65	40	50	105	210
	Scan mode prog 2 → 0,4x90x65	= 0,3D 20	= 0,3D 30	30	60
	Scan mode prog 3/4 → 0,2x75x65	= 0,7D-10 20	= 0,7D-10 30	30	60
AS1-LD-SR-010-J	0,2x200x65	= 0,4D-8,1 40	= 0,6D-11,9 50	80	110
AS1-HD-HR-010-J	Scan mode prog 1 → 0,4x200x65	30	60	120	300
	Scan mode prog 2 → 0,4x180x65	30	60	110	300
	Scan mode prog 3/4 → 0,2x150x65	20	30	80	300
AS1-HD-SR-010-J	0,2x250x65	= 0,8D-43 45	= 0,8D-43 75	80	150
				150	300

MODEL	CYLINDRICAL ROD (ø mm)	DTx (cm)	DRx (cm)	D _{min} (cm)	D _{Max} (cm)
AS1-LD-HR-010-J	Scan mode prog 1 → 6	40	30	75	210
	Scan mode prog 2 → 6	40	15	60	210
	Scan mode prog 3/4 → 6	40	10	55	210
AS1-LD-SR-010-J	18	10	15	30	210
AS1-HD-HR-010-J	Scan mode prog 1 → 6	50	50	150	300
	Scan mode prog 2 → 6	50	40	130	300
	Scan mode prog 3/4 → 6	45	20	130	300
AS1-HD-SR-010-J	18	20	20	80	300

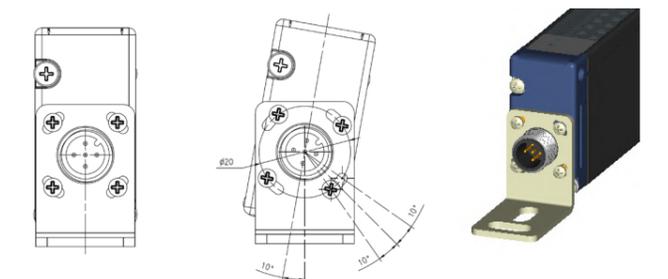
DIMENSIONS



FIXING BRACKET



PRODUCT WITH FIXING BRACKET



Datasensing S.r.l.
Strada S. Caterina 235 - 41122 Modena - Italy
Tel: +39 059 420411 - Fax: +39 059 253973 - www.datasensing.com

The warranty period for this product is 36 months. See General Terms and Conditions of Sales for further details.



For information about the disposal of Waste Electrical and Electronic Equipment (WEEE), please refer to the website at www.datasensing.com.

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