

AS1



AREASCAN™ HIGH-RESOLUTION DETECTION PHOTOELECTRIC LIGHT GRIDS

- Crossed beam area sensors
- 100mm controlled height
- Adjustment trimmer
- Optical or wire synchronism
- Scan Mode input

APPLICATIONS

- Processing lines
- Food, Cosmetic and Pharmaceutical
- Electronics and mechanical assembling
- Conveyor lines and sorting systems

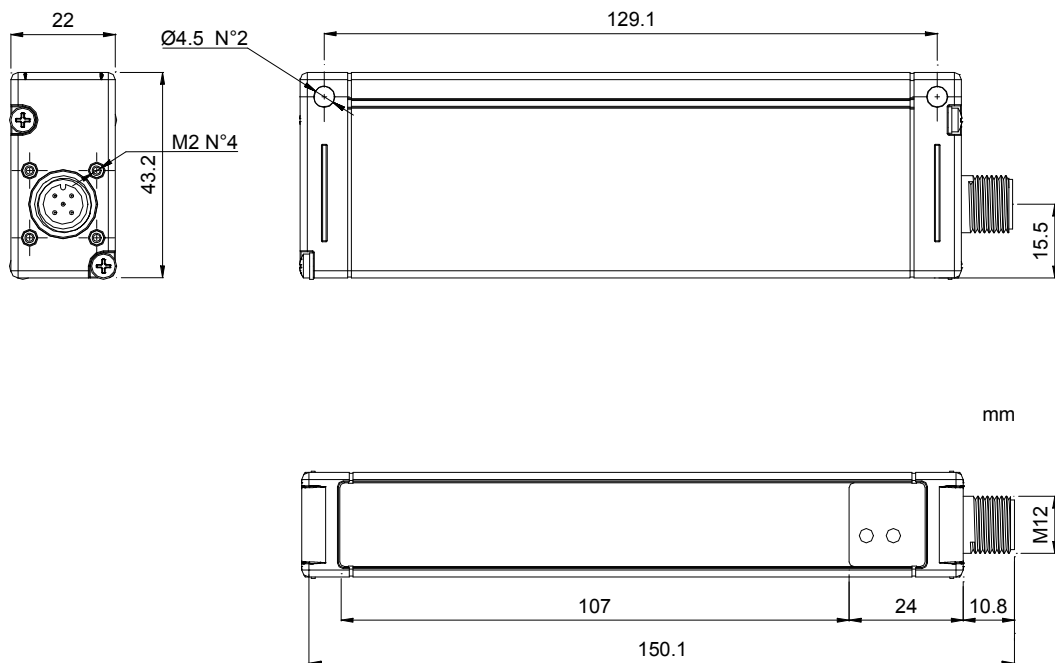


AS1	
Area sensing	100 mm
Operating Distance	0,3...2,1 m (AS1-LD)
	0,8...3 m (AS1-HD)
Resolution	Flat: 0,2x75mm Cylindrical: Ø 6mm (AS1-HR)
	Flat: 0,2x200mm Cylindrical: Ø18mm (AS1-SR)
Response Time	1,75 ms (AS1-SR)
	2,75...8 ms (AS1-HR)
Light emission	IR LED
Power supply	Vdc
	Vac
	Vac/dc
Output	PNP
	NPN
	NPN/PNP
	relay
	other
Connection	cable
	connector
	pig-tail
Approximate dimensions (mm)	22x43x150
Housing material	aluminium
Mechanical protection	IP65

TECHNICAL DATA

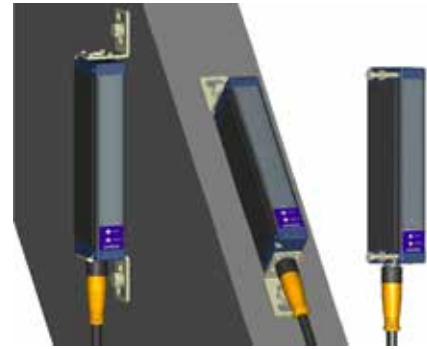
Power supply	24 Vdc ± 15%
Consumption on emitter unit (TX)	150 mA max.
Consumption on receiver unit (RX)	40 mA max. load excluded
Light emission	IR LED 880 nm
Setting	adjustment trimmer (mod. AS1...P)
Indicators	yellow OUTPUT LED green POWER ON LED
Output	PNP
Output current	100 mA max.
Saturation voltage	1,5 V max.
Response time	2,75 - 8 ms (mod. AS1-HR) 1,75 ms (mod. AS1-SR)
Connection	M12 4-pole connector (TX), M12 5-pole connector (RX)
Dielectric strength	500 Vac, 1 min between electronics and housing
Insulating resistance	>20 MΩ, 500 Vdc between electronics and housing
Mechanical protection	IP65 (EN 60529)
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
Operating temperature	0 ... 50 °C
Storage temperature	-25 ... 70 °C
Weight	300 g

DIMENSIONS

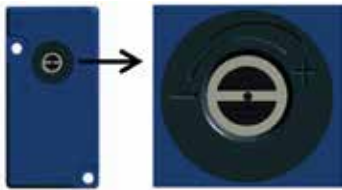


INDICATORS AND SETTINGS

Two different models are available: high resolution (AS1-HR) or standard resolution (AS1-SR). In the first case the light array has 16 beams, while in the second case the beams are reduced to 6. In the AS1-HR model, the selection inputs of the SCAN MODE, can configure 4 different crossed-beam scanning modes. These different modes allow to vary the detection performances, in particular the resolution can be increased to 0.2mm thickness, or the response time up to less than 3ms.



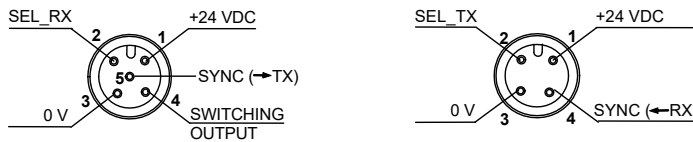
INDICATORS AND SETTINGS (TRIMMER VERSION)



Emitter is equipped with a manual regulation which lets the user change the emission power by means of a screwdriver. The emission power reduction can be particularly useful to lower passive reflections when maximum operating distance it is not required.

CONNECTIONS

M12 CONNECTOR

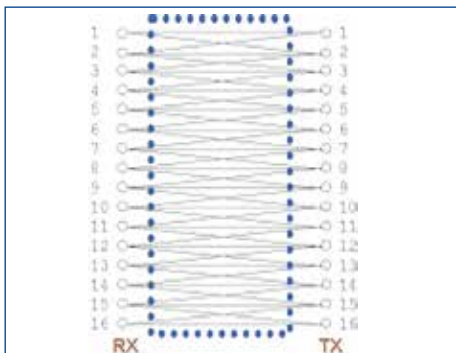


		AS1-HR	AS1-SR			AS1-HR	AS1-SR
RECEIVER (RX): M12 5-pole connector	1 – brown:	+24 VDC	+24 VDC	EMITTER (TX): M12 4-pole connector	1 – brown:	+24 VDC	+24 VDC
	2 – white:	SEL_RX	Not used		2 – white:	SEL_TX	Not used
	3 – blue:	0 V	0 V		3 – blue:	0 V	0 V
	4 – black:	Switching output	Switching output		4 – black: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

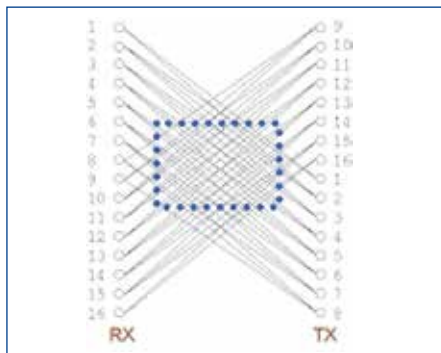
* not used in trimmer version
** SEL_TX2 in trimmer version

HIGH RESOLUTION SCANNING MODE

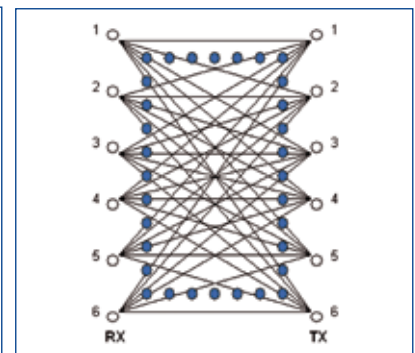
PROG. N°	SEL_RX	SEL_TX	RESOLUTION	RESPONSE TIME (msec)
1	0 Vdc or FLOAT	0 Vdc or FLOAT	LOW	2.75
2	0 Vdc or FLOAT	24 Vdc	M/L	3
3	24 Vdc	0Vdc or FLOAT	M/H	7.75
4	24 Vdc	24 Vdc	HIGH	8



Scan mode 1:
high speed / low resolution
Minimum object detection
Flat = 0.4 (thickness) x 100 (width) mm
Cylindrical objects = Ø 6 mm

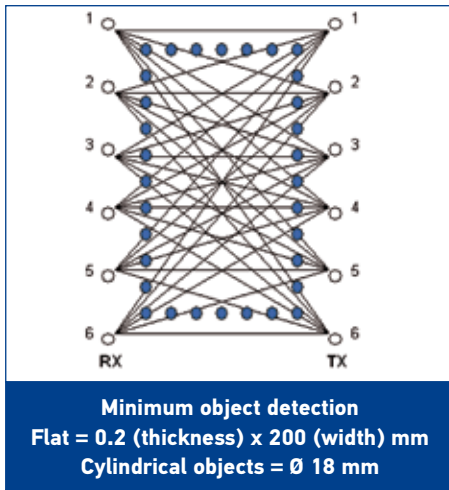


Scan mode 2:
high speed / mid resol. central area
Minimum object detection
Flat = 0.4 (thickness) x 90 (width) mm
Cylindrical objects = Ø 6 mm



Scan mode 3-4:
low speed / high resolution
Minimum object detection
Flat = 0.2 (thickness) x 75 (width) mm
Cylindrical objects = Ø 6 mm

STANDARD RESOLUTION SCANNING MODE



Note: the scan mode is fixed in the standard resolution version.

MODEL SELECTION AND ORDER INFORMATION

OPTIC FUNCTION	OPERATING DISTANCE	RESOLUTION	SETTING	MODEL	ORDER No.
Area sensor	2 m	High	n/a	AS1-LD-HR-010-J	958101000
			Adjustment Trimmer	AS1-LD-HR-010-P	958101040
		Standard	n/a	AS1-LD-SR-010-J	958101010
			Adjustment Trimmer	AS1-LD-SR-010-P	958101050
	3 m	High	n/a	AS1-HD-HR-010-J	958101020
		Standard	n/a	AS1-HD-SR-010-J	958101030

CABLES

TYPE	DESCRIPTION	LENGTH	MODEL	ORDER No.	
Axial M12 Connector	4-pole, grey, P.V.C.	3 m	CS-A1-02-G-03	95A251380	
		5 m	CS-A1-02-G-05	95A251270	
		10 m	CS-A1-02-G-10	95A251390	
	4-pole, U.L., black, P.V.C.	3 m	CS-A1-02-U-03	95ASE1120	
		5 m	CS-A1-02-U-05	95ASE1130	
		10 m	CS-A1-02-U-10	95ASE1140	
		15 m	CS-A1-02-U-15	95ASE1150	
		25 m	CS-A1-02-U-25	95ASE1160	
	5-pole, grey, P.V.C.	3 m	CS-A1-03-G-03	95ACC2110	
		5 m	CS-A1-03-G-05	95ACC2120	
		10 m	CS-A1-03-G-10	95ACC2140	
	5-pole, U.L., black, P.V.C.	3 m	CS-A1-03-U-03	95ASE1170	
		5 m	CS-A1-03-U-05	95ASE1180	
		10 m	CS-A1-03-U-10	95ASE1190	
		15 m	CS-A1-03-U-15	95ASE1200	
		25 m	CS-A1-03-U-25	95ASE1210	
			50 m	CS-A1-03-U-50	95A252700

AS1 SERIES INSTRUCTION MANUAL

CONTROLS

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

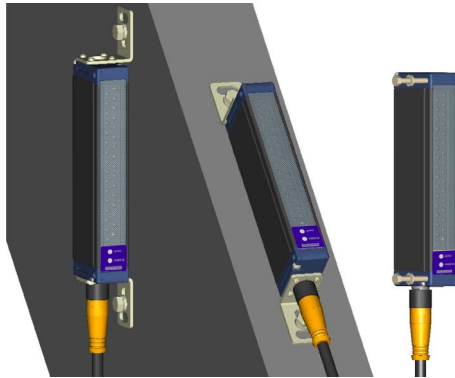
POWER ON LED on receiver (RX)
The green LED ON indicates the optimal device functioning. The fast blinking of the green LED indicates a critical device alignment. Please refer to "DIAGNOSTICS" paragraph for other indications.

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 DATALOGIC 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.

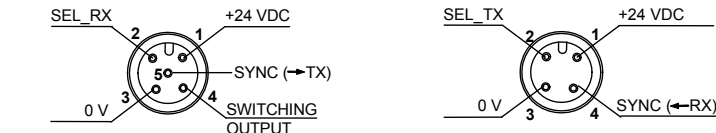
Moreover the following points have to be considered:

- 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 DATALOGIC 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.

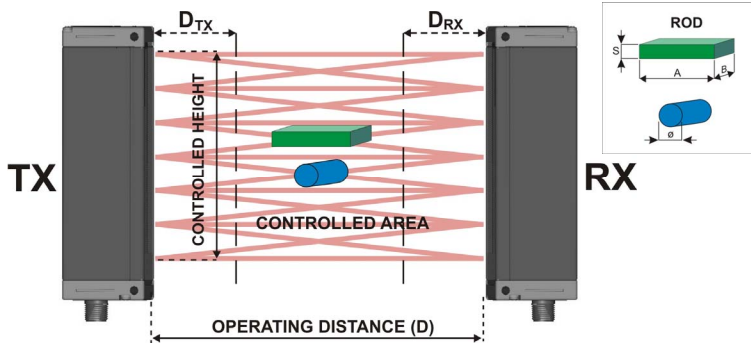
CONNECTIONS



	AS1-HR	AS1-SR	EMITTER (TX): M12 4-pole connector	AS1-HR	AS1-SR
RECEIVER (RX): M12 5-pole connector	1 - brown: +24 VDC	+24 VDC	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 (Yellow LED)	ON	Switching output. Presence of the object in the controlled area.	
POWER ON (Green LED)	OFF	Switching output. Controlled area free of objects.	
OUT LED	ON	Optimal functioning.	
POWER ON (Green LED)	Fast blinking	Critical alignment of the unit or/and functioning closed to maximum operating distance.	
POWER ON (Green LED)	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 Datalogic.
POWER ON (Green LED)	OFF	Device is not powered.	<ul style="list-style-type: none"> Verify the connections. If condition persists, contact Datalogic.

EMITTER UNIT:

Signal	Status	Cause	Action
POWER ON LED (Green LED)	ON	Normal functioning of emission unit.	
POWER ON LED (Green LED)	Blinking	Unit malfunctioning.	<ul style="list-style-type: none"> Switch OFF and switch ON the device. If condition persists, contact Datalogic.
POWER ON LED (Green LED)	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 Datalogic.

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.	

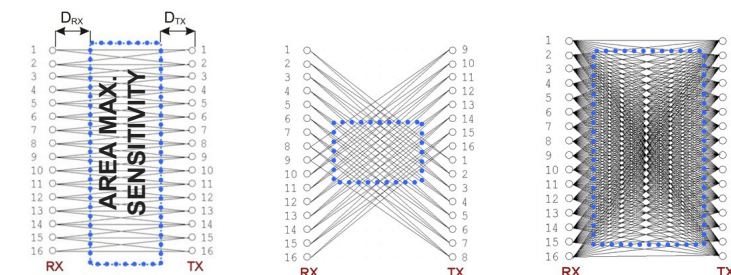
SCANNING PROGRAMS (only for AS1- HR)

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.

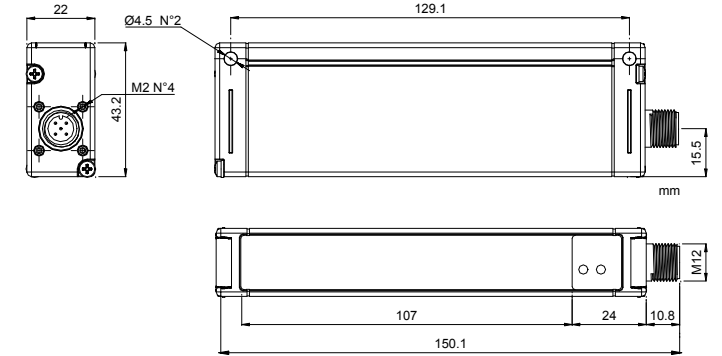


RESOLUTION IN THE ZONE OF MAX. SENSITIVITY

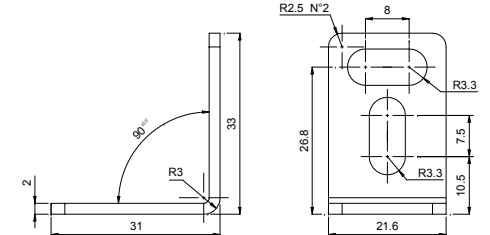
MODEL	FLAT ROD (SxAxB mm)	DTx (cm)	DRx (cm)	D _{min} (cm)	D _{MAX} (cm)
AS1-LD-HR-010-J	Scan mode prog 1 → 0,4x100x65	40	50	105	210
	Scan mode prog 2 → 0,4x90x65	= 0,3D 20	= 0,3D 30	30	60
	Scan mode prog 3/4 → 0,2x75x65	= 0,7D-10 20	= 0,7D-10 30	30	60
AS1-LD-SR-010-J	0,2x200x65	= 0,4D-8,1 40	= 0,6D-11,9 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

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

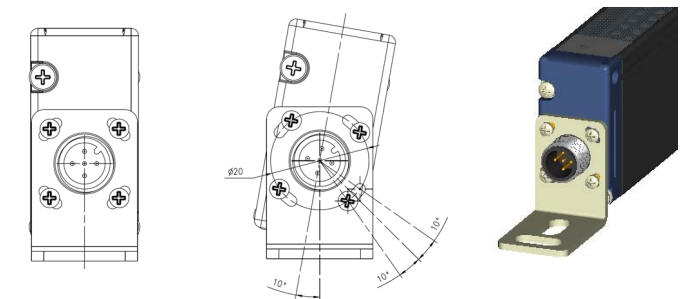
DIMENSIONS



FIXING BRACKET



PRODUCT WITH FIXING BRACKET



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Helpful links at www.datalogic.com: **Contact Us, Terms and Conditions, Support.**

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

Under current Italian and European laws, Datalogic is not obliged to take care of product disposal at the end of its life. Datalogic recommends disposing of the product in compliance with local laws or contacting authorised waste collection centres.

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