DS2 SERIES

The **AREAscan™** family of the **DS2** series covers controlled heights ranging from 150 to 2500mm, with 5m operating distances for high resolution versions, or 10m for low resolution versions.
Digital resolution is 12mm or 25mm while relative measurement precision is ±6mm or ±22.5mm.
Models with RS485 serial port or ETHERNET host interface are available; ETHERNET models are only high resolution versions.
The device configuration can be set manually thanks to internal dip-switches, or using graphic interface from remote PC for serial models.
ETHERNET models can be programmed only from user interface.
Once loaded the program on the flash memory, the device functions in the stand-alone mode.
The serial or ETHERNET interface transmits the measurement in a binary or ASCII code, the operating status control as well as the setting of the different baud-rate versions.
The **DS2** light arrays suits different height or dimensional measurement applications ingeneral, in automatic material handling.

HIGHLIGHTS

- Measurement in automatic material handling
- Versions with 6 or 25mm digital resolution
- Relative measurement precision ±6mm or ±22.5mm.
- 150 - 2500 mm controlled height
- Operating distance up to 5m or 10m
- Digital PNP output
- 0-10 V analogue output
- Serial RS485 protocol or ETHERNET host interface

APPLICATIONS

Automotive

Material Handling

Automatic Warehouse

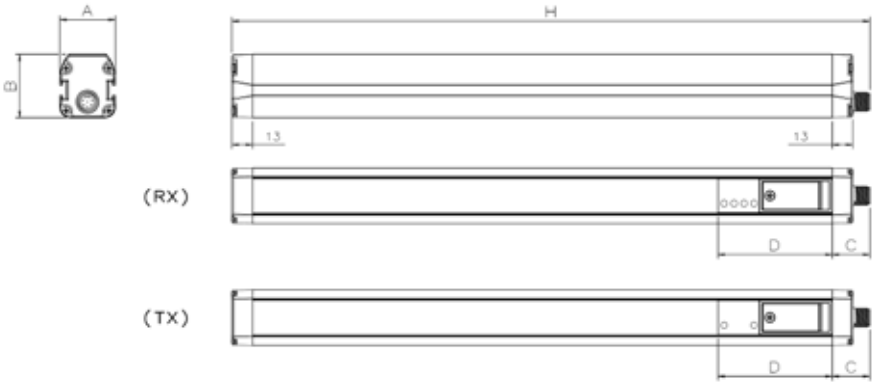
The different configuration parameters of the light grid can be visualised and modified using the extremely easy and intuitive user interface. In particular, the interface allows the access to many different advanced operating modes:

- complete beam status array, where serial output transmits a string of information relative to the status of each single optic;
- top beam, which provides information relative to the last interrupted or free optic;
- bottom beam, which provides information relative to the first interrupted or free optic;
- middle beam, which provides information relative to the central interrupted or free optic;
- total beam, which provides information on the total number of obscured or free optics;
- total contiguous beam, which provides information on the maximum number of adjacent obscured beams;
- number of transitions, provides information on the number of transitions from free to obscured optics or vice versa.

User interface serial version

User interface ethernet version

DIMENSIONS

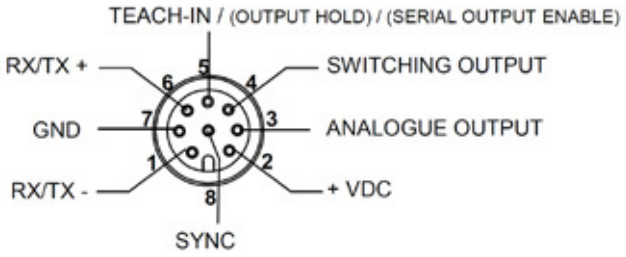


MODEL	A x B (mm)	H (mm)	C (mm)	D (mm)
DS2-05-07-015-XX	35 x 40	256	23.8	72.5
DS2-05-07-030-XX	35 x 40	403	23.8	72.5
DS2-05-07-045-XX	35 x 40	550	23.8	72.5
DS2-05-07-060-XX	35 x 40	697	23.8	72.5
DS2-05-07-075-XX	35 x 40	844	23.8	72.5
DS2-05-07-090-XX	35 x 40	991	23.8	72.5
DS2-05-07-105-XX	35 x 40	1138	23.8	72.5
DS2-05-07-120-XX	35 x 40	1285	23.8	72.5
DS2-05-07-135-XX	35 x 40	1432	23.8	72.5
DS2-05-07-150-XX	35 x 40	1579	23.8	72.5
DS2-05-07-165-XX	35 x 40	1726	23.8	72.5
DS2-05-25-045-XX	35 x 40	562	23.8	72.5
DS2-05-25-060-XX	35 x 40	713	23.8	72.5
DS2-05-25-075-XX	35 x 40	864	23.8	72.5
DS2-05-25-090-XX	35 x 40	1015	23.8	72.5

XX: JV for serial models or JE for ETHERNET models

CONNECTIONS

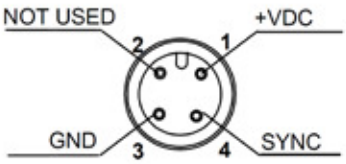
SERIAL VERSION - RX



Main connector: M12 8-pole connector

1	=	white	=	RX/TX -
2	=	brown	=	+VDC
3	=	green	=	ANALOGUE OUT
4	=	yellow	=	SWITCHING OUTPUT
5	=	grey	=	TEACH-IN / (OUT HOLD) / (SERIAL OUT ENABLE)
6	=	pink	=	RX/TX +
7	=	blue	=	GND
8	=	red	=	SYNC

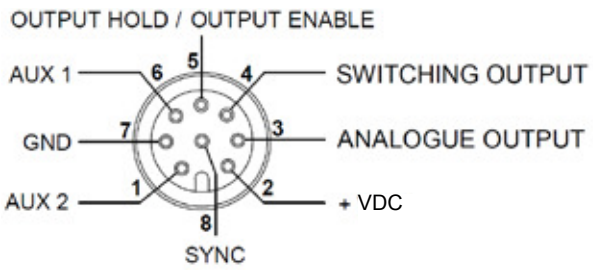
SERIAL VERSION - TX



Main connector: M12 4-pole connector

1	=	brown	=	+VDC
2	=	white	=	NOT USED
3	=	blue	=	GND
4	=	black	=	SYNC

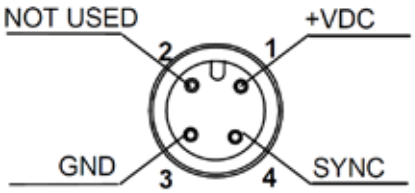
ETHERNET VERSION - RX



Main connector: M12 8-pole connector

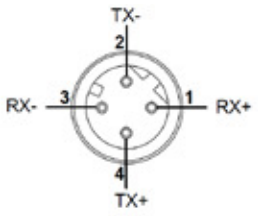
1	=	white	=	AUX 2
2	=	brown	=	+VDC
3	=	green	=	ANALOGUE OUT
4	=	yellow	=	SWITCHING OUTPUT
5	=	grey	=	OUT HOLD / OUT ENABLE
6	=	pink	=	AUX 1
7	=	blue	=	GND
8	=	red	=	SYNC

ETHERNET VERSION - TX



Main connector: M12 4-pole connector

1	=	brown	=	+VDC
2	=	white	=	NOT USED
3	=	blue	=	GND
4	=	black	=	SYNC



Secondary connector: M12 4-pole connector

1	=	brown	=	RX +
2	=	white	=	TX -
3	=	blue	=	RX -
4	=	black	=	TX +

TECHNICAL DATA

	DS2-05-07-xxx-JV	DS2-05-25-xxx-JV	DS2-05-07-xxx-JE
Power supply:	24 Vdc ± 20%		24 Vcc ± 20%
Consumption of emitter unit:	250 mA max without load		250 mA max without load
Outputs:	1 switching output; load max 10 kW		1 switching output: load max 10 kW
	load min 100 W		load min 100 W
	1 analogue output ; 0-10 V (DVmax. 2%)		1 analogue output : 0-10 V (DVmax. 2%)
Output current on switching output:	100 mA; short-circuit protection		100 mA; short-circuit protection
Output voltage on switching output:	-1.5 Vmax of the power supply at T=25°C		-1.5 Vmax of the power supply at T=25°C
Response time:	See table “Response time” below		See table “Response time” below
Emission type:	Infrared (880 nm)		Infrared (880 nm)
Resolution:	6 mm	25 mm	6 mm
Relative measurement precision:	± 6 mm	± 22.5 mm	± 6 mm
Absolute measurement precision:	6 mm	22.5 mm	6 mm
Dimensional difference between objects equally detected in asbolute Teach-in:	± 6 mm	± 22.5 mm	± 6 mm
Dimensional difference between objects equally detected in relative Teach-in	D = 12 mm	D = 45 mm	D = 12 mm
Operating distance:	0.3 ÷ 5 m	0.3 ÷ 10 m	0.3 ÷ 5 m
Available functions:	See next sections		See next sections
Operating temperature:	0 …+ 50 °C		0…+ 50 °C
Storage temperature:	- 25…+ 55 °C		- 25…+ 55 °C
Electrical protection:	Class I		Class I
Mechanical protection:	IP65 (EN 60529)		IP65 (EN 60529)
Vibrations:	0.5 mm width, 10 … 55 Hz frequency, (EN 60068-2-6)		0.5 mm width, 10 … 55 Hz frequency (EN 60068-2-6)
Shock resistance:	11 ms (30 G) 6 shock for each axis (EN 60068-2-27)		11 ms (30 G) 6 shock for each axis (EN 60068-2-27)
Housing material:	Painted aluminium (Pulverit 5121/0085 Black)		Painted aluminium (Pulverit 5121/0085 Black)
Lens material:	PMMA		PMMA
Connections:	TX: M12 4-poles connector RX: M12 8-poles connector		TX: M12 4-poles connector RX: M12 8-poles connector + M12 4-poles type “D”
Weight:	Min. 1.9 kg – Max. 4.6 kg		min 3.3 Kg – max 6.5 Kg (with packing)

TECHNICAL DATA

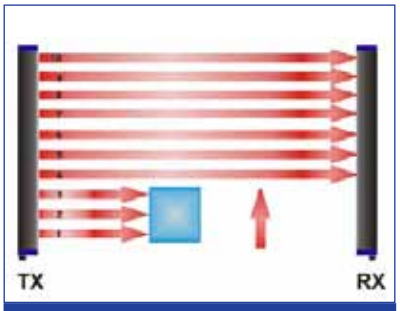
Response time - Serial version

	Tmin (msec)							Tmax (msec)
		T2	T3	T4	T5	T6	T7	
Model	Configuration							
	Top beam	Top beam	Top beam	Top beam	Complete Beams Status	Complete Beams Status	Complete Beams Status	Complete Beams Status
	57600 baud	9600 baud	57600 baud	9600 baud	57600 baud	9600 baud	57600 baud	9600 baud
	binary	binary	ASCII	ASCII	binary	binary	ASCII	ASCII
DS2-05-07-015-JV	5.5	12.5	5.05	13	5.5	15	6.5	10
DS2-05-07-030-JV	7	14	7	14.5	7	18	8.5	21
DS2-05-07-045-JV	8.5	15.5	8.5	16	8.5	21	10	24
DS2-05-07-060-JV	10	17	10	18	10	26	12	38
DS2-05-07-075-JV	11.5	18.5	11.5	19	11.5	31	15	44
DS2-05-07-090-JV	13	20	13	20	13	36	17	54
DS2-05-07-105-JV	14.5	21.5	14.5	22	14.5	40	19	62
DS2-05-07-120-JV	17	24	17	24	17	44	21	70
DS2-05-07-135-JV	18.5	25	19	26	19	48	23	80
DS2-05-07-150-JV	20	26.5	21	28	21	53	25	84
DS2-05-07-165-JV	22	28	23	30	23	56	28	91
DS2-05-25-045-JV	5	11	5	11	5	13	6	18
DS2-05-25-060-JV	5.5	12	5.5	12.5	5.5	14.5	6.5	19.5
DS2-05-25-075-JV	6	13	6	13.5	6	16	7	21
DS2-05-25-090-JV	6.5	13.5	6.5	14.5	6.5	17.5	7.5	22.5

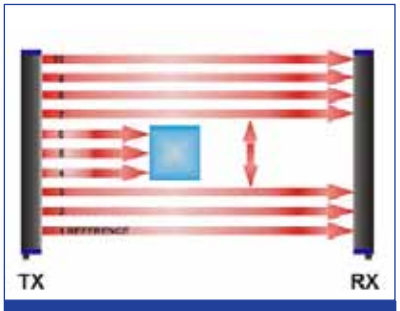
Response time - ETHERNET version

Model	Configuration			
	Top Beam		Complete Beams Status	
	binary	ASCII	binary	ASCII
DS2-05-07-060-JE	10	10	10	12
DS2-05-07-075-JE	11.5	11.5	11.5	15
DS2-05-07-090-JE	13	13	13	17
DS2-05-07-120-JE	17	17	17	21
DS2-05-07-150-JE	20	21	21	25
DS2-05-07-165-JE	22	23	23	28

FUNCTIONING MODE EXAMPLES



DETECTION AND MEASUREMENT OF AN OBJECT'S HEIGHT OR PROFILE



DETECTION MODE (TEACH-IN)

And more applications:

- Object height measurement (vertical mounting);
- Object width measurement (horizontal mounting);
- Object distance measurement (horizontal mounting);
- Object volume measurement (vertical and horizontal combination);
- Single or multiple object presence and/or position detection in a given area;
- Missing label detection on multiple lanes;
- Vertical warehouse drawers positioning;
- Box or other objects profiling on conveyors;
- Web edges or center guiding;
- Cartoners, stackers and palletizers.

MODEL SELECTION TABLE

Model	Optics interaxis (mm)	h1 Length of controlled area (mm)	A x B (mm)	h (mm)	N°. beams	Order n°
DS2-05-07-015-JV	6.75	147	35 x 40	256	21	957501040
DS2-05-07-030-JV	6.75	294	35 x 40	403	42	957501050
DS2-05-07-045-JV	6.75	441	35 x 40	550	63	957501060
DS2-05-07-060-JV	6.75	588	35 x 40	697	84	957501000
DS2-05-07-075-JV	6.75	735	35 x 40	844	105	957501070
DS2-05-07-090-JV	6.75	882	35 x 40	991	126	957501010
DS2-05-07-105-JV	6.75	1029	35 x 40	1138	147	957501080
DS2-05-07-120-JV	6.75	1176	35 x 40	1285	168	957501020
DS2-05-07-135-JV	6.75	1323	35 x 40	1432	189	957501090
DS2-05-07-150-JV	6.75	1470	35 x 40	1579	210	957501100
DS2-05-07-165-JV	6.75	1617	35 x 40	1726	231	957501030
DS2-05-25-045-JV	25	453	35 x 40	562	18	957501110
DS2-05-25-060-JV	25	604	35 x 40	713	24	957501140
DS2-05-25-075-JV	25	755	35 x 40	864	30	957501120
DS2-05-25-090-JV	25	912	35 x 40	1015	36	957501130
DS2-05-07-060-JE	6.75	588	35 x 40	697	84	957501150
DS2-05-07-075-JE	6.75	735	35 x 40	844	105	957501160
DS2-05-07-090-JE	6.75	882	35 x 40	991	126	957501170
DS2-05-07-120-JE	6.75	1176	35 x 40	1285	168	957501180
DS2-05-07-150-JE	6.75	1470	35 x 40	1579	210	957501190
DS2-05-07-165-JE	6.75	1617	35 x 40	1726	231	957501200

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
CS-A1-02-G-03	axial M12-4 pole unshielded 3 m connector	95A251380
CS-A1-02-G-05	axial M12-4 pole unshielded 5 m connector	95A251270
CS-A1-02-G-10	axial M12-4 pole unshielded 10 m connector	95A251390
CS-A1-06-B-03	axial M12-8 pole unshielded 3 m connector	95ACC2230
CS-A1-06-B-05	axial M12-8 pole unshielded 5 m connector	95ACC2240
CS-A1-06-B-10	axial M12-8 pole unshielded 10 m connector	95ACC2250
CV-A1-22-B-03	axial M12 4-pole shielded 3 m connector	95ACC1480
CV-A1-22-B-05	axial M12 4-pole shielded 5 m connector	95ACC1490
CV-A1-22-B-10	axial M12 4-pole shielded 10 m connector	95ACC1500
CV-A1-26-B-03	axial M12 8-pole shielded 3 m connector	95ACC1510
CV-A1-26-B-05	axial M12 8-pole shielded 5 m connector	95ACC1520
CV-A1-26-B-10	axial M12 8-pole shielded 10 m connector	95ACC1530
DATAVS-CV-RJ45C-03	3 m crossed Ethernet cable	95A901340
DATAVS-CV-RJ45D-03	3 m direct Ethernet cable	95A901350
ST-KSTD	mounting brackets - 4 pcs kit	95ACC1670
ST-K4AV	anti-vibration supports - 4 pcs kit	95ACC1700
ST-K6AV	anti-vibration supports - 6 pcs kit	95ACC1710
ST-K4OR	orientable supports - 4 pcs kit	95ACC1680
ST-K6OR	orientable supports - 6 pcs kit	95ACC1690