

Linear Array Detector

DR500/EM



High detection accuracy

Detection of hot or cold products

Design for extremely harsh environment

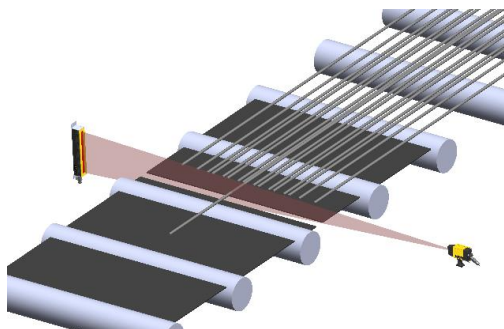
Detection regardless of the transverse position



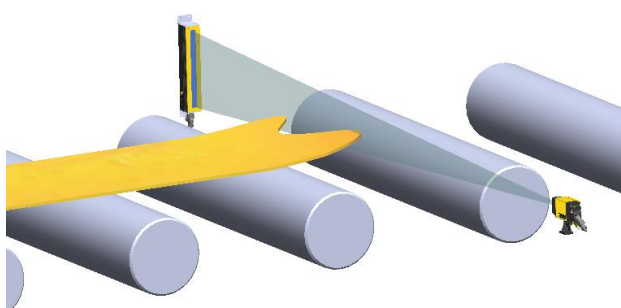
Typical applications

The receiver **DR500** is a light grid detector. In association with the **EM-C** LED emitter, it is able to detect hot or cold products in a wide field, whatever the transverse position of this product.

The **DR500** allows a detection at a very high speed on a very narrow line, like a scanning sensor. The product can be from ambient temperature up to 1350°C.



Detection of small bars (hot or cold) on a wide table



Detection of head / tail (hot or cold)

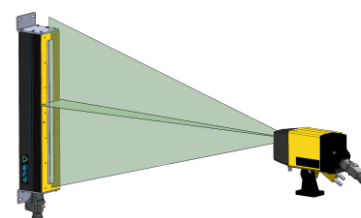
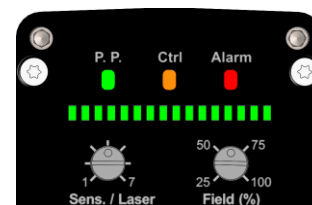
Presentation – Features

The detector **DR500** consists of a lens, a linear diode array and a processing unit enclosed in a cast aluminium case. The image of the viewed area is focused onto the diode array. The output of the Detector **DR500** switches when a product is seen within the field of view with light emitter **EM-C** in the background.

The detector **DR500** has been designed for heavy industry, with a mounting stand, which is adjustable in two axes. In case the sensor must be replaced, it can be easily dismounted from the stand, without disturbing the alignment.

The control panel allows an easy setup and includes:

- 3 LED giving sensor status:
 - **P.P.** is green when detection output is activated (Product Presence)
 - **Ctrl** is orange when detection margin is too low.
 - **Alarm** is red when alarm output is activated (internal T° too high, receiver out of function)
- A **bargraph** with green LED showing the active field of detection and position of the product within this field.
- A '**Field**' potentiometer to set the detection angle.
- A '**Sens./Laser**' potentiometer to adjust sensitivity.
- A **green laser cross**, to make easy alignment, is activated at power ON and as soon as you turn the 'Sens./Laser' potentiometer (stays ON during 15 min, then automatically switches OFF).



Technical characteristics

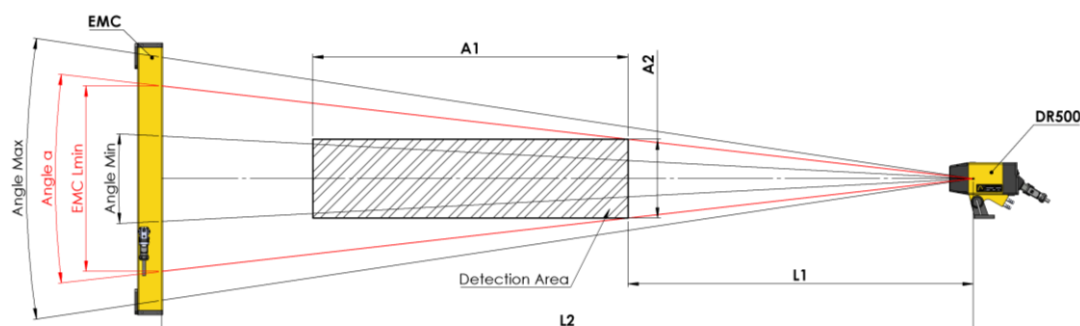
The DR500 can detect hot products at temperature up to 1350°C, or at ambient temperature. The receiver and emitter have to be associated and ordered according to target max. temperature as follows:

Reference	DRR5... + EMR-C	DRB5... + EMB-C
Maximum target temperature	700°C	1350°C

Reference	DR•514•	DR•530•
Focal length	50 mm	25 mm
Number of pixels	1024	
Detection angle (adjustable)	3.5 to 14 °	7.5 to 30 °
Distance min - max	1400 – 5350 mm	450 – 3050 mm
Lateral angle	0.06 °	0.11 °
Lateral field at min – max distance	1.4 – 5.3 mm	0.9 – 5.8 mm
Min. Product size (at Sens. 7)	4 mm	3 mm
Static accuracy	at 3 m: ± 1 mm	at 1.5 m: ± 1 mm
Response time	1.5 ms	
Laser pointer (IEC 60825-1:2014)	Laser cross, green, class 2M Activated during 15 min at power on and as soon as 'Sens/Laser' potentiometer is turned	



Field of view



Example : Detection area : A1: 2000mm ; A2: 200mm
Distance between sensor and detection area L1: 1500mm
Distance between sensor and emitter : L2 : 5000mm

Sensor DR•500 selection:

Check the angle needed to cover the detection area: if within 3.5 to 14°, select the DR•514; if within 7.5 to 30°, select the DR•530. Then check the working distance.

Angle $\alpha \sim 57.3 \cdot A2/L1 \rightarrow \sim 57.3 \cdot 200/1500 = 7.6^\circ$

DR•514 and DR•530 can be used, maximum detection distance: 3500 mm, limited to 3050 for DR•530, select DR•514

Emitter EM•-C Selection :

Check the emitter minimum size. EM•-C Lmin dimension and choose a EM•-C Length larger than this dimension,
Minimum emitter size: $A2 \times L2/L1 \rightarrow 200 \cdot 5000/1500 = 667 \text{ mm}$, select EM•-C-800.

Note: the EM•-C emitter should completely cover the field of view of the DR•500.

Receiver characteristics



Laser Class 2M



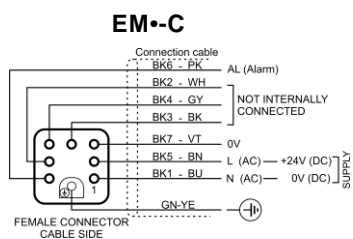
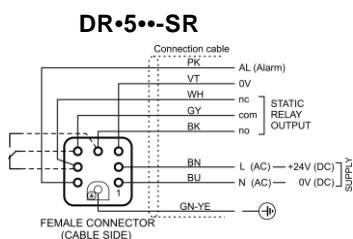
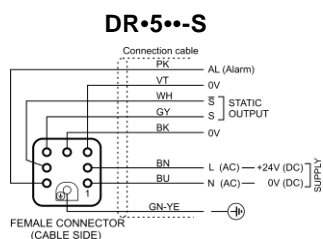
Receiver	DR•5•-S	DR•5•-SR
Product Presence (P.P.)	Transistor: 2 PNP "High side" S & /S 0/24V complementary outputs; low impedance: 50 mA max; protected against short circuit. Switching time: 0.2 ms	2 Optocoupled complementary Solid State Relay: Impedance: 50 Ω , Switching capacity: +/- 350 V peak +/- 100 mA peak. Switching time: 0.2 ms
Alarm output	PNP "High side" 0/24V ; low impedance: 50 mA ; 24V when alarm activated: internal failure or temperature > 55° (131 °F), or supply voltage out of range	
Display and setting	3 status LED (P.P., Ctrl, Alarm) / 16 LEDs for display of detection field of view 2 potentiometers: to select the detection field of view and to adjust the sensitivity	
Operating voltage / Power consumption	VAC: 115 V (-15%) to 230 V (+10%) – 50/60 Hz / 5 VA VDC: 10 to 30 VDC / 5 W	
Connection	Connector fitted with silicone cable & protective steel braid. Length 2 m (standard), 3 m , 5 m, 8 m	
Weight	3.0 kg	
Protection rating	IP 66 (cast aluminium case)	
Air Purging	Protection of the optic with clean air: 50 to 200 g/cm ² , 4 to 16 l/min	
Operating temperature	-20°C to 60°C (-4°F to 140°F) without cooling. Up to 120°C (250°F) with water cooling: industrial quality water at about 25°C, pressure 1-2 bar and flow 1-2 l/min	

Emitter characteristics

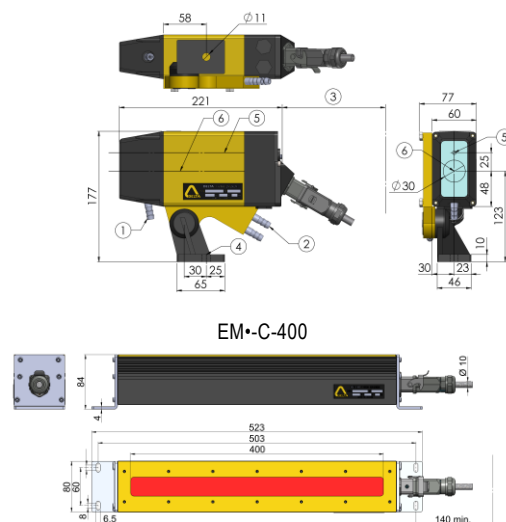
Emitter	EM•-C-400	EM•-C-800	EM•-C-1200	EM•-C-2000
Emission	EMR-C: continuous Red LED (for target temperature < 700°C with DRR5••••) EMB-C: continuous Blue LED (for target temperature < 1350°C with DRB5••••)			
Emission length / width	400 mm / 30 mm	800 mm / 30 mm	1200 mm / 30 mm	2000 mm / 30 mm
Alarm output	Push-pull output, 0/24 V - 50 mA max 0V if internal failure or internal temperature > 55°C (131 °F)			
Operating voltage	VAC: 115 V (-15%) to 230 V (+10%) - 50/60 Hz VDC: 24 VDC (+/- 20%)			
Power consumption AC / DC	20 VA / 10 W	40 VA / 20 W	60 VA / 30 W	100 VA / 50 W
Connection	Connector fitted with silicone cable & protective steel braid. Length 2 m (standard), 3 m, 5 m, 8 m			
Weight	4 kg	8 kg	12 kg	20 kg
Protection Rating	IP67			
Operating temperature	-20°C to 55°C (-4°F to 131°F) without cooling. Up to 120°C (250°F) with water cooling (see accessory cooling plate): industrial quality water at about 25°C, pressure 1-2 bar and flow 1-2 l/min			



Connection

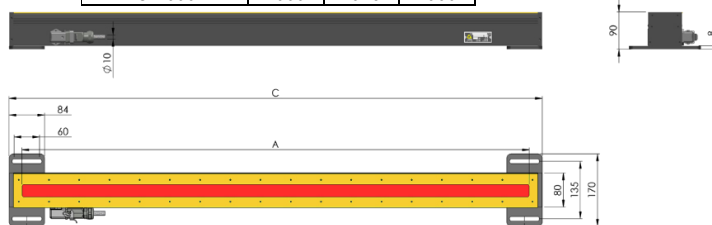


Dimensions



- ① Air supply Ø 10
- ② Water supplies Ø 10
- ③ Connector clearance: min 120 mm
- ④ Mounting with screw Ø 10
- ⑤ Laser cross origin
- ⑥ Optical axis

	A	B	C
EM•-C-800	800	775	860
EM•-C-1200	1200	1175	1260
EM•-C-2000	2000	1975	2060



Note: The fixing plate can be mounted in different positions: bottom / side of emitter

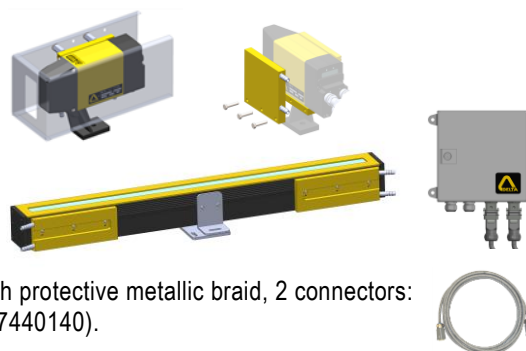
Reference for order

DR•5...-S ... L=					EM•-C... ... L=			
Receiver	Max. Angle	Output type	Supply voltage	Cable length	Emitter	Length (mm)	Supply voltage	Cable length
R: Red B: Blue	14: 14° 30: 30°	S: High Side PNP SR: Static Relay	115-230 VAC 24 VDC	0: no cable 2: 2 m (standard) 3: 3 m 5: 5 m 8: 8 m	R: Red B: Blue	400 800 1200 2000	115-230 VAC 24 VDC	0: no cable 2: 2 m (standard) 3: 3 m 5: 5 m 8: 8 m

e.g: DRB514-S 115-230 VAC L=2 with EMB-C-800 115-230 VAC L=2

Accessories

- Stainless steel heat shield for receiver DR500, ref 7593826
- Additional cooling plate for receiver DR500, ref 7094605
- Cooling plate for emitter EM•-C, ref 7494920
(multiple plates can be mounted on emitter for higher efficiency)
- Adjustable mounting support for emitter EM•-C, ref 7494906
- Junction box to connect DR•500 and EM•-C, ref CR500DR/EM
- Power and I/O cable between junction box and DR•500 and EM•-C, with protective metallic braid, 2 connectors:
5 m (ref: 7440138), 8 m (ref: 7440177), 10 m (ref: 7440171), 15 m (ref: 7440140).



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