



Reflecting OPTICAL BARRIER

Optical Barrier

V3



15 m
30 m

Detection of hot or cold products

Design for extremely harsh environment

Visible optical barrier

**Optical barrier V3 – benefits**

The sensor **V3** works in association with a reflector **R** (cf. literature Lt3990).

- Visible red diode emission.
- Insensitivity to ambient light.
- Cast aluminum case with air purged hood for protecting the lens and with optional water-cooling plate.
- Modular construction allowing rapid maintenance.
- Alignment and checking devices: sensitivity potentiometer, light indicator showing operation.
- Alarm signal when lens or reflector is dirty.

Optical Barrier V3 – Presentation

The **Optical Barrier V3** consists of:

- An optical unit equipped with an emitting diode, reception photodiode, electronics with high current transistor output, relay or opto solid state relay and power supply.
- A terminal block with protection cover or a connector fitted with high temperature cable with protective steel braid.
- A hood for lens protection with air purging connection.
- An optional water-cooling plate for use at ambient temperature higher than 70 °C (160 °F).

Operating principle

The visible and modulated beam emitted by the diode is reflected back by a prism reflector placed opposite to the sensor, then detected by the photodiode which outputs a signal to the processing electronics. Product presence is determined depending on whether the beam is blocked or not. Beam modulation, special optical filter and automatic correction make the sensor insensitive to ambient light.

Commissioning**1. Locating the path of the beam**

There are two ways of locating the path of the beam:

- Under low ambient light conditions and at small distances the impact of the beam may be seen on the reflector.
- Otherwise looking from the reflector position towards the sensor and searching with the eye the position where the emitter LED is the brightest.

2. Mechanical orientation

Rough positioning of the sensor can be carried out by locating the path of the beam near the product to be detected and at the reflector.

3. Adjustment of the detection position

The detection position is adjusted using the sensitivity potentiometer.

With the sensitivity adjusted to the maximum value, the accuracy for the detection is approximately +/-1 cm for a product of cross section greater than 4 cm x 4 cm. Adjusting the sensitivity will increase the detection accuracy.

Performance specifications

Reflector (cf. Literature Lt 3990)	R110 - R110A	R110HT - R110 HTA
Distance V3 - Reflector: mini / maxi	0 / 15 m	0 / 30 m



Outputs

Model	V3 - • • - S Transistor output	V3 - • • - SR • Isolated solid state relay output	V3 - • • - R • Relay output
Electrical characteristics	2 complementary push-pull outputs, short circuit protection, Low impedance : 0/24 V - 100 mA max.	2 Optocoupled complementary Solid State Relay : Impedance : 50 Ω Switching capacity +/- 350 V peak +/- 100 mA peak	Single pole changeover Switching capacity : 230 V a.c. – 2.5 A a.c.
Response time	1 ms		Make time : 8 ms Break time : 4 ms
Alarm:	Push-pull output, short circuit protection, 0/24 V - 50 mA max. (not available for V3 - • C - R • and V3 - • C - SR • with AC supply voltage) 0V if received light is too low or internal temperature > 55°C		

Model	V3 - • • - S	V3 - • • - R1 – V3 - • • - SR1	V3 - • • - R2 – V3 - • • - SR2
Operating mode	S output at 24 VDC and LED on when the beam is interrupted	Dark: relay energized and LED on when the beam is interrupted	Light: relay energized and LED on when the beam is not interrupted
LED indicator	Off: Beam not interrupted Green: Beam interrupted Red: Alarm, beam not interrupted Orange: Alarm, beam interrupted	Off: Beam not interrupted Green: Beam interrupted Red: Alarm, beam not interrupted Orange: Alarm, beam interrupted	Off: Beam interrupted Green: Beam not interrupted Red: Alarm, beam interrupted Orange: Alarm, beam not interrupted

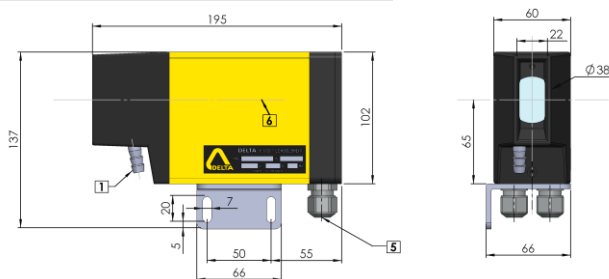
Other data

Emitter	Red LED, with 2.5 kHz modulation	
Operating voltage	220 V (-15%) to 240 V (+10%) - 50 / 60 Hz or 110 V (-15%) to 120 V (+10%) - 50 / 60 Hz or 24 V (±10%) - 50 / 60 Hz	24 V DC (±20%)
Power consumption	10 VA	8 W
Connection	Terminal block – 2 PG 9 (V3 - • B - • •) Connector fitted with silicone cable with protective steel braid (V3 - • C - • •) Standard length of 2 m (other length: 3, 5 or 8 m)	
Weight	2.5 kg (V3 - JC - • •) – 1.8 kg (V3 - LB - • •)	
Protection rating	IP 67 (cast aluminium case)	
Air purging	Protection of the optic with clean air: 50 to 200 g/cm ² , 4 to 16 l/min	
Working temperature	-20 to 70 °C (0 to 160 °F) without cooling, up to 120 °C (250 °F) with water cooling: industrial quality water at about 25 °C (77 °F), pressure 1-2 bar and flow 1-5 l/min	

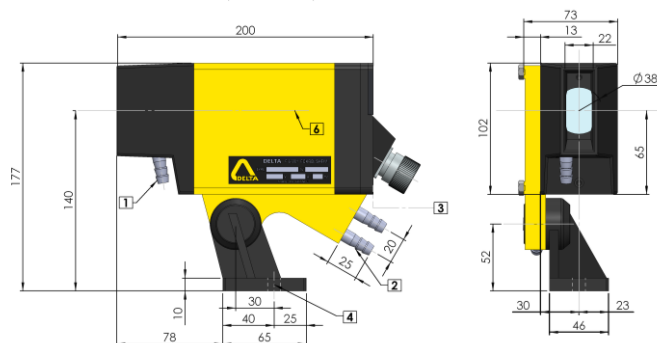


Dimensions

V3 - LB - •



V3 - JC - •



- 1 Air supply Ø 10
- 2 Water supplies Ø 10
- 3 Connector clearance 90 mm
- 4 Mounting with screw Ø 10
- 5 Cable glands (2) for cable with Ø 7-10,5 mm
- 6 Optical axis

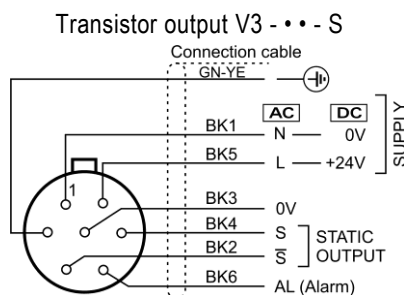


Technical characteristics

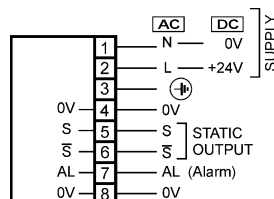
Optical Barrier V3

Connection

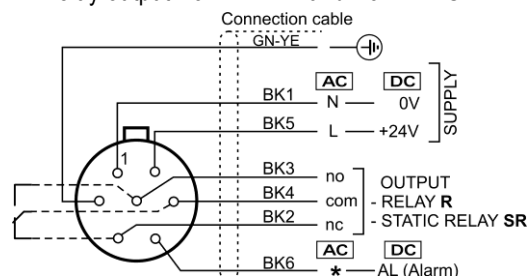
**Connector
V3 - • C - •**



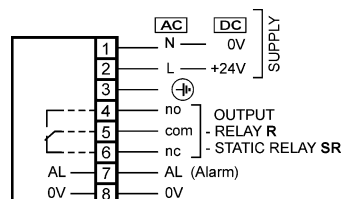
**Terminal
block
V3 - • B - •**



Relay output V3 - • • • R • and V3 - • • • SR •



* Do not connect to any voltage.



Reference for order

CASE	MOUNTING	CONNECTION	OUTPUT	SUPPLY VOLTAGE
	L Bracket	B Terminal block	S Solid-state	230 V AC 115 V AC 24 V AC 24 V DC
			SR1 SR2 Opto solid-state relay	
	J Mounting stand and cooling jacket	C Connector	R1 R2 Relay	

V3 - **L** - **B** - **S** - 115 VAC

E.g.: V3-LB-R1 115 VAC

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