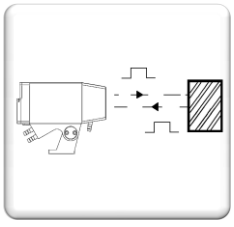
Diffuse Reflective Photoelectric Barrier

Time of Flight Barrier

VFT1



Detection up to 10 m, on cold or hot objects

Without Reflector

Easy setup and installation

Design for steel industry conditions

Lt 1416

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Operating principle

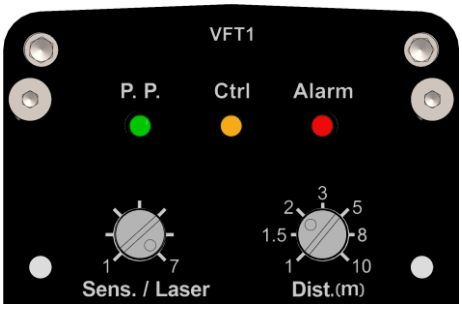
The **VFT1** is a LED based Time-of-Flight detector. With this technology **DELTA** introduces an innovative solution for the detection of product in the difficult environment of the steel industry. It works on very dark low reflecting targets, as well as high temperature targets, and has an extended operating temperature range compared to laser technology.
Thanks to the Time-of-Flight technology the sensor is able to measure the position of the target, and can eliminate any background object.

Features and benefits

- Detection range: from 0.8 m, up to 10 m on grey surface (18% remission), 8 m on black surface (6% remission)
- Target temperature: up to 1250 °C (2280°F)
- Detection resolution (distance between target and background): 150 mm (typical), 300 mm (for target temperature above 1000°C – 1830°F, or black surface over 6 m)
- Response time: from 2 ms on white matt surface at 2 m to 14 ms on black surface (6% remission) at 8 m
- 2 complementary static outputs for product presence and 1 output for alarm
- Visible laser pointer (class 2)
- Easy sensor setup with detection range selection and auto sensitivity adjustment
- Water cooling (model VFT1- **J**B) & air purging
- Optional heat shield for model VFT1– **J**B

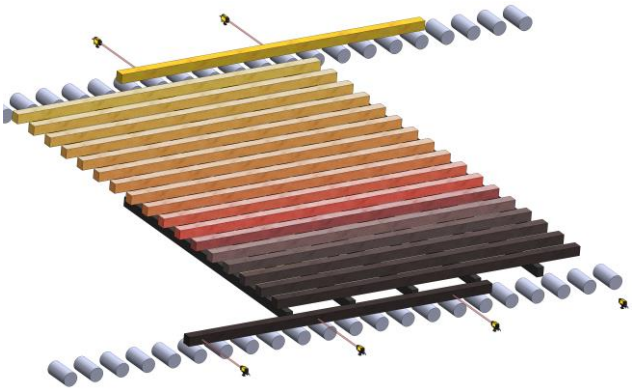
Presentation

The **VFT1** is an easy to use detector thanks to:
- 3 LED giving sensor status:
  - ***P.P.*** is green when detection output is activated (Product Presence)
  - ***Ctrl*** is orange when detection margin is not enough or saturated.
  - ***Alarm*** is red when alarm output is activated (internal T° too high, emitter or receiver out of function)
- The ***'Dist.'*** *potentiometer* to setup the detection range by selecting the maximum distance (max. 10m). For example, potentiometer on position 2 will setup the detection range from 0,8 to 2 m.
- The ***'Sens./Laser'*** *potentiometer* to adjust sensitivity.
- A **laser pointer** to make alignment of sensor. It is activated as soon as you turn the 'Sens./Laser' potentiometer (stays ON during 15 min then automatically switches OFF).

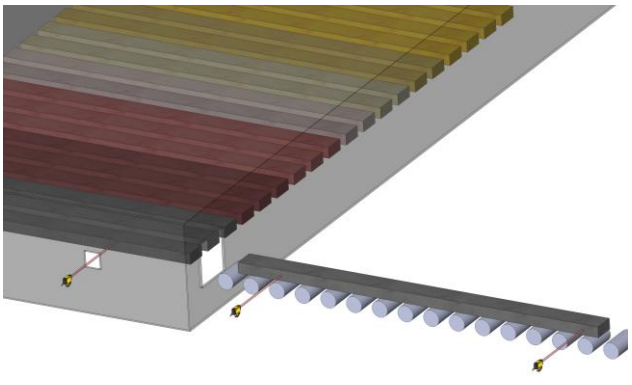


Typical applications

The **VFT1** can be used in many applications of detection, especially where it's not easy or not possible to position a reflector for use of standard light barriers.
Some examples below:



Detection of products on cooling bed



Detection of hot or cold billets when entering inside furnace

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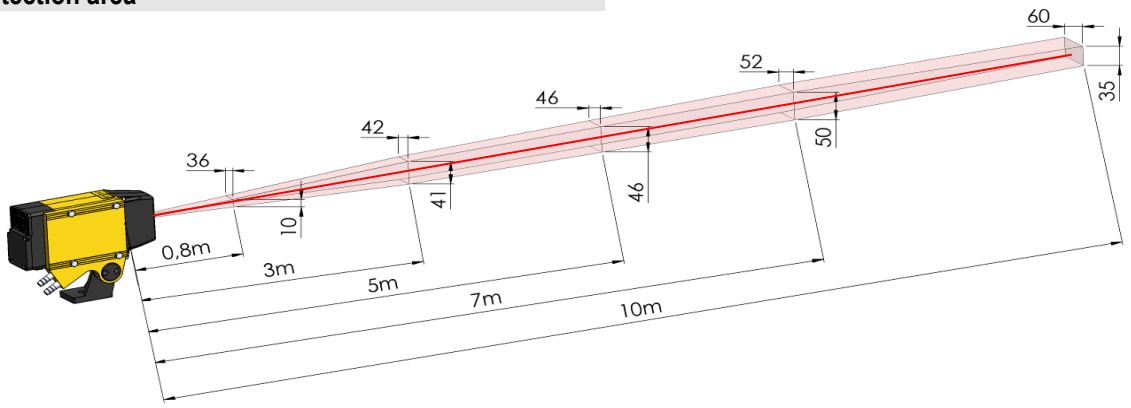
Detection area



Note: if there is guide or plate between sensor and target, minimum aperture 100 x 70 mm or minimum diameter 100 mm.

Technical characteristics

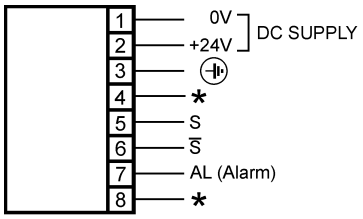
CE

Model	VFT1
Detection Range / Response Time *(1)*	0.8 to 8 m on black surface (6% remission) / Max. 14 ms 0.8 to 10 m on grey surface (18% remission) / Max. 7 ms 0.8 to 10 m on white surface (80% remission) / Max. 3.5 ms
Maximum target temperature	1250 °C (2280 °F)
Detection resolution *(2)*	150 mm (typical), 300 mm (temperature above 1000°C – 1832°F, or black surface over 6 m)
LED emitter	IR 850 nm, non-visible working beam
Laser pointer (IEC 60825-1)	≤ 1 mW class 2 ; Activated during 15 min as soon as a potentiometer is turned
Product Presence (P.P.) Static outputs S and /S	2 Push-Pull complementary outputs Low impedance: 0 / 24 V – 50 mA, protected against short circuit
Alarm output	PNP "High side" 0.1A: 24 V when alarm activated (internal failure)
Display and setting	3 status LED (P.P., Ctrl, Alarm) 2 potentiometers to select the detection range and adjust the sensitivity
Operating voltage	10 to 30 VDC
Power consumption	< 8 W
Weight	2.5 kg (VFT1-LB) - 3.0 kg (VFT1-JB)
Protection rating	IP 66 (cast aluminium case)
Air Purging	Protection of the optic with clean air: 50 to 200 g/cm², 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 77 °F, pressure 1-2 bar and flow 1-2 l/min

(1) Response time depends on the remission of the surface, the size of the receiver's spot and the distance. Values given for an area of detection filled at 100%.
(2) Detection resolution is the minimum distance between object to detect and the background.

Connection

Terminal Block (VFT1-•B)



*DO NOT CONNECT TO ANY VOLTAGE.

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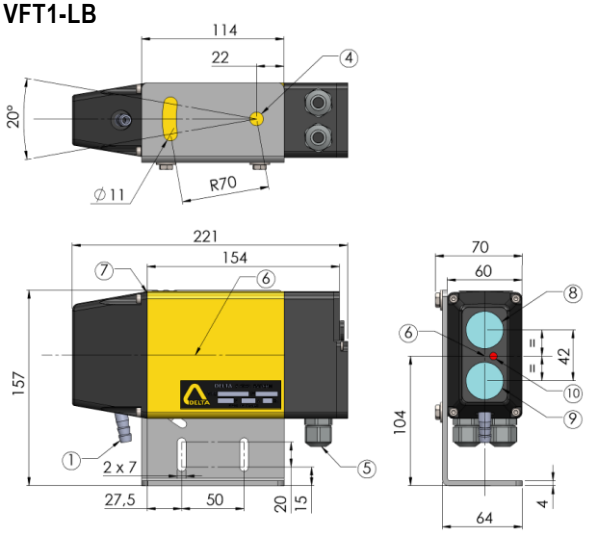
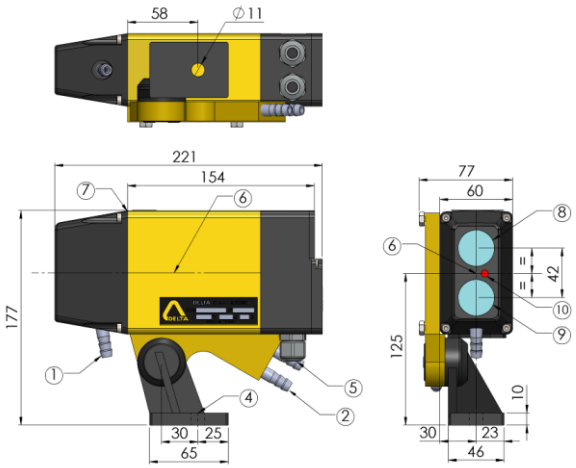
Dimensions

VFT1-LB



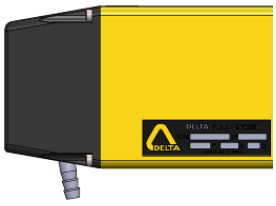
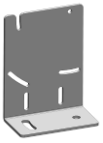
VFT1-JB



① Air supply Ø10
② Water supplies Ø10
④ Mounting with screw Ø10
⑤ 2 cable glands (cable Ø from 7 to 10.5 mm)
⑥ Optical axis
⑦ Distance Reference
⑧ Receiver Ø30 mm
⑨ Emitter LED Ø30 mm
⑩ Laser Pointer Ø6 mm

Note: if there is guide or plate between sensor and target, minimum aperture 100 x 70 mm or minimum diameter 100 mm.

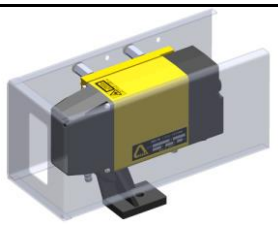
Reference for order

Case	Mounting	Connection
	**L**  Bracket	**B**  Terminal Block
	J  Mounting stand & Cooling Jacket	

Example: **VFT1-JB 24VDC**

Accessories

- Heat shield to protect from direct radiation, only for VFT1-**J**B models, Reference 7593826



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