

Time of Flight Barrier

VFT1

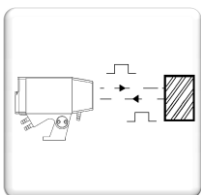


Detection up to 10 m, on cold or hot objects

Without Reflector

Easy setup and installation

Design for steel industry conditions

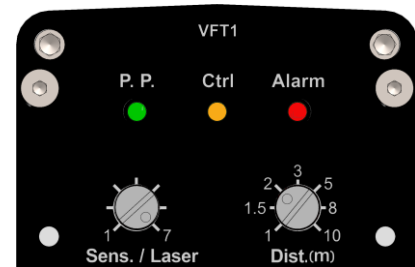


Operating principle

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) or 8 m on black surface (6% remission)
- Target temperature: from cold up to 1250 °C (2280 °F)
- Response time: from 2 ms on white matt surface at 2 m to 14 ms on black surface (6% remission) at 8 m
- Choice for Product Presence output: static (S & /S) or relay ; 1 output for Alarm
- Easy sensor setup with detection range selection and sensitivity adjustment
- Visible laser pointer (class 2)
- Water cooling (model VFT1- J•) & air purging
- Optional heat shield for model VFT1- J•
- Choice for power supply: 115/230 VAC or 24VDC



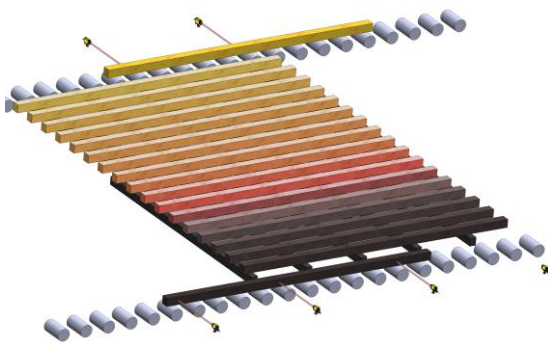
Presentation

The VFT1 is an easy to use detector thanks to:

- 3 LED giving sensor status:
 - o **P.P.** is green when detection output is activated (Product Presence)
 - o **Ctrl** is orange when detection margin is not enough or saturated.
 - o **Alarm** is red when alarm output is activated (internal T° too high, emitter or receiver out of function)
- The '**Sens./Laser**' potentiometer to adjust sensitivity.
- 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.
- 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:

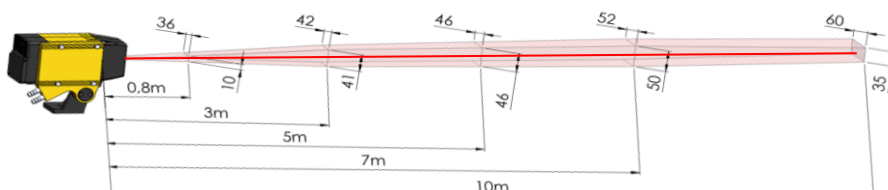


Detection of hot or cold billets on cooling bed



Detection of hot or cold coils

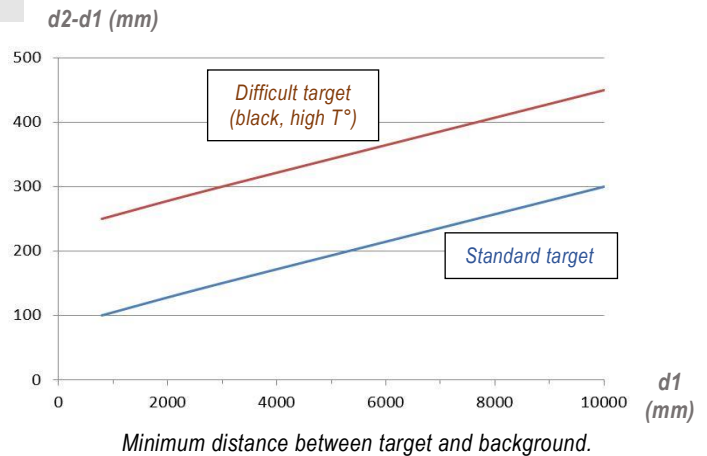
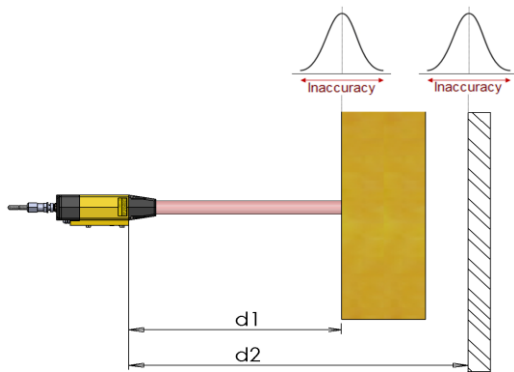
Detection area



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



Detection resolution



Technical characteristics

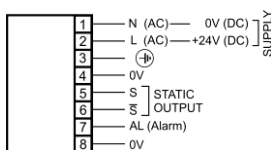


Model	VFT1-...-S	VFT1-...-R
Detection range	0.8 to 10 m	
Response Time (1)	0.8 to 8 m on black surface (6% remission) / Max. 14 ms 0.8 to 10 m on grey surface (18% remission) / Max. 7 ms 0.8 to 10 m on white surface (80% remission) / Max. 3.5 ms	
Detection resolution (minimum d2-d1)	Standard target: 100 to 300 mm Difficult target (black, high T°): 250 to 450 mm	
Maximum target temperature	1250 °C (2280 °F)	
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.)	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	Relay: Single pole changeover Switching capacity : 230 V a.c. – 2.5 A a.c. Make time: 8 ms Break time: 4 ms
Alarm output	PNP "High side" 0/24V ; low impedance: 50 mA ; 24V 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 / Power consumption	VAC: 115 V (-15%) to 230 V (+10%) – 50/60 Hz / 5 VA VDC: 12 to 28 VDC / < 8 W	
Cable (model VFT1-•C)	Connector fitted with silicone cable with protective steel braid Standard length of 2 m (other length: 3, 5, 8 m)	
Weight	2.5 kg (VFT1-LB) - 3.0 kg (VFT1-JC)	
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	

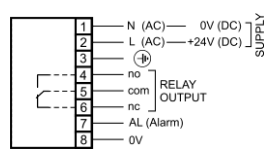
(1) Response time depends on remission of the surface, size of the receiver's spot and distance. Values given for an area of detection filled at 100%.

Connection

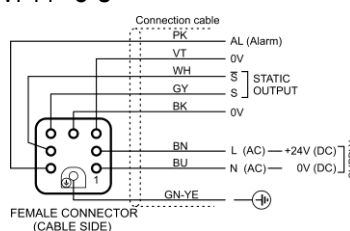
VFT1-•B-S



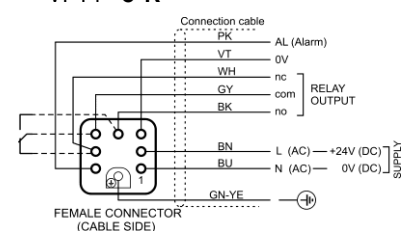
VFT1-•B-R



VFT1-•C-S

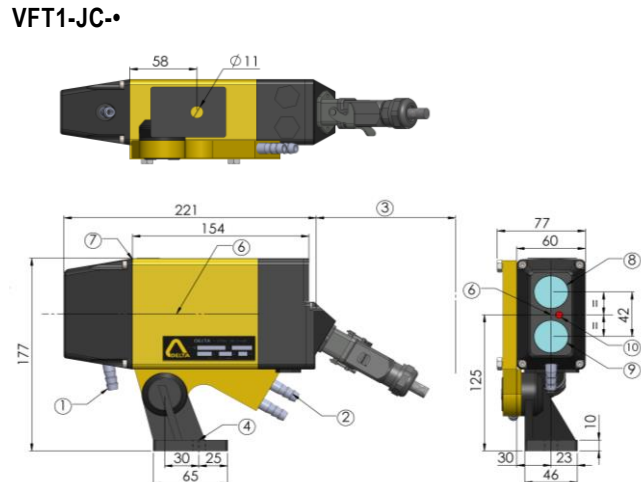
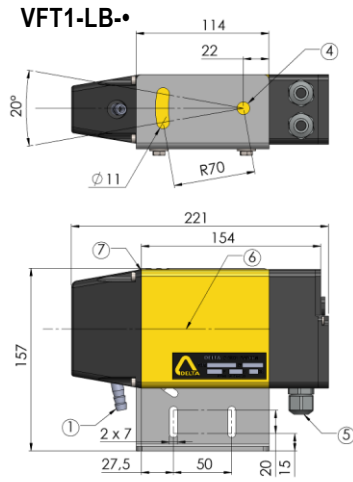


VFT1-•C-R





Dimensions



- ① Air supply Ø10
- ② Water supplies Ø10
- ③ Connector clearance 120 mm
- 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	Output	Supply Voltage	Cable length (VFT1-C-*)
	L Bracket	B Terminal Block	S Static	115-230VAC	L = 2: 2 m (1) 3: 3 m 5: 5 m 8: 8 m (1) Standard length
	J Mounting stand & Cooling jacket	C Connector	R Relay	24VDC	

Example: VFT1-JC-S 24VDC L=2 or VFT1-LB-R 115-230VAC

Accessories

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



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