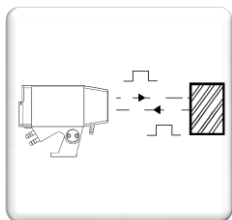


# Time of Flight Barrier

## VFT1



**Detection up to 10 m, on cold or hot objects**

**Without Reflector**

**Easy setup and installation**

**Design for steel industry conditions**

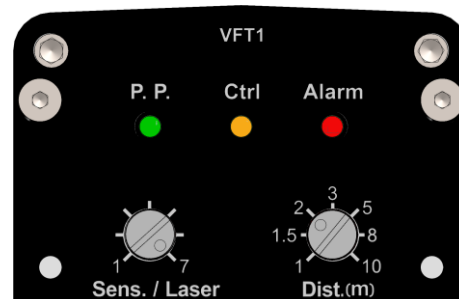


## Operating principle

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), 8 m on black surface (6% remission)
- Target temperature: from cold up to 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: 115-230VAC or 24VDC



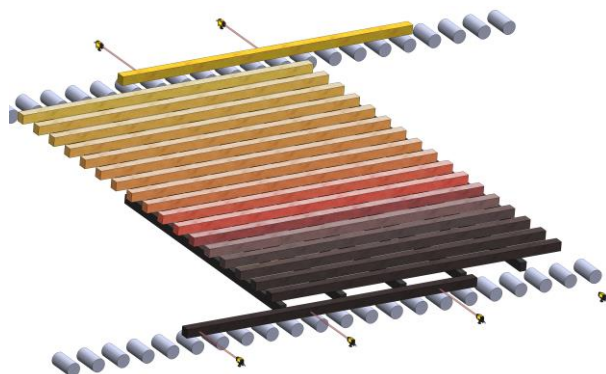
## Presentation

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 '**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:

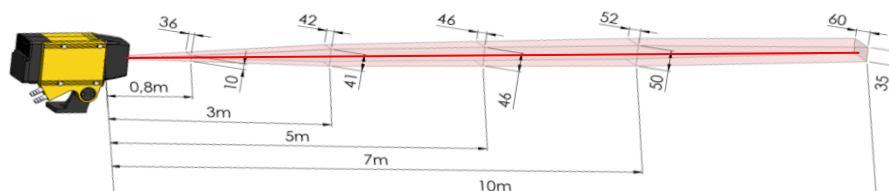


Detection of products on cooling bed



Detection of hot and cold coils

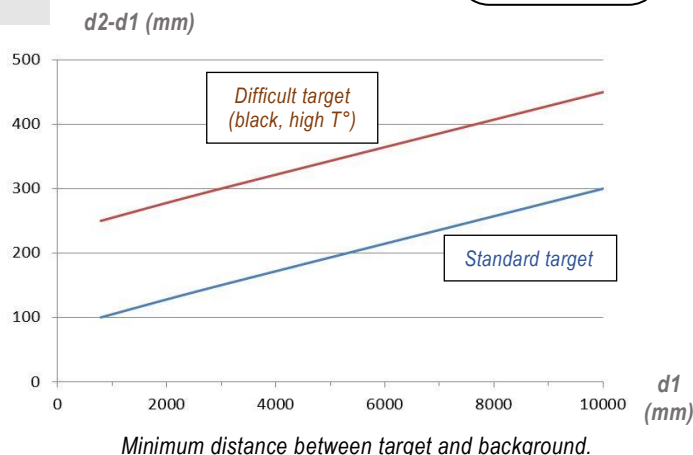
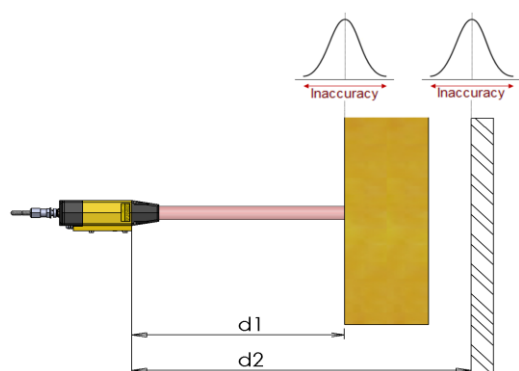
## Detection area



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



## Detection resolution



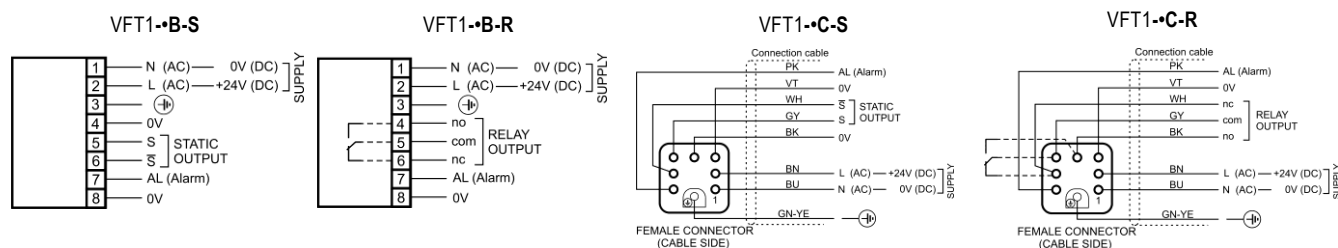
## Technical characteristics



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	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/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 25 °C, 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%.

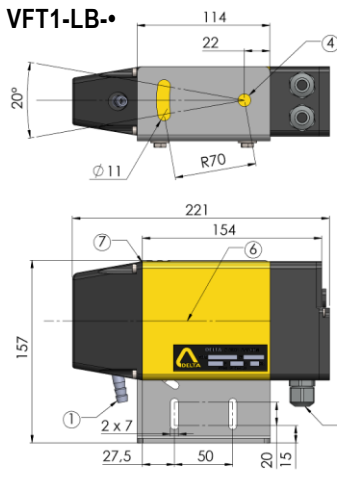
## Connection



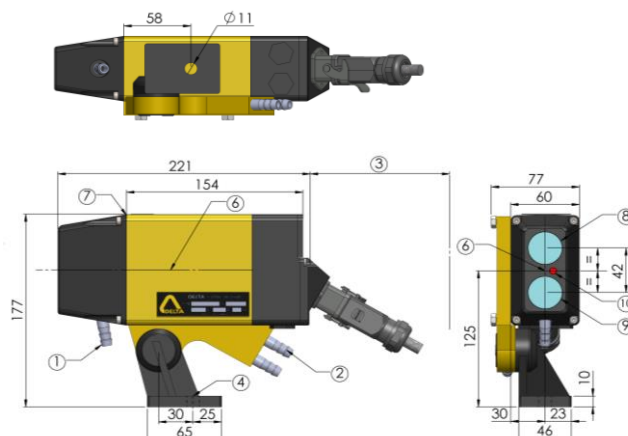


## Dimensions

VFT1-LB•



VFT1-JC•



- 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.

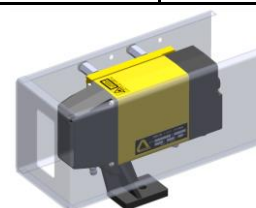
## Reference for order

Case	Mounting	Connection	Output	Supply Voltage	Cable length (VFT1-C-•)
	<b>L</b>  Bracket	<b>B</b>  Terminal Block	<b>S</b>  Static	115-230VAC	L = 2: 2 m (1) 3: 3 m 5: 5 m 8: 8 m  (1) Standard length
	<b>J</b>  Mounting stand & Cooling jacket	<b>C</b>  Connector	<b>R</b>  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



### DELTA

Tel : +33 388 78 21 01 - Fax : +33 388 76 02 29  
info@deltasensor.eu - www.deltasensor.eu

### DELTA Sensor (China)

Tel: +86 519 8188 2500 - Fax: +86 519 8188 2400 - info@deltasensor.com.cn

### DELTA Vertriebsgesellschaft mbH (Germany)

Tel: +49 6183 91 94 323 - Fax: +49 6183 91 94 324 - info.de@deltasensor.eu

### DELTA Sensor (India)

Tel: +91 11 4054 8170 - Fax: +91 11 4054 8172 - info@deltasensor.co.in

### DELTA Sensor (Russia)

Tel: + 7 916 682 6027 - info.ru@deltasensor.eu

## DELTA USA INC. (North America)

CARNEGIE OFFICE PARC - BUILDING 2, SUITE 180  
600 NORTH BELL AVENUE, CARNEGIE, PA 15160

Tel: (412) 429 3574 Fax: (412) 429 3348  
info@delta-usa.com www.delta-usa.com

Subject to change without prior notice  
Non contractual pictures

Lt 1416 4