Flame Detector
Model Deflametec

Instructions manual

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Introduction

This instruction manual should be thoroughly read before attempting the installation of any Deflametec Flame Detector, as this instructions manual will explain the installation, maintaining, testing and usage of the Deflametec. It is therefore recommended that both the installer and the users of the system get acquainted with the Flame Detector and the system of which it may be a part of.

Product Description

The Deflametec is a reliable flame detector working exclusively within a very narrow spectral range, which is closely connected to the combustion of carbon.

The Deflametec has a high detection range, which can be further con
trolled by factory setting a delay within the flame detector. This can prevent the flame detector from actuating from small miniscule flames, but will not affect larger fires within its visibility range at all. The way the delay is
created is by an integrator function. The flame detector receives ultraviolet light impulses from flames which are counted. For the detector to give the alarm it needs to count a certain amount of impulses. As the numbers of impulses sent from the flames are higher when the fire is close to the
detector, the detector will also send the alarm signal output faster the larger and closer the flames are. This is to ensure very fast detection if flames are high, and to ensure delay when flames are small not to cause false alarms.

A stainless steel housing has been manufactured to protect the vital parts of the Deflametec and through EPDM gaskets, the flame detector is able to withstand prolonged submersion under water, thus making the Deflametec applicable even in humid environments.

Technical Data		
Materials	Housing	Stainless Steel ANSI 316L
	Gaskets	EPDM
	Lens	Clear Fused Quartz
Weight	Net	0.35 kg
	Brute	0.5 kg
Storage Temperature	-20°C to 95°C	
Operating Temperature	-10°C to 55°C	
Spectral detection Range	185 nm–260 nm	
Field of View	See page 5,6,7	
LED Signals	See page 8	
Electrical Data		
Power Supply	Min	21 Vdc
	Max	27 Vdc
	Suggested	24 Vdc
Output Signal		
Relay Parameters	Max	50 Vdc & 100 mA
Potential Free Relay Signal	NO/NC	

Connection	
Mechanical	Use enclosed installation brackets w/ ø10 mm bolt
Electrical	See page 8

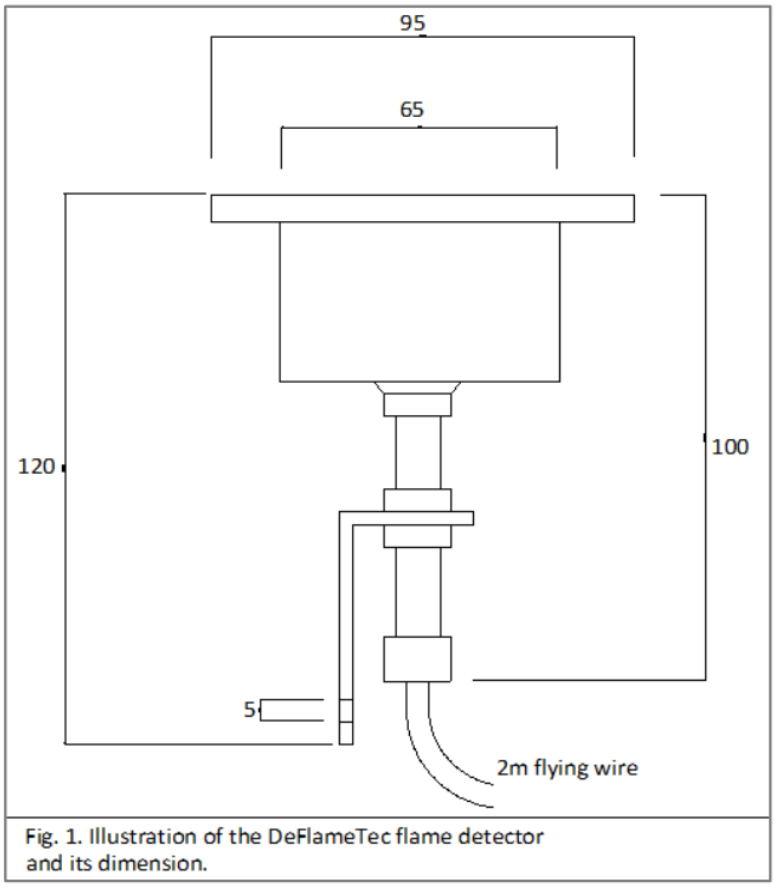


Fig. 1. Illustration of the DeFlameTec flame detector and its dimension.

Installation

Warning: It should be noted, that any compromised Deflametec flame detector should not be installed.

Pre-installation checks

Before the installation of the Deflametec, the flame detector should undergo different checks as to secure that no compromised flame detectors are installed. The following checks should be conducted before the installation of the Deflametec:

- It is to be checked that the type of flame detector matches the requested type and that the detector is intact.
- Detectors which have been dropped or otherwise damaged should not be installed.
- Only detectors with intact factory seals should be installed, and it should be checked that the factory seals have not been in any way tampered with.

Product Location

Figure 1 and 2 explains field of detection of the Deflametec.

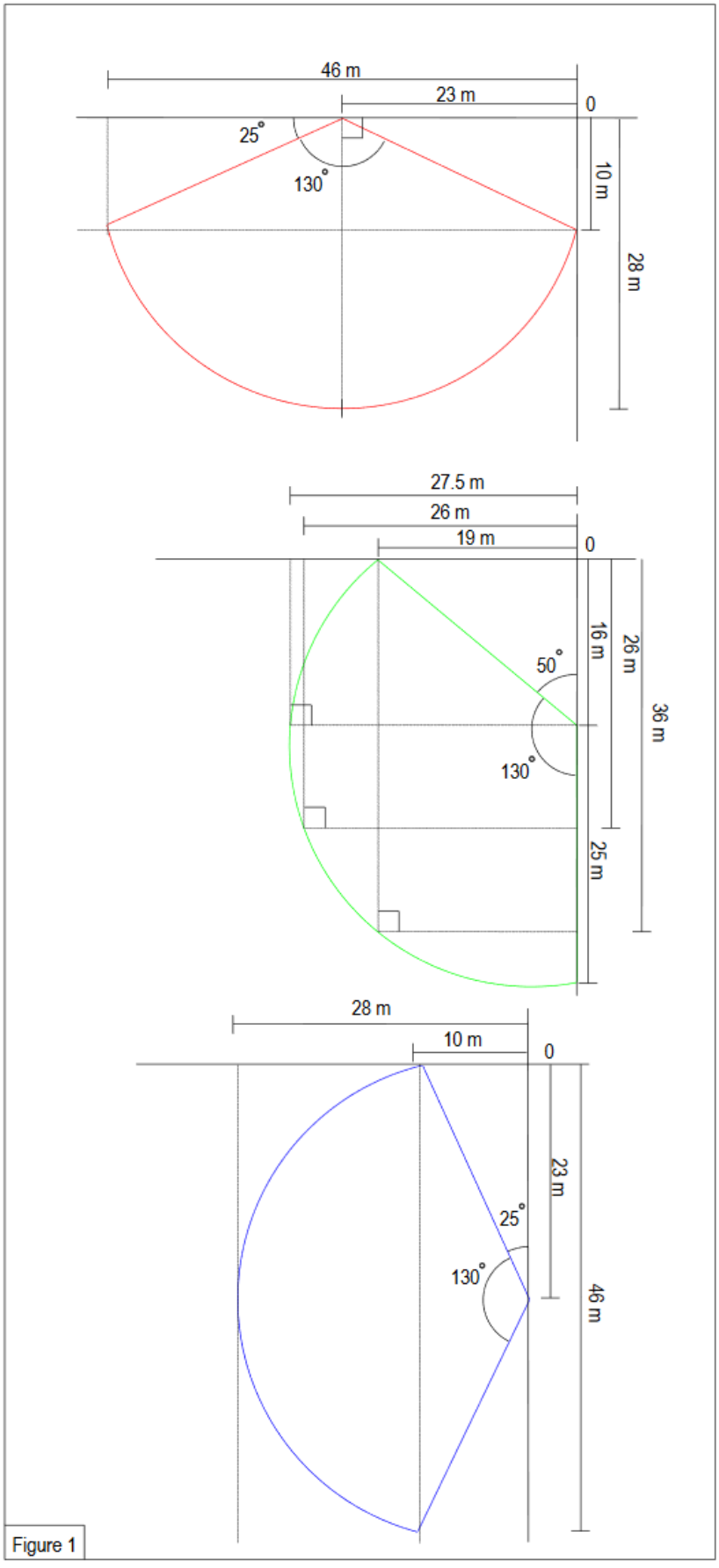
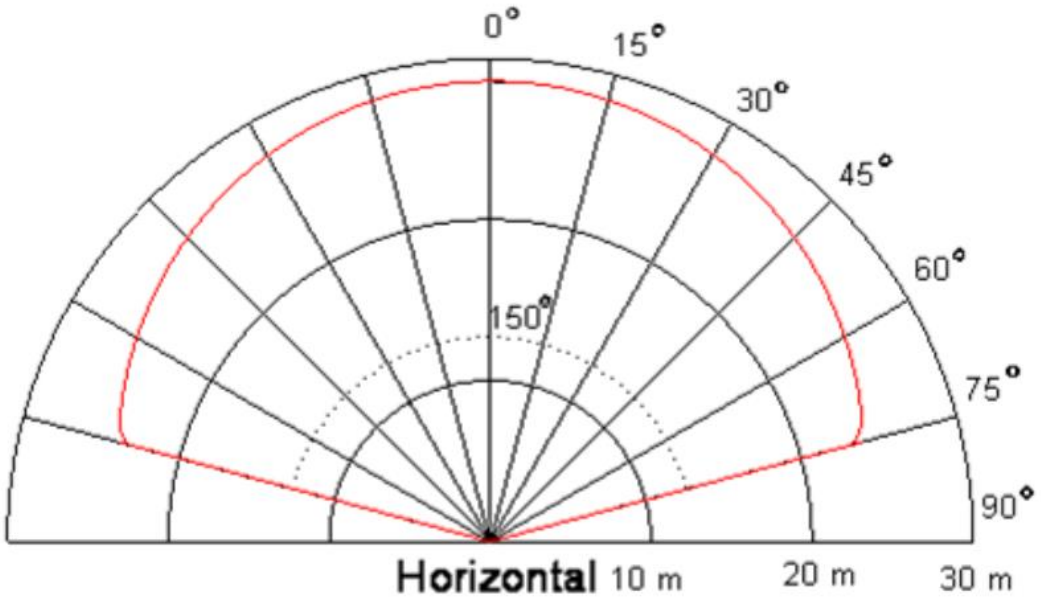

46 m
23 m
0
25°
130°
10 m
28 m
27.5 m
26 m
19 m
0
16 m
26 m
36 m
50°
130°
25 m
28 m
10 m
0
23 m
25°
130°
46 m

Figure 1



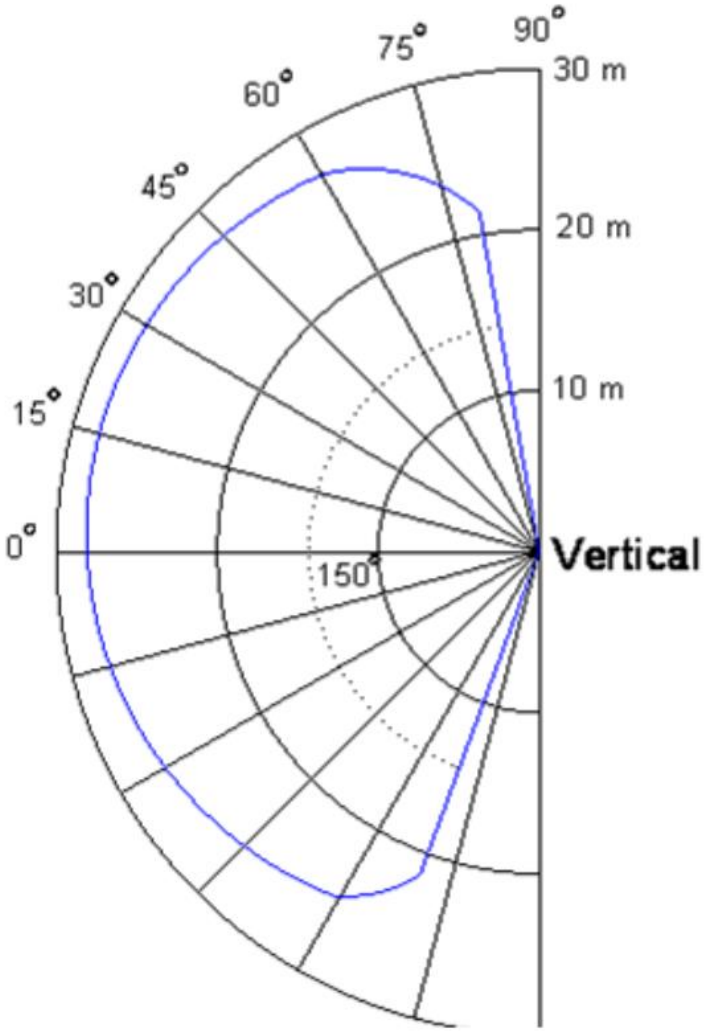


Figure 2 - Field of Detection

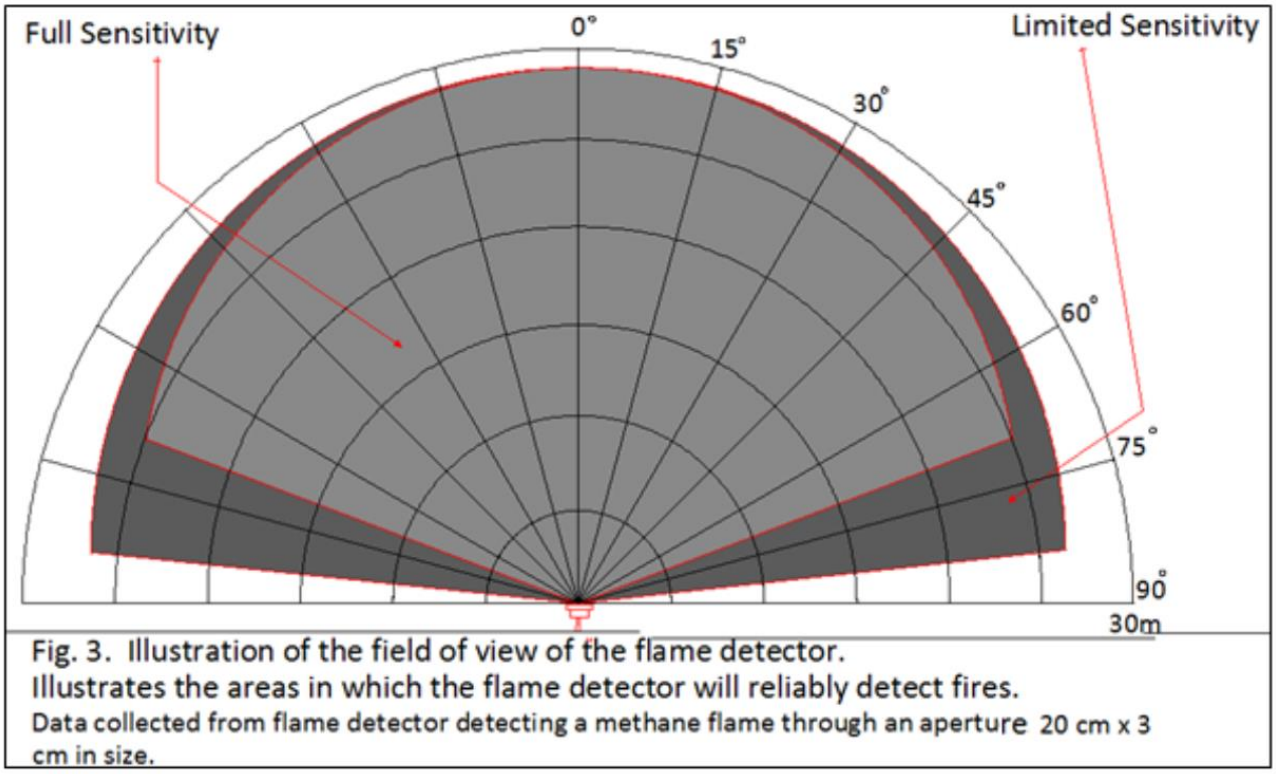


Fig. 3. Illustration of the field of view of the flame detector.
Illustrates the areas in which the flame detector will reliably detect fires.
Data collected from flame detector detecting a methane flame through an aperture 20 cm x 3 cm in size.

The Deflametec has a detection angle of 150°, with a +30°, considered the limited sensitivity area (see figure 3). A fire within the limited sensitivity area has a lower probability of actuating the Deflametec and should therefore only be considered when overlapping of detection fields occur.

The detection distance of the Deflametec has been classified at 28 m (when subjected to a methane flame with a height of 20 cm and with an aperture size of 3 cm). The detection distance will vary depending on the size of the fire and the environmental conditions.
In outdoor installations, environmental variables should be considered and the Deflametec should be placed at lower distances to their designated monitoring zones. Environmental variables may include sunlight, the accumulation of snow, dust etc.

Mounting

The Deflametec flame detector should always be mounted by its mounting bracket. Should a situation occur in which it is not possible to mount the flame detector by its respective bracket, one should contact Safevent as to consult what other methods the Deflametec can be mounted by.
NB. When adjusting the mounting brackets use two wrenches (size 17mm) to hold on the two M10 nuts. Make sure that the threaded rod does not turn around in the detector house when tightening or loosening the nuts, since this can create leaks into the housing.
It should be noted that the Deflametec should be installed into/on steady vibration-free construction elements using an 8 mm stainless steel bolt.

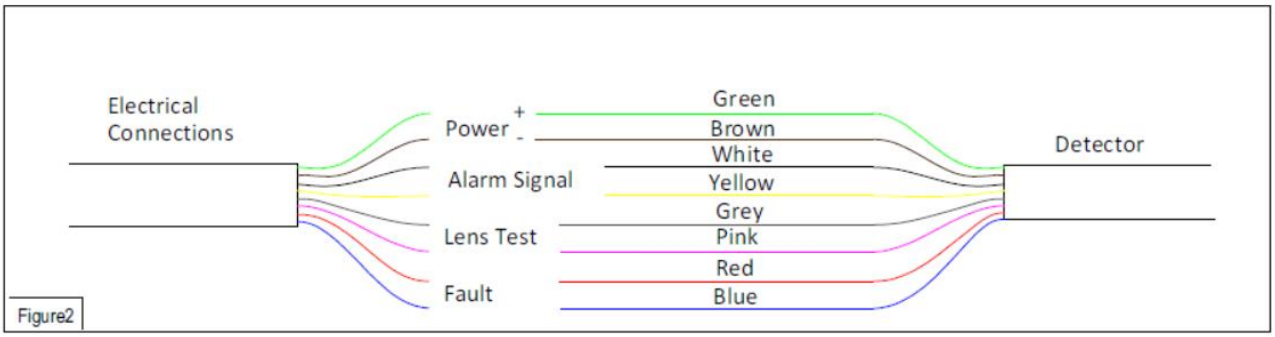
Electrical Connections

Inputs: The Deflametec should be connected to 24VDC±10%.
Outputs: The Deflametec deliver three signals through its inbuilt potential free relays. The relays are normally open when the detector is de-energized. It can be delivered in two versions, closed or open contacts when energized. See bellow table for contact status.

Voltage free output contacts – status			
Version	**Normally open**		
	Alarm contact	**Lens test contact**	**Fault contact**
Detector de-energized	Open	Open	Open
Detector energized	Open	Open	Open
Alarm activated	Closed	Open	Closed
Lens test activated	Open	Closed	Closed
Detector fault	Open	Open	Open
Power loss	Open	Open	Open

Version	**Normally closed**		
	Alarm contact	**Lens test contact**	**Fault contact**
Detector de-energized	Open	Open	Open
Detector energized	Closed	Closed	Closed
Alarm activated	Open	Closed	Closed
Lens test activated	Closed	Open	Closed
Detector fault	Closed	Closed	Open
Power loss	Open	Open	Open

See the drawing below for overview of wire connections.



The following table explains the power parameters of the Deflametec.

Power supply	Max	27 Vdc
	Min	21 Vdc
	Recommended	24 Vdc
Relay Parameter		50 Vdc / 100 mA

LED lights on the flame detector help to visually show what the flame detector sees. Explained in the sketch below:

LED color	**Detector response:**
Green (flashing)	Booted and supplied with sufficient power
Green (constant)	Incandescent light detected (Lens check) and relay signal sent.
Yellow	Fire detected, no alarm
Red	Alarm relay activated

The cables supplying the flame detector with power should be fastened to robust, protected objects. When installed in Ex areas, an explosion proof safety barrier should be installed somewhere along the power cable of the flame detector

Alarm Settings

The detector can be supplied with various alarm settings. Version 1 is our standard setting unless any other version is ordered.

Version	No. of pulses	Seconds	Dip Switch	Model
1	50	5	1 on / 2 off	1
2	100	5	1 off / 2 on	2
3	5	1	1 off / 2 off	3
4	50	30	1 on / 2 on	4

Commisioning

Once the Deflametec flame detector has been mounted and connected to proper its mediums, the flame detector should be checked to see if the installation has been done properly.

At first, the faces of the Deflametec flame detectors are to be inspected:

- If the green LED light is not blinking, even when completely cut off from any light sources, one should check the power supply and possibly disconnect it and reconnect it. If rebooting the flame detector is without any effect, the flame detector should be replaced.
- If the red or yellow LED light is blinking, even when completely cut off from any light sources, the flame detector should be replaced.
- When faced with the incandescent light of a flashlight, the green LED light should stay turned on until the cone of light has been removed from the flashlight is removed. If this is not the case, then one should try to clean the lens and if placed in heavy sunlight, a small cover should be constructed, shielding the flame detector from the sun at all hours of the day. If there are no results, even after rebooting the flame detector, the flame detector should be replaced. The light detector alarm output does not need to be connected for it to be able to detect flames.

For the following test, one should have a movable lit fire source, producing flames no shorter than 20 cm.

- Check around the perimeter of the Deflametec's field of detection as to make sure that the flame detector is not hindered in detecting fires.

Maintenance

The Deflametec flame detectors should have their lens checked for
debris, blurring or the collection of water, oils or other liquids every year, as it can reduce the detectors sensitivity. The Deflametec should also every year be checked in accordance with the above Commissioning section.

The Deflametec flame detector has an expected life expectancy of 5 years under standard conditions. Should the Deflametec for some reason be rendered unable to operate or otherwise compromised, it is asked that the flame detector is not to be repaired or attempted repaired by anyone but Safevent.

Warranty

Warning: Flame detectors rendered nonoperational through misuse of negligence are not considered as part of this warranty.

If a Deflametec is rendered nonoperational within two years after leaving Safevents care; the customer has the right to return the flame detector to their original sales representative for testing and refurbishment. Refurbishment of the Deflametec involves the testing of the Deflametec followed by repairing or replacement of the compromised flame detector. All flame detectors are tested several times during production and function tested before leaving Safevent.

Flame detectors of which have been maliciously handled, tampered with or neglected are not a part of this warrant and will therefore not be repaired or tested without charge. Flame detectors which have surpassed the two years of service will not be repaired or tested without charge.