



## System overview

# Flame Monitoring Device F152

Sensors and systems for combustion engineering



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# Approvals.



# Flame Monitoring Device F152.

Flame monitoring solution for the cost-conscious customer.

The F152 from LAMTEC is a standard SIL 3 category flame monitoring device that can be used in a number of different applications and for a diverse range of monitoring requirements. The digital flame frequency evaluation covers a range from 10 to 200 Hz. The F152 flame monitoring device is approved for continuous operation.

## Design

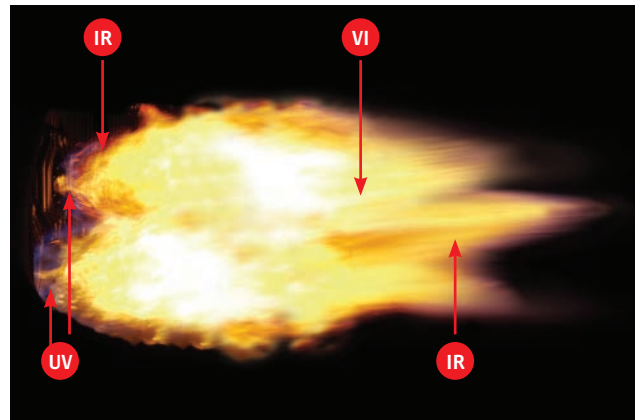
The F152 flame monitoring device consists of a case containing an integrated electronic control system. The case for the F152 flame monitoring device has been designed for top hat rail assembly. The F152 flame monitoring device can also be combined with an additional external flame sensor from the range FFS07 or FFS08, which monitor the flame in the IR range or UV range respectively.

## Field of application

The F152 flame monitoring device from LAMTEC provides operators of industrial combustion systems and power plants with a safety solution for monitoring burner flames without demanding flame discrimination requirements.

## Properties

The F152 flame monitoring device has been designed for use as a two-channel system with electronic self-monitoring. It also features an integrated digital flame frequency evaluation function. The relevant monitoring parameters are displayed via LEDs. One of the key practical benefits of the F152 flame monitoring device is its standard measurement output for intensity in the range 0 ... 20mA. No modifications needed for country-specific mains frequencies as cut-out occurs on a sliding scale. The F152 flame monitoring device is available with a 230 VAC power supply as standard or with an optional 115 VAC supply on request.



Spectrum of the flame.

**IR** Infra-red range **UV** Ultra-violet range **VI** Visual range

## Specialities

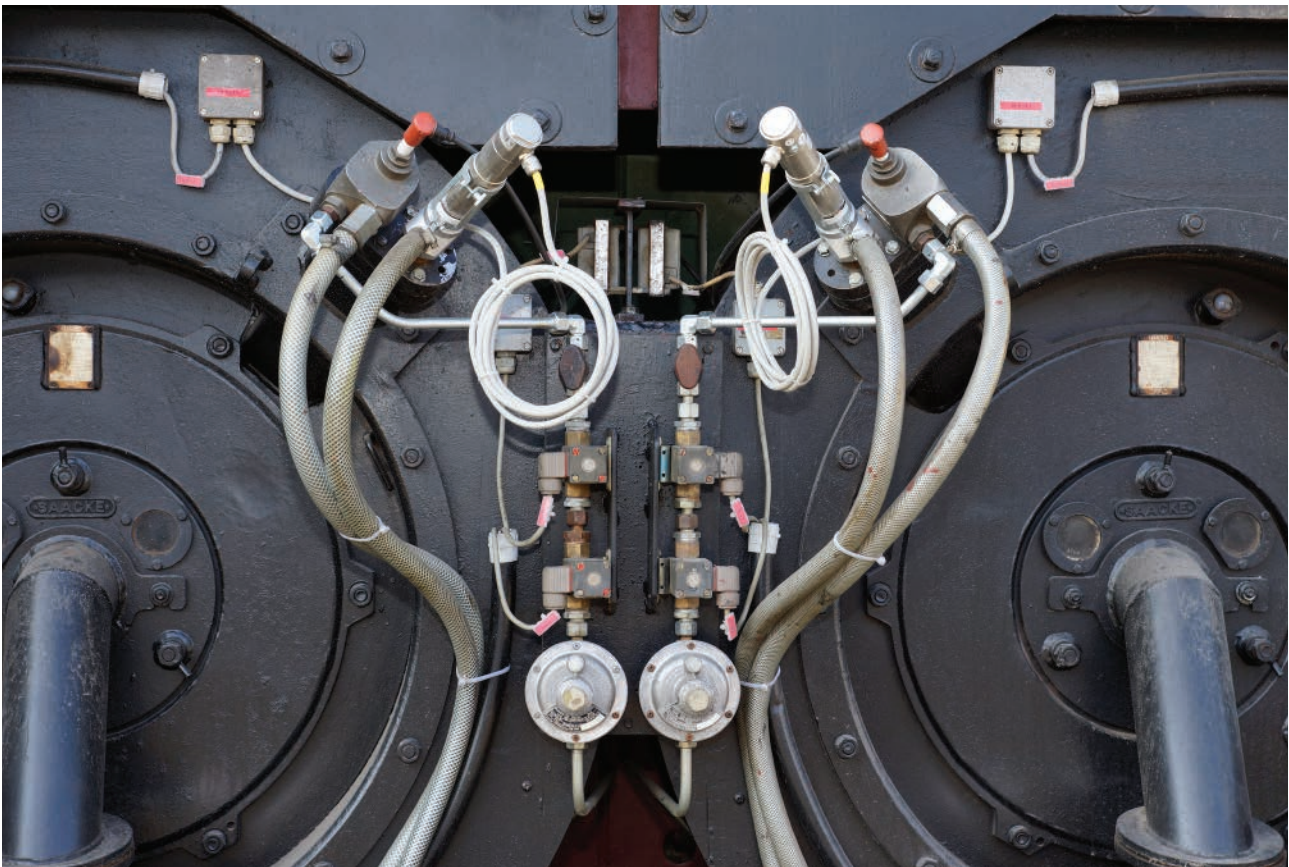
The F152 flame monitoring device and the FFS07 and FFS08 sensors meet the requirements of IEC 61508-2 SIL 3. The devices correspond to DIN EN 298 for operation with gas and oil as well as DIN EN 746-2 for process burners. They also meet the requirements in the directives for pressure equipment (97/23/EC) and gas appliances (2009/142/EC). An Ex Zone 1 certification for the FFS07 flame sensor will be available shortly.





**Summary:**

- Suited for single and multi-fuel burners in standard boiler applications, power plants and process furnaces
- Suitable for fuels such as oil, gas, biomass, dust and process gases
- Plug-in module for top hat rail assembly
- Two-channel system with electronic self-monitoring (no mechanical shutter needed)
- Digital flame frequency evaluation for 10 to 200 Hz
- LED based status display
- Measurement output for intensity 0 ... 20mA
- UV and IR flame sensor
- SIL 3 as per DIN EN 61508-2
- Meets DIN EN 298 for operation with gas and oil as well as DIN EN 746-2 for process burners
- Corresponds to 97/23/EC (Pressure Equipment Directive) and 2009/142/EC (Gas Appliances Directive)
- No modifications needed for country-specific mains frequencies, cut-out occurs on a sliding scale
- Flame sensors FFS07 and FFS08 are available for several different IR & UV spectral ranges
- With power connection ex factory 230 VAC or 115 VAC available



# Basic system.



F152.

## Set-up and function

When combined with the FFS07 or FFS08 flame sensors, the F152 flame monitoring device provides users with a safety solution for monitoring burner flames without demanding flame discrimination requirements. The housing for the F152 flame monitoring device has been designed for top hat rail assembly.

## Applications:

- Single and multi-fuel burners in heating stations
- Process furnaces

## Fuels:

- Oil, gas, biomass, dust, process gases

## Standards and directives:

- DIN EN 298 for gas and oil operation
- DIN EN 746-2 for process furnaces
- Category SIL 3 as per IEC 61508 Part 2
- 97/23/EC (Pressure Equipment Directive)
- 2009/142/EC (Gas Appliances Directive)

## Properties:

- Two-channel design with dynamic electronic self-monitoring.
- No modifications needed for country-specific mains frequencies, cut-out occurs on a sliding scale

## Flame sensor

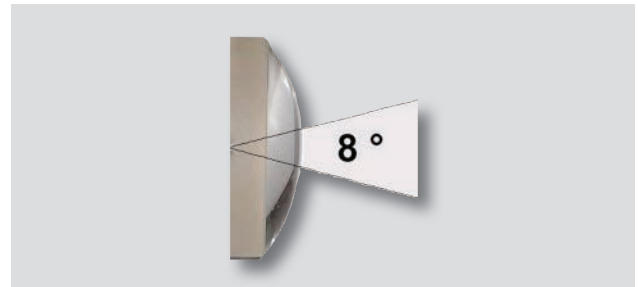
- The flame sensor is available for monitoring flames in the IR range or UV range (FFS07, FFS08).



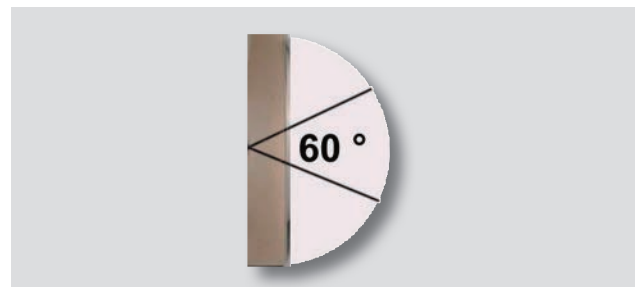
FFS07/FFS08.

## UV flame sensor

The UV flame sensor has a convex lens and detects the flame in a visual range of 8°.



The IR flame sensor has a flat filter disc and detects the flame in a visual range of 60°.



## Selection criteria for spectrum and frequency

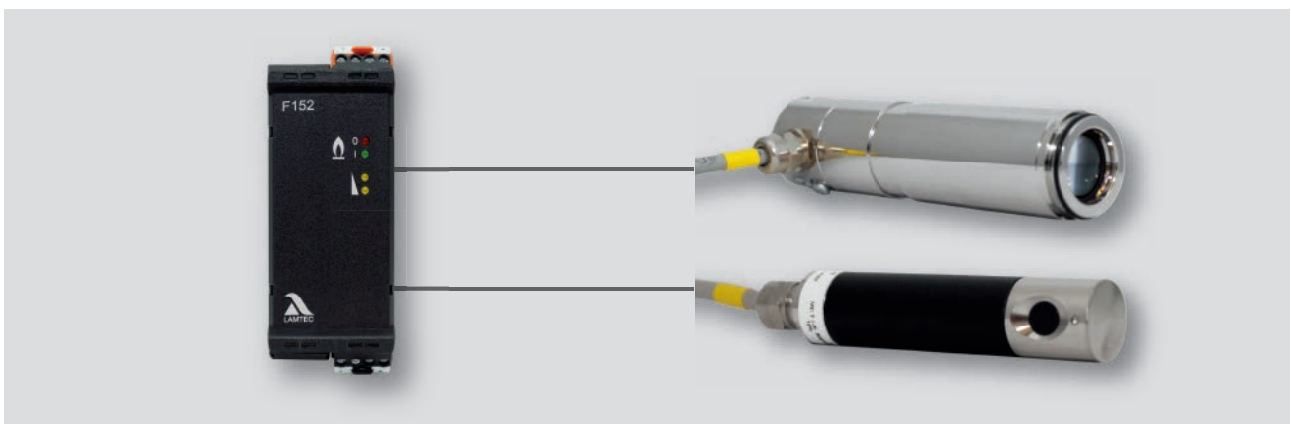
The spectral sensitivity of the flame sensors determines the flame monitoring device's suitability for specific fuels.

## Selection criteria for fuels

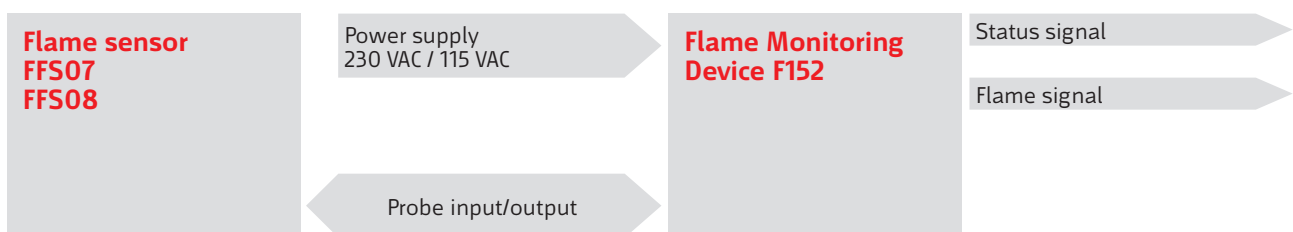
The following table provides an overview:

In certain special circumstances, the suitability of the device types may differ from that indicated in the table.

Type	Spectrum/ nm	Viewing angle approx.	Preferred application/fuels
FFS07/08 UV-1	260 to 400	8°	Oil, gas
FFS07/08 UV-4	215 to 360	8°	Oil, gas, special gases like refinery gases and furnace gases
FFS07/08 IR-1	1000 to 2500	60°	Oil and gas combustion with strong flue-gas recirculation, waste gases with yellowish colour without UV radiation or with shielding of UV components using water vapour and dust



Overview of functions.



Only one sensor possible for each F152.

# Order information.

F152 flame monitoring device options	
F152 flame monitor supply voltage 230 VAC	659G0501
F152 flame monitor supply voltage 115 VAC (UL recognized 120 VAC)	659G0502
Accessory FFS07 flame sensor	
FFS07 UV-1, 3 m cable, without plug	659D21-01/03/0
FFS07 UV-1, 3 m cable, with plug	659D21-01/03/STE
FFS07 UV-4, 3 m cable, without plug	659D21-04/03/0
FFS07 UV-4, 3 m cable, with plug	659D21-04/03/STE
FFS07 IR-1, 3 m cable, without plug	659D21-10/03/0
FFS07 IR-1, 3 m cable, with plug	659D21-10/03/STE
Accessory FFS08 flame sensor	
FFS08 UV-1, 2 m cable, without plug	659D31-01/02/0
FFS08 UV-1, 2 m cable, with plug	659D31-01/02/STE
FFS08 UV-4, 2 m cable, without plug	659D31-04/02/0
FFS08 UV-4, 2 m cable with plug	659D31-04/02/STE
FFS08 IR-1, 2 m cable, without plug	659D31-10/02/0
FFS08 IR-1, 2 m cable, with plug	659D31-10/02/STE
Holders and housing for the FFS07 flame sensor - see Product Catalogue "Accessories for Flame Monitoring Systems" (DLT7660)	
Standard housing Suitable adjustable holder FH30-00, FH30-10, FH40-10	
Housing with screw fixing Suitable adjustable holder FV30-00, FV30-10, FV40-10	
Holders and housing for the FFS08 flame sensor - see Product Catalogue "Accessories for Flame Monitoring Systems" (DLT7660)	
Standard, immersion depth max. 65 mm Suitable holder FS60 and cooling air housing FS65	
Long version, immersion depth max. 150 mm Suitable holder FS60 and cooling air housing FS65	
Extension cable	
Connecting/extension cable, 3 m long*	659R3112
Connecting/extension cable, 5 m long*	659R3115
Connecting/extension cable, 10 m long*	659R3114
Technical documentation	
German operating instructions	DLT7665DE
English operating instructions	DLT7665EN
Other languages on request	



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