

Flame Monitoring Device F152



Approvals.



Flame Monitoring Device F152.

Flame monitoring solution for the cost-concious 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.

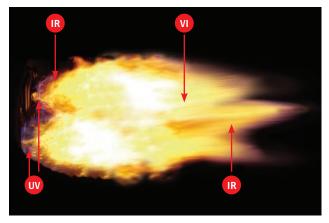
Field of application

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

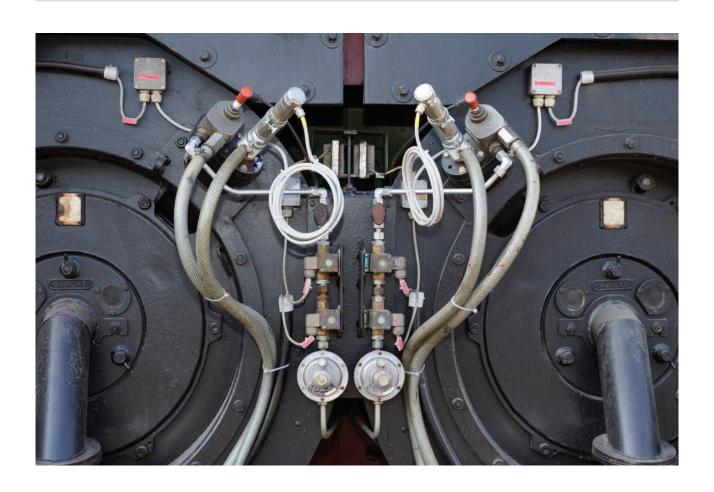
Specialities

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 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.



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

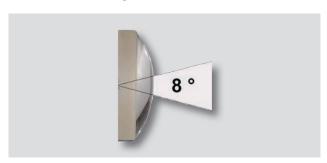
The flame sensor is available for monitoring flames in the IR range or UV range (FFS07, FFS08).



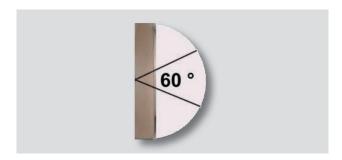
FFS07/FFS08.

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 $^{\circ}$.



Selection criteria for spectrum and frequency

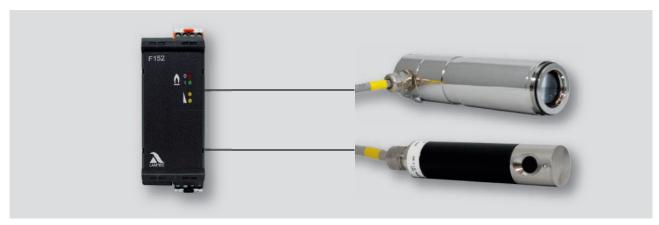
The spectral sensitivity of the flame sensors determines the flame monitoring device's suitability for specific fuels.

Selection criteria for fuels

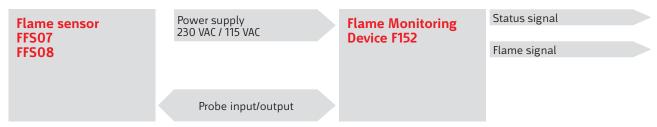
The following table provides an overview:

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

Туре	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 monitor supply voltage 230 VAC F152 flame monitor supply voltage 115 VAC (LIV recognized 120 VAC) (LIV recognized 120 VAC) Accessory FFSO7 flame sensor FFSO7 LIV-1, 3 m cable, without plug FFSO8 LIV-1, 2 m cable, without	F152 flame monitoring device options	
KUL recognized 120 VAC) Accessory FFSO7 flame sensor FFSO7 UV-1, 3 m cable, without plug FFSO7 UV-1, 3 m cable, without plug FFSO7 UV-4, 3 m cable, without plug FFSO7 UV-4, 3 m cable, without plug FFSO7 UV-4, 3 m cable, without plug FFSO7 IR-1, 3 m cable, without plug FFSO7 IR-1, 3 m cable, without plug FFSO8 IR-1, 3 m cable, without plug FFSO8 IR-1, 3 m cable, without plug FFSO8 UV-1, 2 m cable, without plug FFSO8 UV-4, 2 m cable, without plug FFSO8 UV-4, 2 m cable, without plug FFSO8 UV-4, 2 m cable, without plug FFSO8 IR-1, 2 m cable, without plug FFSO8 IR-1, 2 m cable, without plug FFSO8 IR-1, 2 m cable, with plug FFSO8 IR-1, 2 m cable, without plug FFSO8 IR-1, 2 m cable, with pl	F152 flame monitor supply voltage 230 VAC	659G0501
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FFSO7 UV-1, 3 m cable, without plug FFSO7 UV-1, 3 m cable, without plug FFSO7 UV-4, 3 m cable, without plug FFSO7 W-4, 3 m cable, without plug FFSO8 W-4, 3 m cable, with plug FFSO8 W-1, 2 m cable, without plug FFSO8 W-1, 2 m cable, without plug FFSO8 W-1, 2 m cable, without plug FFSO8 W-4, 2 m cable, without	(UL recognized 120 VAC)	
FFSO7 UV-1, 3 m cable, with plug 659021-01/03/STE FFSO7 UV-4, 3 m cable, without plug 659021-04/03/0 659021-04/03/0 659021-04/03/0 659021-04/03/0 659021-04/03/STE FFSO7 UV-4, 3 m cable, with plug 659021-10/03/STE FFSO7 IR-1, 3 m cable, without plug 659021-10/03/STE Accessory FFSO8 flame sensor FFSO8 IW-1, 2 m cable, without plug 659031-01/02/02/0 659031-01/02/02/0 659031-01/02/02/0 659031-01/02/02/0 659031-01/02/02/0 659031-01/02/02/0 659031-01/02/02/0 659031-01/02/02/0 659031-01/02/02/02/02/02/02/02/02/02/02/02/02/02/	Accessory FFS07 flame sensor	
FFSOT UV-4, 3 m cable, without plug FFSOT W-4, 3 m cable, with plug FFSOT IR-1, 3 m cable, with plug FFSOT IR-1, 3 m cable, with plug FFSOT IR-1, 3 m cable, with plug FFSOR IR-1, 3 m cable, with plug FFSOR IR-1, 3 m cable, with plug FFSOR W-1, 2 m cable, with plug FFSOR W-1, 2 m cable, without plug FFSOR W-2, 2 m cable, without plug FFSOR W-4, 2 m cable, 0659031-04/02/5TE Holders and housing for the FFSOR flame sensor - see Product Catalogue "Accessories for Flame Monitoring Systems" (DUT660) Standard housing Suitable adjustable holder FFSOR flame sensor - see Product Catalogue "Accessories for Flame Monitoring Systems" (DUT660) Standard, immersion depth max. 65 mm Suitable holder FSOR and cooling air housing FS65 Long version, immersion depth max. 150 mm Suitable holder FSOR and cooling air housing FS65 Extension cable Connecting/extension cable, 3 m long* Connecting/extension cable, 10 m long* feson3114 fechnical documentation German operating instructions DUT665DE English operating instructions	FFS07 UV-1, 3 m cable, without plug	659D21-01/03/0
FFSO7 UV-4, 3 m cable, with plug 659D21-04/03/STE FFSO7 IR-1, 3 m cable, without plug 659D21-10/03/0 FFSO7 IR-1, 3 m cable, with plug 659D21-10/03/STE Accessory FFSO8 flame sensor FFSO8 UV-1, 2 m cable, without plug 659D31-01/02/0 FFSO8 UV-1, 2 m cable, without plug 659D31-01/02/0 FFSO8 UV-1, 2 m cable, without plug 659D31-01/02/STE FFSO8 UV-4, 2 m cable, without plug 659D31-04/02/0 FFSO8 UR-1, 2 m cable, without plug 659D31-10/02/0 FFSO8 UR-1, 2 m cable, with plug 659D31-10/02/0 FFSO8 UR-1, 2 m cable, without plug 659D31-10/02/0 FFSO8 UR-1, 2 m cable, 0 mthousing for the FFSO7 flame sensor - see Product Catalogue "Accessories for Flame Monitoring Systems" (DLT7660) Standard housing with screw fixing Suitable adjustable holder FY30-00, FY30-10, FV40-10 Holders and housing for the FFSO8 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 Extension cable Connecting/extension cable, 3 m long* 659R3112 Connecting/extension cable, 5 m long* 659R3114 Technical documentation German operating instructions DLT7665DE English operating instructions DLT7665DE	FFS07 UV-1, 3 m cable, with plug	659D21-01/03/STE
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FFSO7 IR-1, 3 m cable, with plug Accessory FFS08 Hame sensor FFS08 UV-1, 2 m cable, without plug FFS08 UV-1, 2 m cable, without plug FFS08 UV-4, 2 m cable, without plug FFS08 IR-1, 2 m cable, with plug FFS08 IR-1, 2 m ca	FFS07 UV-4, 3 m cable, with plug	659D21-04/03/STE
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FFSO8 UV-1, 2 m cable, without plug FFSO8 UV-1, 2 m cable, with plug FFSO8 UV-4, 2 m cable, with plug FFSO8 UV-4, 2 m cable, without plug FFSO8 IR-1, 2 m cable, without plug FFSO8 IR-1, 2 m cable, with plug FFSO8 IR-1, 2 m cable,	FFS07 IR-1, 3 m cable, with plug	659D21-10/03/STE
FFSO8 UV-1, 2 m cable, with plug 659031-01/02/STE FFSO8 UV-4, 2 m cable, without plug 659031-04/02/0 FFSO8 UV-4. 2 m cable with plug 659031-04/02/STE FFSO8 IR-1, 2 m cable, without plug 659031-10/02/0 FFSO8 IR-1, 2 m cable, with plug 659031-10/02/0 FFSO8 IR-1, 2 m cable, with plug 659031-10/02/STE Holders and housing for the FFSO7 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 FFSO8 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* Connecting/extension cable, 5 m long* Connecting/extension cable, 10 m long* Connecting/extension cable, 10 m long* Connecting/extension cable, 10 m long* German operating instructions DLT7665DE English operating instructions DLT7665DE	Accessory FFS08 flame sensor	
FFSO8 UV-4, 2 m cable, without plug 659D31-04/02/0 FFSO8 UV-4. 2 m cable with plug 659D31-04/02/STE FFSO8 IR-1, 2 m cable, without plug 659D31-10/02/0 FFSO8 IR-1, 2 m cable, without plug 659D31-10/02/STE Holders and housing for the FFSO7 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 FFSO8 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* Connecting/extension cable, 5 m long* Connecting/extension cable, 10 m long* 659R3112 Connecting/extension cable, 10 m long* 659R3114 Technical documentation German operating instructions DLT7665DE English operating instructions DLT7665DE	FFS08 UV-1, 2 m cable, without plug	659D31-01/02/0
FFSO8 UV-4. 2 m cable with plug 659D31-04/02/STE FFSO8 IR-1, 2 m cable, without plug 659D31-10/02/0 FFSO8 IR-1, 2 m cable, with plug 659D31-10/02/STE Holders and housing for the FFSO7 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 FFSO8 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* Connecting/extension cable, 5 m long* Connecting/extension cable, 10 m long* 659R3112 Connecting/extension cable, 10 m long* 659R3114 Technical documentation German operating instructions DLT7665DE English operating instructions DLT7665DE	FFS08 UV-1, 2 m cable, with plug	659D31-01/02/STE
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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* Connecting/extension cable, 5 m long* Connecting/extension cable, 10 m long* German operating instructions DLT7665DE English operating instructions	FFS08 IR-1, 2 m cable, without plug	659D31-10/02/0
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* Connecting/extension cable, 5 m long* Connecting/extension cable, 10 m long* German operating instructions DLT7665DE English operating instructions DLT7665EN	FFS08 IR-1, 2 m cable, with plug	659D31-10/02/STE
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" (DL17660) 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* Connecting/extension cable, 5 m long* Connecting/extension cable, 10 m long* German operating instructions DL17665DE English operating instructions DL17665EN	Holders and housing for the FFS07 flame sensor - see Product Catalogue "Accesso	ries for Flame Monitoring Systems" (DL17660)
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Suitable holder FS60 and cooling air housing FS65 Extension cable Connecting/extension cable, 3 m long* Connecting/extension cable, 5 m long* Connecting/extension cable, 10 m long* Connecting/extension cable, 10 m long* German operating instructions DLT7665DE English operating instructions	Standard, immersion depth max. 65 mm Suitable holder FS60 and cooling air housing FS65	
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Connecting/extension cable, 10 m long* Technical documentation German operating instructions English operating instructions DLT7665EN	Connecting/extension cable, 3 m long*	659R3112
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German operating instructions English operating instructions DLT7665DE DLT7665EN	Connecting/extension cable, 10 m long*	659R3114
English operating instructions DLT7665EN	Technical documentation	
	German operating instructions	DLT7665DE
Other languages on request	English operating instructions	DLT7665EN
	Other languages on request	



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