



noor parto
Flame Monitoring



About Us



Following the declaration of need and request of Sirjan Golgozar mining and industrial company in 2013, the design and manufacturing of UV flame detector started for the first time in Iran in ACECR, Sharif branch. The result was the installation of several flame detectors in pelletizing unit of the company. The technical inspection and study of the best available products in global market were made, and the suitable model was selected in order to supply the need of this equipment in domestic industries including thermal power plants, refineries, and petrochemical and mining ones. Finally, the design, manufacturing, and expansion of this work in ACECR, Sharif branch led to establishing "Noor Parto" company, and the technical knowledge was transferred to the company for producing and developing the products while ACECR, Sharif branch became one of its shareholders.

By applying the experienced professionals in fields of photonics, power, and mechanics, with more than three decades of design, manufacturing, and management of electro optical systems, the company succeeded to design and mass production of the flame detectors, and to equip several industrial units including Shahid Rajaee and Sahand thermal power plants, Khorasan and Asaluyeh Mobin petrochemical companies, and Mapna-Tuga turbine engineering and manufacturing company.



Table Of Customers



Employer	Type of furnace /combustion chamber	Installed flame detector model	Customer's previous flame detector model
Gol Gohar mining and industrial company	Pelletizing furnace	UV Flame Detector	Hans Henning
Shahid Rajaei thermal power plant ,steam unit , Qazvin	Steam (boiler)	NFDL-1957 NFDL-2540	Durag - D-LX 200 Baily
Khorasan petrochemical company	Steam (boiler)	NFDL-1957	A.S.T - FD77UVS Fireye - 85UVF
Asaluyeh Mobin petrochemical company	Steam (boiler)	NFDL-1957	Durag - D-LX 100 Fireye - 65UV5 1000E
Sahand thermal power plant, Bonab	Steam (boiler)	NFDF-1957	Fireye - 45UVFS1
Shahid Rajaei thermal power plant, combined cycle unit, Qazvin	Gas turbine of combined cycle unit	NFDF-1957 NFDF-25110-N1Ex	Honeywell - LG1093A
Mapna-Tuga turbine engineering and manufacturing company	Gas turbine	NFDF-1957-N1Ex	ITS BFI - Fiber Optic
Mapna-Meco power and control engineering company	Installation in gas turbine control room	NFDC-DR35	BFI - 3001 Amplifier Card
Shahid Mohammad Montazeri thermal power plant, Esfahan	Steam (boiler)	NFDL-2540	Fireye - 45UVFS1 Fireye - 45RM2
Damavand petrochemical company, Asaluyeh	Auxiliary steam boiler (HRSG unit)	NFDL-2545-N2Ex	Durag - D-LE 603 Fives Pillard
Bid Boland gas refining company, Persian Gulf	Steam (boiler)	NFDL-2545-N2Ex	Durag - D-LX 200
Noori petrochemical company, Asaluyeh	Furnace	NFDL-25110-N2Ex	Fireye - 45UV5 1008
Coal tar refining company	Furnace	NFDL-2540-N2Ex	Fives Pillard



List Of Customers



Standards

Row	Test title	Standard number	Equivalent national standard number
1	Electrostatic discharge immunity test	IEC 61000-4-2	INSO 7260-4-2
2	Electrical fast transient/burst immunity test	IEC 61000-4-4	INSO 7260-4-4
3	Surge immunity test	IEC 61000-4-5	INSO 7260-4-5
4	Immunity to conducted disturbances, induced by radio-frequency fields	IEC 61000-4-6	INSO 7260-4-6
5	Techniques-Voltage dips, short interruptions and voltage variations immunity tests	IEC 61000-4-11	INSO 7260-4-11
6	Flame detector IP66 test	IEC 60529	INSO 2868
7	Flame detector temperature test	EN 298	ISIRI 10254
8	Flame detector vibration test	EN 298	ISIRI 10254
9	Flame detector explosion-proof test ATEX Ex II 2G Ex db IIC T6 Gb II 2D Ex tb IIIC T85°C Db	IEC 60079-1	---





Flame detector

NFDL1957

to detect gas, oil and coal flames



Features

- For ambient temperatures from -40°C up to +85°C;
- Two parallel channels to increase the safety of the device;
- Flame flicker frequency measurement;
- Usable for all burners with different fuels.

Applications

- Power stations;
- Petrochemical industry;
- Steel industry;
- Cement factory;
- Refineries;
- Steam generators;
- Waste incinerators;
- Heating systems.

Standards obtained

EMC Standards

- IEC 61000-4-2
- IEC 61000-4-4
- IEC 61000-4-5
- IEC 61000-4-11
- IEC 61000-4-3
- IEC 61000-4-6

Vibration Standard

Temperature Standard

IP66 Standard

Functional description

This model is a Line of sight flame detector that is installed directly on the furnace. The light of flame by the optical lens is focused on the photodetector sensor. The sensor converts the light into electrical signals. The flame signal is analyzed by the central processor and monitored in the output.

Spectral sensitivity	NFDL-1957	190 - 570 nm	System status relay contact	1x NO contact, 24 VDC, 0.5 A
	NFDL-2540	245 - 400 nm		
	NFDL-2545	250 - 450 nm		
	NFDL-2565	250 - 650 nm		
	NFDL-25110	250 - 1100 nm		
Operating voltage	24 VDC $\pm$ 20%		Flame intensity analogue output	0/4 ... 20 mA, max. load 750 ohm
Power consumption	5 W		Interface protocol	RS485, Modbus RTU
Ambient temperature	-40°C to +85°C		Protection class	IP66
Safety	Safety Self-monitoring and fail-safe		Optical viewing angle	6°
Safety time (FFRT)	1, 2, 3, 5 s		Dimensions	Ø120 mm, length 258 mm
Flame relay contact	1x NO contact, 24 VDC, 0.5 A		Weight	approx. 2.5 kg



Flame detector

NFDL1957-N2EX

to detect gas, oil and coal flames



Features

- For ambient temperatures from -40°C up to +85°C;
- Two parallel channels to increase the safety of the device;
- Flame flicker frequency measurement;
- Usable for all burners with different fuels;
- Explosion-proof.

Applications

- Power stations;
- Petrochemical industry;
- Steel industry;
- Cement factory;
- Refineries;
- Steam generators;
- Waste incinerators;
- Heating systems.

Standards obtained

EMC Standards

- IEC 61000-4-2
- IEC 61000-4-4
- IEC 61000-4-5
- IEC 61000-4-11
- IEC 61000-4-3
- IEC 61000-4-6

Vibration Standard

Temperature Standard

IP66 Standard

Explosion-proof standard (ATEX)



Functional description

This model is a Line of sight flame detector that is installed directly on the furnace. The light of flame by the optical lens is focused on the photodetector sensor. The sensor converts the light into electrical signals. The flame signal is analyzed by the central processor and monitored in the output.

Spectral sensitivity	NFDL-1957 190 - 570 nm NFDL-2540 245 - 400 nm NFDL-2545 250 - 450 nm NFDL-2565 250 - 650 nm NFDL-25110 250 - 1100 nm	System status relay contact	1x NO contact, 24 VDC, 0.5 A
Operating voltage	24 VDC ±20%	Flame intensity analogue output	0/4 ... 20 mA, max. load 750 ohm
Power consumption	5 W	Interface protocol	RS485, Modbus RTU
Ambient temperature	-40°C to +85°C	Protection class	IP66 II 2G Ex db IIC T6 Gb II 2D Ex tb IIIC T85°C Db
Safety	Safety Self-monitoring and fail-safe	Optical viewing angle	6°
Safety time (FFRT)	1, 2, 3, 5 s	Dimensions	Ø145 mm, Length 285 mm
Flame relay contact	1x NO contact, 24 VDC, 0.5 A	Weight	approx. 4.3 kg



Flame detector

NFDF1957

to detect gas, oil and coal flames



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- IEC 61000-4-4
- IEC 61000-4-5
- IEC 61000-4-11
- IEC 61000-4-3
- IEC 61000-4-6

Vibration Standard

Temperature Standard

IP66 Standard

Functional description

This model is one of the fiber optic flame detectors which is connected to furnace or combustion chamber through optical fiber; and in this way, the flame reflected light is focused on photodetector sensor. The sensor produces electrical signals proportional to the light received, and then, after measuring flame light specifications, and processing by system processors based on specific algorithm, the data are put in system outputs.

Spectral sensitivity	NFDF-1957 190 - 570 nm NFDF -2540 245 - 400 nm NFDF -2545 250 - 450 nm NFDF -2565 250 - 650 nm NFDF -25110 250 - 1100 nm	System status relay contact	1x NO contact, 24 VDC, 0.5 A
Operating voltage	24 VDC ±20%	Flame intensity analogue output	0/4 ... 20 mA, max. load 750 ohm
Power consumption	5 W	Interface protocol	RS485, Modbus RTU
Ambient temperature	-40°C to +85°C	Protection class	IP66
Safety	Safety Self-monitoring and fail-safe	Optical viewing angle	6°
Safety time (FFRT)	1, 2, 3, 5 s	Dimensions	Ø120 mm, Length 258 mm
Flame relay contact	1x NO contact, 24 VDC, 0.5 A	Weight	approx. 2.5 kg



Flame detector

NFDF1957-N1EX

to detect gas, oil and coal flames



Features

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- Explosion-proof.

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Vibration Standard

Temperature Standard

IP66 Standard

Explosion-proof standard (ATEX)

Functional description

This model is one of the fiber optic flame detectors which is connected to furnace or combustion chamber through fiber; and in this way, the flame reflected light is focused on photodetector sensor.

The sensor produces electrical signals proportional to the light received, and then, after measuring flame light specifications, and processing by system processors based on specific algorithm, the data are put in system outputs.

Spectral sensitivity	NFDF-1957 190 - 570 nm NFDF -2540 245 - 400 nm NFDF -2545 250 - 450 nm NFDF -2565 250 - 650 nm NFDF -25110 250 - 1100 nm	System status relay contact	1x NO contact, 24 VDC, 0.5 A
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Safety	Safety Self-monitoring and fail-safe	Optical viewing angle	6°
Safety time (FFRT)	1, 2, 3, 5 s	Dimensions	Ø145 mm, Length 285 mm
Flame relay contact	1x NO contact, 24 VDC, 0.5 A	Weight	approx. 4.3 kg

Fiber optic system

NFOS-GT

Used for gas turbines

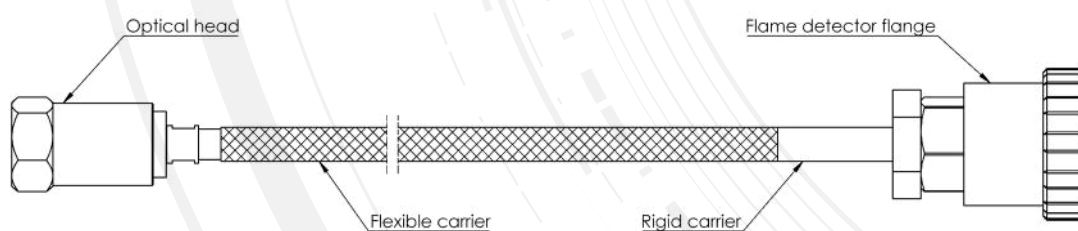
General description of the system

If the environment temperature, where the flame detector is installed, exceeds +85°C, or if the vibration of the turbine installed near the detector is so high that has a negative effect on its performance, then a flexible optical fiber for transferring the flame light towards the detector is used. In normal condition, this system can withstand the temperature up to +300°C, and with cooling air up to +600°C. With this system, the detector can be installed in further distance with respect to combustion chamber.

Fiber optic wavelength	UV type 200 – 1100 nm IR type 400 – 2500 nm
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Fiber optic working temperature	-40°C to +300°C -40°C to +600°C (with cooling air)
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Fiber optic cable length	1 to 20 meter
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Fiber optic system

NFOS-BL

Used for boilers

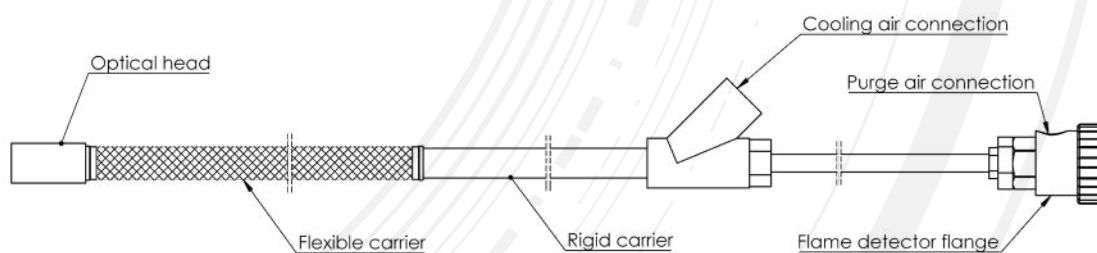
General description of the system

In cases where the path of the flame detector vision up to the flame inside the furnace is not direct and in line, or if the vibration of the turbine installed near the detector is so high that has a negative effect on its performance, then a flexible optical fiber for transferring the flame light towards the detector is used. In normal condition, this system can withstand the temperature up to +300°C, and with cooling air up to +600°C. With this system, the detector can be installed in further distance with respect to furnace or boiler.

Fiber optic wavelength	UV type 200 – 1100 nm IR type 400 – 2500 nm
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Fiber optic working temperature	-40°C to +300°C -40°C to +600°C (with cooling air)
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Fiber optic cable length	1 to 20 meter
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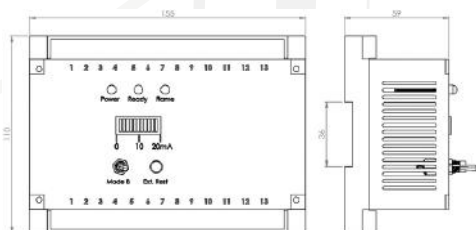


Flame detector electronic card

NFDC-DR35

General description of the system

This card consists of an electronic board which is connected to flame detector through 12-strand fiber optic cable. It is located in control room in order to receive and observe the output signals.



Working voltage	24 VDC $\pm 20\%$	Installation method	DIN Rail 35 mm
Consumption power	5 W	Communication protocol	RS485, Modbus RTU
Environmental temperature	0°C to +70°C	Analog current output	0/4-20 mA, max. load 750 ohm
Dimensions (L x W x H) mm	155x110x59	Flame relay contact	1x closing contact 24 VDC, 0.5 A
Weight	approx. 600 g	System status relay contact	1x closing contact 24 VDC, 0.5 A



Application software

Specifications and capabilities

- Connection to 64 flame detectors, with only two strands of wires, by using RS485 connector and Modbus RTU protocol.
- Display of switches regulation status of intensity and frequency thresholds, and the signal gain coefficient.
- Display of wave shape, light intensity, and frequency of measured fluctuations from the stored flame light for required analyses.
- The possibility of storing and implementing information in Excel format.
- Installation capability on Windows operation system.





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