

# Flame Monitors BROCHURE

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## Compact flame monitor

**Self-monitoring and fail-safe compact flame monitor for the monitoring of gas, oil and coal flames with integrated UV, VIS or IR flame sensor, primarily in single burner furnaces.**

### Features

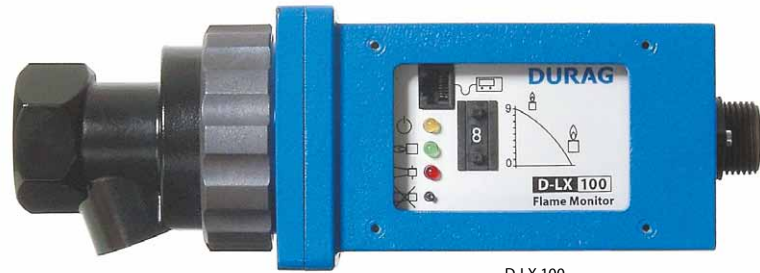
- Suitable for continuous operation and 72-hour operation according to TRD 604
- Compact design, flame sensor and control unit in one enclosure, takes up no space in control cabinet
- LED display for settings and operational status
- ATEX approved (D-LX 100 .../94 Ex for zone 1 and D-LX.../97 Ex for zone 2).

### Applications

- Power stations
- Chemical industry
- Refineries
- Cement plants
- Waste incinerators
- Steam generators
- Heating plants.

### Certifications

- DVGW
- APAVE
- UL 372
- FM Class 7610
- AGA: AG 210
- GOST-R
- PTB (ATEX).



D-LX 100

### Functional description

The D-LX 100 flame monitor analyses flame radiation using the integrated flame sensor signal. The flame intensity is present as a current at one output 0/4...20mA for further analysis.

### Design

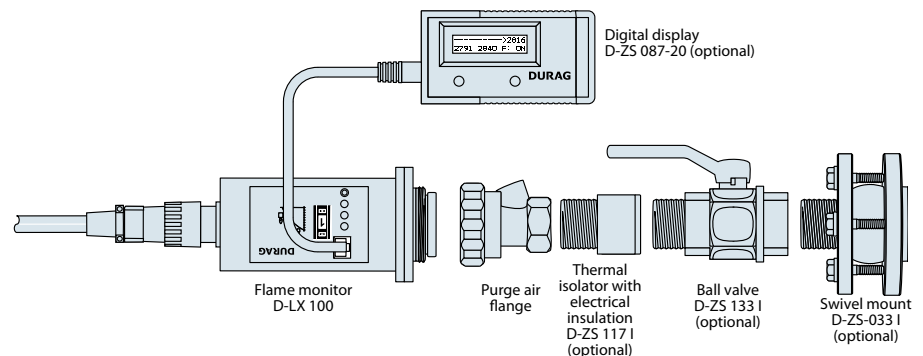
- Integrated compact device.



D-LX 100 / 94 Ex  
D-LX 100 / 95 Ex

### Accessories

- **Digital display** for optimal adjustment of the flame sensors by measuring the pulse rate and its extreme values (D-ZS 087 - 20)
- **Optical adjustment aid** for the alignment of the Swivel mount on the sighting tube (D-ZS 118)
- **UV-C test light source** 230 V / 50 Hz (D-ZS 077-10)
- **UV-A, UV-B and IR test light source** 230 V/50 Hz (D-ZS 093)
- **Swivel mount** for alignment of flame monitor to the flame to be monitored (D-ZS 033 - I)
- **Thermal isolator** with electrical insulation (D-ZS 117 - I)
- **Ball valve** for closing sighting tube (D-ZS 133 - I)
- **Terminal box** for connecting the flame monitor (D-ZS 140 / 141)
- **Power supply unit** to supply two D-LX 100 (D-NG 24/05).



|                     |   |  |   |
|---------------------|---|--|---|
| Operational mode    | Intermittent operation, continuous operation, 72-hour operation without permanent supervision | Flame intensity                          | 0/4...20mA  |
| Safety              | Self-monitoring and fail-safe   | Perm. ambient temperature                | -20...+60°C   |
| Auxiliary supply    | 24 VDC  | Dimensions / Weight                      | 90 x 92 mm, length approx. 350 mm / approx. 1.8 kg  |
| Protection class    | IP67  | Sighting tube connection                 | G 1 1/4"  |
| Flame relay         | 1x NO contact, 230 VAC, 2 A   | Purge air connection                     | G 1/2"  |
| Status relay        | 1x NO contact, 230 VAC, 2 A   | <b>D-LX 100 Ex</b>                       |   |
| Safety time         | 1, 3, 5 s   | Ex-protection optional optional optional | II 2G Ex de IIC T5/T6 Class I, Div. 1, Group B, C & D Class I, Div. 2, Group A, B, C & D II 3G Ex nAnC IIC T6 |
| Spectral ranges     | UV, VIS, IR   | Dimensions Weight                        | Ø130 mm, length 313 mm approx. 4.3 kg   |
| Viewing angle       | 6°  | Sighting tube connection                 | G 1"  |
| Number of ranges    | 1   | Protection class                         | IP65  |
| Switching threshold | 0...9   |  |   |
| Display             | LED display   |  |   |

## Compact flame monitor

**Self-monitoring and fail-safe compact flame monitor for the monitoring of gas, oil, and coal flames with integrated UV or IR flame sensor.**

### Features

- Wide sensitivity range
- For ambient temperatures from -40°C up to +85°C
- Dual channel design throughout
- Measurement of flame flicker frequency
- Selective to individual burners and fuels.

### Applications

- Power stations
- Chemical industry
- Refineries
- Cement plants
- Waste incinerators
- Steam generators
- Heating plants.

### Certifications

- DVGW
- FM Class 7610
- SIL3
- GOST-R



D-LX 200

### Functional description

The D-LX 200 compact flame monitor analyses flame radiation using the integrated flame sensor signal.

Current output 0/4...20 mA available for further analysis.

Flame properties and parameters of the flame monitor can be transmitted to a PC via a RS485 and an IrDA interface.

### Design

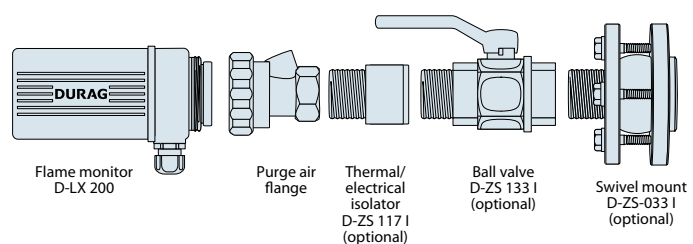
- Integrated compact device
- Plug connection (/MP)

### Accessories

- **Optical adjustment aid** for the alignment of the swivel mount on the sighting tube (D-ZS 118)
- **LED bar graph display** for the flame intensity (D-ZS 129)
- **UV-A, UV-B and IR-test light source** 230 V/50 Hz (D-ZS 093)
- **Swivel mount** for the alignment of the flame monitor (D-ZS 033 - I)
- **Thermal isolator** with electrical insulation (D-ZS 117 - I)
- **Ball valve** for closing the sighting tube (D-ZS 133 - I)
- **Terminal box** for connecting the flame monitor (D-ZS 140-12)
- **Power supply unit** for supply of up to two D-LX 200 (D-NG 24/05).



User interface of the flame monitor software



**SIL 3**

|                  |   |                           |   |
|------------------|---|---------------------------|---|
| Operational mode | Intermittent operation and continuous operation | Communication             | LED, Modbus RTU, IrDA                           |
| Safety           | Self-monitoring and fail-safe                   | Analogue output           | 0/4...20 mA                                     |
| Auxiliary supply | 24 VDC  | Ambient temperature range | -40...+85°C                                     |
| Protection class | IP66/68, IP65 (/MP)                             | Dimensions Weight         | 85x85 mm, length approx. 250 mm approx. 1.25 kg |
| Flame relay      | 1x NO contact, 24 VDC, 0.5 A                    | Sighting tube connection  | G 1 1/4" or 1 1/4" NPT(F)                       |
| Status relay     | 1x NO contact, 24 VDC, 0.5 A                    | Purge air connection      | G 1/2" or 1/2" NPT(F)                           |
| Safety time      | 1, 2, 3, 5 s                                    | Spectral ranges           | UV, IR  |
| Viewing angle    | 6°  | Threshold switches        | Flame intensity and flicker frequency           |
| Ranges           | 2   |                           |   |

## Compact flame monitor with fibre optic system

- Application with**
- flexible fibre optic system (D-LL 703)
  - or rigid fibre optic system (D-LL 704)

### Features

- Suitable for continuous operation and 72-hour operation according to TRD 604
- Compact design, flame sensor and control unit in one enclosure, takes up no space in control cabinet
- LED display for settings and operational status
- Self-monitoring and fail-safe compact flame monitor for the monitoring of gas, oil and coal flames with integrated UV, VIS or IR flame sensor, primarily in single burner furnaces.

### Applications

- Burners with difficult installation conditions for conventional flame sensors or on those whose environmental temperature near the sighting tube is too high
- Power stations
- Chemical industry
- Refineries
- Cement plants
- Waste incinerators
- Steam generators
- Heating plants.

### Certifications

- GOST-R



D-LX 700

### Functional description

The D-LX 700 flame monitor analyses flame radiation using the integrated flame sensor signal.

The flame intensity is present as a current at one output 0/4...20mA for further analysis.

The D-LL 703 and D-LL 704 fibre optic system may be integrated directly into the hot area of the burner. It transfers the radiation from the flame over a fibre optic bundle to the flame sensor installed outside the burner.

### Design

- Integrated compact device.

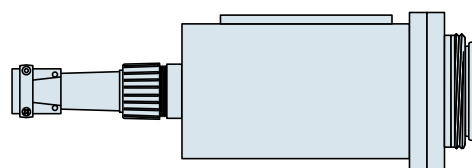
### Accessories

- **Digital display** for optimal adjustment of the flame sensors by measuring the pulse rate and its extreme values (D-ZS 087 - 20)
- **UV-A, UV-B and IR test light source** 230 V/50 Hz (D-ZS 093)
- **Terminal box** for connecting the flame monitor (D-ZS 140 / 141)
- **Installation flange** for D-LL 703 for fibre optic system (D-ZS 703)
- **Welding flange** for D-LL 704 for fibre optic system (D-ZS 704).

### Flame monitor selection

| Flame sensor | Suitable for fuels |     |      |      | Features   |
|--------------|--------------------|-----|------|------|--|
|              | Gas                | Oil | Coal | Wood |  |
| D-LX 700 UAF | ●                  | ++  |      |      | with intensive ambient light (neighbouring burners), gain switchover |
| D-LX 700 UA  | +                  | ++  | +    |      | with low NO <sub>x</sub> component, gain switchover                  |
| D-LX 700 IS  | !                  | +   | ++   | +    | selective single burner monitoring (coal, oil)                       |
| D-LX 700 IG  | ●                  | +   | ++   | ++   | selective single burner monitoring (coal, oil, wood)                 |

++ ideally suited + well suited ● conditionally suited ! not permitted (from experience)



Flame sensor  
D-LX 700

|                  |   |                           |  |
|------------------|---|---------------------------|--|
| Operational mode | Intermittent operation, continuous operation, 72-hour operation without permanent supervision | Spectral ranges           | UV, VIS, IR  |
| Safety           | Self-monitoring and fail-safe   | Number of ranges          | 1  |
| Auxiliary supply | 24 VDC  | Switching threshold       | 0...9  |
| Protection class | IP67  | Display                   | LED display  |
|                  |   | Flame intensity           | 0/4...20 mA  |
| Flame relay      | 1x NO contact, 230 VAC, 2 A   | Perm. ambient temperature | -20...+60°C  |
| Status relay     | 1x NO contact, 230 VAC, 2 A   | Dimensions / Weight       | 90 x 92 mm, length approx. 350 mm / approx. 1.8 kg |
| Safety time      | 1, 3, 5 s   |                           |  |

## Compact flame monitor with fibre optic system

### Application with

- flexible fibre optic system  
D-LL 703
- or rigid fibre optic system  
D-LL 704

### Features

- Wide sensitivity range
- For ambient temperatures from -40°C up to +85°C
- Dual channel design throughout
- Measurement of flame flicker frequency
- Selective to individual burners and fuels.

### Applications

- Burners with difficult installation conditions for conventional flame sensors or on those whose ambient temperature near the sighting tube is too high
- Power stations
- Chemical industry
- Refineries
- Cement plants
- Waste incinerators
- Steam generators
- Heating plants.

### Certifications

- DVGW
- FM Class 7610
- GOST-R
- SIL3.



**SIL 3**



D-LX 720

### Functional description

The D-LX 720 compact flame monitor is electronically identical to the D-LX 200. It analyses flame radiation using the integrated flame sensor signal.

Current output 0/4...20 mA available for further analysis.

Flame properties and parameters of the flame monitor can be transmitted to a PC via a RS485 and an IrDA interface.



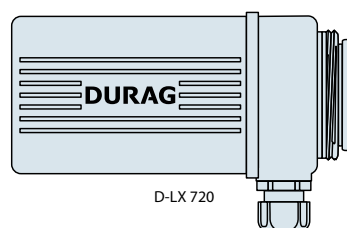
User interface of the flame monitor software

### Design

- Integrated compact device
- Plug connection (/MP)

### Accessories

- **LED bar graph display** for the flame intensity (D-ZS 129)
- **Terminal box** for connecting the flame monitor (D-ZS 140-12)
- **Installation flange** for D-LL 703 fibre optic system (D-ZS 703)
- **Welding flange** for D-LL 704 fibre optic system (D-ZS 704)
- **Power supply unit** for supply of up to two D-LX 720 (D-NG 24/05).



D-LX 720

|                  |   |                           |   |
|------------------|---|---------------------------|---|
| Operational mode | Intermittent operation and continuous operation | Ranges                    | 2   |
| Safety           | Self-monitoring and fail-safe                   | Communication             | LED, Modbus RTU, IrDA                           |
| Auxiliary supply | 24 VDC  | Analogue output           | 0/4...20 mA                                     |
| Protection class | IP66/68, IP65 (/MP)                             | Ambient temperature range | -40...+85°C                                     |
| Flame relay      | 1x NO contact, 24 VDC, 0.5 A                    | Dimensions Weight         | 85x85 mm, length approx. 175 mm approx. 1.25 kg |
| Status relay     | 1x NO contact, 24 VDC, 0.5 A                    | Spectral ranges           | UV, IR  |
| Safety time      | 1, 2, 3, 5 s                                    | Threshold switches        | Flame intensity and flicker frequency           |



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