

DURAG GROUP

D-FL 100

Volume flow measuring system



DURAG

Suitability-tested and certified impact pressure system to measure velocity and volume flow of dry flue gas or process gas in pipes or ducts.

OVERVIEW

- Reliable measurement of the gas velocity even at high temperatures
- Calculation of volume flow at standard conditions
- Certified, cost effective measuring system
- Versions with or without counter-support and for point measurement
- Extremely low maintenance, maintenance interval 6 months
- Convenient operation via remote access with web Interface

YOUR BENEFIT

- **Certified for official emission monitoring**
Type approved according to EN 15267-3, certified versions for EX environments available
- **Precise velocity and volume flow measurement under difficult conditions**
Averaging pitot tube with bore holes placed according to the reference method ensures optimum comparability with the reference method
- **Space-saving and easy installation**
One-sided Installation without alignment available for small stacks
- **Low risk of failure**
Option remote mounting with no electronic parts on the hot side allow operation with no purge air requirement even at high flue gas temperatures
- **Suitable for harsh flue gas conditions**
Ruggedized probes made from special materials available for extremely high temperatures or aggressive flue gases
- **Reliable emission monitoring**
Automatic back purging option ensures reliable measurements and a long lifetime for flue gas with high dust content

APPLICATIONS

Suitable for velocity and volume flow measurement

- Volume flow measurement at high temperatures
- Plants with large or small flue cross-sections
- Volume flow measurement at high pressure

Industries

- Plants requiring official approval acc. to IED 2010/75/EU
- Emission trading of green house gases GHG acc. to 2003/87/EG / MRR
- Power industry
- Incinerators with dry fluegas
- Waste incineration
- Cement industry
- Crematories
- Process monitoring
- ATEX applications

CERTIFICATIONS



TECHNICAL DATA

D-FL 100 application data

| | |
|--|--|
| Flue gas type | Air, flue gas, non flammable process gas |
| Flue gas temperature | Above dew point, up to 450 °C standard, up to 1000 °C option |
| Flue gas dust concentration | 0 ... 30 mg/m ³ , type 1 (24x22mm) without backpurge 0 ... 100 mg/m ³ , type 2 (54x50mm) without backpurge 0 ... 150 mg/m ³ , type 3 (100x90mm) without backpurge |
| Inner stack/duct pressure (relative to ambient pressure) | -50 ... +50 hPa |
| Flue gas relative humidity | 0 ... 95 % RH, non-condensing |
| Flue gas flow velocity | 3 ... 50 m/s |
| Stack/duct inner diameter | 0.5 ... 10 m |

D-FL 100 general

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|---------------------------------|---|
| Measuring principle | Measurement of ram pressure / differential pressure with a dual-chamber-probe |
| Measuring principle description | The probe has two separate chambers between which the flow builds up a differential pressure. The evaluation unit determines the gas velocity and the volume flow (norm conditions or standard conditions) from the differential pressure, taking into account gas temperature and gas pressure |

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|----------------------------------|--|
| Conformities | IED 2010/75/EU 13., 17., 27., 30. BlmschV TA Luft EN 14181 EN 15267-1, -2, -3 DIN EN 16911-2 |
| Certificates | CE, QAL1 (DIN EN 14181 / DIN EN ISO 14956 / DIN EN 15267-3), MCERTS, EAC Gost Ex Zone 2 |
| Measuring location | In-situ, non-contact. Mounted at stack, measurement across the stack, half duct or single point, probe is in contact with flue gas |
| Measuring path length | 0.4 ... 8 m |
| Measuring angle | 90° -4° relative to the flow direction |
| Self-check, protective functions | Automatic internal self-test |
| System components | D-FL 100 DS probe D-FL 100 DDM-H differential pressure transmitter D-FL 100 UH valve D-FL 100 A adaptor D-FL 100-20 evaluation unit D-ISC 100 operating unit or D-ESI software D-FL 100 ADM-H absolute pressure transmitter (option) D-XT temperature transmitter (option) Accessories |

D-FL 100 measuring device (D-FL 100 DS probe + D-FL 100-20 evaluation unit)

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|------------------------------|--|
| Physical measuring value | Ram pressure / differential pressure |
| Derived measuring values | Flow velocity, volume flow at operating conditions or normalized |
| Measuring range gas velocity | 3 ... 50 m/s |
| Output range gas velocity | Freely programmable |
| Measuring range volume flow | 0 ... 3000000 Nm ³ /h |
| Output range volume flow | Freely programmable |

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| Measuring range temperature | 0 ... 600 °C |
| Output range temperature | Freely programmable |
| Resolution | 0.1 m/s |
| Combined standard uncertainty acc. to QAL1, DIN EN 14181 | 0.71 m/s |
| Integration time | 1 ... 180 s, freely programmable |
| Process connection | Mounting tube with flange, DN40 PN6 (system 1), tube ID = 43.1 mm, OD = 48.3 mm, DN65 PN6 (system 2), tube ID = 70.3 mm, OD = 76.1 mm, DN100 PN6 (system 3), tube ID = 107.1 mm, OD = 114.3 mm, other on request |
| Digital interfaces | RS 485 Modbus RTU, bi-directional communication, USB (Service) |
| Analog outputs | 1 x 4 ... 20 mA, 400 Ohm, isolated, assignment parameterisable |
| Digital outputs | 2 x contact NC/NO, permissible load 60 VDC / 30 VAC / 0.5 A, function can be assigned. Typically: maintenance, failure |
| Power supply | Sensor supply voltage 24 VDC \pm 10 %, 0.5 A (standard) 90 ... 264 VAC, 48 ... 62 Hz (option) |
| Operation | D-ISC 100 universal operating unit D-ESI 100 software, requires Windows-PC |
| Ambient temperature (operational) | -20 ... +50 °C standard -40 ... +60 °C option |
| IP protection class (IEC 60529) | IP65 (standard) IP20 (evaluation unit M) |
| Dimensions (HxWxD) | Evaluation unit A/P: 231 x 160 x 105 mm Evaluation unit M: 62 x 90 x 54 mm Probe 1: 24 x 22 x 400 ... 2000 mm Probe 2: 54 x 50 x 2000 ... 4000 mm Probe 3: 100 x 90 x 4000 ... 8000 mm |
| Weight | 1 kg (evaluation unit only) |

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|---|---|
| Material | Housing evaluation unit: Polycarbonate RAL 7035, fire class B1 (UL 94 V0), Process parts: Stainless steel 1.4571 (316 Ti) |
| D-FL 100 E mounting tube with flange | |
| Process connection | DN40 PN6 (system 1), tube ID = 43.1 mm, OD = 48.3 mm, DN65 PN6 (system 2), tube ID = 70.3 mm, OD = 76.1 mm, DN100 PN6 (system 3), tube ID = 107.1 mm, OD = 114.3 mm |
| Dimensions (HxWxD) | System 1: 130 x 120 / 240 mm, other on request System 2: 160 x 240 ... 700 mm, other on request System 3: 210 x 240 ... 800 mm, other on request |
| Material | Stainless steel GFK |

Remarks

The universal operating unit D-ISC 100 can be connected to several DURAG sensors. It allows parameterization and maintenance of all connected sensors via the integrated keypad or a connected PC and also supports remote access via intranet or internet connection.

[↗ D-ISC 100](#)

Universal display and operating units

- Owing to the working principle, the accuracy of the measurement depends on the installation type and -location, the flow pattern and on the accuracy of the reference method.
- Subject to technical modifications.

Additional accessories

Universal display and operating units

The universal operating unit [D-ISC 100](#) allows the connection of several DURAG devices. It allows parameterisation and maintenance of all connected devices via integrated keypad or a connected PC and also supports remote access via intranet or internet connection.

Our [D-ESI Service and Parameterisation Software](#) assists you to manage all your DURAG sensors connected in one network system via a uniform graphical Interface.

Please contact your sales representative for more information.

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