

The Blue X-FLR9 Series are gas analyzers that are tailored for the continuous monitoring of multiple compounds of interest, either for environmental compliance or for industrial process control. The analyzers are based on Blue's proprietary widely tunable laser technology. They offer greatly enhanced characteristics compared to standard laser spectrometers:

- measurement of multiple compounds, including many heavy molecules (up to 450),
- automatic adjustment to changing conditions, guaranteeing specificity over time.

The analyzers are available in 4 different form factors, and can be closely adapted to specific metrology requirements.

| Description | Optional | Application dependent | |
|------------------------------|----------|-----------------------|--|
| Application | | x | Continuous gas measurement. Refer to the Application Sheet for details. |
| Measuring principle | | | IR Absorption Spectroscopy with photo acoustic detection. |
| IR source | | | Horton B3 Widely Tunable laser / spectral range: 2,350-3,150 cm ⁻¹ / resolution: 0.01 cm ⁻¹ |
| Laser product classification | | | CLASS 1M IEC 60825-1:2014 Safety of laser products equipment classification and requirements |
| Sample gas temperature range | | | less than 50 °C (gas line is heated to 50°C for measurement) |
| Sample gas pressure range | | | 1 bar |
| Sampling mode | | | Extractive |
| Sampling line material | | | Entry tubes and detection cell: Stainless steel 316L Detection cell windows: coated CaF2 Detection cell mirrors: coated quartz |
| | x | | Filter for particulates: 2µm. The use of external filters is recommended |
| | | x | Microphones: silicium FR4 |
| | | x | Electrovalves: brass |
| | | x | O-rings: Nitrile |
| | | x | Pump: EPDM |
| | | x | Exit tubes: polyurethane |
| | | x | Permapure membrane: Nafion |

Technical Data

Sample components and measurement ranges

| | | | |
|-----------------------------|---|---|--|
| Sample component | | x | Application dependent. Please refer to the Application Sheet. Up to 450 compounds can be measured (please also refer to the list at the Products page on our website). |
| Min./max. measurement range | | x | Application and compound dependent. Please refer to the Application Sheet. Typical: from single digit ppb to low percent. |
| Max. abs. pressure | | | 1 bar at entry point of the analyzer |
| Max. temperature | x | | From 0.07 and up to 3.8 bar upon request. |
| Sample volume | | | 50°C at entry point of the analyzer. |
| Sample flow | | | 4 cl 0.1 l/min recommended. Upper limit 0.15 l/min. |

Performance

Performance data below is given at standard conditions. Some data may vary depending on the specific application.

Stability

| | | | |
|-----------------------|--|---|--|
| Linearity deviation | | | R ² > 0.99 over measurement range |
| Repeatability | | x | < (1% of reading) or LOD, whichever is greater. LOD as specified in the Application sheet. |
| Detection limit (3 σ) | | x | up to 1 ppb (depends on molecules, see Products/List of gases on our website) |

Dynamic response

| | | | |
|-------------------|--|---|---|
| Warm-up time | | x | 30 min typical |
| Response time T90 | | x | < 10 s (from entry point of the analyzer) |
| Measurement rate | | x | Up to 1 Hz |



Technical Data

Optional
Application dependent

Maintenance interval and calibration/validation

| | | | |
|---------------------------------|--|---|--|
| Maintenance interval | | x | Depending on application and dust load |
| Calibration | | x | Calibration with test gas, please refer to the Application Sheet |
| Calibration/validation interval | | x | Depending on application, typically once a year |

Environmental

| | | | |
|-------------------------------|---|--|---|
| Operating temperature range | | | 10 to 35 °C |
| Storage temperature range | | | -20°C to +55°C |
| Operating humidity range | | | 0 to 95 %, non-condensing |
| Protection class | | | Rack mount/ benchtop: IP20 (EN 60529) Mobile analyzer: IP54 (EN 60529) |
| Hazardous area classification | x | | Rack mount/ Benchtop/ Mobile: n/a - General purpose area Ex-proof enclosures available |

Instrument purging

Depending on the application, purging of the instrument housing might be needed.

| | | | |
|--------------------------------|--|---|--|
| Gas port connector for purging | | x | Swagelok® 1/8" |
| Purging medium | | x | Instrument air, dry and oil-free (compliant with standard ISO 8573.1, Class 2–3) |
| | | x | Nitrogen (required only for low level CO ₂ measurements) |

Inputs and Outputs

| | | | |
|----------------------------|---|---|--|
| Analogue signal out | x | | up to 16 4-20 mA outputs (optional) |
| Analogue signal in | | | n/a |
| Digital signal out | | | RS232 |
| | | x | 10/100Base T Ethernet/ Modbus (optional) |
| | | x | WiFi connection (optional) |
| Inlet gas port connector | | | Swagelok® 1/8" |
| Exhaust gas port connector | | | Swagelok® 1/8" |

Electrical Rating

| | | | |
|-------------------|--|---|--|
| Input voltage | | | 24 V / 90W |
| | | | external supply provided: 100 VAC 60Hz / 240 VAC 50Hz |
| Power consumption | | x | 40 W typical when operating at 20°C ambient air temperature. |

Dimensions

| | | | Rackmount 19" 6U | Benchtop | Mobile |
|--------------|--|--|---|---|---|
| Size [HxWxD] | | | 524 x 448 x 260 (mm) 20.6 x 17.6 x 10.2 (inch) | 519 x 380 x 265 (mm) 20.4 x 15.0 x 10.4 (inch) | 621 x 520 x 422 (mm) 24.4 x 20.5 x 16.6 (inch) |
| Weight | | | 17 - 19 (kg) (Actual weight depends on hardware options - see Application Sheet) | 16 (kg) 35.3 (lbs) | 29 - 31 (kg) 63.9 - 68.3 (lbs) |

