

Midas[®] SENSOR CARTRIDGE SPECIFICATIONS

Perfluoro Compounds (PFC Group) MIDAS-S-XCF, MIDAS-E-XCF



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|---|--|
| Gas Measured | Hexafluorobutadiene (C ₄ F ₆) |
| Cartridge Part Number | MIDAS-S-XCF 1 year standard warranty MIDAS-E-XCF 2 year standard warranty |
| Sensor Technology | 3 electrode electrochemical cell |
| Measuring Range (ppm) | C ₄ F ₆ 0 – 40 ppm |
| Minimum Alarm 1 Set Point | 4 ppm |
| Repeatability | < ± 10% of measured value |
| Linearity | < ± 20% of measured value |
| Response Time t_{92.5} | ≤ 45 seconds |
| Sensor Cartridge Life Expectancy | ≥ 12 months under typical application conditions |
| Operating Temperature | 0°C to +40°C (32°F to 104°F) |
| Effect of Temperature | < ± 0.009 ppm / °C (at 0°C to 20°C) < ± 0.03 ppm / °C (at 20°C to 40°C) |
| Zero Sensitivity | < ± 0.4% of measured value / °C |
| Operating Humidity (continuous) | 20 – 75% RH ¹ |
| Effect of Humidity | |
| Zero Sensitivity | < ± 0.01 ppm / % RH < ± 1% of measured value / % RH |
| Operating Pressure | 90 – 110kPa |
| Effect of Position | No effect in typical application |
| Long Term Drift | |
| Zero Sensitivity | No Drift < 15% of measured value / year |
| Calibration Gas | Hydrogen Fluoride (HF) |
| Challenge Gas (Bump Test) | Chlorine (CL ₂) |
| Warm Up Time | < 60 minutes |
| Storage Temperature | +5°C to +25°C (+41°F to +77°F) |

The sensor data listed is based on ideal test environment; observed performance may vary based on the actual monitoring system and the sampling conditions employed.

Separate Pyrolyzer module (MIDAS-T-NP1) required with the PFC sensor cartridge to detect C₄F₆, C₃F₈, CH₂F₂ or SF₆ by thermal breakdown. To maintain stated performance, it is recommended to perform gas calibration every 6 months, and ensure the constant temperature of the installation point is in 50 – 104°F (10 – 40°C) and the humidity is in 30 – 70 %RH. Otherwise, more frequent bump testing or calibration will be required to confirm working specifications. Do not use Freon filter to measure C₄F₆, C₃F₈ and SF₆. Use of the ventilated Midas top cover (MIDAS-A-039) is recommended.

Other Detectable Gases

The following additional gases can be detected with this sensor cartridge. Sensor performance and characteristics will be representative of the data as tabulated above. Consult the Technical Manual to set up the Midas[®] transmitter with the designated identification code for each of the following gas types.

| Detectable Gas | Chemical Formula | Measuring Range |
|------------------------|--------------------------------|-----------------|
| Difluoromethane | CH ₂ F ₂ | 0 – 120 ppm |
| Octofluorocyclopentene | C ₅ F ₈ | 0 – 40 ppm |

Cross Sensitivities

Each Midas[®] sensor is potentially cross sensitive to other gases and this may cause a gas reading when exposed to other gases than those originally designated. The table below presents typical readings that will be observed when a new sensor cartridge is exposed to the cross sensitive gas (or a mixture of gases containing the cross sensitive species).

| Gas / Vapor | Chemical Formula | Concentration applied (ppm) | Reading (ppm C ₄ F ₆) |
|------------------------------------|----------------------------------|-----------------------------|--|
| Arsine | AsH ₃ | 1 | 0 |
| Carbon Monoxide | CO | 2,000 | 0 |
| Chlorine | Cl ₂ | 4.8 | 5 |
| Diborane | B ₂ H ₆ | 0.5 | -2.3 |
| Hydrogen | H ₂ | 20,000 | 0 |
| Hydrogen Chloride | HCl | 2 | 2.8 |
| Hydrogen Fluoride | HF | 2 | 3.1 |
| Hydrogen Sulfide | H ₂ S | 1 | -0.6 |
| Isopropanol | C ₃ H ₇ OH | 500 | 0 |
| Methanol | CH ₃ OH | 500 | 0 |
| Nitrogen Dioxide | NO ₂ | 10 | 2 |
| Phosphine | PH ₃ | 1 | -0.6 |
| Nitrogen Trifluoride | NF ₃ | 10 | 4.7 |
| Sulfur Dioxide | SO ₂ | 5.7 | 5 |
| Perfluoroether | HFE | | Yes |
| Hydrofluorocarbon, Perfluorocarbon | HFC / PFC | | Yes |

Interference differs from cartridge to cartridge and over cell life. It is not recommended to calibrate with cross sensitivity factors. The target gas should be used for calibration.

Find out more

www.honeywellanalytics.com

Toll-free: 800.538.0363

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W: <https://dsasuppliers.com>

E: sales@dsasuppliers.com

P: +441158390391

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