



Midas® Sensor Cartridge Specifications

Nitrogen Trifluoride (NF₃), Methyl Fluoride (CH₃F)

MIDAS-E-XHF, MIDAS-S-XHF

| Gas Measured | Nitrogen Trifluoride (NF ₃) |
|---|--|
| Cartridge Part Number | MIDAS-S-XHF 1 year standard warranty MIDAS-E-XHF 2 year extended warranty |
| Sensor Technology | 3 electrode electrochemical cell |
| Measuring Range | NF ₃ 0 – 40ppm |
| Minimum Alarm 1 Set Point | 5ppm |
| Lower Detection Limit | 4ppm |
| Linearity | < ± 20% of measured value |
| Repeatability | < ± 10% of measured value |
| Resolution | 0.2ppm |
| Response Time t_{62.5} | ≤ 110 seconds |
| Sensor Cartridge Life Expectancy | ≥ 24 months under typical application conditions |
| Operating Temperature | 0°C to +40°C (32°F to 104°F) |
| Effect of Temperature | |
| Zero | < ± 0.008ppm / °C |
| Sensitivity | < ± 0.4% of measured value / °C |
| Operating Humidity | 10 to 90% RH |
| Effect of Humidity | |
| Zero | < ± 0.003ppm / % RH |
| Sensitivity | < ± 1% of measured value / % RH |
| Operating Pressure | 90 – 110kPa |
| Effect of Position | No effect in typical application |
| Long Term Drift | |
| Zero | No Drift |
| Sensitivity | < 15% of measured value / year |
| Calibration Gas | Hydrogen Fluoride (HF) |
| Bump Test Gas | Chlorine (Cl ₂) |
| Warm Up Time | < 20 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 Nitrogen Trifluoride sensor cartridge to detect gas calibration every 6 months, and ensure the constant temperature of the installation point is in NF₃ by thermal breakdown. To maintain stated performance, it is recommended to perform 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

Find out more

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H_MIDAS-E-XHF_v5 06/22

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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 |
|-----------------|-------------------|-----------------|
| Methyl Fluoride | CH ₃ F | 0 – 120ppm |

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 Measured | Chemical Formula | Concentration Applied (ppm) | Reading (ppm NF ₃) |
|-------------------|----------------------------------|-----------------------------|--------------------------------|
| Arsine | AsH ₃ | 1 | 0 |
| Carbon Monoxide | CO | 2000 | 0 |
| Chlorine | Cl ₂ | 5 | 13.7 |
| Diborane | B ₂ H ₆ | 1 | -1.3 |
| Hydrogen | H ₂ | 20000 | 0 |
| Hydrogen Chloride | HCl | 8 | 14 |
| Hydrogen Fluoride | HF | 2 | 8 |
| Hydrogen Sulfide | H ₂ S | 25 | -3.6 |
| Iso Propanol | C ₃ H ₇ OH | 500 | 0 |
| Methanol | CH ₃ OH | 500 | 0 |
| Nitrogen Dioxide | NO ₂ | 5 | 2.6 |
| Phosphine | PH ₃ | 1 | -0.14 |
| Sulfur Dioxide | SO ₂ | 10 | 22.8 |

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.