

MIDAS[®]-M MINERAL ACIDS (HF GROUP)

Smart Sensor Specifications

Bringing new visibility, reliability, and ease-of-use to gas detection in semiconductor processing and industrial manufacturing.



| GAS MEASURED | HYDROGEN FLUORIDE (HF) |
|------------------------------------|--|
| Cartridge Part Number | MMS-Z2 |
| Sensor Technology | 3 electrode electrochemical cell |
| Measuring Range | HF 0 ppm to 12 ppm |
| Default Alarm 1 | 1.5 ppm (rising) |
| Default Alarm 2 | 3 ppm (rising) |
| Accuracy | <±5% of measured value Exposure to HF 6 ppm for 5 minutes |
| Response Time (t _{62.5}) | Typical 29 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 Sensitivity | <±0.015 ppm/°C <±0.4% of measured value/°C |
| Operating Humidity (continuous) | 20% RH to 75% RH |
| Effect of Humidity | |
| Zero Sensitivity | <±0.003 ppm/%RH <±1% of measured value/%RH |
| Operating Pressure | 90 kPa to 110 kPa |
| Effect of Position | No effect in typical application |
| Long Term Drift | |
| Zero Sensitivity | No drift <15% of measured value/year |
| Calibration Gas | Hydrogen Fluoride (3 ppm to 9 ppm, 6 ppm) |
| Challenge Gas (Bump Test) | Chlorine (10 ppm) |
| Warm Up Time | <20 minutes |
| Storage Temperature | 5°C to 25°C (41°F to 77°F) |

The sensor data listed is based on the test data under normal lab test conditions (20°C to 25°C, 0% RH to 60% RH, normal atmosphere pressure); observed performance may vary based on the actual monitoring system and the sampling conditions employed.

NOTE: The HF sensor should not be used with NH₃ or SO₂ sensor in same Midas[®]-M unit.

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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[®]-M transmitter with the designated identification code for each of the following gas types:

| DETECTABLE GAS | CHEMICAL FORMULA | MEASURING RANGE |
|-----------------------|------------------|-----------------|
| Boron Trifluoride | BF ₃ | 0 ppm to 8 ppm |
| Tungsten Hexafluoride | WF ₆ | 0 ppm to 12 ppm |

CROSS SENSITIVITIES

Each Midas-M 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).

NOTE: The cross sensitivity data shown below does not form part of the product specification and is supplied for guidance only. Values quoted are based on tests conducted on a small number of sensors and any batch may show significant variation.

| GAS/VAPOR | CHEMICAL FORMULA | CONCENTRATION APPLIED (ppm) | READING (ppm HF) |
|-------------------|----------------------------------|-----------------------------|------------------|
| Arsine | AsH ₃ | 1 | 0 |
| Carbon Monoxide | CO | 2000 | 0 |
| Chlorine | Cl ₂ | 1 | 1.5 |
| Diborane | B ₂ H ₆ | 1 | -1.3 |
| Hydrogen | H ₂ | 20000 | 0 |
| Hydrogen Chlorine | HCl | 8 | 14 |
| Hydrogen Sulphide | 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 | 0.65 |
| Phosphine | PH ₃ | 1 | -0.14 |
| Sulphur Dioxide | SO ₂ | 50 | 28.3 |

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Manuals and other information about this product are available at:
www.honeywellanalytics.com/en/products/Midas-M



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