



## Midas® Sensor Cartridge Specifications

### Mineral Acids (HF Group)

### MIDAS-E-HFX, MIDAS-S-HFX

Gas Measured	Hydrogen Fluoride (HF)
<b>Cartridge Part Number</b>	MIDAS-S-HFX 1 year extended warranty MIDAS-E-HFX 2 year extended warranty
<b>Sensor Technology</b>	3 electrode electrochemical cell
<b>Measuring Range</b>	HF 0 - 12ppm
<b>Minimum Alarm 1 Set Point</b>	1.50ppm
<b>Lower Detection Limit</b>	1.35ppm
<b>Linearity</b>	< ± 10% of measured value
<b>Repeatability</b>	< ± 10% of measured value
<b>Resolution</b>	0.05ppm
<b>Response Time <math>t_{62.5}</math></b>	≤ 30 seconds
<b>Sensor Cartridge Life Expectancy</b>	≥ 24 months under typical application conditions
<b>Operating Temperature</b>	0°C to +40°C (32°F to 104°F)
<b>Effect of Temperature</b>	
Zero	< ± 0.008ppm / °C
Sensitivity	< ± 0.4% of measured value / °C
<b>Operating Humidity</b>	10 to 90% RH
<b>Effect of Humidity</b>	
Zero	< ± 0.003ppm / % RH
Sensitivity	< ± 1% of measured value / % RH
<b>Operating Pressure</b>	90 – 110kPa
<b>Effect of Position</b>	No effect in typical application
<b>Long Term Drift</b>	
Zero	No drift
Sensitivity	< 15% of measured value / year
<b>Calibration Gas</b>	Hydrogen Fluoride (HF)
<b>Bump Test Gas</b>	Chlorine (Cl <sub>2</sub> )
<b>Warm Up Time</b>	< 20 minutes
<b>Storage Temperature</b>	+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.

#### 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
Tungsten Hexafluoride	WF <sub>6</sub>	0-12ppm
Boron Trifluoride	BF <sub>3</sub>	0-8ppm
Nitrogen Trifluoride	NF <sub>3</sub>	0-40ppm

#### 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 HF)
Arsine	AsH <sub>3</sub>	1	0
Carbon Monoxide	CO	2000	0
Chlorine	Cl <sub>2</sub>	5	3.4
Diborane	B <sub>2</sub> H <sub>6</sub>	1	-1.3
Hydrogen	H <sub>2</sub>	20000	0
Hydrogen Chloride	HCl	8	14
Hydrogen Sulfide	H <sub>2</sub> S	25	-3.6
Iso Propanol	C <sub>3</sub> H <sub>7</sub> OH	500	0
Methanol	CH <sub>3</sub> OH	500	0
Nitrogen Dioxide	NO <sub>2</sub>	5	0.65
Phosphine	PH <sub>3</sub>	1	-0.14
Sulfur Dioxide	SO <sub>2</sub>	50	28.3

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

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