



Mineral Acids (HF Group)

MIDAS-S-HFX

MIDAS-E-HFX

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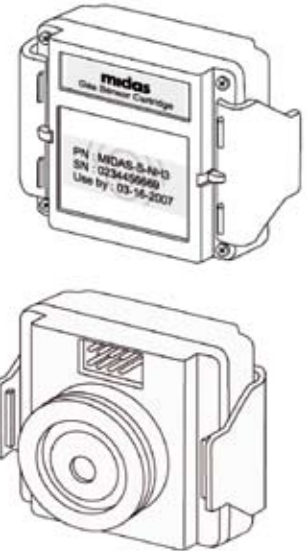
MIDAS-S-HFX

MIDAS-E-HFX



Midas® sensor cartridges are intended for use only with Honeywell Analytics' Midas® gas detector system. Please refer to the Midas® Technical Manual for further details.

The Midas® Mineral Acid (HF) electrochemical sensor is specifically designed to directly detect similar molecular species in the mineral acid group; namely Hydrogen Fluoride (HF), Tungsten Hexafluoride (WF₆), Boron Trifluoride (BF₃) and via a separate Pyrolyzer option Nitrogen Trifluoride (NF₃). See details below regarding other detectable gases. Consult the Technical Manual to configure the Midas® transmitter to read the desired gas type.



Gas Measured	Hydrogen Fluoride ¹ (HF)
Cartridge Part Number	MIDAS-S-HFX 1 year standard warranty MIDAS-E-HFX 2 year extended warranty
Sensor Technology	3 electrode electrochemical cell
Measuring Range (ppm)	HF 0 – 12ppm
Minimum Alarm 1 Set Point	1.5ppm
Lower Detectable Limit (LDL)	1.0ppm
Repeatability	< ± 10% of measured value
Linearity	< ± 10% of measured value
Response Time t_{92.5}	< 30 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	< ± 0.002ppm / °C (at 0°C to 20°C) < ± 0.008ppm / °C (at 20°C to 40°C)
Zero	< ± 0.4% of measured value / °C
Sensitivity	
Operating Humidity (continuous)	20 – 75% rH ¹
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)
Challenge Gas (Bump Test)	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

General Specification



Midas® is a registered trademark of Honeywell Analytics.

All data refers to representative electrochemical sensor as tested with HF gas from an approved source.

As with all electrochemical sensor cells, dramatic output changes in reported concentrations can be expected under rapidly changing environmental conditions. Please ensure sensors are located in areas not prone to sudden changes in humidity and temperature. Actual readings may be affected by flow rates (although Midas® automatically controls flow rates within specified ranges) and absorption on tubing and other gas path surfaces.

All sensors are shipped pre-calibrated to traceable national standards. Dependent on actual operating conditions and overall exposure to gases, each sensor may not require in-field calibration for up to 24 months subject to any requirements to calibrate from local regulations or site practices. Calibration and challenge gases should be from a certified and reliable source.

¹ To maintain stated sensor performance when using this sensor cartridge for these selected gas types ensure constant ambient humidity of the installation point does not exceed a relative humidity (RH) of 60%. This product can tolerate intermittent changes in humidity, but constant exposure to higher levels of humidity will require more frequent bump testing or calibration to confirm working specification.

² Separate Pyrolyzer module (MIDAS-T-00P) required with the Mineral Acid sensor cartridge to detect NF_3 by thermal breakdown. To maintain stated performance ensure the constant temperature of the installation point does not exceed 30°C (86°F) otherwise more frequent bump testing or calibration will be required to confirm working specification.

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 ¹	WF_6	0 – 12ppm
Boron Trifluoride ¹	BF_3	0 – 8ppm
Nitrogen Trifluoride ²	NF_3	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 / Vapour	Chemical Formula	Concentration Applied (ppm)	Reading (ppm HF)
Arsine	AsH_3	1	0
Carbon Monoxide	CO	2000	0
Chlorine	Cl_2	5	3.4
Diborane	B_2H_6	1	-1.3
Hydrogen	H_2	20000	0
Hydrogen Chloride	HCl	8	7
Hydrogen Sulphide	H_2S	25	-3.6
Iso Propanol	$\text{C}_3\text{H}_7\text{OH}$	500	0
Methanol	CH_3OH	500	0
Nitrogen Dioxide	NO_2	5	0.65
Phosphine	PH_3	1	-0.14
Sulphur Dioxide	SO_2	50	28.3

Our Product Range



Fixed Gas Monitoring

Honeywell Analytics offers a wide range of fixed gas detection solutions for a diverse array of industries and applications including: Commercial properties, industrial applications, semiconductor manufacturers, energy plants and petrochemical sites.

- » Detection of flammable, oxygen and toxic gases (including exotics)
- » Innovative use of 4 core sensing technologies – paper tape, electrochemical cell, catalytic bead and infrared
- » Capability to detect down to Parts Per Billion (ppb) or Percent by Volume (%v/v)
- » Cost effective regulatory compliance solutions

Portable Gas Monitoring

When it comes to personal protection from gas hazards, Honeywell Analytics has a wide range of reliable solutions ideally suited for use in confined or enclosed spaces.

These include:

- » Detection of flammable, oxygen and toxic gases
- » Single gas personal monitors – worn by the individual
- » Multi-gas portable gas monitors – used for confined space entry and regulatory compliance
- » Multi-gas transportable monitors – used for temporary protection of area during site construction and maintenance activities

Technical Services

At Honeywell Analytics, we believe in the value of great service and customer care. Our key commitment is providing complete and total customer satisfaction. Here are just a few of the services we can offer:

- » Full technical support
- » Expert team on hand to answer questions and queries
- » Fully equipped workshops to ensure quick turnaround on repairs
- » Comprehensive service engineer network
- » Training on product use and maintenance
- » Mobile calibration service
- » Customised programmes of preventative/corrective maintenance
- » Extended warranties on products

Find out more

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