Honeywell

Midas® SENSOR CARTRIDGE SPECIFICATIONS

Nitrogen Trifluoride NF_3 and Methyl Fluoride CH_3F
Midas-S-XHF, Midas-E-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 (ppm)	NF3 0 - 40 ppm
Minimum Alarm 1 Set Point	4.0ppm
Repeatability	< ± 10% of measured value
Linearity	< ± 20% of measured value
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	< ± 0.002ppm / °C (at 0°C to 20°C)
Zero	< ± 0.008ppm / °C (at 20°C to 40°C)
Sensitivity	< ± 0.4% of measured value / °C
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 Fluroide (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.

Separate Pyrolyzer module (MIDAS-T-NP1) required with the Nitrogen Triflouride sensor cartridge to detect NF_3 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 – 104ºF(10 - 40ºC) and the humidity is in 30 – 70 %RH.
Otherwise, more frequent bump testing or callibration will be required to confirm working specifications.

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_3F	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 / Vapor	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_2H_6	1	-1.3
Hydrogen	H_2	20000	0
Hydrogen Chloride	HCl	8	14
Hydrogen Flouride	HF	2	8
Hydrogen Sulphide	H_2S	25	-3.6
Iso Propanol	C_3H_7OH	500	0
Methanol	CH_3OH	500	0
Nitrogen Dioxide	NO_2	5	2.6
Phosphine	PH_3	1	-0.14
Sulphur 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.

Find out more
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