

Midas[®] SENSOR CARTRIDGE SPECIFICATIONS

Perfluoro Compounds (PFC Group) MIDAS-S-XCF, MIDAS-E-XCF



Gas Measured	Hexafluorobutadiene (C ₄ F ₆)
Cartridge Part Number	MIDAS-S-XCF 1 year standard warranty MIDAS-E-XCF 2 year standard warranty
Sensor Technology	3 electrode electrochemical cell
Measuring Range (ppm)	C ₄ F ₆ 0 – 40 ppm
Minimum Alarm 1 Set Point	4 ppm
Repeatability	< ± 10% of measured value
Linearity	< ± 20% of measured value
Response Time t _{92.5}	≤ 45 seconds
Sensor Cartridge Life Expectancy	≥ 12 months under typical application conditions
Operating Temperature	0°C to +40°C (32°F to 104°F)
Effect of Temperature	< ± 0.009 ppm / °C (at 0°C to 20°C) < ± 0.03 ppm / °C (at 20°C to 40°C) < ± 0.4% of measured value / °C
Operating Humidity (continuous)	20 – 75% RH ¹
Effect of Humidity	< ± 0.01 ppm / % RH < ± 1% of measured value / % RH
Operating Pressure	90 – 110kPa
Effect of Position	No effect in typical application
Long Term Drift	No Drift < 15% of measured value / year
Calibration Gas	Hydrogen Fluoride (HF)
Challenge Gas (Bump Test)	Chlorine (CL ₂)
Warm Up Time	< 60 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 PFC sensor cartridge to detect C₄F₆, C₅F₈, CH₂F₂ or SF₆ 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 – 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. Do not use Freon filter to measure C₄F₆, C₅F₈ and SF₆. Use of the ventilated Midas top cover (MIDAS-A-039) is recommended.

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
Difluoromethane	CH ₂ F ₂	0 – 120 ppm
Octafluorocyclopentene	C ₅ F ₈	0 – 40 ppm

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 C ₄ F ₆)
Arsine	AsH ₃	1	0
Carbon Monoxide	CO	2,000	0
Chlorine	Cl ₂	4.8	14.9
Diborane	B ₂ H ₆	0.5	-2.3
Hydrogen	H ₂	20,000	0
Hydrogen Chloride	HCl	2	2.8
Hydrogen Fluoride	HF	2	4.2
Hydrogen Sulfide	H ₂ S	1	-0.6
Isopropanol	C ₃ H ₇ OH	500	0
Methanol	CH ₃ OH	500	0
Nitrogen Dioxide	NO ₂	10	2
Phosphine	PH ₃	1	-0.6
Nitrogen Trifluoride	NF ₃	10	4.7
Sulfur Dioxide	SO ₂	5.7	5
Perfluoroether	HFE		Yes
Hydrofluorocarbon, Perfluorocarbon	HFC / PFC		Yes

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.