



# SPM Flex SPECIFICATIONS

## Chemcassette® Tape-Based Gas Detector

General Specifications	
<b>Detection Technique</b>	Chemcassette tape-based with advanced self monitoring optics design
<b>Dimensions</b>	Height: 13.2 in. (33.6 cm); Width: 7.2 in. (18.3 cm); Depth without handle: 6.4 in. (16.3 cm); Depth with handle: 9.5 in. (24.1 cm)
<b>Weight</b>	9.1 lbs. (4.1 kg)
<b>Mounting screws</b>	Concrete: $\frac{5}{16}$ in x 2 in vibration-resistant stud anchor for concrete (McMaster-Carr 94475A185 or equivalent), add 0.25 in. to length when mounting bracket with sun shield Wood: $\frac{5}{16}$ in. x 2 in. flange head lag screw for wood (McMaster-Carr 95526A375 or equivalent), add 0.25 in. to length when mounting bracket with sun shield
<b>Battery type</b>	Lithium ion
<b>Battery life</b>	Approximately 70% of its original capacity after 300 full charge/discharge cycles
<b>Operating Temperature</b>	0°C to 40°C for most gases/applications
<b>Operating Humidity</b>	0-100% RH for unit (Sample RH limited per tape/calibration). Sample line requires additional hardware to remove moisture in high RH conditions where condensing may occur. The sample must be non-condensing. Dry conditions may require humidification.
<b>Flow System</b>	Automatic flow control with bypass system, 250 or 500 cc/min at tape, higher flow at inlet to reduce sample time (internal bypass system); sample up to 100 ft
<b>Local Alarms/Status</b>	Visual: LEDs for alarm, normal condition and fault Audible: User selectable: Off, Low ~75 dB at 1 m, Medium ~85 dB at 1 m, High >90 dB at 1 m
<b>Interface</b>	4 large buttons, 3.5 in. Color LCD TFT display, web server
<b>Data Logging</b>	Rolling up to 3 months (15 sec. with no gas reading, 1 sec. when reading gas), Event history (1500 events – approx. 1 year)
<b>Maximum inlet/outlet pressure differential</b>	The overall maximum load on the pump between the inlet and the exhaust should not exceed 10 inches H <sub>2</sub> O
<b>Relays</b>	250 V, 6 A maximum
<b>Wire gauges</b>	Minimum: 24; Maximum: 14
<b>USB</b>	2.0 or later
<b>Indoor/outdoor use?</b>	Both (the power supply is indoor only)
<b>Operating Altitudes</b>	-1,000 to 3,000 ft. above sea level: standard; 3,000 ft. to 6,000 ft. above sea level: requires adjustment by Honeywell Analytics
<b>Ingress Protection rating</b>	IP65
<b>External switch or circuit breaker requirement (description &amp; location)</b>	Meet or exceed all local codes and regulations
<b>Ventilation requirements</b>	Mount with no obstructions within 4 in. (10 cm) of either side or within 2 in. (5 cm) above and below the detector

<b>Electrical</b>	
<b>Power supply</b>	Universal Line powered (90-260 VAC 50/60 Hz) for battery charger & non-classified use. Battery: 6+ hours under typical conditions – acts as battery back-up in fixed applications
<b>Power consumption</b>	~1.9 A at 24 VDC (including battery-charging current)
<b>Power adaptor</b>	Manufacturer: FSP Group Model: FSP135-AAAN1 Input: 100-240 VAC, 2 A, 50-60 Hz Output: 24 VDC, 5.62 A CCN: QQQQ (E190414) Mark of conformity: UL listed
<b>Communications</b>	
	Relays: Alarm 1, Alarm 2, Fault (user configurable for normally open/closed) 4-20mA Ethernet (with Modbus TCP/IP and web server) USB port (for memory stick configuration/data transfer) Communications connector and optional communications cable: 60 V, 5 A maximum
<b>4-20 mA Output Defaults and Ranges</b>	
<b>Inhibit</b>	2 mA, programmable from 1.5-3.5 mA in 0.5 mA increments
<b>Maintenance</b>	3 mA, programmable from 1.5-3.5 in 0.5 increments
<b>Instrument Fault</b>	1 mA or less, not programmable (will be driven under 1 mA)
<b>Over-Scale</b>	21.5 mA, programmable 21-22 mA
<b>4-20 mA Configurations</b>	Sink, source, isolated
<b>Storage Conditions</b>	
<b>Detector</b>	0°C to 40°C, 0-100% RH non-condensing
<b>Chemcassette cartridges</b>	See the label on the Chemcassette cartridge for storage conditions
<b>Certifications</b>	
<b>Detector</b>	UL 61010-1, 3rd Edition, 2012-05 (ELECTRICAL EQUIPMENT FOR MEASUREMENT, CONTROL, AND LABORATORY USE - Part 1: General Requirements CAN/CSA-C22.2 No. 61010-1, 3rd Edition, 2012-05, (ELECTRICAL EQUIPMENT FOR MEASUREMENT, CONTROL, AND LABORATORY USE - Part 1: General Requirements) IEC 61010-1:2010, 3rd Edition FCC approval for RFID board + Canadian and European
<b>Battery</b>	UL/cUL Recognition to UL 2054 + 60950-1 IEC 62133 1st Edition CB Certification UN Test Report to UN 38.3
<b>Self-declared European CE Mark on detector for:</b>	EMC, LVD, ROHS, WEEE

# DETECTABLE GASES

Family	Gas	Range	TLV <sup>1</sup>	LAL	Default Alarm		Response time (T50) at 2TLV gas conc. (sec)	Max. Sample Tubing length (m)	Sample Line Particulates Filter <sup>2</sup>	ChemCassette			Optimum Temp range (°C)	Optimum %RH range for best accuracy <sup>7,8</sup>	
					A1	A2				Name	P/N (30-90d)	P/N (14d)			
Hydrides	Arsine (AsH <sub>3</sub> )	0.5-500ppb	5 ppb		1 ppb	2.5 ppb	5 ppb	55	30	A	Flex CC XP Hydrides	1265-3000	1265-4000	0-40	10-70% RH <sup>4,6</sup>
	Phosphene (PH <sub>3</sub> )	3-3000 ppb	300 ppb	2014 NIC: 0.1ppmTWA; 0.5ppm STEL-C	5 ppb	150 ppb	300 ppb	6							30-70% RH <sup>4,6</sup>
	Diborane (B <sub>2</sub> H <sub>6</sub> )	5-1000 ppb	100 ppb		10 ppb	50 ppb	100 ppb	14							30-70% RH <sup>5,6</sup>
	Silane (SiH <sub>4</sub> )	0.03 - 50 ppm	5 ppm		0.05 ppm	2.5 ppm	5 ppb	13							34-50% RH <sup>4,6</sup>
	Germane (GeH <sub>4</sub> )	50-2000 ppb	200 ppb		100 ppb	100 ppb	200 ppb	245							40-50% RH <sup>4,6</sup>
	Hydrogen Selenide (H <sub>2</sub> Se)	2-500 ppb	50 ppb		5 ppb	25 ppb	50 ppb	14							10-60% RH <sup>4,6</sup>
	Hydrogen Sulphide (H <sub>2</sub> S)	0.001-9,999 ppm	1 ppm		0.005 ppm	0.5 ppm	1 ppm	7							10-75% RH <sup>4,6</sup>
Mineral Acids	Hydrogen Fluoride (HF)	0.02-20 ppm	0.5 ppm	2 ppm STEL-C	0.03 ppm	1 ppm	2 ppm	7	5	B, C	Flex CC XP Mineral Acids	1265-3001	1265-4001	0-35	15-75% RH <sup>5,6</sup>
	Hydrogen Chloride (HCl)	0.02-20 ppm	2 ppm	STEL-C	0.03 ppm	1 ppm	2 ppm	5							30-50% RH <sup>5,6</sup>
	Hydrogen Bromide (HBr)	0.02-10 ppm	2 ppm	STEL-C	0.03 ppm	1 ppm	2 ppm	5							20-50% RH <sup>5,6</sup>
	Boron Trifluoride (BF <sub>3</sub> )	0.05-10 ppm	1 ppm	STEL-C	0.1 ppm	0.5 ppm	1.0 ppm	5							15-60% RH <sup>5,6</sup>
Mineral Acids (export unrestricted)	Hydrogen Fluoride (HF)	0.4-20 ppm	0.5 ppm	2 ppm STEL-C	0.4 ppm	1 ppm	2 ppm	7	5	B, C	Flex CC-U XP Mineral Acids	1265-3012	1265-4012	0-35	15-75% RH <sup>5,6</sup>
	Hydrogen Chloride (HCl)	0.02-20 ppm	2 ppm	STEL-C	0.03 ppm	1 ppm	2 ppm	5							30-50% RH <sup>5,6</sup>
	Hydrogen Bromide (HBr)	0.02-10 ppm	2 ppm	STEL-C	0.03 ppm	1 ppm	2 ppm	5							15-60% RH <sup>5,6</sup>
	Boron Trifluoride (BF <sub>3</sub> )	0.05-10 ppm	1 ppm	STEL-C	0.1 ppm	0.5 ppm	1.0 ppm	5							15-60% RH <sup>5,6</sup>
Oxidizers	Chlorine (Cl <sub>2</sub> )	0.005 - 5 ppm	0.5 ppm		0.02 ppm	0.25 ppm	0.5 ppm	7	30	B, C	Flex CC XP Chlorine	1265-3002	1265-4002	0-40	30-55% RH <sup>4,6</sup>
	Chlorine (Cl <sub>2</sub> )	0.01-5 ppm	0.5 ppm		0.05 ppm	0.25 ppm	0.5 ppm	9							0-85% RH
	Fluorine (F <sub>2</sub> )	0.01-10 ppm	1 ppm	0.1 ppm OSHA PEL	0.05 ppm	0.5 ppm	1.0 ppm	5	6		0-85% RH				
	Nitrogen Dioxide (NO <sub>2</sub> )	0.03-10 ppm	0.2 ppm		0.05 ppm	0.1 ppm	0.2 ppm	56	30		10-70% RH <sup>5,6</sup>				
	Chlorine Dioxide (ClO <sub>2</sub> )	20-1000 ppb	100 ppb		25 ppb	50 ppb	100 ppb	36	15		5-90% RH				
Amines	Ammonia (NH <sub>3</sub> )	0.01-150 ppm	25 ppm		0.05 ppm	12.5 ppm	25 ppm	5	30	B, C	Flex CC XP Ammonia	1265-3003	1265-4003	0-35	0-90% RH <sup>4</sup>
	Dimethylamine (DMA) (H <sub>2</sub> C <sub>2</sub> Si)	0.5-50 ppm	5 ppm		0.1 ppm	2.5 ppm	5 ppm	10							5-90% RH <sup>4</sup>
	Tetrakis (Dimethylamido) Titanium (TDMAT) (C <sub>8</sub> H <sub>20</sub> N <sub>4</sub> Ti)	0.01 -20 ppm	n/a		0.05 ppm	1 ppm	2 ppm	14							5-90% RH <sup>4</sup>
	Trimethylamine (TMA) (C <sub>3</sub> H <sub>9</sub> N)	0.5-50 ppm	5 ppm		0.1 ppm	2.5 ppm	5 ppm	10							0-90% RH <sup>4</sup>
Phosgene	Phosgene (COCl <sub>2</sub> )	7-4000 ppb	100 ppb			50 ppb	100 ppb		30	A	Flex CC XP Phosgene	1265-3007	1265-4007	0-40	10-90% RH
Diisocyanates	Toluene Diisocyanate (TDI)(C <sub>9</sub> H <sub>8</sub> N <sub>2</sub> O <sub>2</sub> )	0.3-150 ppb	1 ppb	2014 NIC (1 ppb TWA; 3 ppb STEL)	0.5 ppb	1 ppb	2 ppb		0.15	no filter	Flex CC Diisocyanates	1265-3006	1265-4006	0-40	25-65% RH
	Methylene Bisphenyl Isocyanate (MDI) (C <sub>15</sub> H <sub>16</sub> N <sub>2</sub> O <sub>2</sub> )	2-60 ppb	5 ppb			2.5 ppb	5 ppb								TBD
	Hexamethylene Diisocyanate (HDI)(C <sub>12</sub> H <sub>18</sub> N <sub>2</sub> O <sub>2</sub> )	2-60 ppb	5 ppb			2.5 ppb	5 ppb								TBD
Hydrazines	Hydrazine (N <sub>2</sub> H <sub>4</sub> )	5-1000 ppb	10 ppb			5 ppb	10 ppb		3	no filter	Flex CC Hydrazines	1265-3008	1265-4008	0-40	10-70% RH <sup>3</sup>
	Monomethyl Hydrazine (MMH) (CH <sub>3</sub> N <sub>2</sub> )	3-2000 ppb	10 ppb			5 ppb	10 ppb								TBD
	Dimethyl Hydrazine (UDMH) (C <sub>2</sub> H <sub>8</sub> N <sub>2</sub> )	3-5000 ppb	10 ppb			5 ppb	10 ppb								TBD
Hydrogen Cyanide (HCN)	0.5-30 ppm	4.7 ppm			2.4 ppm	4.7 ppm		30	A	Flex CC Hydrogen Cyanide	n/a	1265-4009	0-30	30-75% RH	
Sulphur Dioxide (SO <sub>2</sub> )	5-2500 ppb	250 ppb			120 ppb	250 ppb		31	B, C	Flex CC Sulfur Dioxide	1265-3005	1265-4005	0-40	TBD	
Ozone (O <sub>3</sub> )	10-1000 ppb	100 ppb			50 ppb	100 ppb		31	no filter	Flex CC Ozone	1265-3011	1265-4011	0-40	30-55% RH	
Hydrogen Peroxide (H <sub>2</sub> O <sub>2</sub> )	0.1-3 ppm	100 ppb				100 ppb		15	no filter	Flex CC Hydrogen Peroxide	1265-3010	1265-4010	0-40	TBD	

1 Source: ACGIH 2014.

2 A = 780248 (disposable), B = 1830-0055 (filter membrane 0235-1072 must be replaced every 30 days), C = 1991-0147 (disposable)

Outside of RH range:

3 Tends to have lower response at higher humidities.

4 Tends to increase sensitivity at higher humidities (due to the chemistry of the reaction).

5 Tends to under-report at higher humidities (typically >75% RH) due to the gas characteristics to adhere or decompose on contact with water/moisture. The response seems to be lower but the actual gas concentration under these high humidity conditions will be lower than expected.

6 Tends to under-report in dry conditions (<25-30% RH).

7 Depending on the combination of temperature and humidity, even within the ranges specified above, a unit's performance efficiency can be influenced due to condensation, physical tape material changes, or optical changes. Consult Honeywell Analytics' Service Department.

8 Refer to TechNotes 971131 (Chemcassette®-based Instrument Accuracy and Precision) and 1998-0219 (Protocol for Testing Gas Detectors).

# Honeywell Analytics Gas Detection Offerings

Honeywell Analytics gas detectors protect people, assets and environment from toxic and combustible gas hazards, helping to create safer, more comfortable, secure and productive environments. Our strength derives from Honeywell's leadership in sensor technology; in fact Honeywell operates four sensor manufacturing plants, supplying an entire industry with its core detective element.



## Commercial

Gas detection from standalone units to fully engineered, multi-point systems, all offering cost-effective regulatory compliance.

- » Applications: parking structures, chillers, mechanical rooms, office towers, commercial buildings, shopping centers, swimming pools, golf courses, schools and universities, laboratories

## Industrial

Renowned Sieger and Manning gas detection systems with advanced electrochemical, infrared and open path sensing technologies.

- » Applications: oil and gas, cold storage, water/wastewater treatment, chemicals, engine rooms, plastics and fibers, agriculture, printing and light industrial

## Portables

Single or multi-gas detectors ranging from compact, lightweight designs for personal protection to systems-based, networkable instrumentation for industrial hygiene.

- » Applications: underground utility and electricity ducts, boiler rooms, post-fire sites, sewers, industrial plants, industrial hygiene, first responder teams, remote fleets



## High Tech/Government

Reliable gas and chemical detection including infrared spectroscopy (MST) with no cross interference, to Chemcassette paper-based solutions (MDA Scientific) offering detection down to parts per billion.

- » Applications: semiconductor manufacturing, aerospace propulsion, specialty chemicals industry, research laboratories, emergency response

## Technical Services

24/7 global network includes post-sales service and Systems Integration teams.

- » Emergency call out, service contracts, on/off-site repair, training and commissioning
- » Complete range of spares, consumables and accessories

### Find out more:

[www.honeywellanalytics.com](http://www.honeywellanalytics.com)

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