



Portable Indoor Air Quality Smart Sensor Specifications



YESAIR & YES Plus LGA Smart Sensor Specifications

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Indoor Air Quality Instruments

YESAIR Eight Channel Air Quality Monitor



- » 8 sensor capacity
- » > 30 plug & play sensor choices
- » Data logging to SD flash card
- » Lightweight, contoured & comfortable handheld device



YES Plus LGA Fifteen Channel Air Quality Monitor



- » 15 sensor capacity
- » > 30 plug & play sensor choices
- » Data logging to SD flash card
- » Internal sample pump with inline filter



YESAIR Junior Essential Portable Air Quality Monitor



- » Low cost & easy to use
- » Light weight, handheld device
- » Simultaneously measures & displays temperature, RH & CO₂
- » Logs to internal memory (up to 26,000 data points)



YESDUST Affordable Particulate Sensor



- » Low cost and long life
- » Quick response and light weight
- » Rechargeable nickel hydride battery pack
- » Real time display on YESAIR or YES Plus LGA LCD



OVERVIEW

Gas Detection

Categories of gas detection systems are defined by the technology they use: electrochemical and metal oxide semiconductor technologies generally detect toxic gases and catalytic and infrared sensors detect combustible gases.



ELECTROCHEMICAL

Toxic gas sensors & oxygen sensors

LIFE SPAN

2 - 5 years (sensor type & manufacturer dependent). Oxygen typically 2 years.

SPECIFICITY

Specific to target gas with known cross sensitivity to a small variety of gases.

RANGE

Typically 0 - 1.0 ppm to 0 - 2,000 ppm, sensor dependent.

POISONING / DAMAGING

- Oxygen deprivation
- Exposure to high concentrations of solvent vapours
- Very high concentrations of target gas
- Reactive gases
- Environments with high temperatures, low temperatures (freezing)
- Very low levels of relative humidity (less than 10 - 15%)

APPLYING SPAN GAS

- Use span gas with air balance or nitrogen balance
- Flow rate should be a minimum of 0.5 LPM (lighter-than-air gases) to a maximum of 1.0 LPM (heavier-than-air gases)
- Do NOT humidify span gas when flowing

SOLID-STATE

Toxic & combustible gas sensors

LIFE SPAN

3 - 8 years (sensor type & manufacturer dependent).

SPECIFICITY

Broad spectrum, non gas specific sensors with a wide range of interfering gases & chemicals.

RANGE

0 - 50% LEL (combustible gases), varies for target toxic gases (typically 0 - 100 ppm to 0 - 2,000 ppm).

POISONING / DAMAGING

High concentrations of target gas, silicon vapours, alkaline metals, salt water spray, environments with extreme temperatures (heat and freezing).

APPLYING SPAN GAS

- Use span gas with air balance ONLY. Nitrogen balance will cause negative sensor response.
- Flow rate should be a minimum of 0.5 LPM to a maximum of 0.75 LPM.
- Span gas MUST be humidified when flowing over sensor.



CATALYTIC

Combustible gas sensors, toxic gas sensors at very high concentrations (% volume)

LIFE SPAN

3 - 8 years (typically if not poisoned)

SPECIFICITY

Specific to combustible gases only in the LEL ranges

RANGE

0 - 100% LEL of target gas

POISONING / DAMAGING

High concentrations of target gas, lead vapours, silicon vapours, alkylated heavy metals.

APPLYING SPAN GAS

- Use span gas with air balance ONLY.
- Flow rate should be a minimum of 0.5 LPM (lighter-than-air gases) to a maximum of 1.0 LPM (heavier-than-air gases)
- Do not humidify span gas when flowing

INFRARED

Toxic & combustible gas sensors

LIFE SPAN

10 years +

SPECIFICITY

Specific to target gas.

RANGE

0 - 1,000 ppm to 0 - 100% volume. Target gas, manufacturer dependent.

POISONING / DAMAGING

No known poisoning agents. Condensing humidity will damage sensor and distort readings.

APPLYING SPAN GAS

- Use span gas with air balance or nitrogen balance. Nitrogen balance ONLY for CO₂ sensors.
- Flow rate should be approximately 0.5 LPM. Some sensors are flow sensitive.
- Do NOT humidify span gas when flowing.

Relative Humidity (RH)

SENSOR

Type	Thin film capacitive
Standard Range	0 - 100% RH
Resolution	2% RH
Accuracy	No data available
Long Term Drift	2% (\pm)
Response Time	< 10 seconds
Cross Sensitivities	N/A

INSTRUMENT

Displayed Resolution	1%
Warm Up Time @ Switch On	5 minute operational, 20 minute max accuracy
Recommended Calibration Frequency	1 yr for best performance

ENVIRONMENTAL

Operating Temperature	0°C to 50°C (32°F to 122°F)
Operating Humidity	N/A
Operating Life (<i>Estimated</i>)	3 yrs +

Temperature

SENSOR

Type	Negative Coefficient Thermistor
Standard Range	-5°C to 55°C (23°F to 131°F)
Resolution	0.1°C @ 25°C
Accuracy	No data available
Long Term Drift	0.5°C (\pm)
Response Time	< 10 seconds
Cross Sensitivities	N/A

INSTRUMENT

Displayed Resolution	0.1°C
Warm Up Time @ Switch On	5 minute operational, 20 minute max accuracy
Recommended Calibration Frequency	1 yr for best performance

ENVIRONMENTAL

Operating Temperature	0°C to 50°C (32°F to 122°F)
Operating Humidity	N/A
Operating Life (<i>Estimated</i>)	3 yrs +

Ammonia (NH₃)

SENSOR

Type	Electrochemical
Standard Range	0 - 50 ppm
Resolution	1 ppm
Accuracy	No data available
Long Term Drift	< 5% / 6 months
Response Time	$t_{90} = < 60$ sec calculated fr 5 minute exposure
Cross Sensitivities	Alcohols @ 1,000 ppm = 0 ppm CO ₂ @ 5,000 ppm = 0 ppm CO @ 100 ppm = 0 ppm Hydrocarbons @ % range = 0 ppm H ₂ @ 10,000 ppm = 0 ppm H ₂ S @ 20 ppm = 2 ppm Cross sensitivity list not fully completed. Sensor maybe sensitive to other gases.

INSTRUMENT

Displayed Resolution	0.1 ppm (100 ppb)
Warm Up Time @ Switch On	Approx 2 - 2.5 min (warm up delay time)
Recommended Calibration Frequency	6 months

ENVIRONMENTAL

Operating Temperature	0°C to 40°C (32°F to 104°F)
Operating Humidity	15 - 90% non-condensing
Operating Life (<i>Estimated</i>)	2 yrs

Arsine (AsH₃)

SENSOR

Type	Electrochemical
Standard Range	0 - 1 ppm
Resolution	< 15 ppb @ 20°C (68°F)
Accuracy	No data available
Long Term Drift	< 5% / 6 months
Response Time	$t_{90} = < 30$ seconds calc fr 2 minute exposure
Cross Sensitivities	CO @ 85 ppm = 0 ppm H ₂ @ 3,100 ppm = 0 ppm NO ₂ @ 10 ppm = 2 ppm C ₃ H ₃ OH @ 25,000 ppm = 0 ppm H ₂ S @ 18 ppm = 10.8 ppm

Cross Sensitivities *continued*

SO ₂ @ 18 ppm = 5.4 ppm
Cl ₂ @ 0.85 ppm = 0.24 ppm
HCl @ 7.8 ppm = 1 ppm
HF @ 7.2 ppm = 0 ppm
HCN @ 12.6 ppm = 0.7 ppm
SiH ₄ @ 4.3 ppm = 0.7 ppm
H ₂ Se @ 0.8 ppm = 0.24 ppm
B ₂ H ₆ @ 0.2 ppm = 0.28 ppm
PH ₃ @ 0.2 ppm = 0.24 ppm

INSTRUMENT

Displayed Resolution	0.001 ppm (1 ppb)
Warm Up Time @ Switch On	Approximately 2 - 2.5 min (instrument warm up delay time)
Recommended Calibration Frequency	6 months

ENVIRONMENTAL

Operating Temperature	0°C to 40°C (32°F to 104°F)
Operating Humidity	20 - 95% non- condensing
Operating Life (<i>Estimated</i>)	1.5 yrs

Carbon Dioxide (CO₂)

SENSOR

Type	Infrared
Standard Range	0 - 5,000 ppm
Resolution	50 ppm fr 0 - 2,500 ppm, then 100 ppm up to FSD
Accuracy	± 2% full scale @ 20°C (68°F), 1 bar pressure, applied gas 2.5% volume CO ₂
Long Term Drift	± 50 ppm / month @ 20°C (68°F) ambient, (max ± 150 ppm / yr)
Response Time	t ₉₀ = > 30 seconds @ 20°C (68°F)
Cross Sensitivities	None

INSTRUMENT

Displayed Resolution	1 ppm
Warm Up Time @ Switch On	Approx 2 - 2.5 min (warm up delay time)
Recommended Calibration Frequency	2 yrs, 1 yr for best accuracy

ENVIRONMENTAL

Operating Temperature	0°C to 50°C (32°F to 122°F)
Operating Humidity	0 - 95% non-condensing
Operating Life (<i>Estimated</i>)	5 - 10 yrs

Carbon Dioxide (CO₂)

SENSOR

Type	Infrared
Standard Range	0 - 10,000 ppm
Resolution	50 ppm fr 0 - 2,500 ppm, then 100 ppm up to FSD
Accuracy	± 2% full scale @ 20°C (68°F), 1 bar pressure, applied gas 2.5% volume CO ₂
Long Term Drift	± 500 ppm / month @ 20°C (68°F) ambient
Response Time	t ₉₀ = > 30 seconds @ 20°C (68°F)
Cross Sensitivities	None

INSTRUMENT

Displayed Resolution	1 ppm
Warm Up Time @ Switch On	Approx 2 - 2.5 min (warm up delay time)
Recommended Calibration Frequency	2 yrs, 1 yr for best accuracy

ENVIRONMENTAL

Operating Temperature	0°C to 50°C (32°F to 122°F)
Operating Humidity	0 - 95% non-condensing

Carbon Dioxide (CO₂)

SENSOR

Type	Infrared
Standard Range	0 - 5% volume
Resolution	1% of measuring range for readings above 50% of range, 0.5% of measuring range for readings below 50% of range
Accuracy	± 2% full scale @ 20°C (68°F), 1 bar pressure, applied gas 2.5% volume CO ₂
Long Term Drift	± 500 ppm / month @ 20°C (68°F) ambient
Response Time	t ₉₀ = > 30 seconds @ 20°C (68°F)
Cross Sensitivities	None

INSTRUMENT

Displayed Resolution	0.1% volume
Warm Up Time @ Switch On	Approx 2 - 2.5 min (warm up delay time)
Recommended Calibration Frequency	2 yrs, 1 yr for best accuracy

ENVIRONMENTAL

Operating Temperature	0°C to 50°C (32°F to 122°F)
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Operating Humidity	0 - 95% non-condensing
Operating Life (<i>Estimated</i>)	5 - 10 yrs

Carbon Dioxide (CO₂)

SENSOR

Type	Infrared
Standard Range	0 - 20% volume
Resolution	1% of measuring range for readings above 50% of range, 0.5% of measuring range for readings below 50% of range
Accuracy	No data available
Long Term Drift	± 1% volume / month @ 20°C (68°F) ambient
Response Time	t ₉₀ = > 30 seconds @ 20°C (68°F)
Cross Sensitivities	None

INSTRUMENT

Displayed Resolution	0.1% volume
Warm Up Time @ Switch On	Approx 2 - 2.5 min (warm up delay time)
Recommended Calibration Frequency	2 yrs, 1 yr for best accuracy

ENVIRONMENTAL

Operating Temperature	0°C to 50°C (32°F to 122°F)
Operating Humidity	0 - 95% non-condensing
Operating Life (<i>Estimated</i>)	5 - 10 yrs

Carbon Monoxide (CO)

SENSOR

Type	Electrochemical
Standard Range	0 - 50 ppm
Resolution	0.5 ppm
Accuracy	No data available
Long Term Drift	zero: 0.2 ppm equivalent change / yr in clean air. Sensitivity: 3% change / yr in clean air (value based on twice per month test)
Response Time	t ₉₀ = < 25 seconds fr 0 - 400 ppm
Cross Sensitivities	H ₂ S @ 20 ppm = < 0.1 ppm NO ₂ @ 10 ppm = < 0.1 ppm Cl ₂ @ 10 ppm = < 0.1 ppm NO @ 50 ppm = < 5 ppm

Cross Sensitivities <i>continued</i>	SO ₂ @ 20 ppm = < 0.1 ppm
	H ₂ @ 20°C (68°F) @ 400 ppm = < 60 ppm
	C ₂ H ₄ @ 400 ppm = < 25 ppm
	NH ₃ @ 20 ppm = < .01 ppm

INSTRUMENT

Displayed Resolution	1 ppm
Warm Up Time @ Switch On	Approximately 2 - 2.5 min (instrument warm up delay time)
Recommended Calibration Frequency	2 yrs, 1 yr for best accuracy

ENVIRONMENTAL

Operating Temperature	0°C to 50°C (32°F to 122°F)
Operating Humidity	15 - 90% non-condensing
Operating Life (<i>Estimated</i>)	2 - 3 yrs

Carbon Monoxide (CO)

SENSOR

Type	Electrochemical (for use in H ₂ background environment)
Standard Range	0 - 50 ppm
Resolution	0.5 ppm
Accuracy	No data available
Long Term Drift	zero: 0.2 ppm equivalent change / yr in clean air. Sensitivity: 3% change / yr in clean air (value based on twice per month test)
Response Time	t ₉₀ = < 30 seconds
Cross Sensitivities	H ₂ @ 900 ppm in 900 ppm CO @ 10°C (50°F) = < 2 ppm
	H ₂ @ 900 ppm in 900 ppm CO @ 20°C (68°F) = < 4 ppm
	H ₂ @ 900 ppm in 900 ppm CO @ 30°C (86°F) = < 6 ppm
	NO ₂ @ 10 ppm = < 0.1 ppm
	Cl ₂ @ 10 ppm = < 0.1 ppm
	NO @ 50 ppm = < 0.1 ppm
	SO ₂ @ 20 ppm = < 0.1 ppm
	C ₂ H ₄ @ 400 ppm = < 30 ppm
	NH ₃ @ 20 ppm = < 0.1 ppm

INSTRUMENT

Displayed Resolution	1 ppm
Warm Up Time @ Switch On	Approximately 2 - 2.5 min (instrument warm up delay time)
Recommended Calibration Frequency	6 months

ENVIRONMENTAL

Operating Temperature	0°C to 50°C (32°F to 122°F)
Operating Humidity	15 - 90% non-condensing
Operating Life (<i>Estimated</i>)	2 - 3 yrs

Chlorine (Cl₂)**SENSOR**

Type	Electrochemical
Standard Range	0 - 5 ppm
Resolution	0.02 ppm
Accuracy	No data available
Long Term Drift	zero: < 0.2 ppm equivalent change / yr in clean air with monthly test. Sensitivity: < 0.4 ppm change / month in clean air with twice monthly test
Response Time	t ₉₀ = < 40 seconds fr 0 - 5ppm H ₂ S @ 20 ppm = < -40 ppm NO ₂ @ 10ppm = 100 ppm NO @ 50 ppm = < 0.5 ppm
Cross Sensitivities	SO ₂ @ 20 ppm = < -2.5 ppm CO @ 400 ppm = < 0.1 ppm H ₂ @ 400 ppm = < 0.1 ppm C ₂ H ₄ @ 400 ppm = < 0.1 ppm

INSTRUMENT

Displayed Resolution	0.1 ppm (100 ppb)
Warm Up Time @ Switch On	Approximately 2 - 2.5 min (instrument warm up delay time)
Recommended Calibration Frequency	6 months

ENVIRONMENTAL

Operating Temperature	0°C to 40°C (32°F to 104°F)
Operating Humidity	15 - 90% non-condensing
Operating Life (<i>Estimated</i>)	2 - 2.5 yrs

Chlorine Dioxide (ClO₂)**SENSOR**

Type	Electrochemical
Standard Range	0 - 1 ppm
Resolution	0.02 ppm

Accuracy	No data available
Long Term Drift	< 5% / 6 months
Response Time	$t_{50} = < 20$ seconds calc fr 2 minute exposure time $t_{90} = < 120$ seconds calc fr 2 minute exposure
Cross Sensitivities	Alcohols @ 1,000 ppm = 0 ppm CO @ 100 ppm = 0 ppm Cl ₂ @ 1ppm = 0.6 ppm O ₃ @ 0.25 ppm = 0.7 ppm H ₂ @ 3,000 ppm = 0 ppm H ₂ S @ 20 ppm = -5 ppm

INSTRUMENT

Displayed Resolution	0.01 ppm (10 ppb)
Warm Up Time @ Switch On	Approximately 2 - 2.5 min (instrument warm up delay time)
Recommended Calibration Frequency	6 months

ENVIRONMENTAL

Operating Temperature	0°C to 40°C (32°F to 104°F)
Operating Humidity	15 - 95% non- condensing
Operating Life (<i>Estimated</i>)	2 yrs

Combustibles

SENSOR

Type	Catalytic Pellistor
Standard Range	0 - 100% LEL
Resolution	1% LEL
Accuracy	No data available
Long Term Drift	Minimal
Response Time	$t_{50} = < 10$ seconds
Cross Sensitivities	Responds to most flammable gases & vapours

INSTRUMENT

Displayed Resolution	1% LEL
Warm Up Time @ Switch On	Approximately 2 - 2.5 min (instrument warm up delay time)
Recommended Calibration Frequency	1 yr for best performance

ENVIRONMENTAL

Operating Temperature	0°C to 40°C (32°F to 104°F)
Operating Humidity	10 - 90% non- condensing
Operating Life (<i>Estimated</i>)	5 yrs +

Combustibles

SENSOR

Type	Infrared
Standard Range	0 - 5% vol CH ₄
Resolution	1% vol CH ₄
Accuracy	No data available
Long Term Drift	± 1% FSD / mth @ 20°C (68°F) ambient, (max ± 3% of full scale / yr)
Response Time	t ₉₀ = <30 seconds @ 20°C (68°F) ambient
Cross Sensitivities	None

INSTRUMENT

Displayed Resolution	0.1% volume
Warm Up Time @ Switch On	Approximately 2 - 2.5 min (instrument warm up delay time)
Recommended Calibration Frequency	1 year

ENVIRONMENTAL

Operating Temperature	0°C to 50°C (32°F to 122°F)
Operating Humidity	0 - 95% non-condensing
Operating Life (<i>Estimated</i>)	5 - 10 yrs

Ethylene (C₂H₄)

SENSOR

Type	Electrochemical
Standard Range	0 - 500 ppm
Resolution	1 ppm
Accuracy	No data available
Long Term Drift	< 5% / month
Response Time	t ₉₀ = < 100 seconds
Cross Sensitivities	CO = < 60%

INSTRUMENT

Displayed Resolution	1 ppm
Warm Up Time @ Switch On	Approximately 2 - 2.5 min (instrument warm up delay time)
Recommended Calibration Frequency	6 months

ENVIRONMENTAL

Operating Temperature	0°C to 50°C (32°F to 122°F)
Operating Humidity	15 - 90% non-condensing
Operating Life (<i>Estimated</i>)	2 - 3 yrs

Ethylene Oxide (C₂H₄O)

SENSOR

Type	Electrochemical
Standard Range	0 - 20 ppm
Resolution	0.1 ppm
Accuracy	No data available
Long Term Drift	< 5% signal loss / yr
Response Time	t ₉₀ = < 120 seconds
Cross Sensitivities	Ethanol ≈ 55%
	Toluene ≈ 20%
	Methyl-ethyl-ketone ≈ 10%
	CO ≈ 40%

INSTRUMENT

Displayed Resolution	0.1 ppm (100 ppb)
Warm Up Time @ Switch On	Approximately 2 - 2.5 min (instrument warm up delay time)
Recommended Calibration Frequency	6 months

ENVIRONMENTAL

Operating Temperature	0°C to 50°C (32°F to 122°F)
Operating Humidity	15 - 90% non- condensing
Operating Life (<i>Estimated</i>)	2 - 3 yrs

Fluorine (F₂)

SENSOR

Type	Electrochemical
Standard Range	0 - 2 ppm
Resolution	< 0.02 ppm @ 20°C (68°F)
Accuracy	No data available
Long Term Drift	< 5% / month
Response Time	t ₉₀ = < 80 sec calc fr 4 minute exposure with 1 ppm Cl ₂
Cross Sensitivities	Alcohols @ 1,000 ppm = 0 ppm
	AsH ₃ @ 0.2 ppm = -0.03 ppm
	Br = yes; n/d
	CO ₂ @ 5,000 ppm = 0 ppm
	CO @ 100 ppm = 0 ppm
	Cl ₂ @ 1 ppm = 1.4 ppm
	B ₂ H ₆ @ 0.25 ppm = -0.01 ppm
Hydrocarbons @ % range = 0 ppm	
HCl @ 5 ppm = -7 ppm	

Cross Sensitivities *continued*

H ₂ @ 10,000 ppm = 0 ppm
HCN @ 1 ppm = -0.05 ppm
H ₂ S @ 1 ppm = -2 ppm
N ₂ @ 100% = 0 ppm
NO ₂ @ 10 ppm = 8 ppm
O ₃ @ 0.25 ppm = 0.3 ppm
PH ₃ @ 0.3 ppm = approximately -0.1 ppm; n/d
SO ₂ @ 20 ppm = -0.2 ppm

INSTRUMENT

Displayed Resolution	0.01 ppm (10 ppb)
Warm Up Time @ Switch On	Approximately 2 - 2.5 min (instrument warm up delay time)
Recommended Calibration Frequency	6 months

ENVIRONMENTAL

Operating Temperature	0°C to 40°C (32°F to 104°F)
Operating Humidity	15 - 90% non- condensing
Operating Life (<i>Estimated</i>)	1.5 - 2 yrs

Formaldehyde (CH₂O) *See reference Note 4*

SENSOR

Type	Electrochemical
Standard Range	0 - 10 ppm
Resolution	0.01 ppm
Accuracy	No data available
Long Term Drift	< 2% signal loss / month
Response Time	t ₅₀ = < 80 sec
Cross Sensitivities	H ₂ = 1 - 3%
	CO = 10 - 18%
Interference from other reducing gases such as alcohol.	

INSTRUMENT

Displayed Resolution	0.01ppm (10 ppb)
Warm Up Time @ Switch On	Approximately 2 - 2.5 min (instrument warm up delay time)
Recommended Calibration Frequency	6 months

ENVIRONMENTAL

Operating Temperature	0°C to 50°C (32°F to 122°F)
Operating Humidity	15 - 90% non- condensing
Operating Life (<i>Estimated</i>)	2 - 3 yrs in air

Hydrogen (H₂)

SENSOR

Type	Electrochemical
Standard Range	0 - 2,000 ppm
Resolution	2 ppm
Accuracy	No data available
Long Term Drift	< 2% / months
Response Time	$t_{90} = < 90$ seconds
Cross Sensitivities	CO @ 300 ppm = ≤ 60 ppm
	H ₂ S @ 15 ppm = < 3 ppm
	SO ₂ @ 5 ppm = 0 ppm
	NO @ 35 ppm ≈ 10 ppm
	NO ₂ @ 5 ppm = 0 ppm
	Cl ₂ @ 1 ppm = 0 ppm
	HCN @ 10 ppm ≈ 3 ppm
	HCl @ 5 ppm = 0 ppm
	C ₂ H ₄ @ 100 ppm ≈ 80 ppm

INSTRUMENT

Displayed Resolution	1 ppm
Warm Up Time @ Switch On	Approximately 2 - 2.5 min (instrument warm up delay time)
Recommended Calibration Frequency	6 months

ENVIRONMENTAL

Operating Temperature	0°C to 50°C (32°F to 122°F)
Operating Humidity	15 - 90% non- condensing
Operating Life (<i>Estimated</i>)	2 yrs +

Hydrogen Chloride (HCl)

SENSOR

Type	Electrochemical
Standard Range	0 - 30 ppm
Resolution	< 0.7 ppm @ 20°C (68°F)
Accuracy	No data available
Long Term Drift	< 3% / month
Response Time	$t_{90} = < 70$ seconds calc fr 4 minute exposure
Cross Sensitivities	Alcohols @ 1,000 ppm = 0 ppm
	NH ₃ @ 100 ppm = 0 ppm
	AsH ₃ @ 0.2 ppm = 0.7 ppm
	CO ₂ @ 5,000 ppm = 0 ppm

Cross Sensitivities *continued*

CO @ 100 ppm = 0 ppm
Cl ₂ @ 5 ppm = < ±0.1 ppm
Hydrocarbons @ % range = 0 ppm
H ₂ @ 10,000 ppm = 0 ppm
HCN @ 20 ppm = 7 ppm
H ₂ S @ 20 ppm = 60 ppm
NO @ 100 ppm = 45 ppm
N ₂ @ 100% = 0 ppm
NO ₂ @ 10 ppm = < ±0.5 ppm
PH ₃ @ 0.1 = 0.3 ppm
SO ₂ @ 20 ppm = 8 ppm

INSTRUMENT

Displayed Resolution	0.1 ppm (100 ppb)
Warm Up Time @ Switch On	Approximately 2 - 2.5 min (instrument warm up delay time)
Recommended Calibration Frequency	6 months

ENVIRONMENTAL

Operating Temperature	0°C to 40°C (32°F to 104°F)
Operating Humidity	15 - 95% non- condensing
Operating Life (<i>Estimated</i>)	2 yrs

Hydrogen Cyanide (HCN)

SENSOR

Type	Electrochemical
Standard Range	0 - 30 ppm
Resolution	0.2 ppm
Accuracy	No data available
Long Term Drift	< 5% / month
Response Time	t ₉₀ = < 50 seconds calc fr 2 minute exposure

Cross Sensitivities

Alcohols @ 1,000 ppm = 0 ppm
CO ₂ @ 5,000 ppm = 0 ppm
CO @ 100 ppm = 0 ppm
Hydrocarbons @ % range = 0 ppm
H ₂ @ 10,000 ppm = 0 ppm
NO @ 100 ppm = -5 ppm
NO ₂ @ 10 ppm = -7 ppm
H ₂ S @ 20 ppm = 0 ppm
(short gas exposure in minute range; after filter saturation: ca. 40 ppm reading)

INSTRUMENT

Displayed Resolution	0.1 ppm (100 ppb)
Warm Up Time @ Switch On	Approximately 2 - 2.5 min (instrument warm up delay time)
Recommended Calibration Frequency	6 months

ENVIRONMENTAL

Operating Temperature	0°C to 40°C (32°F to 104°F)
Operating Humidity	15 - 95% non- condensing
Operating Life (<i>Estimated</i>)	1.5 - 2 yrs

Hydrogen Fluoride (HF)**SENSOR**

Type	Electrochemical
Standard Range	0 - 10 ppm
Resolution	0.2 ppm @ 20°C (68°F)
Accuracy	No data available
Long Term Drift	< 10% in 6 months
Response Time	$t_{90} = < 90$ seconds calc fr 4 minute exposure
Cross Sensitivities	$C_2H_4O_2$ @ 100 ppm = 100 ppm Alcohols @ 1,000 ppm = 0 ppm CO_2 @ 5,000 ppm = 0 ppm CO @ 100 ppm = 0 ppm Cl_2 @ 1 ppm = 0.7 ppm Hydrocarbons @ % range = 0 ppm H_2 @ 3,000 ppm = < 1 ppm HCl @ 10 ppm = 6 ppm SO_2 @ 20 ppm = 16 ppm

INSTRUMENT

Displayed Resolution	0.1 ppm (100 ppb)
Warm Up Time @ Switch On	Approximately 2 - 2.5 min (instrument warm up delay time)
Recommended Calibration Frequency	6 months

ENVIRONMENTAL

Operating Temperature	0°C to 40°C (32°F to 104°F)
Operating Humidity	15 - 90% non- condensing
Operating Life (<i>Estimated</i>)	1.5 yrs +

Hydrogen Sulphide (H₂S)

SENSOR

Type	Electrochemical
Standard Range	0 - 50 ppm
Resolution	< 0.05 ppm
Accuracy	No data available
Long Term Drift	Zero: < 0.1 ppm equivalent change / yr in clean air Sensitivity: < 4% change / yr in clean air with monthly test
Response Time	$t_{90} = < 25$ seconds fr 0 - 20 ppm
Cross Sensitivities	NO ₂ @ 10 ppm = < -20 ppm
	Cl ₂ @ 10 ppm = -25 ppm
	NO @ 50 ppm = < 4 ppm
	SO ₂ @ 20 ppm = < 10 ppm
	CO @ 400 ppm = < 1.5 ppm
	H ₂ @ 400 ppm = < 0.2 ppm
	C ₂ H ₄ @ 400 ppm = < 0.5ppm
	NH ₃ @ 20 ppm = < 0.1 ppm

INSTRUMENT

Displayed Resolution	0.1 ppm (100 ppb)
Warm Up Time @ Switch On	Approximately 2 - 2.5 min (instrument warm up delay time)
Recommended Calibration Frequency	6 months

ENVIRONMENTAL

Operating Temperature	0°C to 50°C (32°F to 122°F)
Operating Humidity	15 - 90% non- condensing
Operating Life (<i>Estimated</i>)	2 - 3 yrs

Nitrogen Dioxide (NO₂)

SENSOR

Type	Electrochemical
Standard Range	0 - 10 ppm
Resolution	0.1 ppm
Accuracy	No data available
Long Term Drift	< 2% signal loss / month
Response Time	$t_{90} = < 25$ seconds
Cross Sensitivities	H ₂ S @ 20 ppm = < -40 ppm
	Cl ₂ @ 10 ppm = 100 ppm
	NO @ 50 ppm = < 0.5 ppm
	SO ₂ @ 20 ppm = < -2.5 ppm

Cross Sensitivities <i>continued</i>	CO @ 400 ppm = < 0.1 ppm
	H ₂ @ 400 ppm = < 0.1 ppm
	C ₂ H ₄ @ 50 ppm = < 0.1 ppm
	NH ₃ @ 20 ppm = < 0.1 ppm
	CO ₂ @ 5% volume = < 0.1 ppm

INSTRUMENT

Displayed Resolution	0.1 ppm (100 ppb)
Warm Up Time @ Switch On	Approximately 2 - 2.5 min (instrument warm up delay time)
Recommended Calibration Frequency	6 months

ENVIRONMENTAL

Operating Temperature	0°C to 50°C (32°F to 122°F)
Operating Humidity	15 - 90% non- condensing
Operating Life (<i>Estimated</i>)	2 - 3 yrs

Nitric Oxide(NO)

SENSOR

Type	Electrochemical
Standard Range	0 - 100 ppm
Resolution	< 0.2 ppm
Accuracy	No data available
Long Term Drift	Zero: 0.5 ppm equivalent change fr -20°C to 20°C (-4°F to 68°F), 1 - 3 ppm equivalent change 20°C to 50°C (68°F to 122°F) Sensitivity: 101 - 105% output change @ 50 ppm btw 20°C (68°F) & 50°C (122°F)
Response Time	t ₉₀ = < 20 seconds fr 0 - 50 ppm
Cross Sensitivities	H ₂ S @ 20 ppm = < 30 ppm
	NO ₂ @ 50 ppm = < 5 ppm
	Cl ₂ @ 10 ppm = < 15 ppm
	SO ₂ @ 20 ppm = < 3 ppm
	H ₂ @ 400 ppm = < 0.1 ppm
	CO @ 400 ppm = < 0.1 ppm
	NH ₃ @ 20 ppm = < 0.1 ppm
	CO ₂ @ 5% volume = < 0.1 ppm

INSTRUMENT

Displayed Resolution	0.1 ppm (100 ppb)
Warm Up Time @ Switch On	Approximately 2 - 2.5 min (instrument warm up delay time)
Recommended Calibration Frequency	6 months

ENVIRONMENTAL

Operating Temperature	0°C to 50°C (32°F to 122°F)
Operating Humidity	15 - 90% non- condensing
Operating Life (<i>Estimated</i>)	2 - 3 yrs

Oxygen (O₂)

SENSOR

Type	Electrochemical
Standard Range	0 - 25% volume
Resolution	0.1% volume
Accuracy	No data available
Long Term Drift	< 1% change in output over 3 months
Response Time	t ₉₀ = < 15 seconds fr 0 - 20.9%
Cross Sensitivities	CO ₂ sensitivity: 0.1% change in O ₂ reading per % CO ₂ in 5% CO ₂

INSTRUMENT

Displayed Resolution	0.1% volume
Warm Up Time @ Switch On	Approximately 2 - 2.5 min (instrument warm up delay time)
Recommended Calibration Frequency	6 months

ENVIRONMENTAL

Operating Temperature	0°C to 55°C (32°F to 131°F)
Operating Humidity	< 0.7% fr 0 - 95% RH @ 40°C (104°F)
Operating Life (<i>Estimated</i>)	2 yrs

Ozone (O₃)

SENSOR

Type	Electrochemical
Standard Range	0 - 1 ppm
Resolution	< 0.02 ppm @ 20°C (68°F)
Accuracy	No data available
Long Term Drift	< 10% / 6 months @ 20°C (68°F) and 30 - 50% RH
Response Time	t ₉₀ = < 60 seconds calc from 3 minute exposure @ 30 cc / min flow
Cross Sensitivities	Br, I ₂ = yes; n/d CO ₂ @ 5,000 ppm = 0 ppm CO @ 100 ppm = 0 ppm Cl ₂ @ 1 ppm = 1.2 ppm

Cross Sensitivities <i>continued</i>	N_2H_4 @ 3 ppm = -3 ppm
	H_2 @ 3,000 ppm = 0 ppm
	H_2S @ 20 ppm = -1.6 ppm
	N_2 @ 100% = 0 ppm
	NO_2 @ 10ppm = 6 ppm

INSTRUMENT

Displayed Resolution	0.01 ppm (10 ppb)
Warm Up Time @ Switch On	Approximately 2 - 2.5 min (instrument warm up delay time)
Recommended Calibration Frequency	6 months

ENVIRONMENTAL

Operating Temperature	0°C to 40°C (32°F to 104°F)
Operating Humidity	15 - 90% non-condensing
Operating Life (<i>Estimated</i>)	1.5 - 2 yrs

Phosphine (PH₃)

SENSOR

Type	Electrochemical
Standard Range	0 - 5 ppm
Resolution	Lower detection limit < 30 ppb
Accuracy	No data available
Long Term Drift	< 5% / 6 months
Response Time	$t_{90} = < 30$ seconds
Cross Sensitivities	CO @ 85 ppm = 0 ppm
	H_2 @ 3,100 ppm = 0 ppm
	NO_2 @ 10 ppm = 2 ppm
	C_3H_5OH @ 25,000 ppm = 0 ppm
	H_2S @ 18 ppm = 13 ppm
	SO_2 @ 18 ppm = 6.5 ppm
	Cl_2 @ 0.85 ppm = 0.29 ppm
	HCl @ 7.8 ppm = 1.2 ppm
	HF @ 7.2 ppm = 0 ppm
	HCN @ 12.6 ppm = 0.84 ppm
	SiH_4 @ 4.3 ppm = 0.84 ppm
	H_2Se @ 0.8 ppm = 0.29 ppm
	B_2H_6 @ 0.2 ppm = 0.34 ppm
AsH_3 @ 0.2 ppm = 0.16 ppm	

INSTRUMENT

Displayed Resolution	0.01 ppm (10 ppb)
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Warm Up Time @ Switch On	Approximately 2 - 2.5 min (instrument warm up delay time)
Recommended Calibration Frequency	6 months

ENVIRONMENTAL

Operating Temperature	0°C to 40°C (32°F to 104°F)
Operating Humidity	10 - 95% non- condensing
Operating Life (<i>Estimated</i>)	2 yrs

Silane (SiH₄)

SENSOR

Type	Electrochemical
Standard Range	0 - 50 ppm
Resolution	0.05 ppm
Accuracy	No data available
Long Term Drift	< 5% / 6 months
Response Time	t ₉₀ = < 60 seconds calc fr 2 min exposure

Cross Sensitivities

CO @ 85 ppm = 0 ppm
H ₂ @ 3,100 ppm = 0 ppm
NO ₂ @ 10 ppm = 2.3 ppm
C ₃ H ₃ OH @ 25,000 ppm = 0 ppm
H ₂ S @ 18 ppm = 8 ppm
SO ₂ @ 18 ppm = 7.4 ppm
Cl ₂ @ 0.85 ppm = 0.1 ppm
HCl @ 8 ppm = 0.45 ppm
HF @ 7.2 ppm = 0 ppm
HCN @ 12 ppm = 0.77 ppm
AsH ₃ @ 0.16 ppm = 0.2 ppm
H ₂ Se @ 0.8 ppm = 0.2 ppm
B ₂ H ₆ @ 0.2 ppm = 0.27 ppm
PH ₃ @ 0.2 ppm = 0.35 ppm

INSTRUMENT

Displayed Resolution	0.01 ppm (10 ppb)
Warm Up Time @ Switch On	Approximately 2 - 2.5 min (instrument warm up delay time)
Recommended Calibration Frequency	6 months

ENVIRONMENTAL

Operating Temperature	0°C to 40°C (32°F to 104°F)
Operating Humidity	20 - 95% non- condensing
Operating Life (<i>Estimated</i>)	1.5 yrs

Sulphur Dioxide (SO₂)

SENSOR

Type	Electrochemical
Standard Range	0 - 20 ppm
Resolution	< 0.1 ppm
Accuracy	No data available
Long Term Drift	< 2% change / month in clean air
Response Time	$t_{90} = < 25$ seconds fr 0 - 10 ppm
Cross Sensitivities	H ₂ S @ 20 ppm = < 0.1 NO ₂ @ 10 ppm = < -130 ppm Cl ₂ @ 10 ppm = < -40 ppm NO @ 50 ppm = < ±2 ppm CO @ 400 ppm = < 1.6 ppm H ₂ @ 400 ppm = < 0.3 ppm C ₂ H ₄ @ 400 ppm = < 40 ppm NH ₃ @ 20 ppm = < 0.1 ppm

INSTRUMENT

Displayed Resolution	0.1 ppm (100 ppb)
Warm Up Time @ Switch On	Approximately 2 - 2.5 min (instrument warm up delay time)
Recommended Calibration Frequency	6 months

ENVIRONMENTAL

Operating Temperature	0°C to 40°C (32°F to 104°F)
Operating Humidity	15 - 90% non- condensing
Operating Life (<i>Estimated</i>)	2 yrs

Total Volatile Organic Compound (TVOC)

SENSOR

Type	Photolization Detector
Standard Range	0 - 30 ppm
Resolution	0.02 ppm
Accuracy	No data available
Long Term Drift	< 2% change / month in clean air
Response Time	$t_{90} = < 3$ seconds
Cross Sensitivities	Many chemicals & gases. Refer to manual.

INSTRUMENT

Displayed Resolution	0.01 ppm (10 ppb)
Warm Up Time @ Switch On	Approximately 2 - 2.5 min (instrument warm up delay time)

Recommended Calibration Frequency	monthly to 4 months (usage dependent)
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ENVIRONMENTAL

Operating Temperature	0°C to 40°C (32°F to 104°F)
Operating Humidity	0 - 95% non- condensing
Operating Life (<i>Estimated</i>)	5 yrs (excluding replaceable lamp & electrode stack)

Total Volatile Organic Compound (TVOC)

SENSOR

Type	Photolization Detector
Standard Range	0 - 300 ppm
Resolution	0.1 ppm (100 ppb)
Accuracy	No data available
Long Term Drift	< 2% change / month in clean air
Response Time	$t_{90} = <3$ seconds
Cross Sensitivities	Many chemicals & gases. Refer to manual.

INSTRUMENT

Displayed Resolution	1 ppm
Warm Up Time @ Switch On	Approximately 2 - 2.5 min (instrument warm up delay time)
Recommended Calibration Frequency	monthly to 4 months (usage dependent)

ENVIRONMENTAL

Operating Temperature	0°C to 40°C (32°F to 104°F)
Operating Humidity	0 - 95% non- condensing
Operating Life (<i>Estimated</i>)	5 yrs (excluding replaceable lamp & electrode stack)

Additional chemical symbols not defined above:

Br	Bromine	C_2H_2	Acetylene	B_2H_6	Diborane
ClF_3	Chlorine Trifluoride	C_3H_8O	Isopropyl Alcohol		

Important Notes:

1. Some sensors may be calibrated with correlation gases. If you prefer to have specific sensors calibrated with the target gas, contact our factory for availability and extra costs. Customer will have to bear the cost of the full cylinder of specialty gas plus incoming dangerous goods freight and take ownership of the cylinder of gas remaining.
2. These specifications have been developed from data considered accurate at the time. No warranty is implied or suggested based on this data. We accept no responsibility for errors or omissions.
3. Critical Environment Technologies Canada Inc. reserves the right to make design and specification changes without prior notice.
4. Formaldehyde sensor has high cross sensitivity to Carbon Monoxide, Alcohol & Hydrogen.
5. Combustible (flammable) gas sensors (catalytic) can be calibrated for a number of target gases. Please specify the target gas desired & we will evaluate your request.



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