

TVI

Texas Valve & Instruments, LLC

DeTec^{LLC}

a division of Texas Valve & Instruments

Gas Detection

Gas Detector Tubes Overview

Characteristics

- Easy, accurate, on-site gas and vapor measurement.

Features

- No maintenance or calibration required.
- Ideal for spot checking or continuous monitoring.

Specifications

- Conforms to OSHA standards.



Texas Valve & Instrument, LLC
PO Box 263660
Houston, TX 77207

T 713.645.2100
F 713.645.2102
E sales@tvi-i.com
website www.tvi-i.com

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Gas Detection

Gas Detector Tube Options

Gas Detector Tube Options

Part Number	Gas Type	Measurement Range
CO2-0.25-3.0%	Carbon Dioxide	0.25 - 3%
CO2-0.5-10.0%	Carbon Dioxide	0.5 - 10%
CO2-1-20%	Carbon Dioxide	1 - 20%
CO2-5-60%	Carbon Dioxide	5 - 60%
CO2-150-2500PPM	Carbon Dioxide	150 - 2500 ppm
H2O-0.1-2.0MGL	Water Vapor	0.1 - 2.0 mg/l
H2O-1-18MGL	Water Vapor	1 - 18 mg/l
H2O-1-30MGL	Water Vapor	1 - 30 mg/l
H2O-2-10LBMMCF	Water Vapor	2 - 10 lbs/ mmcf
H2O-6-40LBMMCF	Water Vapor	6 - 40 lbs/ mmcf
H2S-0.1-2.0%	Hydrogen Sulfide	0.1 - 2.0%
H2S-0.2-7.0%	Hydrogen Sulfide	0.2 - 7%
H2S-0.5-4.0%	Hydrogen Sulfide	0.5 - 4%
H2S-0.5-10.0%	Hydrogen Sulfide	0.5 - 10%
H2S-2-40%	Hydrogen Sulfide	2 - 40%
H2S-0.5-10PPM	Hydrogen Sulfide	0.5 - 10 ppm
H2S-1-30PPM	Hydrogen Sulfide	1 - 30 ppm
H2S-2.5-60PPM	Hydrogen Sulfide	2.5 - 60 ppm
H2S-5-100PPM	Hydrogen Sulfide	5 - 100 ppm
H2S-10-250PPM	Hydrogen Sulfide	10 - 250 ppm
H2S-50-800PPM	Hydrogen Sulfide	50 - 800 ppm
H2S-100-2000PPM	Hydrogen Sulfide	100 - 2000 ppm
MER-1-20PPM	Mercaptan	1 - 20 ppm
MER-5-120PPM	Mercaptan	5 - 120 ppm
MER-25-500PPM	Mercaptan	25 - 500 ppm
PH3-0.2-10PPM	Phosphine	40 - 60%

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Gas Detection

Gas Detector Tube Specs

Carbon Dioxide (CO₂) Specification Summary

TWA (TLV): 5000 ppm

· STEL (TLV): 30,000 ppm

· Flammable Range: N/A

Part No.	Range Class	Measurement Range	No. of Strokes	CF _v *	Volume	Sampling Time	Color Change	Shelf Life	Active Reagents
CO2-0.25-3.0%	Low Level Extended	1.25 – 1.5%	2	0.5	200 mL	2 minutes per stroke	Blue ☒ White	3 years	Sodium Hydroxide
	Standard	0.25 – 3.0%	1	1.0	100 mL				
	High Level Extended	0.5 – 6.0%	0.5	2.0	50 mL				
CO2-0.5-10.0%	Low Level Extended	0.25 – 5%	2	0.5	200 mL	2.5 minutes per stroke	Purple ☒ Off-White	3 years	Sodium Hydroxide
	Standard	0.5 – 10%	1	1.0	100 mL				
	High Level Extended	1.0 – 20%	0.5	2.0	50 mL				
CO2-1-20%	Low Level Extended	0.5 – 10%	2	0.5	100 mL	2.5 minutes per stroke	Purple ☒ Off-White	3 years	Sodium Hydroxide
	Standard	1.0 – 20%	1	1.0	50 mL				
	High Level Extended								
CO2-5-60%	Low Level Extended	2.5 – 30%	1	0.5	100 mL	2.5 minutes per stroke	Purple ☒ Off-White	3 years	Sodium Hydroxide
	Standard	5.0 – 60%	0.5	1.0	50 mL				
	High Level Extended		do not extend						

*Multiply the observed reading by the correction factor (CF_v · CF_r) to obtain the true concentration.

Gas Detection

Gas Detector Tube Specs

Water Vapor (H₂O) Specification Summary

TWA (TLV): N/A · STEL (TLV): N/A · Flammable Range: N/A

Part No.	Range Class	Measurement Range	No. of Strokes	CF _v *	Volume	Sampling Time	Color Change	Shelf Life	Active Reagents
H2O-0.1-2.0MGL	Low Level Extended	do not extend				1 minute per stroke	Yellow ☒ Blue-Green	2 years	Magnesium Perchlorate
	Standard	0.1 – 2.0 mg/L	1	1.0	100 mL				
	High Level Extended	do not extend							
H2O-1-18MGL	Low Level Extended	do not extend				1 minute per stroke	Yellow ☒ Blue	2 years	Magnesium Perchlorate
	Standard	1.0 – 18 mg/L	1	1.0	100 mL				
	High Level Extended	do not extend							
H2O-1-30MGL	Low Level Extended	do not extend				1 minute per stroke	Yellow ☒ Blue	2 years	Magnesium Perchlorate
	Standard	1.0 – 30 mg/L	1	1.0	100 mL				
	High Level Extended	do not extend							

Phosphine (PH₃) Specification Summary

TWA (TLV): 0.3 ppm · STEL (TLV): 1 ppm · Flammable Range: 2-100%

Part No.	Range Class	Measurement Range	No. of Strokes	CF _v *	Volume	Sampling Time	Color Change	Shelf Life	Active Reagents
PH3-0.2-10PPM	Low Level Extended	0.1 – 2.5 ppm	2	0.5	100 mL	1.5 minutes per stroke	Yellow ☒ Pink	2 years	Mercuric Chloride
	Standard	0.2 – 10 ppm	1	1.0	50 mL				
PH3-50-1000PPM	Low Level Extended	25 – 500 ppm	2	0.5	200 mL	1 minute per stroke	Yellow ☒ Dark Purple	3 years	Gold
	Standard	50 – 1000 ppm	1	1.0	100 mL				
	High Level Extended	100 – 2000 ppm	0.5	2.0	50 mL				

*Multiply the observed reading by the correction factor (CF_v · CF_T) to obtain the true concentration.

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Gas Detector Tube Specs

Hydrogen Sulfide (H₂S) Specification Summary

TWA (TLV): 1 ppm

· STEL (TLV): 5 ppm

· Flammable Range: 4–44%

Part No.	Range Class	Measurement Range	No. of Strokes	CF _v *	Volume	Sampling Time	Color Change	Shelf Life	Active Reagents
H2S-0.1–2.0%	Low Level Extended	0.05 – 1.0%	2	0.5	200 mL	2.5 minutes per stroke	Light Blue ☒ Dark Brown	3 years	Copper Sulfate
	Standard	0.1 – 2.0%	1	1.0	100 mL				
	High Level Extended	0.2 – 4.0%	0.5	2.0	50 mL				
H2S-0.2–7.0%	Low Level Extended	0.1 – 3.5%	2	0.5	200 mL	2.5 minutes per stroke	Light Blue ☒ Dark Brown	3 years	Copper Sulfate
	Standard	0.2 – 7.0%	1	1.0	100 mL				
	High Level Extended	0.4 – 14%	0.5	2.0	50 mL				
H2S-0.5–4.0%	Low Level Extended	0.25 – 2.0%	2	0.5	200 mL	1.5 minutes per stroke	Light Blue ☒ Dark Brown	3 years	Copper Sulfate
	Standard	0.5 – 4.0%	1	1.0	100 mL				
	High Level Extended	1.0 – 8.0%	0.5	2.0	50 mL				
H2S-0.5–10.0%	Low Level Extended	0.25 – 5.0%	2	0.5	100 mL	6 minutes per stroke	Light Blue ☒ Black	2 years	Copper Sulfate
	Standard	0.5 – 10%	1	1.0	50 mL				
	High Level Extended								
H2S-2–40%	Low Level Extended	1 – 20%	1	0.5	100 mL	2.5 minutes per stroke	Light Blue ☒ Dark Brown	3 years	Copper Sulfate
	Standard	2 – 40%	0.5	1.0	50 mL				
	High Level Extended	do not extend							
H2S-1–30PPM	Low Level Extended	0.5 – 15 ppm	4	0.5	400 mL	1.5 minutes per stroke	White ☒ Light Brown	3 years	Lead Acetate
	Standard	1 – 30 ppm	2	1.0	200 mL				
	High Level Extended	2 – 60 ppm	1	2.0	100 mL				
H2S-2.5–60PPM	Low Level Extended	1.25 – 30 ppm	2	0.5	200 mL	1.5 minutes per stroke	White ☒ Brown	3 years	Lead Acetate
	Standard	2.5 – 60 ppm	1	1.0	100 mL				
	High Level Extended	5 – 120 ppm	0.5	2.0	50 mL				
H2S-5–100PPM	Low Level Extended	2.5 – 50 ppm	2	0.5	200 mL	1.5 minutes per stroke	White ☒ Brown	3 years	Lead Acetate
	Standard	5 – 100 ppm	1	1.0	100 mL				
	High Level Extended	10 – 200 ppm	0.5	2.0	50 mL				
H2S-10–250PPM	Low Level Extended	5 – 125 ppm	2	0.5	200 mL	1.5 minutes per stroke	White ☒ Brown	3 years	Lead Acetate
	Standard	10 – 250 ppm	1	1.0	100 mL				
	High Level Extended	20 – 500 ppm	0.5	2.0	50 mL				
H2S-50–800PPM	Low Level Extended	25 – 400 ppm	2	0.5	200 mL	1.5 minutes per stroke	White ☒ Brown	3 years	Lead Acetate
	Standard	50 – 800 ppm	1	1.0	100 mL				
	High Level Extended	100 – 1600 ppm	0.5	2.0	50 mL				

*Multiply the observed reading by the correction factor (CF_v·CF_r) to obtain the true concentration.

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Gas Detection

Gas Detector Pump Overview

Characteristics

- The DeTec piston style gas sampling pump is designed to be used as an inexpensive, accurate, and fast tool for gas or air sampling.

Features

- Piston style sampling pump with tube breaker
- 50 & 100 ml single pull locking handle
- Rear mounted, easy view, vacuum indicator gage
- Rugged aluminium cylinder
- Lightweight

Dimensions

- Diameter: 1 ¾ inches
- Length (Closed): 8 ½ inches
- Length (Extended): 12 ¾ inches

Pump Options and Accessories

Part Number	Part Type
140124GSP-40-1	Fast Track Piston Style Pump
140124GSP-40C	Fast Track Piston Style Pump with Case
140124GSP-40L	Fast Track Hard Case Loaded
G-102245G	1/4" NPT Stainless Steel Sampling Bulb



140124GSP-40-1
Fast Track Pump



G-102245G - SAMPLE BULB



140124GSP-40L
CASE WITH PUMP, SAMPLE BULB & 10
BOXES OF TUBES

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Gas Detector Pump Operations

How to check the pump for leaks

Insert an unopened tube into the pump inlet and pull a stroke. After 3 minutes, unlock the handle and release it slowly, holding the handle and the pump body securely. If the handle returns to the red "0 mark" line, then the pump is leak free and ready to use.

Measurement Procedure

- Break both ends of the tube using the tip breaker on the sampling pump.
- Insert one end of the tube securely into the sampling pump inlet, ensuring that the arrow mark on the tube points towards the pump.
- Rotate the piston shaft until the red dot on it aligns with the red dot on the pump body.
- Insert the open end of the tube into the gas to be sampled and pull the handle 0.5 or 1 stroke until it locks in place, and wait for the indicated sampling time. For a second stroke, rotate the hand 90°, push it back to the 0 mark without removing the detector tube, and pull the piston handle for another full stroke. Repeat for the number of required strokes.
- Remove the tube from the pump and read the concentration directly on the tube scale. If tailing occurs read at the midpoint of the taper. Take the reading within a few minutes of sampling.
- Check for possible cross-sensitivities.

CAUTION:

- The process of breaking the tube tips can produce small gas shards. The broken tube ends can be very sharp. Use hand and eye protection when handling opened tubes.
- Keep tubes out of reach of unauthorized people, especially children.
- Dispose of the used tubes according to local regulations.



NOTES:

- The sampling pump together with the detector tube form a measuring system.
- Detector tube use with another manufacturer's pump is not recommended. However, DeTec is compatible when the tube diameter is the same and the pump pulls 100 cc per stroke.
- Before each day's use, check the pump for leaks and use it only if it is leak free.

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Gas Detection

Reading Adjustments

Detector Adjustments

Part Number	Temperature Correction Factor (CF _t)*						Usable Range of Relative Humidity
	39°F	50°F	68°F	84°F	86°F	104°F	
CO2-0.25–3.0%	1.0	1.0	1.0	1.0	1.0	1.0	10 – 90%
CO2-0.5–10.0%	0.9	1.0	1.0	1.0	1.1	1.2	10 – 90%
CO2-1–20%	0.9	1.0	1.0	1.0	1.1	1.2	10 – 90%
CO2-5–60%	0.9	1.0	1.0	1.0	1.1	1.2	
CO2-150–2500PPM	0.9	1.0	1.0	1.0	1.1	1.2	10 – 90%
H2O-0.1–2.0MGL	(refer to spec sheet)						N/A
H2O-1–18MGL	(refer to spec sheet)						N/A
H2O-1–30MGL	1.0	1.0	1.0	1.0	1.0	1.0	N/A
H2O-2–10LBMMCF		1.3	1		0.7	0.5	N/A
H2O-6–40LBMMCF		1.2	1		0.7	0.5	N/A
H2S-0.1–2.0%	1.0	1.0	1.0	1.0	1.0	1.0	
H2S-0.2–7.0%	1.0	1.0	1.0	1.0	1.0	1.0	10 – 90%
H2S-0.5–4.0%	1.0	1.0	1.0	1.0	1.0	1.0	
H2S-0.5–10.0%	1.0	1.0	1.0	1.0	1.0	1.0	10 – 90%
H2S-2–40%	1.0	1.0	1.0	1.0	1.0	1.0	10 – 90%
H2S-1–30PPM	1.0	1.0	1.0	1.0	1.0	1.0	10 – 90%
H2S-2.5–60PPM	1.0	1.0	1.0	1.0	1.0	1.0	10 – 90%
H2S-5–100PPM	1.0	1.0	1.0	1.0	1.0	1.0	10 – 90%
H2S-10–250PPM	1.0	1.0	1.0	1.0	1.0	1.0	10 – 90%
H2S-50–800PPM	1.0	1.0	1.0	1.0	1.0	1.0	10 – 90%
H2S-100–2000PPM	1.0	1.0	1.0	1.0	1.0	1.0	10 – 90%
PH3-0.1–10PPM	1.0	1.0	1.0	1.0	1.0	1.0	40 – 60%

*Multiply the observed reading by the correction factor (CF_v·CF_t) to obtain the true concentration.

Gas Detection

Chemical Cross-Sensitivities

Chemical Cross Sensitivities

Part Number	CH ₄		CO		CO ₂		CS ₂		H ₂ S		NH ₃		NO		NO ₂		SO ₂	
	conc.	error	conc.	error	conc.	error	conc.	error	conc.	error	conc.	error	conc.	error	conc.	error	conc.	error
CO2-0.25–3.0% ⁵	2.5%	0	1.5%						0.2%	0.5%	5%	0	100	0			3.5%	1.1%
CO2-0.5–10.0% ⁵	2.5%	0	1.5%	0 ³					0.2%	0.5%							3.5%	1.1%
CO2-1–20% ⁵	2.5%	0	1.5%						100	0	300	0	100	0			200	0
CO2-5–60% ⁵	2.5%	0	3.8%	0					0.2%	0.5%	500	0	100	0			3.5%	1.1%
CO2-150–2500PPM ⁵			3000	0					1%	0	50000	0	100	0	200	0	2050	0
H2O-0.1–2.0MGL	99.9%	0	200	0	3000	0			2000	0								
H2O-1–18MGL	99.9%	0	200	0	3000	0			2000	0								
H2O-1–30MGL	99.9%	0	200	0	3000	0			2000	0								
H2O-2–10LBMMCF	99.9%	0	200	0	3000	0			2000	0								
H2O-6–40LBMMCF	99.9%	0	200	0	3000	0			2000	0								
H2S-0.1–2.0%	2.5%	0	3000	0			100	0			300	0	100	0	200	0	20	0
H2S-0.2–7.0%	2.5%	0	3000	0			40%	0			300	0	2550	0	1020	0	30	0
H2S-0.5–4.0%	2.5%	0	3000	0			40%	0			300	0	2550	0	1020	0	30	0
H2S-0.5–10.0%			3000	0							300	0			200	0		
H2S-2–40%	2.5%	0	250	0			5%	0			10%	1.3%					10	0
H2S-1–30PPM	25000	0	250	0			100	0			300	0			200	0	20	0
															1800	0	1800	0
H2S-2.5–60PPM	25000	0	250	0			100	0			300	0			200	0	20	0
															1800	0	1800	0
H2S-5–100PPM	25000	0	250	0							100	0			200	0		
H2S-10–250PPM	25000	0					100	0			300	0						
H2S-50–800PPM	25000	0	250	0			100	0			300	0			200	0	20	0
H2S-100–2000PPM	25000	0	250	0			100	0			300	0			200	0	20	0
PH3-0.1–10PPM	25000	0	100	0	50000	0.05			50	>2.5 ²	100	≤0.1					200	0

Notes

1. t-Butyl Mercaptan
2. Interferes
3. Color darkens
4. Dark blue ring
5. Acid gases such as HCl give a positive response when coexisting.

Gas Detection

Chemical Cross-Sensitivities

Chemical Cross Sensitivities

Part Number	Benzene		Isobutylene		Methanol		Hexane		Toluene		TBM ¹		
	conc.	error	conc.	error	conc.	error	conc.	error	conc.	error	conc.	error	
CO2-0.25–3.0%	100		106				0.15%	0	400	0			
CO2-0.5–10.0%	100		106										
CO2-1–20%	100		106				1200	0	100	0			
CO2-5–60%			106	0			1200	0	100	0			
CO2-150–2500PPM			106	0			1500	0	400	0			
H2O-0.1–2.0MGL					50	0	3000	0					
H2O-1–18MGL					50	0	3000	0					
H2O-1–30MGL					50	0	3000	0					
H2O-2–10LBMMCF					50	0	3000	0					
H2O-6–40LBMMCF					50	0	3000	0					
H2S-0.1–2.0%			106	0			1200	0	100	0	0.2%	0.1%	< yellow-green
H2S-0.2–7.0%			106	0			1200	0	100	0	0.5%	≈0.3	< faint light green color
H2S-0.5–4.0%			106	0			1200	0	100	0	0.5%	≈0.3	< diffuse yellow-green
H2S-0.5–10.0%			106	0			1200	0			0.2%	≈0.1	< yellow-green
H2S-2–40%	100	0	106	0			100	0			0.5%	≈0.3	< very faint yellow color
H2S-1–30PPM			106	0			100	0	100	0	100	0	
H2S-2.5–60PPM			106	0			100	0	100	0	100	0	
H2S-5–100PPM			106	0					100	0	100	0	
H2S-10–250PPM			106	0					100	0	500	0	
H2S-50–800PPM			106	0					100	0	500	0	
H2S-100–2000PPM			106	0			100	0	100	0	500	0	
PH3-0.1–10PPM							1500	≤0.05	100	0			

Notes

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Related TVI Products



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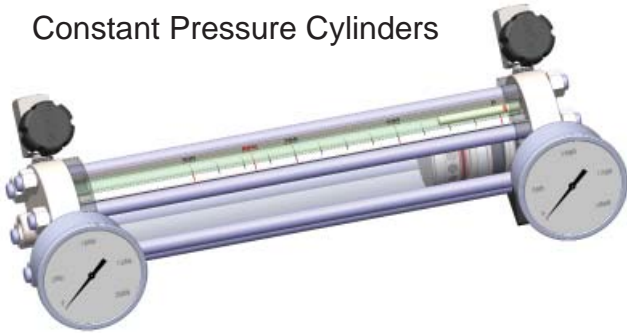
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Related TVI Products

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Gas Measurement Manifolds & Taps



Texas Valve & Instrument, LLC
PO Box 263660
Houston, TX 77207

T 713.645.2100
F 713.645.2102
E sales@tvi-i.com
website www.tvi-i.com