



SmartTest series  
Portable BD5 Universal gas detector

# Organic Vapor Detector

VOCs based on MOS Gas Sensitive Technology  
Ref:HBD5VOC\_IntE  
Revision: 2005-04-08

## Being Aware:

VOC sensor is designed sensitive to a group of gases usually. But VOC now is more popular than it's original meaning: Vapor of Organic Chemicals. Some people use it as symbol for air contaminants also, then it also includes some inorganic gases.

As to your application, choose the best suitability from the listed information.

If you are going to identify each gases, you have to choose from HBD5gas or pGas4810/4820, and other system.

- Intelligent Analysis Based on Powerful CPU
- Rapid Test
- Multi-parameters Tested for Compensation
- 100 frame Data log
- LCD 4x16 Display, Backlight Available
- RS232/485 Communication
- Full Function Keypad Operation
- Memo Driven Software
- Supporting EPA Method 21 -- Determination of Volatile Organic Compound Leaks

## Comparison with PID instrument

- The most important advantage of PID method is that it is not effected much Oxygen content. But the sensors of our design effected by Oxygen. So pay attention to use this instrument inside of the sealed container that not hold normal O2 level in air or the state when calibrated.
- Comparing to the principle of PID detecting gas by ionization potential, MOS VOCs more specific to certain application.
- PID is more sensitive in trace vocs in air, but always happened with unpredictable slow offset drift by the lamp. And lamp life is only months. MOS sensor has longer than 3 years. Relatively easy to maintenance. Even never need repari in the instrument life.



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Handheld BD3  
2600 Series  
Gas Analyzer

### 气体分析仪

量程: ppb-% 由探头决定

重复精度: 0.1-2%读数

用途:

主要配电化学气体探头.  
有160多种气体可选

介质温度: -10~50 °C

应用:

环境气体  
工艺气体  
矿井气体  
等低压常温场所



<http://www.big-dipper.com.cn>

## Configuration of VOC Instrument

	HBD5VOC	pGas200VOCs	
VOCs	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Humidity	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Oxygen	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Temperature	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Sampling Pump		<input checked="" type="checkbox"/>	
Sampling Gun		<input checked="" type="checkbox"/>	7m pipe attached.
Battery Life	1-3 hours	>10 hours	Each charge

## Instrumental Functions

- LCD 2×16 LCD Display, with backlight
- RS232/RS485 serial port. Supporting STIMcom / Modbus communication, and printer; USB support in new version
- Non-volatile memory supported data store and read out, or output to computer
- Built-in Sampling pump included, and suitable sample pre-process assembly
- Built-in alarm include LED flash, LCD indication, and Beep; Alarm limit setup supported, default to TWIN standard
- Sampling gun with filter/trap for dusts and condensated
- System diagnostic
- User complete calibration, zero-adjust and essential data setup support
- Basal temperature detected for compensation. Over limit alarm support
- PGas200:Rechargeable batteries to provide 100 hours of continuous operation; HBD5: 60mins

- 12-24 V DC powered. Local AD to DC adapter supported
- Basal intrinsically safe system, except parts of pump and heater. Special order for class 1 div. 1, groups a, b, c and d and class 2 div. 1, groups e, f and g for use in hazardous areas recommended.

## Applications:

- Common sense organics totally test
- Environal standard VOC,VOCs or TVOC
- Single gas measurement anywhere from 1/10ppm to the saturated level in atomosphere
- Weapons of Mass Destruction – chemical warfare agents, rocket propellants
- Breath sampling
- Personal monitoring of very toxic compounds -TDI, Methyl isocyanate, Vinylcyclohexene, Hydrazines
- Personal monitoring of low volatile toxic compounds, for example
- Heat exchange fluids
- Pesticides and pesticide residues
- Hypo-allergenic studies in chemical clean rooms
- Laboratory fume hood breakthrough
- Personal protective equipment (PPE)-Breakthrough, Decision making
- Environmental Survey instrument
- Leak detection, Residue studies
- Drug detection



## General Models Available

Model	Sensor	Ranges/(ppm)	Sensitiv ity	Applications	Specificatio ns	HBD5	pGas200	
VOC	eVOC	Acetaldehyde:0.6-687 Acetylene:0.08-80 Acrylonitrile:0.3-367 Butadiene:0.16-160 Carbon disulphide:0.2-196 Carbon monoxide:0.3-275 Carbonyl sulphide:0.2-204 Dimethyl sulphide:0.2-183 Epichlorohydrin:0.5-550 Methy-ethyl-ketone:1-1000 i-propanol:0.35-350 Ethanol:0.15-150 Ethylene:0.12-125 Ethylene Oxide:0.1-100 Formaldehyde:0.08-83 Methanol:0.06-66 Methyl mercaptan:0.1-100 Thiophane:0.6-610 Vinyl acetate:0.1-137 Vinyl chloride:0.1-137 Toluene:0.5-500 alpha-pinene:0.3-312 Ethylacetate:0.7-695		Active organics' vapor detection, specific to active organics and some inorganics; Labor environ protection; Toxic gas detection; Leakage detection; Simple living environ air test; *the listed is only typical, more gases possible				
HC/TVO C	IR4120- HC	C5H12:0-1.5%, CH4:0-4.3%, C3H8:0-1.5%, C4H10:0-1.7%, C6H14:0-2% C7H16:0-1.875%, C8H18:0-2.67%, CH3OH:0-1.2%, C2H5OH:0-1.7%, C3H7OH:0-1.9% (CH3)2CO:0-6%, MethyEthylKetonev:3.8%, Ethyl acetate: 0-2.5%, CycloHexane,C6H12:0-		All hydrocarbons detection, specific to organics; Combustible, explosives detection; Leakage detection; *the listed is only typical, more gases possible				

		1.7%, Gas:0-2.7% Toluene:0-15%			
VOCs	PID2290-1	Isobutylene:1-1000ppm Acetaldehyde Acetone Ammonia Benzene Butadiene Diesel Ethanol Ethylene Gasoline Hexane Jet fuel (JP8) Kerosene MEK Naphtha Styrene Toluene Turpentine Vinyl chloride Xylene		All VOCs with an IP below 10.6eV, not specific; Labor environ protection; Toxic gas detection; Leakage detection; Simple living environ air test; *the listed is only typical, more gases possible	
Model	Sensor	Range and typical gases	Sensitivity	Applications	Specifications
AQI	ADS02	Typical Sensitive to Toluene:<1~30ppm H2S:<0.1~3ppm EtOH:<1ppm-30ppm NH3:<1~30ppm H2:3~30ppm	100 36.7 4.8 2.75 0	Organics effluvium,VOCs,toxic Air quality index	and Repeatability: ≤ ±5%F; Range: 0~30ppm
VOC	ADS00	Typical Sensitive to H2:0.5-180ppm EtOH:0.3-300ppm C4H10:<1-400ppm CH4:<3-1000ppm CO:<2-1200ppm CSC:0.1-100ppm COC:0.1-100ppm	101 100 56.1 0 6.3 100 100	Air quality,General Contaminants test Indoor and outdoor air quality indication; Industry Safety explore before engineering; Quality monitor in HVAC equipment and other air cleaner products	Air Repeatability: ≤ ±3%F Range: 1-100ppm
VOC	ADS02	Typical Sensitive to Toluene:1-30ppm H2S:0.1-3ppm EtOH:1-30ppm NH3:1-30ppm H2:<3-30ppm+ CSC:0.07-30ppm COC:0.1-30ppm Warfare:0.07-30ppm	101 36.7 3.8 2.75 0 100 100 100	Air quality,General Contaminants test Indoor and outdoor air quality indication; Industry Safety explore before engineering; Quality monitor in HVAC equipment and other air cleaner products	Air Repeatability: ≤ ±3%F Range: 0-30ppm
Voc	4R	Typical Sensitive to Methane: 0-5% acetic acid: 0-10% acetone:0-5.55% ammonia: 0-15% benzene: 0-2.66% n-butane: 0-3.8% carbon monoxide: 0-15.6% chlorobenzene:4.33% ethanol:0-5.5%	100 40 45 125 45 50 80	THC, combustables and organics, include CO,NH3 alike inorganic vapors totally. Industrial leak detect	Repeatability: ≤ ±5%F; Range: 0~100% LEL;

		n-hexane:0-2.75%	30		
		hydrogen:0-4.44%	60		
		isobutene:0-2.57%	40		
		isopropanol: 0-5%	90		
		methanol:0-5.0%	70		
		methyl ethyl ketone:0-3.5%	40		
		n-pentane:0-3.33%	70		
		propane: 0-3.5%	40		
		toluene:0-2.75%	45		
		etc.	60		
			40		
VOC	ADS1B	Typical Sensitive to C4H10:<20 to 30000ppm CH4:<30 to >200000ppm H2:<50 to 20000ppm EtOH:<100 to 30000ppm		Butane and LP detect Industry Safety explore before engineering; Industry leakage detect	Repeatabilit y: ≤ ±3%F Range: 500- 10000ppm
VOC	ADS1M	Typical Sensitive to CH4:<30 to >200000ppm C4H10:<100 to 100000ppm H2:<100ppm to 10% EtOH:<200ppm to 15%		Mathane and Natural Gas Industry Safety explore before engineering; Industry leakage detect	Repeatabilit y: ≤ ±3%F Range: 300- 10000ppm
VOC	ADS20	Typical Sensitive to Methane: 40ppm-5% Ethanol:40ppm-10000ppm Isobutane:40ppm-3% Toluene: Hydrogen:40ppm-1.5% xylene, CO:40ppm-2.5%	47.4 100 89.5  100  84.2	Alcohol and organic vapor Indoor and outdoor air quality indication; Industry Safety explore before engineering; Quality monitor in HVAC equipment and other air cleaner products; Ornament and decorating test for products and engineering	Repeatabilit y: ≤ ±3%F Range: 50- 5000ppm
VOC	ADS3x	Typical Sensitive to R21:<40 to 3000ppm R22: <40 to 3000ppm R113: <40 to 3000ppm R11: <40 to 3000ppm R12: <40 to 3000ppm R134a: <40 to 3000ppm Ethanol:60ppm-2000ppm		Halocarbon, Halide, vapor Industry Safety explore before engineering; Industry leakage detect	Repeatabilit y: ≤ ±3%F Range: 100- 3000ppm

### Ordering information:

- Do not use HBD5VOC inside of the sealed container that not hold normal O2 level in air or the state when calibrated. But select pGas200-VOCs

BIG DIPPER TECHNOCHEM INSTITUTE

Call: (86) 10- 8264.0226; 8264.0225; Fax: (86)10-8264.0221;

P.o.Box: 603 BDTI Beijing, China 100080 <http://www.fullsense.com/>

## Units of Standard Configuration

Device		Introduction
System Analyzer	pBD5CMD:	3 Analog input except Temperature, RS232 COM supported
Temperature Sensor	TMP	Included in basic system
Humidity Sensor	1	Test room
Pressure Sensor	1	select
Flow Sensor	1	select
Other sensors		select
Air sampler gun		default
Enhanced sampler gun		Select
Other accessories		select
Battery	1	Included in basic system
DC Adapter	1	Included in basic system
Portable Case	1	For pGas200

## Optioal Parts

### Sampling Accessories

Items			Introduction
Sampler Gun	AGS	1	For normal air
Sampler	SGS	1	For user defined
Pump	6V	1	For atmosphere sampling
Pump	9V	11	For smoke sampling
Toxic gas Trap			Collect of toxic gas before exhaust
Chemical Filter			Collect interfering gas that influence accuracy of sensors selected. Plant recommended
Heater		1	For outdoor air application in north area, or cold gas process
Filter		1	To filtrate industrial level dust
Pipe fitter			For easy connect to pipe line
Pressure Conditioner			To reduce and regulate sample pressure to fit testing requirements
Extended Wiring and piping			Attached to sample gun

### Calibration Accessories

		Introduction
Standard gas	0	4L bottle, 9.5MPa
Cal tool kit	1	regulator
Cal tool kit	1	Switch
Cal tool kit	1	connector

### Computer Software – order separately

		Introduction
RS485 Kit		Append RS485 port, and Connector to RS232 port of PC

## More gases that AQI and VOCs sensor can detect.

Acetaldehyde	Ether	Methyl chloride
Acetone	2-Ethoxyethanol	Methyl chloroform
Acetonitrile	Ethyl alcohol	Methylcyclohexane.
Acetylene	Ethylamine	Methylcyclohexanot
Allyl alcohol	Ethyl benzene	Methylene chloride
Ammonia	Ethyl bromide	Methyl ethyl ketone
Arsine	Ethylbutyl ketone	MIBK (Hexone)
Benzene	Ethyl chloride	Methyl mercaptan

Butane	Ethyl ether	Naptha
2-Butanone (MEK)	Ethyl foemate	Napthalene
2-Butoxyethanol	Ethylenediazine	Natural gas
Butyl acetate	Ethylene dichioride	Nitro benzene
Butyl alcohol	Ethylene oxide	Nitrochloro benzene
Carbon monoxide	Formaldehyde	Nitroethane
Carbon tetrachloride	Frfuyl alcohol	Nitrotoluene
Chlorobenzene	Gasoline/Diesel fuel	Pentane
Chloroform	Heptane	2-Pentanone
Chloroprene	Hexachloroethane	PERCHLOROETHYLENE
Cumene	Hexane	Pet. distillates
Cyclohexane	2-Hexanone	Phenylether
Cyclohexanol	Hydrogen	Phosphine
Cyclohexanone	Hydrogen bromide	Propane
Dichloroethyl ether	Hydrogen chloride	Propylene oxide
Diacetone alcohol	Hydrogen cyanide	R-11 R-12 R-22
Diborane	Hydrogen sulfide	R-S02
1,1 Dichloroethane	Isoamyl alcohol	Silane
1,2 Dichloroethane	Isobutyl alcohol	Sulfur dioxide
Diethylamine	Isopropyl alcohol	Toluene
Diethylamino ehtanol	LP. gas	1,1,1, TCE
Diaaobutyl ketone	Methane	1,1,2 TCE
Dimethylamine	Methyl alcohol	Trichloroethylene
Dimethylformamide	Methyl butyl ketone	Xylene
Dinitrobenzene	Methylamine	
Dinitrotoluene	Methyl cellosolve	