



Portable Gas Analyzer

Model:pGas4810NDMIR-VOC Portable Infrared Gas Analyzer

Portable Industry Gas Detector

Ref: pGas4810NDMIR_VOC_IntE

Version:1.3

Date: October 23, 2006

Internet Information:

http://www.big-dipper.com.cn/Products/Gas/Portable/pGas4810NDMIR_VOC_IntE.pdf

- Intelligent Analysis Based on Powerful CPU
- Rapid Test
- 100 frame Data log
- LCD 4x16 Display, Backlight Available
- RS232/485 Communication
- Full Function Keypad Operation
- Memo Driven Software
- Long life sensor designed
- Free of maintenance
- None of interferences of water vapor at most case.
- Nearly absolute identification.
- High selective is expected
- Solved gas detect is supported

p-Gas4810 Industry Gas Analyzer

p-Gas4810_VOC was special designed for industry gas analysis. It was a photometer based on special bands from NIR to MIR.

This is economic design for single specific gas analysis. Each band might be sensitive to a possible group of gases that we listed of the general gases, also you can try to use it to measure gases that absorb in the certain band.

Usually this device is possible to be used as gas analyzer for user's gas mixture if there is not any other gases that also absorbing.

If you can not identify the special gas with this instrument, you can refer to pGas4820-VOCs,pGas4810,pGas4820 for high selective analysis.

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Applications:

- Industry gas safety detection
- Industry gas analysis
- Environ monitoring
 - Groundwater and soil contamination assessment
 - Tanker loading emissions monitoring
 - Occupational hygiene analysis
 - Detection of leaks from storage facilities
 - Odour investigations
- Occupational Air Quality
 - Light hydrocarbons and combustion products

Instrumental Functions

- LCD 4 × 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 water drain.
- System diagnostic
 - Protection against accidental turn-off
 - Over-range protection for all installed sensors
 - Storage protection for sensors
- Flexible tubing for re-configuration
- User complete calibration, zero-adjust and essential data setup support
- Interfering gas compensation select
- Basal humidity and temperature detected for compensation and controlled for normal test. Over limit alarm support
- Rechargeable batteries to provide 100 hours of continuous operation
- 15-24 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.

Specifications

Instrument

Electronic unit: BD4CCD, ADC resolution: 0.025%FS

Startup time: <5min

Response time: < 100ms with 90% of change

Sampling pressure:<1.1 kgf/cm²

Sampling temperature: -10 °C to 50 °C

Protection against electromagnetic and radio frequencies interference

Sensors

Optical path length (OPL): General Max <1 meter, OPL could be expanded to kilometers by Perrot Cell to get trace gas analysis.

Bandwidth: 0.1 to 10nm;

Start up time: <3 mins

Response time: Less than 2 seconds

Detection limit: Refer to Table 1.

Min. measuring range: Refer to Table 1.

Dynamic range: General 100:1; 1000 to 10000 :1 by cwP module.

Instrument span drift: < 4% of measuring range between maintenance intervals

Instrument zero drift: Negligible (<2% of measuring range between maintenance intervals)

Maintenance interval: Recommended every 3 months (no consumables needed)

Calibration: In situ with flow through cell, or in separate calibration tube

Power Supply

Supply: 9V Rechargeable Cell or AC Adapter

Continuous running time: >24Hr/ each charge;

Standby time: 7 days

Environment Requirements:

Environmental Humidity:

Operating: 0 to 100% RH, non-condensing



Storage: 0 to 90% RH, non-condensing

Environmental Temperature Range:

N: Operating -10 °C to 50 °C

N: Storage -40 °C to 125 °C

Instrumental Type:

	pGas4810-H-OPL(<1)-B(2-4)	pGas4810-OPL(<6)-B (2-4)
		
	Dispersion sampling; OPL≤1m; 1kw Rechargeable battery,20 more hour continuous working supported; Safety:	Pump sampling; OPL≤1m, or 6m 1kw Rechargeable battery,20 more hour continuous working supported; Safety:
Bx2O1		
Bx2O6		

*B means the light beam you order.

*OPL means the optic path length of cell, max to 6 meters.

Specifications Consideration for Your Application

Low detect limit or highest top range: LDL listed in the table is the sensitivity with 1M optic length. The dynamic range of this device is only 10^2 - 10^3 ..

If you are interested to detect more low range, you need to lengthen the optic path, such as to detect SF6, if you need LDL as 1 ppm, then u need optic path equal to $30/1=30m$. you will know this device is impossible to configure. If you must detect to 1ppm, you can consider pGas4810 system.

If you use 6m OPL, you only can get 5ppm as LDL. And the top measurement range might be $5 \times 1000=5000ppm$ about.

So pGas4810-H-OPL6-VOC-B46R43 would has a test range from 5ppm to 5000ppm.

If you need to measure 100% SF6 purity, then the top limit is $1000000/(30 \times 1000)=33.3$ times than typical low range; so the OPL should be $1/33.3=0.03m=3cm$. you can mark as OPL0.03.

Series Spectrum Band Information

Datasheet of Sensor Specifications

VOC16(6369-5988)

Product No.	Gas	LDL/1M	Min/Typical range	Pressure	Temperature	Cross Interference Information	Configuration
6078	CH4	0.12ppm	0-120ppm	10atm	400℃	NH3,CO2(w),	
6060	CH4/HC	0.03ppm	0-6 ppm	10atm	400℃	CH4(15), C2H6(0.8) ,HCl	
5900	CH3OH	2ppm	0-2000ppm	10atm	400℃	CH3OH(12),water(13), CH3SH(.2),	
5930	CH3SH	0.72ppm	0-750ppm	10atm	400℃	aromatic , CH4,NH3,CH3OH,	
5941	CH3SCH3	0.5ppm	1-500ppm	10atm	400℃	NH3, CH4, CH3SH, CH3OH,aromatic	
	CH3SSCH3		0.1-100ppm/0-10%V	10atm	400℃	C2H6,CH3OH,CH4	
5988	C2H6/HC	0.05ppm	0-10 ppm/0-100%V	10atm	400℃	CH4(10),C2H6(2.5)	
5935	Aromatic	1ppm	0-100ppm	10atm	400℃	NH3,CH4,Ar	
6410	CO	20ppm	0-20%	10atm	400℃	CO, CO2, H2S,HCN,H2CO, CS2, C2H2, NH3	
6330	CO2	30ppm	0-30%V	10atm	400℃	CO2, H2S, CO, HCN,H2CO, CS2, C2H2, NH3	
6135	COS	3ppm	0-1000ppm/0-10%V	10atm	400℃		
5724	HCL	0.5ppm	0-1000ppm,	10atm	400℃		
6345	H2S	4ppm	0-3000 ppm,0-30%V	10atm	400℃	H2S, CO, CO2, HCN,H2CO, CS2, C2H2, NH3	
6030	NH3	0.72ppm	0-1000ppm	10atm	400℃	NH3(50), CO2, CH4,C2H4	

VOC18(5586-5102)

Product No.	Gas	LDL/1M	Min/Typical range	Pressure	Temperature	Cross Interference Information	Configuration
5100	CH3SH	5ppm	0-5000ppm	10atm		C2H6,CH3OH,CH4	
5113	CO2	10ppm	0-3000ppm,%V	10atm		HBr, H2S,CH3SCH3,NH3, HCHO,	
5405	H2O	0.09 ppm	0-120ppm,0-100%V	10atm		water(25),CH3OH(1), CH3SH(.2), HCN(2), HCl(2),H2CO(2),NO<181>	
5209	H2S	1ppm	0-1000 ppm,0-30%V	10atm		H2S, CO, CO2, HCN,H2CO, CS2, C2H2, NH3	
5117	N2O	2.2ppm	0-1000ppm,	10atm		CH4,NH3	
5524	NO	5ppm	0-1000ppm	10atm			
	HCl	3ppm		10atm			

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VOC19(5434-5102)

Product No.	Gas	LDL/1M	Min/Typical range	Pressure	Temperature	Cross Interference Information	Configuration
5100	CH3SH	5ppm	0-5000ppm	10atm		C2H6,CH3OH,CH4	
5113	CO2	10ppm	0-3000ppm,%V	10atm		HBr, H2S,CH3SCH3,NH3, HCHO,	
5405	H2O	0.09 ppm	0-120ppm,0-100%V	10atm		water(25),CH3OH(1), CH3SH(.2), HCN(2), HCl(2),H2CO(2),NO<181>	
5209	H2S	1ppm	0-1000 ppm,0-30%V	10atm		H2S, CO, CO2, HCN,H2CO, CS2, C2H2, NH3	
5117	N2O	2.2ppm	0-1000ppm,	10atm	400°C	CH4,NH3	

VOC20(5154-4785)

Product No.	Gas	LDL/1M	Min/Typical range	Pressure	Temperature	Cross Interference Information	Configuration
5100	CH3SH	5ppm	0-5000ppm	10atm	400°C	C2H6,CH3OH,CH4	
5113	CO2	10ppm	0-3000ppm,%V	10atm	400°C	HBr, H2S,CH3SCH3,NH3, HCHO,	
5117	N2O	2.2ppm	0-1000ppm,	10atm	400°C	CH4,NH3	
4875	HNO3	1.2ppm	0-120 ppm	10atm	400°C		
5053	NH3	0.048ppm	0-50ppm	10atm	400°C	NH3(50), CO2(5), H2O	
4967	COS	0.5ppm	0-1000ppm/0-10%V	10atm	400°C		

VOC21 (4950-4545)

Product No.	Gas	LDL/1M	Min/Typical range	Pressure	Temperature	Cross Interference Information	Configuration
4545	VOCs	0.1ppm	0-20 ppm/0-100%V	10atm	400°C	Most hydrocarbons, more sensitive to some inorganic	
4445	CH3SH	0.45ppm	0-450ppm	10atm	400°C	NH3, CH4,CH3OH,HF,	
4566	C2H4	0.1ppm	0-100 ppm	10atm	400°C		
4566	C2H3Cl	0.1ppm	0-100 ppm	10atm	400°C		
4875	HNO3	1.2ppm	0-120 ppm	10atm	400°C		
4560	NO2	10ppb	0-1ppm,	10atm	400°C		

VOC22(4878-4405)

Product No.	Gas	LDL/1M	Min/Typical range	Pressure	Temperature	Cross Interference Information	Configuration
4545	VOCs	0.1ppm	0-20 ppm/0-100%V	10atm	400°C	Most hydrocarbons, more sensitive to some inorganic	
4425	CH3OH	0.9ppm	0-900ppm	10atm	400°C	CH3OH(12),water(13), CH3SH(.2),	
4445	CH3SH	0.45ppm	0-450ppm	10atm	400°C	NH3, CH4,CH3OH,HF,	
4566	C2H4	0.1ppm	0-100 ppm	10atm	400°C		
4566	C2H3Cl	0.1ppm	0-100 ppm	10atm	400°C		
4416	C2H5OH	1ppm	0-1000 ppm	10atm	400°C	CH4(10),C2H6(2.5)	

4424	C2H5OC2H5	1ppm	0-1000 ppm	10atm	400℃	CH4(10),C2H6(2.5)
4526	H2CO	0.15ppm	0-30ppm/0-10%V	10atm	400℃	H2CO(13), C2H4(12), NH3(3), CH3OH(1), CH3SH(.1), N2O(.3), CS2(.25),
4875	HNO3	1.2ppm	0-120 ppm	10atm	400℃	
4494	NH3	0.06ppm	0-60ppm	10atm	400℃	NH3(50), CH3OH(1), CH3SH(.2),H2CO(2), CS2(.25),
4560	NO2	10ppb	0-1ppm,	10atm	400℃	
4753	NO2	10ppb	0-1ppm,	10atm	400℃	

VOC23 (4608-4082)

Product No.	Gas	LDL/1M	Min/Typical range	Pressure	Temperature	Cross Interference Information	Configuration
4545	VOCs	0.1ppm	0-20 ppm/0-100%V	10atm	400℃	Most hydrocarbons, more sensitive to some inorganic	
4348	VOCs	0.1ppm	0-20 ppm/0-100%V	10atm	400℃	Most hydrocarbons, less sensitive to most inorganic	
4218	CH4	0.05ppm	0-50ppm	10atm	400℃	CH3OH,DMS,HCs,HF, CH3SH(1), CH3OH(2), NH3(3), CH4(25),CH3CH3(6), CO(1/3), C2H2(.2), C2H4(3), N2O(.1),NO2(+),H2CO(2), CS2(.2),	
4425	CH3OH	0.9ppm	0-900ppm	10atm	400℃	CH3OH(12),water(13), CH3SH(.2),	
4348	CH3SH	0.2ppm	0.1-100ppm/0-10%V	10atm	400℃	C2H6,CH3OH,CH4,many	
4401	CH3SCH3	0.18ppm	180ppm	10atm	400℃	CH4, CH3SH, CH3OH	
4566	C2H4	0.1ppm	0-100 ppm	10atm	400℃		
4566	C2H3Cl	0.1ppm	0-100 ppm	10atm	400℃		
4352	C2H5OH	1ppm	0-1000 ppm	10atm	400℃	CH4(10),C2H6(2.5)	
4424	C2H5OC2H5	1ppm	0-1000 ppm	10atm	400℃	CH4(10),C2H6(2.5)	
4344	C2H6	0.3ppm	0-300 ppm	10atm	400℃	HCs	
4288	C3H8	1ppm	0-10 0ppm	10atm	400℃	HCs	
4354	C4H10	0.4ppm	0-400ppm	10atm	400℃	HCl,C2H6,C2H2,C3H4,C3H8,C2H6O,CH4, H2O	
4278	CO	0.2ppm	0-200ppm	10atm	400℃	H2CO,CH3CH2OH,DMS,CH3SH,CH4,C2H5OC2H5,HF(.2)	
4526	H2CO	0.15ppm	0-30ppm/0-10%V	10atm	400℃	H2CO(13), C2H4(12), NH3(3), CH3OH(1), CH3SH(.1), N2O(.3), CS2(.25),	
4494	NH3	0.06ppm	0-60ppm	10atm	400℃	NH3(50), CH3OH(1), CH3SH(.2),H2CO(2), CS2(.25),	
4387.5	N2O	10ppm	0-1000ppm,	10atm	400℃	CH4,NH3	
4560	NO2	10ppb	0-1ppm,	10atm	400℃		

VOC27 (4082-3448)

Product No.	Gas	LDL/1M	Min/Typical range	Pressure	Temperature	Cross Interference Information	Configuration
3745	H2S	0.1ppm	0-100 ppm,0-30%V	10atm	400℃	water(.1);	
4014	HNO3	0.06ppm	0-60 ppm	10atm	400℃		
3703	NO	10ppm	0-1%	10atm	400℃	NO(350),SO2(250),	

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3472 H2CO 0.15ppm 0-30ppm/0-10%V 10atm 400°C

VOC29 (3846-2941)

Product No.	Gas	LDL/1M	Min/Typical range	Pressure	Temperature	Cross Interference Information	Configuration
3030	CH/HC/VOC	0.0012ppm	0-20 ppm/0-100%V	10atm		CH4(1000), CH3CH3(100), HCl(500), CH3SH(30), C2H4(50),CH3OH(30), HCl(20), O3(.1),NO2,	
2953.2	CH3Br	10ppm	0-10000 ppm	10atm		C2H6,HCO,CH4,NO2,	
2948	CH3SH	0.01ppm	0-1000ppm/0-10%V	10atm		C2H6,CH3OH,CH4	
2925	CH3SCH3	0.008ppm	1-1000ppm/0-10%V	10atm		C2H6,CH3OH,CH4	
2976.8	C2H6	0.4ppm	0-400ppm/0-100%V	10atm			
	CHBr3						
3745	H2S	0.1ppm	0-100 ppm,0-30%V	10atm		water(.1);	
3472	H2CO	0.15ppm	0-30ppm/0-10%V	10atm			
3703	NO	10ppm	0-1%	10atm		NO(350),SO2(250),	
	HCl			10atm			

VOC31 (3636-2976)

Product No.	Gas	LDL/1M	Min/Typical range	Pressure	Temperature	Cross Interference Information	Configuration
3030	CH/HC/VOC	0.0012ppm	0-20 ppm/0-100%V	10atm	400°C	CH4(1000), CH3CH3(100), HCl(500), CH3SH(30), C2H4(50),CH3OH(30), HCl(20), O3(.1),NO2,	
2953.2	CH3Br	10ppm	0-10000 ppm	10atm	400°C	C2H6,HCO,CH4,NO2,	
2948	CH3SH	0.01ppm	0-1000ppm/0-10%V	10atm	400°C	C2H6,CH3OH,CH4	
3030	CH3SH	0.06ppm	0-1000ppm/0-10%V	10atm	400°C	C2H6,CH3OH,CH4	
2925	CH3SCH3	0.008ppm	1-1000ppm/0-10%V	10atm	400°C	C2H6,CH3OH,CH4	
2997	CH3SCH3	0.015ppm	1-1000ppm/0-10%V	10atm	400°C	C2H6,CH3OH,CH4	
2976.8	C2H6	0.4ppm	0-400ppm/0-100%V	10atm	400°C		
	CHBr3						
3745	H2S	0.1ppm	0-100 ppm,0-30%V	10atm	400°C	water(.1);	
3636	H2S	0.1ppm	0-100 ppm,0-30%V	10atm	400°C		
3472	H2CO	0.15ppm	0-30ppm/0-10%V	10atm	400°C		
3703	NO	10ppm	0-1%	10atm	400°C	NO(350),SO2(250),	
	HCl	0.1ppm		10atm			

VOC34 (3115-2817)

Product No.	Gas	LDL/1M	Min/Typical range	Pressure	Temperature	Cross Interference Information	Configuration
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3030	CH/HC/VOC	0.0012ppm	0-20 ppm/0-100%V	10atm	400℃	CH4(1000), CH3CH3(100), HCl(500), CH3SH(30), C2H4(50),CH3OH(30), HCl(20), O3(.1),NO2,	OPL<6m; H2O<10 ⁴ *HC
2953.2	CH3Br	10ppm	0-10000 ppm	10atm	400℃	C2H6,HCO,CH4,NO2,	
2948	CH3SH	0.01ppm	0-1000ppm/0-10%V	10atm	400℃	C2H6,CH3OH,CH4	
2925	CH3SCH3	0.008ppm	1-1000ppm/0-10%V	10atm	400℃	C2H6,CH3OH,CH4	
2976.8	C2H6	0.4ppm	0-400ppm/0-100%V	10atm	400℃		
	CHBr3						
	HCl	0.003ppm					

VOC36 (2985-2631)

Product No.	Gas	LDL/1M	Min/Typical range	Pressure	Temperature	Cross Interference Information	Configuration
2953.2	CH3Br	10ppm	0-10000 ppm	10atm	400℃	C2H6,HCO,CH4,NO2,	
2948	CH3SH	0.01ppm	0-1000ppm/0-10%V	10atm	400℃	C2H6,CH3OH,CH4	
2925	CH3SCH3	0.008ppm	1-1000ppm/0-10%V	10atm	400℃	C2H6,CH3OH,CH4	
2976.8	C2H6	0.4ppm	0-400ppm/0-100%V	10atm	400℃		
2750	HCL	0.005ppm	0-5ppm,	10atm	400℃		
2800	H2CO	0.15ppm	0-30ppm/0-10%V	10atm	400℃	HCl(300),CH3OH(5), CH3SH(4?), NH3(0.2),CH3(3),CH3CH3(10), CH4(15), HCN(7-60?), C2H2(.5), H2S(0.3), N2O(3), NO2(.1), H2CO(60), CS2(1.5),	
2785	SO3	6ppm				3.59,4.15	R34
	HCl	0.006ppm					
	SO2F2	0.1	0-10ppm				R27

VOC38 (3.44/2907-3.95/2532)

Product No.	Gas	LDL/1M	Min/Typical range	Pressure	Temperature	Cross Interference Information	Configuration
2750	HCL	0.005ppm	0-5ppm,	10atm	400℃		
2800	H2CO	0.15ppm	0-30ppm/0-10%V	10atm	400℃	HCl(300),CH3OH(5), CH3SH(4?), NH3(0.2),CH3(3),CH3CH3(10), CH4(15), HCN(7-60?), C2H2(.5), H2S(0.3), N2O(3), NO2(.1), H2CO(60), CS2(1.5),	
2785	SO3	0.1ppm				3.59,4.15	①
	HCl	0.1ppm					

VOC43(3.7/2703-4.21/2375,4.37/2288-4.5/2222)

Product No.	Gas	LDL/1M	Min/Typical range	Pressure	Temperature	Cross Interference Information	Configuration
2510	SO2	0.09ppm	0-1ppm	10atm	400℃		
2409	SO3	0.1ppm				3.59,4.15	①
	SF6	37ppm				4.05,4.25,4.5um	

CS2

*high CO2 might effect;

[VOC46\(4.0/2500-4.22/2369,4.35/2299-4.8/2083\)](#)

Product No.	Gas	LDL/1M	Min/Typical range	Pressure	Temperature	Cross Interference Information	Configuration
2174	CO	0.002ppm	0-0.5/100ppm	10atm	400°C	CO(400), C2H2(1.7), CH3OH(.4), CH3SH/0.3, N2O(), HCN(.3), NH3(0.1), CO2(.1), C2H4(.4), N2O(.2), O3(.12), H2S(.007),	
2062	COS	0.003ppm	0-1000ppm/0-10%V	10atm	400°C		
2222	SF6	37ppm	37-3700			4.05,4.25,4.5um	Ref43
2409	SO3	0.1ppm				3.59,4.15	①

*high CO2 might effect;

[VOC50\(4.0/2500-4.22/2369,4.35/2299-5.25/1905\)](#)

Product No.	Gas	LDL/1M	Min/Typical range	Pressure	Temperature	Cross Interference Information	Configuration
2174	CO	0.002ppm	0-0.5/100ppm	10atm	400°C	CO(400), C2H2(1.7), CH3OH(.4), CH3SH/0.3, N2O(), HCN(.3), NH3(0.1), CO2(.1), C2H4(.4), N2O(.2), O3(.12), H2S(.007),	
2062	COS	0.003ppm	0-1000ppm/0-10%V	10atm	400°C		
2409	SO3	0.1ppm					①
	SF6	37ppm				4.05,4.25,4.5um	Ref43

*high CO2 might effect;

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