

Gas Detector for Semiconductor Industry Comprehensive Solutions

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Fixed-type Special Gas Detector

Product Overview

GDM-2100 series special gas detector are mainly used in scenarios of toxic and harmful gas leakage detection in such industries as semiconductor, LCD panel, and photovoltaic industry. With fixed backplate mounting mode and pumping sampling method, they can detect over 40 toxic and harmful gases, including silane, phosphine, and ammonia.

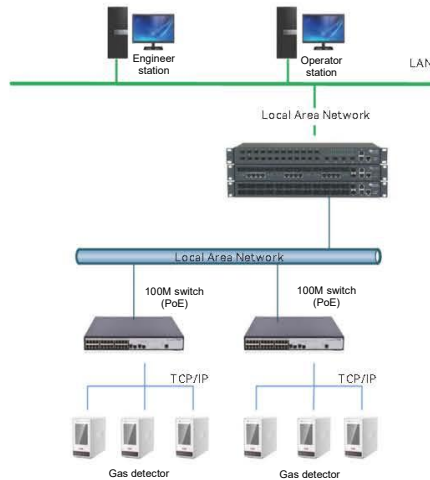
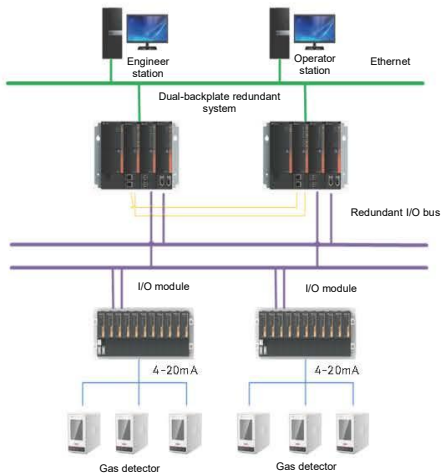


Product Features

- Built-in sampling pump achieving quick response to gas leakage
- Built-in microprocessor realizing self-diagnostic function
- Smart box-type sensors, which can be calibrated in an off-line manner
- Magnetic front cover, avoiding the need of cover opening tools, allowing for quick replacement of the sensor box and reducing the maintenance workload
- Digital flow sensor, maintaining constant flow rate, reducing one-by-one check burden
- Long-term stable quality and proven detection principle



Communication Method



Technical Specification

	Item	Indicator
Detector size	Size (with sensors)	124mm (H) * 71mm (W) * 160mm (D)
	Size (with NDIR)	209mm (H) * 76mm (W) * 215mm (D)
	Weight (with sensors)	<1kg
	Weight (with NDIR)	<1.5kg
Power supply	Operating voltage	24VDC, -15 to +10%
	Operating voltage of power supply for Ethernet	48VDC PoE (Conforming to IEEE 802.3af)
	Power consumption	<5W
	Power consumption (with NDIR)	<7.6W
Instrument output	Visible information	Power (green), alarm 1 (red), alarm 2 (red), fault (yellow), real-time gas reading, as well as event level 1 alarm, level 2 alarm, and instrument fault
	Relays	5A 250VAC / 30VDC Configurable normally open or normally closed, locked or unlocked
	Analog output	4-20mA output
	Digital communication	Standards: Modbus/TCP Ethernet/Ethernet power supply (POE)
Gas pipeline system	Flow rate	500mL/min
	Gas transmission time	2-20seconds maximum
Performance	Limit of detection	LDL<LAL
	Alarm set point	LAL=1/2TLV (typical value)
	Range	FSD=4xTLV (typical value)
	Sampling distance	<30m, with specific value depending on gas type
	Environmental point monitoring	Suitable, together with on-line air filter
	Exhaust pipe length	30m
Pipe requirements	Intake pipe specifications	1/4 inch, FEP pipe recommended
	Exhaust pipe specifications	1/4 inch, FEP pipe recommended
Working temperature		0-40 °C
Wiring requirements	4-20mA/DC power supply/Relay	14 AWG
	Digital communication	RJ45 connector, CAT5E cable
Display interface	Instrument	Digital display of detection value, dynamic display of flow direction and others, operated through 4 buttons
	Remote	You can visit the host machine via web page on PC side
Product installation	Mounting mode	Wall mounting via mounting holes on the back of the unit, with optional DIN rail or vertical mounting bracket.

Portable Special Gas Detector

Product Overview

GDM-3100 series special gas detector are mainly used in scenarios of toxic and harmful gas leakage detection in such industries as semiconductor, LCD panel, and photovoltaic industry. The product itself comes with lithium battery power supply modules, enabling portable and mobile detection of toxic and harmful gases, and the sensor box can be replaced with a different one on site according to the measured factor.



Product Features

- The detector is light in structure and easy to carry on site
- High-performance polymer lithium battery, with excellent battery life
- Built-in sampling pump achieving quick response to gas leakage
- A multi-purpose detector thanks to the smart box-type sensors, supporting plug-and-play
- Digital flow sensor maintaining constant flow rate

Technical Specification

Item	Indicator
Size (length, width, height)	180 mm x 160 mm x 245mm
Weight	<4kg
Instrument power	<5W (NDIR <8W)
Adaptor operating voltage	220V, 50HZ
POE operating voltage	48VDC (Conforming to IEEE 802.3af)
Battery operating voltage	24VDC, -15 to +10%
Battery parameters	Ternary polymer lithium battery, 124wh
Charging time	< 3 hours
Sampling flow	500ml/min
Sampling distance	<30m, with specific value depending on gas type
Working temperature	0~40°C
Alarm mode	Built-in alarm buzzer and alarm state indicator

List of Detected Gases (GDM-2100&GDM-3100)

No.	Gas name	Chemical formula	Measurement range
1	Oxygen	O ₂	0-25%V/V
2	Hydrogen chloride	HCl	0-8ppm
3	Chlorine	Cl ₂	0-2ppm
4	Ammonia	NH ₃	0-100ppm
5	Flammable gas	combustible	0-100%LEL
6	Hydrogen	H ₂	0-100%LEL
7	Methane	CH ₄	0-100%LEL
8	Ethylene	C ₂ H ₄	0-100%LEL
9	Propene	C ₃ H ₆	0-100%LEL
10	Hydrogen sulphide	H ₂ S	0-40ppm
11	Carbon monoxide	CO	0-100ppm
12	Hydrogen fluoride	HF	0-12ppm
13	Hydrogen	H ₂	0-1000ppm
14	Silane	SiH ₄	0-20ppm
15	Tetramethylsilane	TMS	0-20ppm
16	Phosphine	PH ₃	0-1ppm
17	Arsine	AsH ₃	0-0.2ppm
18	Tetraethyl orthosilicate	TEOS	0-40ppm
19	Octamethylcyclotetrasiloxane	OMCTS	0-40ppm
20	Fluorine	F ₂	0-4ppm
21	Bromine	Br ₂	0-1ppm
22	Ozone	O ₃	0-0.4ppm
23	Phosgene	COCl ₂	0-1ppm
24	Hydrogen bromide	HBr	0-8ppm
25	Boron trichloride	BCl ₃	0-8ppm
26	Dichlorosilane	DCS	0-8ppm
27	Tungsten hexafluoride	WF ₆	0-12ppm
28	Boron trifluoride	BF ₃	0-8ppm
29	Diborane	B ₂ H ₆	0-0.4ppm
30	Disilane	Si ₂ H ₆	0-20ppm
31	Chlorine dioxide	ClO ₂	0-0.4ppm
32	Chlorine trifluoride	ClF ₃	0-1ppm
33	Hydrogen cyanide	HCN	0-20ppm
34	Nitrogen trifluoride*	NF ₃	0-40ppm
35	Difluoromethane*	CH ₂ F ₂	0-100ppm
36	Fluoromethane*	CH ₃ F	0-120ppm
37	Carbonyl sulphide*	COS	0-100ppm
38	Sulphur hexafluoride*	SF ₆	0-1000ppm
39	Carbon tetrafluoride*	CF ₄	0-1000ppm
40	Octafluorocyclobutane*	C ₄ F ₈	0-40ppm
41	Octafluorocyclopentene*	C ₅ F ₈	0-20ppm
42	Nitrous Oxide*	N ₂ O	0-1000ppm
43	Perfluorobutadiene	C ₄ F ₆	0-50ppm

Fixed-type gas detection and alarm instrument

Product Overview

GDM-1000 series fixed-type gas detection and alarm instruments use (electrochemical, catalytic combustion, photoionization) industrial-grade gas sensors with excellent performance, and carry new-generation signal processing technology, to achieve intelligent detection of flammable gases, toxic and harmful gases and VOC gases;



GDM-1020



GDM-1030/1031



GDM-1040

Product Features

- Explosion-proof design, suitable for use in explosion-proof scenarios
- Infrared two-way remote communication mode, allowing maintenance on site without cover opening, which is even more safe
- Standard equipped with 4-20mA and two relay outputs, offering strong environmental adaptability
- Unique mounting design, supporting such mounting modes as horizontal pipe, vertical pipe, and wall-mounted
- An all-in-one explosion-proof acousto-optic alarm can be equipped, giving even more clear alarm

Technical Specification

Parameter type	GDM-1020	GDM-1030/1031	GDM-1040
Measurement principle	Electrochemical method	Catalytic combustion	Photoionization
Response time	<30s; <60s (a part of products)	<30s	<10s
Detection error	<±2%F.S.	<±5%F.S.	<±3%F.S.
Instrument power consumption	<2.5W	=3.5W	<2.5W
User Interface	LCD display	High-brightness LED display/LCD	LCD display
Operation mode	Infrared remote control	Infrared touch button/Infrared remote control	Infrared remote control
Working temperature	(-20-50)°C	(-40-70)°C	(-20-60)°C
Working power supply	24VDC (normal working range (10-30)VDC)		
Output interface	Three-wire system, (4-20) mA output, two relay outputs		
Explosion-proof grade	Explosion-proof ExdIICT6		
Main material	Anti-corrosion cast aluminum +316L		
Mounting mode	Supporting wall-mounted mode or horizontal/vertical pipe holding mounting mode, with two cable outlets M20*1.5 on the left and right sides		
Protection grade	IP65		
Working humidity	(10-95)%RH (Non-condensing)		
Acousto-optic interface	Supporting all-in-one acousto-optic alarm		

List of Detected ases (GDM-1000 series)

Flammable gas

No.	Detected gas	Molecular formula	Measurement range	Response time	Sensor type
1	Methane	CH ₄	0-100%LEL	<30S	Catalytic combustion
2	Ethane	C ₂ H ₆	0-100%LEL	<30S	Catalytic combustion
3	Propane	C ₃ H ₈	0-100%LEL	<30S	Catalytic combustion
4	Hydrogen	H ₂	0-100%LEL	<30S	Catalytic combustion
5	Ethanol	C ₂ H ₅ OH	0-100%LEL	<30S	Catalytic combustion
6	Butadiene	C ₄ H ₆	0-100%LEL	<30S	Catalytic combustion
7	Acetylene	C ₂ H ₂	0-100%LEL	<30S	Catalytic combustion

Toxic and harmful gases

No.	Detected gas	Molecular formula	Measurement range	Response time	Sensor type
1	Carbon monoxide	CO	100/500/1000ppm	<30s	Electrochemical method
2	Oxygen	O ₂	25%V/V	<20S	Electrochemical method
3	Hydrogen sulphide	H ₂ S	50/100/200ppm	<30s	Electrochemical method
4	Chlorine	Cl ₂	10/20ppm	<30s	Electrochemical method
5	Ammonia	NH ₃	50/100ppm	<60s	Electrochemical method
6	Hydrogen	H ₂	1000/2000ppm	<30s	Electrochemical method
7	Nitrogen monoxide	NO	50/100ppm	<30s	Electrochemical method
8	Nitrogen dioxide	NO ₂	10/20ppm	<60s	Electrochemical method
9	Sulphur dioxide	SO ₂	50/100/200ppm	<30s	Electrochemical method
10	Hydrogen chloride	HCl	10/20/30ppm	<60s	Electrochemical method
11	Hydrogen fluoride	HF	10pppm	<60s	Electrochemical method
12	Hydrogen cyanide	HCN	10/20/30ppm	<60s	Electrochemical method

VOC gases

No.	Detected gas	Molecular formula	Measurement range	Response time	Sensor type
1	Benzene	C ₆ H ₆	50/100ppm	<10S	PID
2	Toluene	C ₇ H ₈	50/100ppm	<10S	PID
3	Xylene	C ₈ H ₁₀	50/100ppm	<10S	PID
4	Ethylbenzene	C ₈ H ₁₀	50/100ppm	<10S	PID
5	Aniline	C ₆ H ₇ N	50/100ppm	<10S	PID
6	Trimethylamine	C ₃ H ₉ N	10/20ppm	<10S	PID
7	Other VOC	/	/	<10S	PID

For more detection demands for gas factors and ranges, please consult Expec Technology at 400-700-2658