

Gas Detection System for Semiconductor Manufacturing Plants

## "Extractive" Gas Detector Model PS-7

A "Cosmos System" that reduces running costs. Compact and lightweight.  
The most advanced state-of-the-art PS-7 Gas Detector Head



A "Cosmos System" Gas Detector made more compact and lightweight with easy-to-read LCD display

Combine with Optional Units.

NF3 and other gases can be detected by combining the Cosmos PS-7 Gas Detector Head with a pyrolyzer and electrochemical sensor.

DeviceNet used for communications with host system, allowing easy connection to PLCs.

# Various Gases Detected by Changing Sensor Units. Compact and Lightweight with New LCD Display

## Features of the PS-7

### 1 Compact and Lightweight

Approximately half the size and weight of previous model.

### 2 Large LCD

An LCD gives easy-to-read displays of gas concentrations, the alarms, and error messages. Device status can be read at a glance.

### 3 Automatic Sampling Flow Control(Patent Pending)

Sampling flowrate automatically held constant to provide stable detection.

### 4 Easy Replacement of Sensor unit and Gas Flow Path

Sensor unit and Gas Flow Path \* are made in modules that can be changed easily without tools.

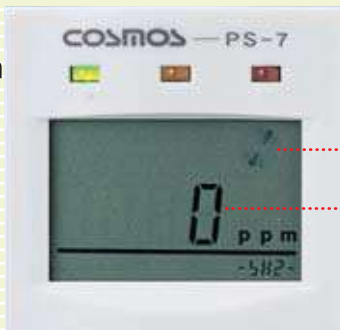
### 5 Error message shown for wrong sensor unit loaded.

If a sensor unit for a different gas is loaded, an error alarm is issued and tells an abnormal operation.

Note: Gas Flow Path includes all internal tubing and pump.

## Easy-to-read LCD

Normal operation



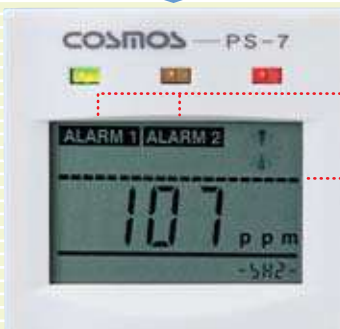
### Flow Sign

The sign rotates, indicating that gas is being sampled normally.

### Gas Concentration

Displays the gas concentration. Provides concentration in %LEL, ppm, or ppb, depending on the gas type and scale.

Alarm



### Alarm Messages

For first-phase alarm, "ALARM 1" is shown and for second-phase alarm "ALARM 1" and "ALARM 2" are shown in the display. The alarm lamp at the top of the front panel also light (red).

### Gas Concentration Bar Graph

One segment of the bar graph is 5% of the full scale. The display indicates 100% of the full scale when the right end of the bar graph is reached. The bar graph, therefore, gives the current gas concentration in relation to the full scale at a glance.

# The "Cosmos System"

is an ideal system that does not require an on-site calibration of the sensor for preventing contamination of your clean room by calibration gases and that recycles the sensor and the parts for reducing the running cost.

## Features of the "PS-7" Gas Detector

- 1** Sensor units are already calibrated when delivered to site. Sensor units only need zero check and operation checks after being replaced, and they are ready to monitor gas concentration. No calibration gases are brought into the clean room.
- 2** Used sensor units are returned when obtaining new ones so they can be recycled.
- 3** Sensor units and gas flow path can be replaced without tools.
- 4** All functional parts are in modules for easy replacement.
- 5** The Cosmos assists in reliable management of the timing for sensor unit and gas flow path replacement.

## Replacing Sensor Units



Remove the main unit from the base unit.



Remove the back cover of the main unit.



Remove the old sensor unit and reload the new sensor unit.



Mount the main unit on the base unit and press the test switch to confirm operation.

## Options



### Pyrolyzer

Electrochemical cell sensor detects NF<sub>3</sub> etc. when combined with a pyrolyzer.



### DeviceNet unit

Using DeviceNet as a protocol to communicate with higher level systems, it is easy to connect with PLCs (when combined with a DeviceNet unit).

## Wide Range of CDS-series Sensor Units

New Cosmos technology has developed a wide range of sensor units for a variety of semiconductor gases.

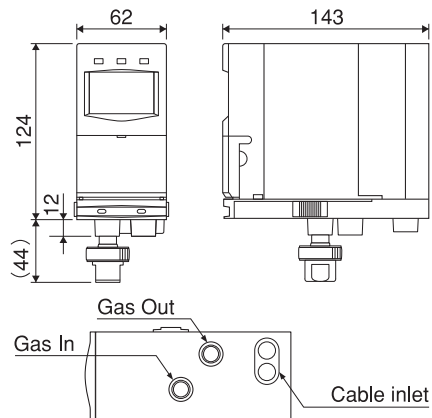
Gas	Full Scale	Detection Principle	Model No.	Gas	Full Scale	Detection Principle	Model No.
SiH <sub>4</sub>	25ppm	Electrochemical	CDS-7	HCl	5ppm	Electrochemical	CDS-7
SiH <sub>4</sub>	5ppm			HBr	10ppm		
PH <sub>3</sub>	1ppm			F <sub>2</sub>	5ppm		
B <sub>2</sub> H <sub>6</sub>	0.5ppm			Cl <sub>2</sub>	5ppm		
AsH <sub>3</sub>	0.25ppm			ClF <sub>3</sub>	1ppm		
H <sub>2</sub> Se	0.25ppm			O <sub>3</sub>	1ppm		
Si <sub>2</sub> H <sub>6</sub>	25ppm			CO	250ppm		
SiH <sub>2</sub> Cl <sub>2</sub>	25ppm			H <sub>2</sub> S	50ppm		
GeH <sub>4</sub>	1ppm			NF <sub>3</sub>	100ppm	Electrochemical with pyrolyzer	CDS-7
NH <sub>3</sub>	100ppm			CCl <sub>4</sub>	100ppm		
HF	10ppm			H <sub>2</sub>	500ppm	Hot-wire semiconductor	CHS-7
PF <sub>3</sub>	10ppm			H <sub>2</sub>	1000ppm		
HCl	25ppm			O <sub>2</sub>	25vol%	Galvanic cell	COS-7

Contact your representative for gases other than those listed.

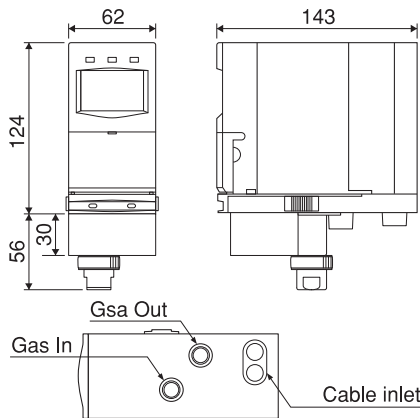
## Exterior Dimensions

(Units: mm)

PS-7

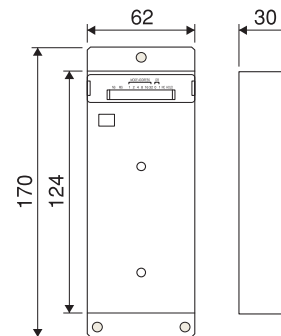


With a pyrolyzer



Option

DeviceNet Unit



## Specifications: Model PS-7

Model	PS-7	
	Standard Type	With a Pyrolyzer
Detection Principle	Electrochemical cell, Hot wire semiconductor, Galvanic cell	Pyrolysis + Electrochemical cell
Sampling Method	Extractive type (Sample flow rate: 0.5L/min, automatic control)	
Sampling Tubing*1	Teflon - External diameter: 6mm, Internal diameter: 4mm, Tubing length: 20m or less	
Gas Concentration Indication	4-digit LCD (with measuring unit), 20 - step bar graph	
Alarm Indication	<ul style="list-style-type: none"> <li>● Gas alarm (1st and 2nd stage) <ul style="list-style-type: none"> <li>• Alarm: Red LED lamp flashing</li> <li>LCD - ALARM1 for 1st stage, ALARM1 and ALARM2 for 2nd stage</li> </ul> </li> <li>● Low flow alarm <ul style="list-style-type: none"> <li>• Clogging indication: LCD - Flow sign rotates slowly</li> <li>• Alarm: Yellow LED lamp flashing</li> <li>LCD - FLOW indication, Flow sign stops rotating</li> </ul> </li> <li>● Sensor trouble alarm/Incorrect sensor insertion alarm <ul style="list-style-type: none"> <li>• Alarm: Yellow LED lamp flashing</li> <li>LCD - SENS. indication</li> </ul> </li> <li>● Pyrolyzer wire break alarm*2 <ul style="list-style-type: none"> <li>• Alarm: Yellow LED lamp flashing</li> <li>LCD - CONV. indication</li> </ul> </li> </ul>	
External Output	<ul style="list-style-type: none"> <li>• Gas concentration analog output: 4-20mA DC (shared with the power source negative terminal)</li> <li>• Gas alarm contact (1st and 2nd stage): 1a no-voltage contact/Non-latching</li> <li>• Trouble alarm contact (Open collector/Non-latching)</li> </ul>	
Applicable Cable	3C or 4C shielded control cable (φ8-11mm) X2	
Operating Temperature/Humidity Range	0°C to 40°C (No sudden change), 30-85%RH (No condensation)	
Power Source	24V DC ±10%	
Power Consumption	Approx. 7W	
Dimensions	W62 X H124 X D143mm (excluding options and protrusions)	
Weight	Approx. 1.0kg	
Installation	Wall mount	
Approval	CE, SEMI (Semiconductor Equipment and Material Standard)	

\*1 Teflon is recommended. But it depends on operating conditions when the gas adsorption capacity is high, so contact us for more information.  
The specifications above are subject to change without prior notice.

\*2 Only for the model with a pyrolyzer



## CAUTION

- Please read the instruction manual before using to ensure correct operation.
- Be sure to use only the power source and voltage indicated.



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