

Be sure, be safe.

COSMOS

FIXED GAS DETECTOR (DIFFUSION TYPE)

# KD-12 SERIES

**Explosion proof**  
**Fixed gas detector with display**  
for combustible gases, toxic gases, oxygen etc.



KD-12A/B/C/B-SIL

Ex CE IECEx

**Explosion proof KD-12 Series (IP65) is smart and reliable fixed gas detectors for continuous monitoring of a wide range of combustible gases, toxic gases, oxygen and more. You can choose from various models such as HART communication model and SIL2 certified model according to the applications.**

### Feature

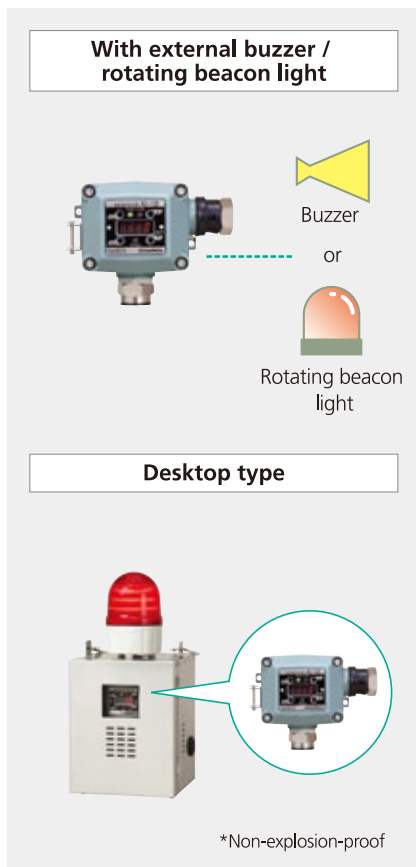
- **Rugged, compact and lightweight**  
Size 158xH116xD68mm, Weight Approx. 1.2kg
- **LED local display**  
Large LED local display shows the gas concentration and alarm indication.
- **Explosion proof**  
ATEX, IECEx and TIS approved.
- **Water and dust proof**  
IP65 rating
- **One man calibration**  
All setup and maintenance can be performed easily on site by one person with a magnetic stick (pic.1).
- **Easy sensor replacement**  
The simple plug-in sensor module makes it easier (pic.2).



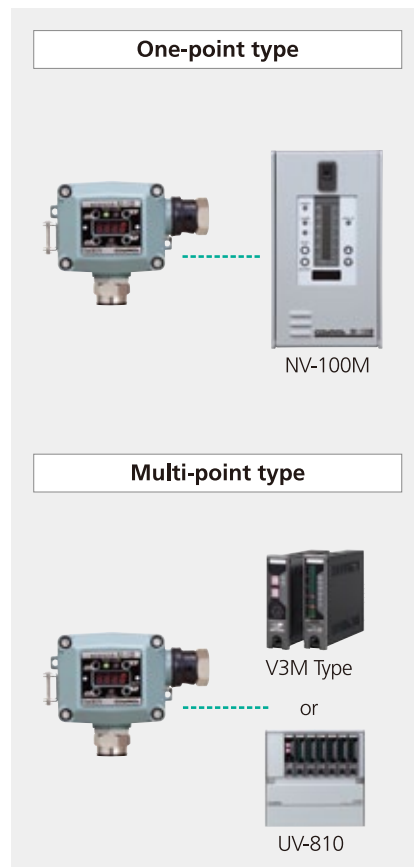
- **Japan made products**  
As well as the sensor which is the heart of gas alarm, all the products are developed and manufactured in Japan with high quality and reliability.
- **Infrared sensor for long-term stability and less calibration needs**  
(KD-12R)
- **HART communication model is available**  
(KD-12AH/KD-12BH)
- **SIL2 certified model is available**  
(KD-12B-SIL)
- **Extractive type (PD-12 series) is available\***  
\* For further information, please contact us.

### Configurations

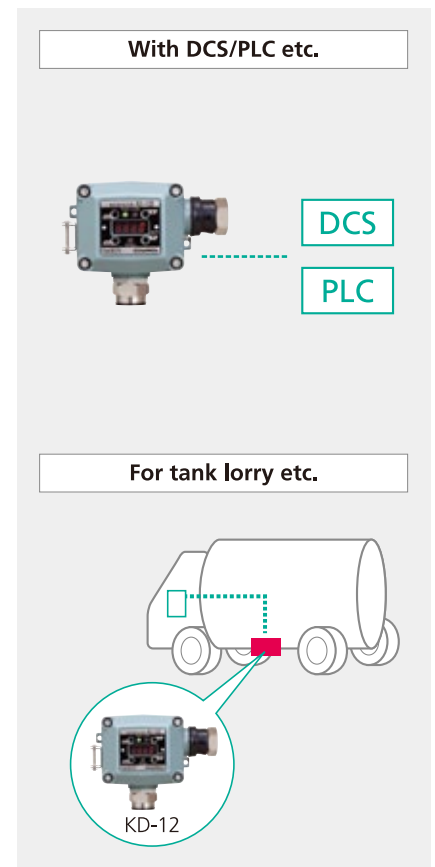
**With buzzer or rotating beacon light**  
It is used as an integral type gas detection system, connecting to external buzzer or rotating beacon light (screw-less type only).



**With indicator unit**  
It is connected with our indicator units and you can monitor gas concentrations and alarm status from a distance.



**With DCS/PLC/SCADA**  
It is directly connected to a central control system such as DCS/PLC/SCADA. It is also mounted in vehicles like tank lorry etc.





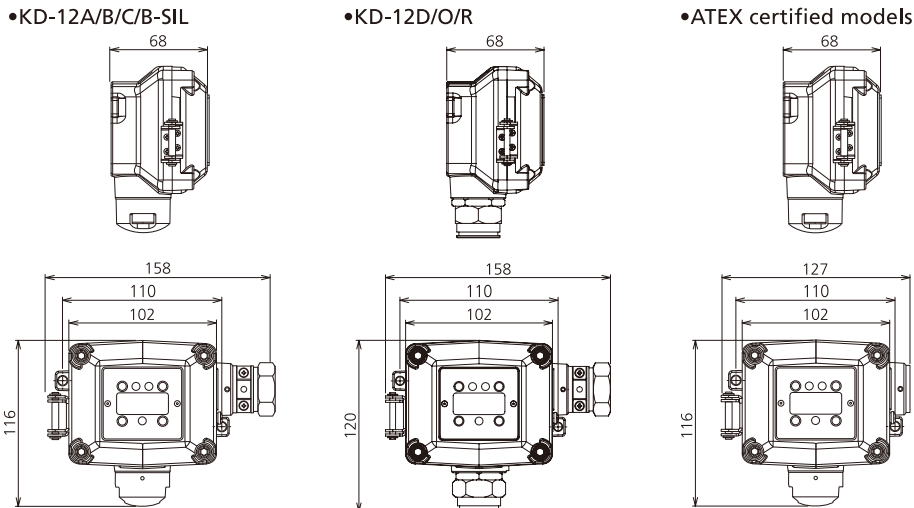
**Scale 1:1**  
KD-12D/O/R

\* Cable gland is not included in ATEX certified models and sold separately.

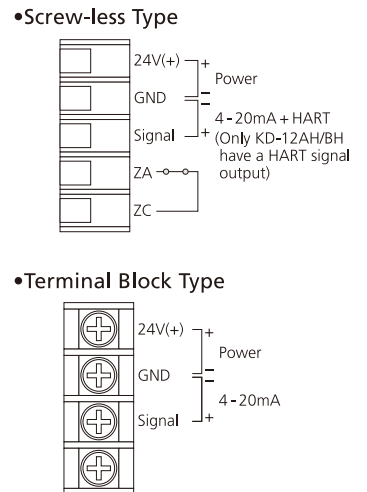
## Applications

- Pipelines
- Production platforms
- Power Stations
- Tank farms
- Oil and gas terminals
- Waste water facilities
- Exploration and drilling platforms
- Refineries and chemical plants
- Utilities

### External Dimensions



### Terminal Block



### Specifications

Model	KD-12A	KD-12B	KD-12C	KD-12R	KD-12D	KD-12O	
Detection Principle	Hot wire semiconductor	Catalytic combustion	Thermal conductivity	Non-dispersive infrared	Electrochemical cell	Galvanic cell	
Gas Detected	Combustible gas, Toxic gas*1		Hydrogen, Helium, Carbon dioxide	Methane, Carbon dioxide	Carbon monoxide	Hydrogen sulfide	Oxygen
Sampling Method	Diffusion						
Detection Range	As per specifications				0-100ppm, 0-150ppm, or 0-250ppm*2	0-30-ppm or 0-50ppm*2	0-25.0vol%
Alarm Set Value	As per specifications				FS100ppm: 25ppm (recommendation) FS150/250ppm: 50ppm (recommendation)	10ppm	18.0vol%
Alarm Accuracy	Combustible gas: $\pm 25\%$ of alarm set value Toxic gas: $\pm 30\%$ of alarm set value		$\pm 25\%$ of alarm set value		$\pm 30\%$ of alarm set value		$\pm 1.0\text{vol}\%$ of alarm set value
Alarm Delay	Combustible gas: within 30s at 1.6 times of alarm set value Toxic gas: within 60s at 1.6 times of alarm set value			Within 30s at 1.6 times of alarm set value	Within 60 s at 1.6 times of alarm set value	Within 5s to reach 18vol% under condition of 10vol%*3	
Alarms	Gas alarm: Red LED lamp flashes Trouble alarm: Yellow LED lamp flashes (sensor trouble, power voltage malfunction, etc.)						
Display	4-digit digital LED display						
Output	Gas concentration analog signal •4-20mADC (common to the negative side of power supply) Gas alarm contact (one stage only)*4 •1a no-voltage contact output, Non-latching •Rated load: 0.5A at 250VAC or 0.5A at 30VDC (resistance load)						
Operation	At 4 points of magnetic switches						
Explosion-proof	Ex d IIC T5 (TIIIS) II 2 G Ex db IIC T5 Gb (ATEX) Ex db IIC T5 Gb (IECEX)						
Degree of Protection	IP65						
Applicable Cable	Cable out diameter: $\phi 10\text{-}13\text{mm}$ 5-conductor cable*4: CVV-S 1.25mm <sup>2</sup> , 3-conductor cable: CVV-S 2mm <sup>2</sup> or 1.25mm <sup>2</sup>						
Operating Temperature/Humidity*5	Temperature: -10 to +50°C Humidity: 10% to 90% RH (0 to +50°C)				Temperature: -10 to +40°C Humidity: 30% to 85% RH	Temp: 0 to +40°C Hum: 30% to 85% RH	
Power Supply	24 VDC ( $\pm 20\%$ )						
Power Consumption	3W max.			2.2 W max.	1.2 W max.		
Dimensions	W158xH116xD68 mm (excluding protrusion)*6			W158xH120xD68mm (excluding protrusion)*7			
Weight	Approx. 1.2kg			Approx. 1.3kg			

Model	KD-12B-SIL	KD-12AH	KD-12BH
Detection Principle	Catalytic combustion	Hot wire semiconductor	Catalytic combustion
Gas Detected	Combustible gas, Toxic gas*1		
Sampling Method	Diffusion		
Detection Range	As per specifications		
Alarm Set Value	As per specifications		
Alarm Accuracy	Combustible gas: $\pm 25\%$ of alarm set value Toxic gas: $\pm 30\%$ of alarm set value	$\pm 25\%$ of alarm set value	
Alarm Delay	Combustible gas: within 30s at 1.6 times of alarm set value Toxic gas: within 60s at 1.6 times of alarm set value	Within 30s at 1.6 times of alarm set value	
Alarms	Gas alarm: Red LED lamp flashes Trouble alarm: Yellow LED lamp flashes (sensor trouble, power voltage malfunction, etc.)		
Display	4-digit digital LED display		
Output	Gas concentration analog signal •4-20mADC (common to the negative side of power supply) Gas alarm contact (one stage only)*4 •1a no-voltage contact output, Non-latching •Rated load: 0.5A at 250VAC or 0.5A at 30VDC (resistance load)	Gas concentration analog signal and HART signal •4-20mADC (common negative with power supply) •Wired HART signal (superimposed over 4-20mA signal), Protocol Rev. 7.5 Gas alarm contact (one stage only)*4 •1a non-voltage, Latching (standard) or non-latching •HART Communication Protocol Rev. 7.5	
Display	4-digit digital LED display		
Operation	At 4 points of magnetic switches		
Explosion-proof	Ex d IIC T5 (TIIIS) II 2 G Ex db IIC T5 Gb (ATEX) Ex db IIC T5 Gb (IECEX)		
Degree of Protection	IP65		
Functional Safety	•SIL2 capable •Hardware Fault Tolerance: zero (0) •Applicable standards: IEC 61508-2, EN 61508-2 and JIS C 0508-2.	—	
Applicable Cable	Cable out diameter: $\phi 10\text{-}13\text{mm}$ 5-conductor cable*4: CVV-S 1.25mm <sup>2</sup> , 3-conductor cable: CVV-S 2mm <sup>2</sup> or 1.25mm <sup>2</sup>		
Operating Temperature/Humidity*5	-10 to +50°C 10 to 90%RH (0 to +50°C)		
Power Supply	24 VDC ( $\pm 20\%$ )		
Power Consumption	3W max.		
Dimensions	W158xH116xD68 mm (excluding protrusion)*6		W127xH116xD68mm (excluding protrusion)
Weight	Approx. 1.2kg		

\*1 Only combustible gas for ATEX certified models \*2 Specify when purchasing \*3 Under the condition of 20  $\pm 2^\circ\text{C}$  \*4 Screwless type only \*5 No radical temperature or humidity changes and no condensing  
\*6 W127xH116xD68mm for ATEX certified models \*7 W127xH120xD68mm for ATEX certified models



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### SAFETY WARNING

Read the operating instructions thoroughly before use. Always operate in accordance with the instructions.

Be sure to choose the sensor designed to detect the required type of gas. Use of the wrong sensor type could cause an accident.