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Technical information

Gas sensing unit NSU-131AF

(For general combustible gases)

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Combustible gas detection unit NSU-131AF

NSU-131AF is a simple gas detection unit with catalytic type gas sensor NAP-51A, which has been already calibrated. It can be driven if the designated direct voltage is added, and analogue signal can be obtained according to the concentration of methane and hydrogen. Zero offset level and signal in target gas can be calibrated according to customers' requirement, the recalibration is not necessary after being installed in the equipment. Features are as follows.

1. Features

- Downsizing, light and cheap.
- It is applicable for all combustible gases.
- Low dependence on installation environment, and easy handling.
- Excellent stability and reliability, long life.
- Quick response.

2. Ratings

・Supply voltage	DC2.50±0.1V	
・Current consumption	160－180mA (when 2.50V is applied)	
・Ambient temperature and humidity in operation		
	Temperature	-20－+80℃
	Humidity	less than 95%RH
・Ambient temperature and humidity in storage		
	Temperature	-20－+70℃
	Humidity	less than 95%RH (no dew condensation)

3. Characteristics

・Recommended stabilization time	1 min.
・Response time	less than 30sec. (at 90% response)
・Recommended calibration	10±1%LEL (when 2.50V is applied) (methane 4,500-5,500ppm, hydrogen3,600-4,400ppm)
・Adjustable calibration level	5－25%LEL
・Zero offset in clean air	dependence on calibration

4. Detection gases

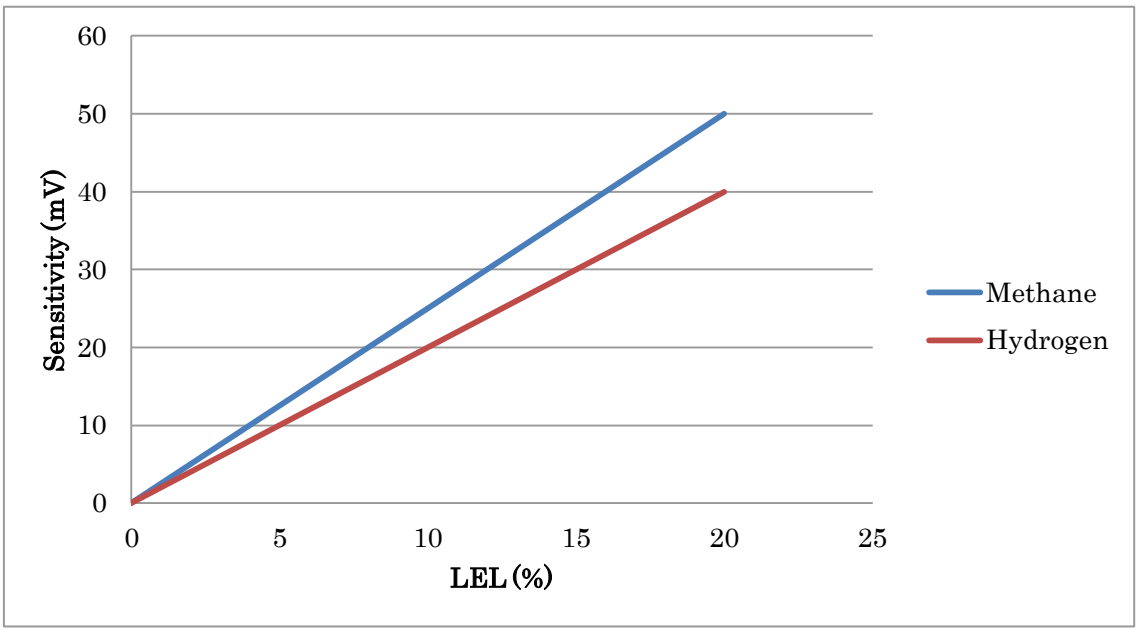
Gases		Recommended calibration level
1	Natural gas (methane)	10－30%LEL
2	Hydrogen	10－30%LEL

Only methane and hydrogen are generally detectable target gases, however please note that it is not recommended that it is calibrated less than 5%LEL and more than 50%LEL because of low detection accuracy. Gas sensitivity on methane and hydrogen are shown as follows.

5. Gas sensitivity

The average gas sensitivity to mainly detectable gases are below described as a calibration reference.

Gases		Standard gas sensitivity
1	Methane	20－30mV/5,000ppm
2	Hydrogen	16－24mV/4,000ppm

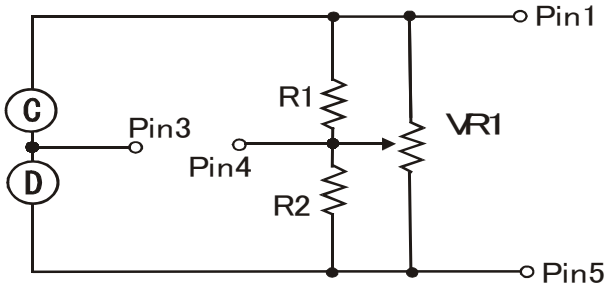


6. Terminals

No.1	+2.50V
2	Unused
3	Output signal (+)
4	Output signal (-)
5	GND.

Notice)

Since terminal 5 (GND.) is different from terminal 4 (output signal (-), both are not short-circuited absolutely. Circuit diagram is shown below.



7. Handling procedure

- At first, sensing unit is to be fixed at designated position. Electric driver is not applicable at all. When the unit is installed, both screw holes are to be in the horizontal relationship, not vertical relationship.
- Connector is to be injected.
- Electrified, and monitor can be started after around 1 minute later.

8. Calibration

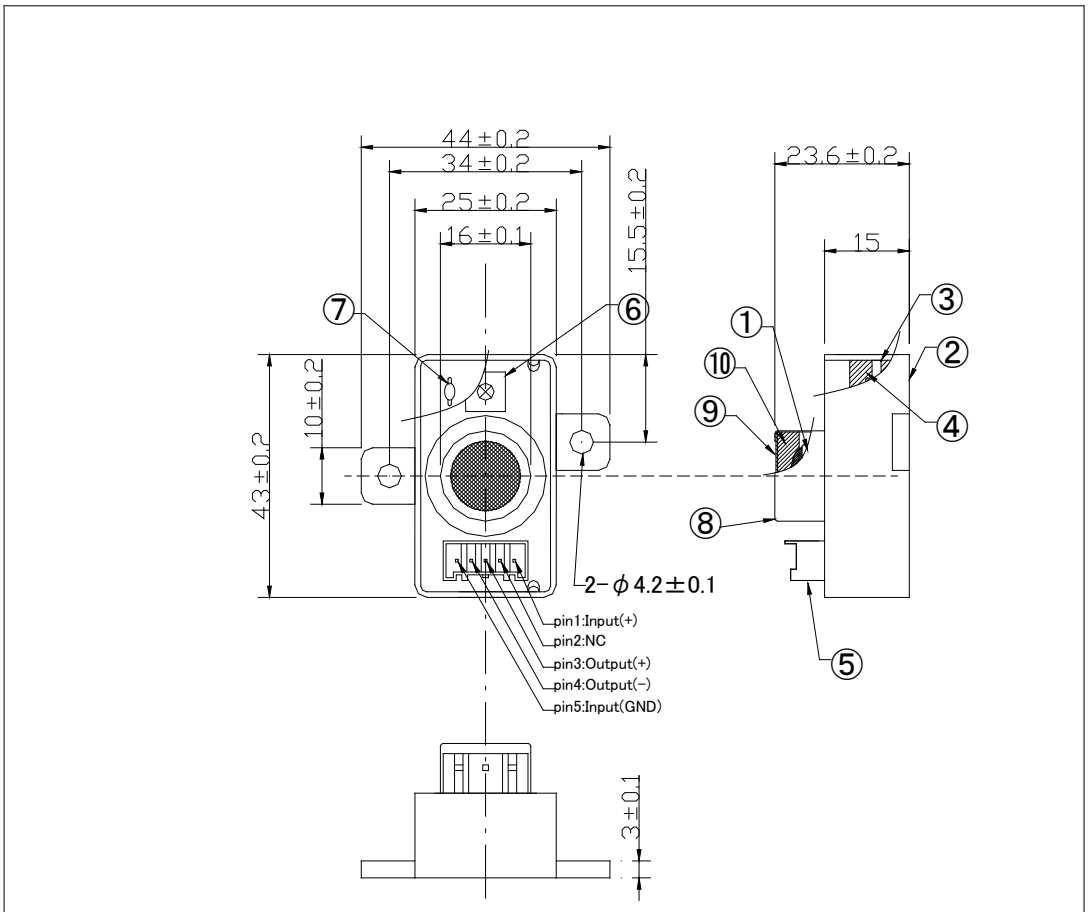
Recommended calibration is 10%LEL, and it is correspondent to 5000ppm in case of methane. However, since around 10% of calibration error is to be permitted, adjustable output signal is to be lower than alarm point by 20 – 30mV. Then, methane gas concentration at alarm point is to be 4500 – 5500ppm. If this calibrated unit is applied to hydrogen detection, hydrogen gas concentration at alarm point is to be around 10% lower than methane because sensitivity to methane is around 10% lower than hydrogen in case of the same gas concentration, not LEL concentration.

If the special request for calibration is not required, the calibration between 5 – 25%LEL is to be actually recommended.

9. Notice

- Do not add excess of shock, and drop from high position. Doubtful unit is to be unused.
- Do not touch and turn the variable resistor. In case that resin for fixing of variable resistor is detached or peeled, the unit performance can not be guaranteed.
- Unit should be stored in sealed package to avoid humid and dew.

- Silicone glue, silicone putty, silicone rubber and etc. are not to be near the sensor installation location because they should be a cause of poisoning.
- Installation location of sensor has to be in the waterproof structure.
- This unit is to be continuously electrified in normal. If the ON-OFF driving is expected, please consult us.
- Do not be exposed in corrosive gases.



No	Parts name	Material	Remark
10	Filter	Active carbon	t5
9	Mesh	SUS316	—
8	Filter cover	SUS304	—
7	Resistor	—	200Ω±1%、Pb-free
6	Variable resistor	—	10kΩ、Pb-free
5	Connector	PBT	NipponTanshi N1050A-9205
4	Desiccating agent	Resin	—
3	Circuit	FR4	—
2	Enclosure	Polycarbonate	—
1	Sensor	—	NAP-51A

Fig. Structure of NSU-131AF