Since 1941
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(April 20, 2001)

User's Manual for NAP-100AH

Catalytic type gas sensor NAP-100AH accurately detects hydrogen gas in a wide range from a low concentration up to about 1%. Being designed to withstand up to 150°C, this sensor can be used not only as an industrial hydrogen gas sensor but also as hydrogen gas leakage sensor for fuel batteries that are getting popular recently. Applications of this sensor are limitless, and the following is detailed information on NAP-100AH.

1. Applications

* Hydrogen gas leakage detectors for fuel batteries.
* Industrial hydrogen gas detectors.

2. Features

* Can be used without temperature compensation circuit in the range up to 150 °C.
* Excellent gas selectivity, and not affected by other hydrocarbon gases.
* Excellent reproducibility and stability.
* Accurately detects a high gas concentration up to around 1% of H_2.
* Hardly affected by humidity.
* Excellent long term stability and durability with corrosion resistance.
* Durable to killer gases, such as silicone and H_2S gases.

3. Maximum specifications

* Supply voltage : DC 2.5V
* Temperature & humidity in operation : Temperature ; Less than +200 °C
  Humidity ; Less than 99%RH (< 100 °C)
* Temperature & humidity in storage : Temperature ; -30 ~ +70 °C
  Humidity ; Less than 99%RH
  (With no dew condensation)
* Air velocity : Less than 5 m/sec.

4. Specifications

* Supply voltage : DC 1.6 +/- 0.1V
* Current : 130～150 mA (When 1.6V is supplied)
* Temperature & humidity in operation : Temperature ; 0～+150°C
  Humidity ; Less than 95%RH (<100°C)
* Temperature & humidity in storage : Temperature ; -20～+60°C
  Humidity ; Less than 99%RH
  (With no dew condensation)
* Air velocity : Less than 3 m/sec.

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5. Structure

As per attached Fig. 3. Almost of the parts and components are made of stainless steel, and base plate, lead wires, and fillers are durable up to 300°C.

6. Recommended circuit

As per attached Fig. 2. Using this circuit, detection of hydrogen gas is possible in the range from room temperature to 150°C.

7. Typical characteristics

* Hydrogen gas sensitivity : 40 +/- 4 mV at 5,000 ppm
* Response speed : Within 20 seconds (90% response)
* Detectable gas concentration range : 0 ~ 4 % (Perfect linearity shall be up to around 1.3 %)
* Long term stability : More than 90% sensitivity is maintained after 2-year use.

8. Characteristics

The following is the gas sensitivity characteristic at room temperature.

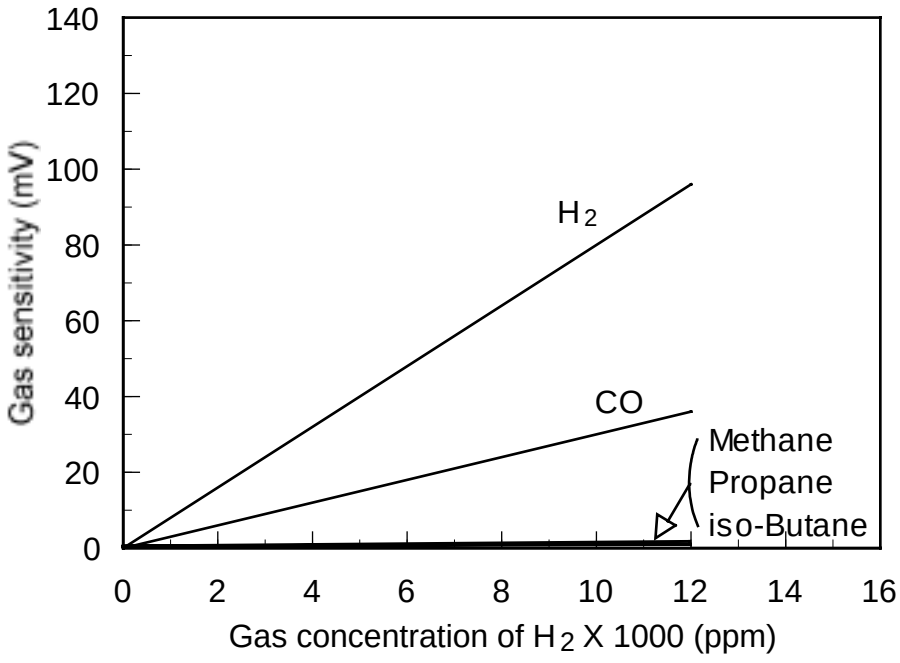

Fig.1 Gas sensitivity characteristics of NAP-100AH

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9. Calibration of bridge output voltage

Sensor is mounted on the recommended circuit and electrified for more than 1 hour, then a zero point is adjusted using V/R. No special V/R is required but a regular V/R would be enough. V/R is fixed with a locking paint after calibration.

10. Remarks

* Refrain from dropping or giving strong shocks to sensor.
* Refrain from operation or storage in a place where dew condensation may occur.
* Power supply wire of sensor should be firmly fixed with a screw.
* Sensor is corrosive resistant, but refrain from using under dirty conditions.
* Refrain from storing in dusty a place.

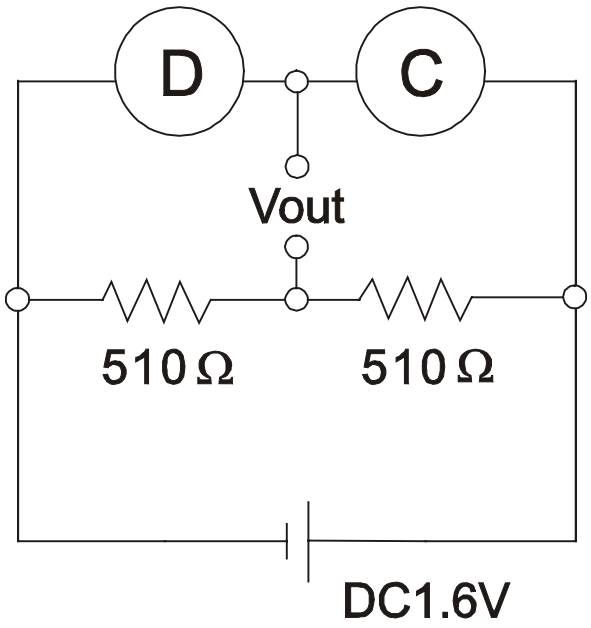

Fig. 2 Recommended circuit of NAP-100AH

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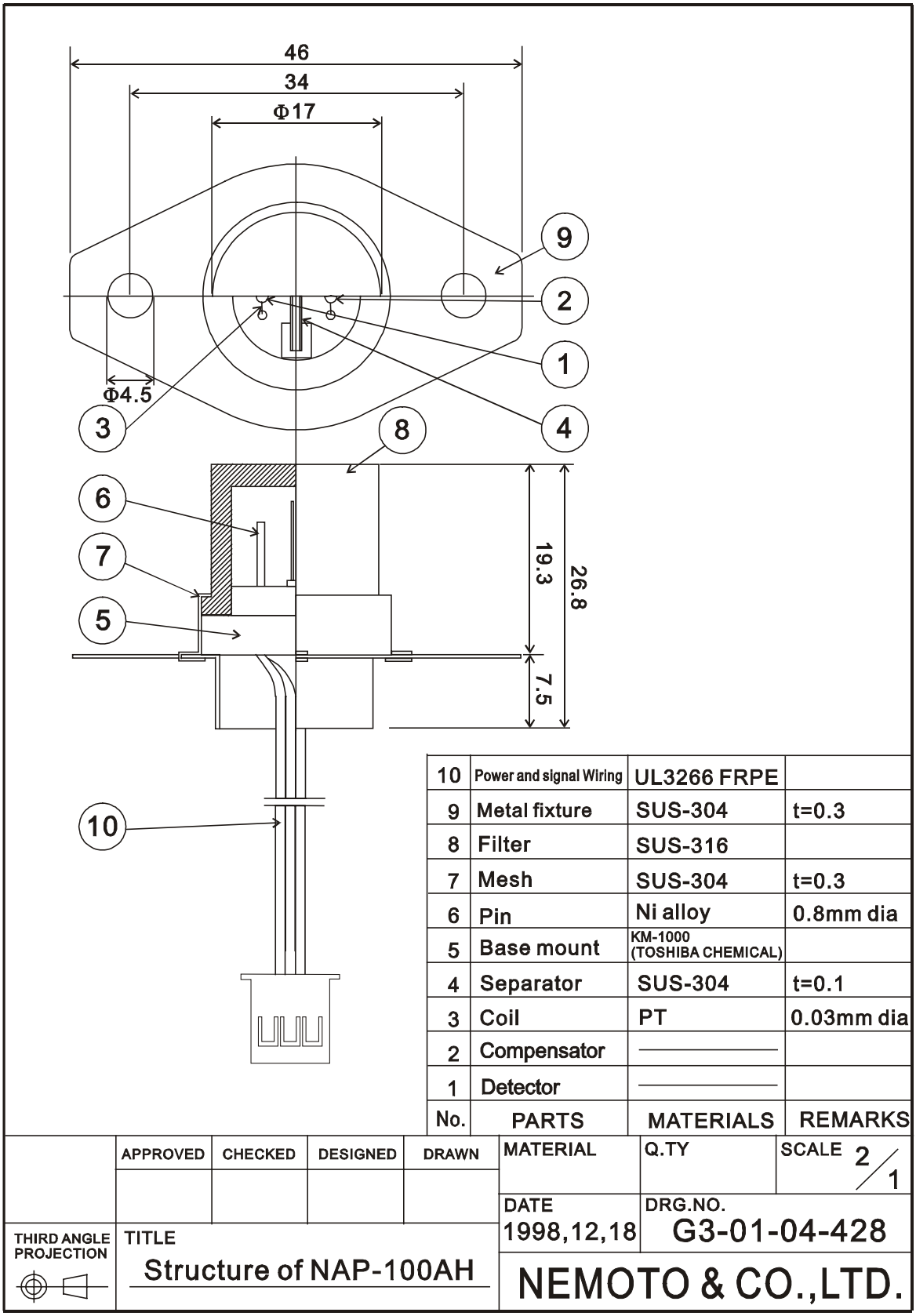

No.	PARTS	MATERIALS	REMARKS
10	Power and signal Wiring	UL3266 FRPE	
9	Metal fixture	SUS-304	t=0.3
8	Filter	SUS-316	
7	Mesh	SUS-304	t=0.3
6	Pin	Ni alloy	0.8mm dia
5	Base mount	KM-1000 (TOSHIBA CHEMICAL)	
4	Separator	SUS-304	t=0.1
3	Coil	PT	0.03mm dia
2	Compensator	———	
1	Detector	———	

APPROVED	CHECKED	DESIGNED	DRAWN	MATERIAL	Q.TY	SCALE 2/1
				DATE 1998,12,18	DRG.NO. G3-01-04-428	

THIRD ANGLE PROJECTION

TITLE: Structure of NAP-100AH

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Fig. 3 Structure of NAP-100AH