FIGARO

product presentation

LPM2610-D09 LP Gas Pre-Calibration Module

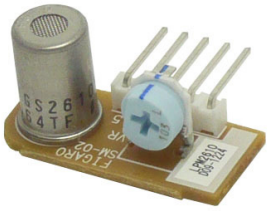
characteristic：

:: Factory calibration
* temperature compensating circuit
* Anti-interference sensor TGS2610 is adopted
* small volume
* Complies with R OHS requirements

apply：

Control of civil LP gas alarm

The LPM2610* is a pre-calibrated module for LP gas detectors, with its precise calibration function derived from Figaro's temperature and humidity control system. The selected TGS 2610-D00 sensor in this module features a filter that eliminates interfering gases like alcohol, thereby enhancing selectivity for LP gas and improving response speed.

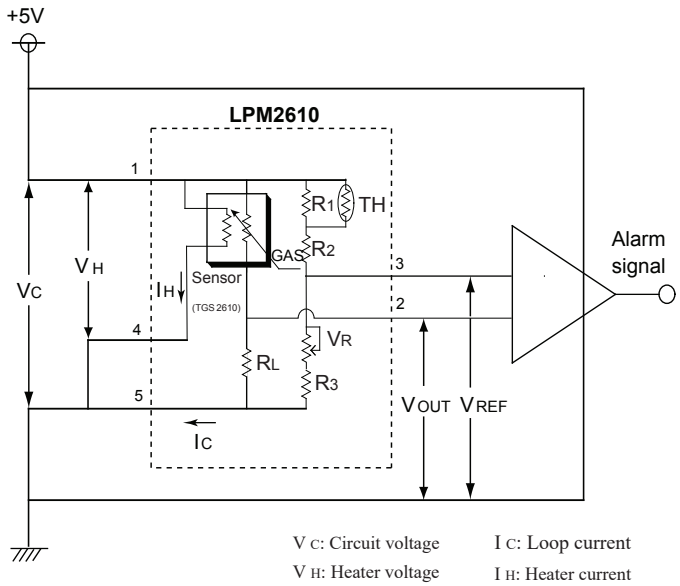


The most critical aspect of manufacturing reliable civilian liquefied petroleum gas (LI point calibration—a complex, time-consuming process requiring substantial investmen This module eliminates such costly calibration procedures, enabling users to produce I ease and simplicity. Feigaro provides a sophisticated gas detection circuit desigr compensation circuit integrated with built-in thermistors, along with a low-power LPG adjustable load resistance. The plug-in interface facilitates periodic sensor replacem simplifies motherboard connectivity, allowing the same module to be easily reconfigured for both methane and LPG detection. The module's design complies with EN50194 and UL1484 performance standards.

For sensor sensitivity characteristics, please refer to "Technical Information for TGS2610" and for further information on circuit design, please refer to "Application Notes for TGS2610".

* LPM (Liquefied Petroleum gas sensor Module)

circuit diagram：



V C: Circuit voltage
V H: Heater voltage
V OUT: Output voltage
V REF: Reference voltage

I C: Loop current
I H: Heater current

Pin connection:

The 5V DC power supply is connected to pin #1. The voltage comparator should be connected to pins #2 and #3. The circuit for detecting heater failures can be connected to pin #4 (in this configuration, both pins #4 and #5 must be grounded). When the gas sensor module detects the predetermined target gas alarm concentration, the V OUT value will reach or exceed the reference voltage (V REF), triggering the alarm condition in the module.

Note: As specified in Sections 2-6 of the "Technical Information for TGS2610", when a long-dead sensor is reactivated, its resistance (R S) will experience a sharp decline during the initial seconds after power-on, regardless of whether target gas detection is active or not. This transient state may cause alarm activation until the sensor stabilizes. To prevent unnecessary alarms during the sensor's warm-up period, appropriate circuit modifications should be implemented in accordance with the provisions outlined in Sections 1-7 of the "Application Notes for TGS2610".

Component detai-
ls:

symbol	component	specifications	quantity
R1	deposited-carbon resi-stor	43kΩ	1
R2	deposited-carbon resi-stor	1.0kΩ	1
R3	deposited-carbon resi-stor	2.7kΩ	1
RL	deposited-carbon resi-stor	1.1~4.7kΩ	1
VR	potential device	10kΩ	1
TH	thermal resistor	25. C is 10kΩ B value =3370±1%	1
Sensor	gas transducer	Figaro TGS2610-D00	1
CN	connector	Nichiatsu MB5P-90S	1

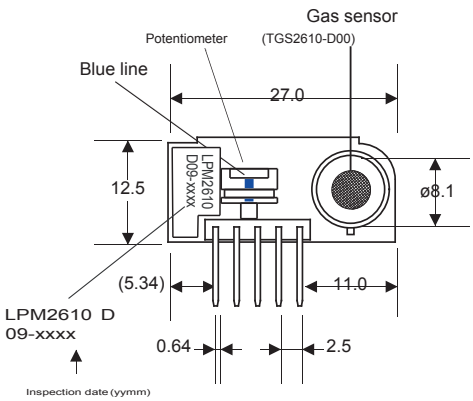
specificat-
ions :

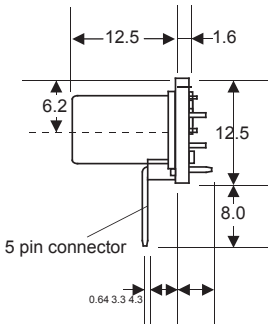
model			LPM2610 - D09
standard test conditions	Test gas conditions		Air containing isobutane 1250±100ppm 20. C ±2. C, 65±5%RH
	Circuit conditions		V_H=5.0±0.05V DC V_C=5.0±0.05V DC
	Test warm-up time		48 hour
Electrical characte-ristics under stand-ard test conditions	reference voltage	V_{REF}(STD)	1.4~3.0V DC
	output voltage	V_{OUT}(STD)	1.4~3.0V DC

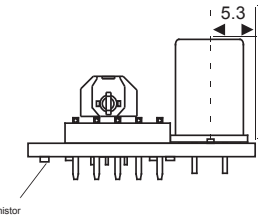
specificat-
ions :

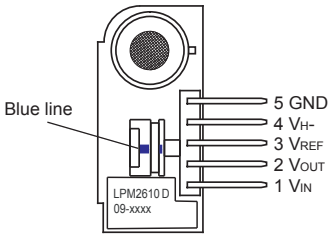
Recommended conditions of work	heater voltage	V_H	5.0±0.2V DC
	loop voltage	V_C	5.0±0.2V DC
	Minimum resistance between pin #2 and GND		2.5MΩ
	Minimum resistance between pin #3 and GND		
	going		0˚C~40˚C, 30~95%RH
	Different temperatures inside and outside the dete-ctor		⩽10. C max. (see note 1)
Electrical character-istics under working conditions	Heater current (Current between pins #1 and #4)	I_H	56±5mA
	loop current (Current between pins #1 and #5)	I_C	10mA (max)
	reference voltage	V_{REF}	0.8~3.5V DC (see note 2)
	output voltage (0~7200ppm isobutane in air)	V_{out}	0.05~4.0V DC (see note 3)

Structure and size:





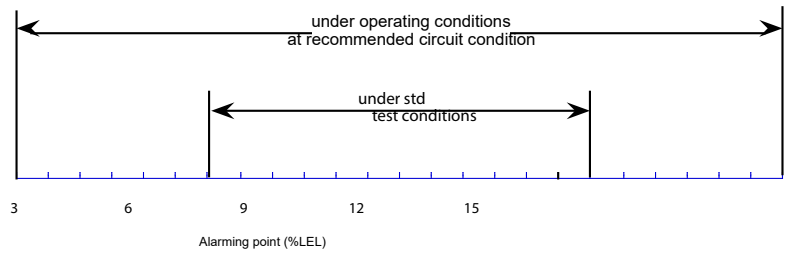




Unit : mm

Important: When checking and confirming that the potentio-meter is in the correct position during initial setup before using the module, the LPM2610 has a blue line for alignment. The blue line on the potentiometer must be aligned with it.

performance guaran-
tee：



When the alarm point is 9%LEL, the performance of LP gas detector is guaranteed when LPM2610 is used

Note: When using the LPM2610, the typical alarm tolerance for methane at 9%LEL is shown in the diagram above. However, actual performance may vary due to factors such as differing testing conditions or residual heat within the gas detector housing. In summary, Feigaro neither explicitly nor implicitly guarantees the performance depicted here. If significant discrepancies are observed between the detector's actual performance and expectations, please consult Feigaro for clarification.

Basic test circuit:

Absolute maximum rating (see note 4)	loop voltage	V_C	-0.3~+6.0V DC
	Heater current	V_H	-0.3~+5.5V DC (5.5V for up to 2 minutes)
	working temperature		-15˚C~+55˚C (maximum 95%RH)
	Storage temperature		-20˚C~+60˚C (anti-condensation)
	welding temperature		260˚C (maximum 10 seconds)

Note 1: If the heat generated by circuit components causes the internal temperature of the detector to exceed the external ambient temperature of the detector housing by 10˚C or more, the calibrated alarm concentration value may drift due to reference voltage V_{REF} drift. If users cannot ensure that the temperature difference between the detector's interior and exterior remains below 10˚C through design optimization, they should consult Feicaro Corporation.

Note 2: If the temperature exceeds the recommended operating conditions, the reference voltage may exceed the rated range.

Note 3: If the following conditions occur, the output voltage may exceed the rated range:

* Isobutane concentration exceeds 7200ppm

* During the warm-up period (due to the initial reaction-see "Item 2-6 Initial Action" on page 7 of Technical Information for TGS2610) it is therefore strongly recommended that LPM2610-D09 be used

Set the fault threshold.

The recommended fault threshold is:

1.0V DC > Vref > 4.0V DC

0.05V DC > Vout > (Vc-0.05)V DC

Note 4: The detector design should comply with the above "recommended operating conditions ". However, the detection circuit design in any case should not exceed the "absolute maximum rating", otherwise, the sensor may be damaged or cause performance degradation.

Before using LPM2610 for LP gas alarms outside of civilian use, consult Le Figaro first.

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When purchasing the sensor, please scan the QR code to confirm the limited warranty.

https://www.figaro.co.jp/cn/pdf/Limited_Warranty_cn.pdf

The typical characteristics of the sensor are shown in this product specification. The actual characteristics of the sensor vary depending on the product. Please refer to the specifications for each sensor.