

azbil

GasCVD™

Natural Gas Calorific Value Determining Device

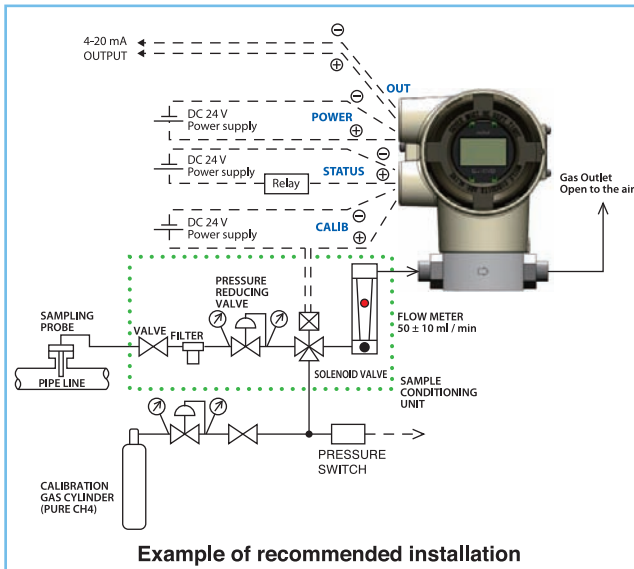
The GasCVD is the simple CVDD, which measures the calorific value directly.



- OIML R140 CVDD Class B compliant device
- Integral style with IEC Ex/ ATEX flame-proof safety approval
- Innovative small size and light weight
- Revolutionary continuous measurement with Azbil Corporation original thermal conductivity sensor

Features

- 1 OIML R 140 compliant device. Can be used as a calorimeter or calorific value determining device (CVDD) for natural gas. (OIML R140: International Organization of Legal Metrology recommendation that includes specifications for CVDDs.)
- 2 Innovative structure compatible with various installation sites.
 - Unlike conventional gas calorimeters, the CVM400 is small and lightweight, allowing a variety of installation site choices.
 - Explosion-proof: compliant with IECEx and ATEX, and suitable for Zone 1 use.
- 3 Revolutionary continuous measurement. Can detect a change of calorific value in processes in near real time by measuring every 2 seconds.
- 4 Fast response. The time constant for 90 % response is within 30 seconds resulting in very fast output of natural gas calorific value.
- 5 Automatic calibration for prolonged stability. Automatic calibration using pure methane guarantees long-term stable operation.
- 6 A wealth of diagnostic functions
 - Ambient temperature diagnostic function. Determines whether the operating environment is suitable, making use of a temperature sensor embedded on the same chip as the thermal conductivity sensor.
 - Operation time tracker function. Keeps track of the total operation time for comparison with the recommended replacement period.
 - Automatic calibration history check function. Shows up to 5 of the latest automatic calibration records to check changes in the calibration factor.



Measurement principle

The CVM400 measures the thermal conductivity of natural gas at different temperatures, changing the temperature of the thermal conductivity sensor in multiple stages. The calorimeter uses the support vector regression (SVR) method that is also employed on Azbil Corporation's differential pressure transmitters. The calorific value is calculated from the measured thermal conductivity values of the process using a characteristics formula created in advance based on thermal conductivities measured at different temperatures of the natural gas.

- Direct calorie measurement with Azbil Corporation original thermal conductivity sensor, which has simple and robust structure.

ITEM	SPECIFICATIONS
Application	Natural gas calorific value (Hs) measurement
Measuring principle	The correlative measuring method
Output	4 to 20 mA analog output
Communication	HART protocol (Ver. 7.0)
Accuracy	± 1% of the measuring point (Hs) (under OIML test condition)
Stability	± 0.5% of the measuring point (Hs)
Measurement range	35.0 to 45.0 MJ/m ³
Gas specification	Natural gas
	Component limit CO ₂ <2 mol%, N ₂ <7 mol%, C ₄ ⁺ <2 mol%
	Temperature -10 °C to 50 °C
	Maximum process gas pressure 110 kPa (abs)
	Consumption 50 ± 10 mL/min
Response time	Measurement period 2 s
	Response time 90% 30 s at 50 mL/min purge rate
Level of protection	Enclosure IP66
Ambient temperature	-10 °C to 50 °C
Calibration	Automatic adjustment on Pure methane
Power supply	Device requirements 24 VDC ± 10% 0.3 A max
	Alarm contact 26.4 VDC 50 mA max
	Calibration contact 26.4 VDC 1A max (solenoid valve)
Dimensions / weight	Dimension W:120, D:130, H:160 (mm)
	Weight 2.5 kg
	Electrical conduit NPT1/2 or M20
	Gas inlet connection NPT1/8F or Rc1/8
<Approvals>	
Explosion-proof	IEX Ex Flame-proof
	ATEX Flame-proof
OIML R140	CVDD (calorific value determining device)
	mpe Accuracy class B
	CO ₂ <2 mol%, N ₂ <7 mol%, C ₄ ⁺ <1.2 mol%
	Class (OIML D11) I (for indoor)
	Temperature -10 °C to 40 °C

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Azbil Corporation

Advanced Automation Company

Yamatake Corporation changed its name to Azbil Corporation on April 1, 2012.

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