

VQ500 Series Datasheet

Catalytic Combustible Gas Sensor (4-Series)

The VQ500 Series is a complete range of miniature, fully certified, flameproof sensor heads containing a high quality, low power pellistor pair optimised for the detection of combustible gases or % volume gases in thermal conductivity mode. They have an outline identical to modern miniature electrochemical cells and are ideally suited for use in portable instruments.

Within the VQ500 Series there are specific sensors that are able to detect most combustible gases and vapours and ammonia at LEL levels. The thermal conductivity version will detect most gases at % volume concentrations which have thermal conductivities different from that of air.

The VQ500ZD/W variants have had a temperature test performed during its manufacture to confirm the temperature performance of the sensor meets the datasheet ensuring compliance to the various mining performance standards (Group 1) with regard to the temperature performance.

The VQ548ZD-S variant has extra burn-in for enhanced stability.

FEATURES

- Optimised for combustible gases and vapours
- Thermal conductivity versions available
- Certified explosion proof component
- Integral pellistors
- Low power
- Standard miniature body size
- Poison resistant – silicones and hydrogen sulfide
- Shock resistant
- ATEX certified
- IECEx certified
- CSA certified
- UL recognised
- Temperature Rated between -40°C and +55°C



OPERATING PRINCIPLES

The detector consists of a fine coil of platinum wire embedded in a ceramic bead incorporating a noble metal catalyst. The coil acts both as an electrical heater and as a resistance thermometer. The bead is mounted on a header with connecting leads and is surrounded by a metal can with the end open to the atmosphere.



If a flammable gas is present when the bead is heated to about 400 to 500 °C, the gas will oxidise and the resultant release of energy will heat the bead still further. This increase in temperature is detected as an increase in resistance of the coil.

The temperature of the coil is also affected by ambient temperature and by variations in thermal conductivity of the air caused by the possible presence of inert gases such as carbon dioxide. To compensate for temperature changes not caused by the oxidation of the flammable gas a second, inert bead is used. This compensator is made in the same way as a detector bead except that instead of incorporating a catalyst in the ceramic bead, the bead is treated so that oxidation cannot take place. The two beads are then used in a circuit that detects the difference in their resistances. Since the two beads are generally of a different colour, they have different emissivity and hence different slope resistances. Therefore, to obtain the best temperature performance, it is necessary to connect a fixed resistor in parallel with the compensator to correct for its higher slope resistance.

TECHNICAL SPECIFICATION

Mechanical

Dimensions	see outline, page 3
Body material	Stainless Steel
Weight	22g

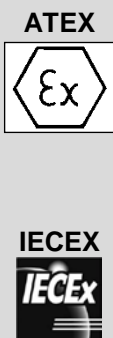


Environmental

Temperature range for operation and storage	-40 to +55 °C
Humidity range for operation and storage	0 to 80% (non-condensing)

Electrical

Supply Voltage	3.00 V to 4.25 V; (Depending upon type)
Supply Power	135 mW to 230 mW (Depending upon type)

CERTIFICATION

	EC Type-Examination Certificate Numbers:	ATEX: Sira 01ATEX1073U IECEx: IECEx SIR 04.0014U	
	Issued by:	Sira Test & Certification Service Rake Lane Eccleston Chester, CH4 9JN UK	
	Have been assessed to the following harmonized standards:	EN 60079-0:2012 & IEC 60079-0:2011 (Ed. 6) Electrical apparatus for explosive gas atmospheres – General requirements IEC 60079-1:2014 (Ed. 7) Electrical apparatus for explosive gas atmospheres Flameproof enclosures “d”	
	Product Marking:	ATEX: II 2G Ex db IIC Gb I M2 Ex db I Mb IECEx: Ex db IIC Gb Ex db I Mb	Ta -40°C to +55°C, Pi: 2.5 W
	The Canadian Standards Association has issued a component certification for the VQ500 Series as an Explosion Proof Enclosure for use in Class I hazardous locations. It has satisfied the requirements of CSA standard C22.2 No. 30-M 1986. Certificate No. 2589677. The Canadian Standards Association has also assessed the VQ500 Series to UL 1203 (4 th Edition).		
	Underwriters Laboratories Inc. recognise the VQ500 Series as a component for use in intrinsically safe apparatus in Class 1, Division 1, Groups A, B, C and D hazardous locations. It has satisfied the requirements of UL 913, 7th edition. File E186043.		

INSTRUCTIONS SPECIFIC TO HAZARDOUS AREA INSTALLATIONS

(Ref. EU ATEX Directive 2014/34/EU)

- The VQ500 Series Gas Sensing Heads are component approved only and may not be used as standalone items in a hazardous area without further protection.
- The VQ500 Series Sensing head shall be used in conjunction with apparatus providing an intrinsically safe supply having a maximum output (P_o) not greater than 2.5 W.
- For the purpose of temperature classification of the apparatus in which the VQ500 Series Gas Sensing Head is used, the maximum temperature rise on any external surface does not exceed 64 °C.
- When the VQ500 Series component is utilized in equipment that is intended to be used in Group I applications, it shall be suitably protected to ensure that it will withstand an impact energy in excess of 7 J low risk of impact value specified in EN 60079-0 clause 26.4.
- The VQ500 Series Gas Sensing Heads have not been assessed as a safety device (EHSR 1.5).
- There are no user-serviceable parts in the component.
- The end-user/installer shall be aware that the certification of the VQ500 Series Gas Sensing Heads relies on the following materials used in its construction, which are suitable for most common applications:
EnclosureStainless steel
MeshStainless steel
BushingEpoxy resin
In accordance with the Note in EN60079-0:2006 clause 6.1(a), the end-user/installer shall inform the manufacturer of any adverse conditions that the VQ500 Series Gas Sensing Heads may encounter. This is to ensure that the VQ500 Series Gas Sensing Heads are not subjected to conditions that may cause degradation of these materials.
- The VQ500 Series Gas Sensing Head shall only be used in an ambient temperature range of -40°C and +55°C.

Данный компонент на территории Российской Федерации

Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

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