

Excellence and performance through innovation and quality sgxsensortech.com

SGX Sensortech

A market leader in innovative sensor and detector devices that offers unrivalled performance, robustness and cost-effectiveness. Our team boasts some of the industry's foremost experts, enabling us to add real value to our customers. We have an established reputation in designing the most advanced gas sensing components.

Serving customers worldwide that require sensing technology for air quality, health and safety applications, we have expertise in a wide range of sectors from industrial OEMs to pharmaceutical and energy companies and scientific research institutions. We pride ourselves on our close relationships with our customers, working with them at every stage to devise the best solution to meet their most demanding requirements and timescales.

SGX sensors and modules often make up the vital detecting element in a wide range of analytical detection equipment for industrial safety gas detection, automotive cabin air quality, university research, forensic science, mining and much more. With a manufacturing capability from low volume up to over 2 million sensors per annum, SGX Sensortech provides quality sensors and electronic modules to meet the highest industry performance and safety standards.

SGX is structured with two manufacturing sites and operates within the global markets of Automotive Air Quality, Indoor Air Quality and Industrial Safety Gas Detection.

2 Operational sites

- SGX Sensortech SA, Switzerland
- SGX Europe Sp. z o. o., Poland
- Global sales channels
- > Worldwide distribution



For more information:

Visit: www.sgxsensortech.com Email: info@sgxsensortech.com

Environmental Monitoring

Metal-oxide sensors for environmental gas detection, including Automotive Air Quality sensors (AQS), Interior Air Quality (IAQ), Outdoor Air Quality (OAQ), MeMs Pellistor sensors (mPell), IR source and module (MIMS) and MeMS Thermal Conductivity sensors for high volume markets such as the automotive industry.

Industrial Safety

Gas Sensor technologies, design and manufacture of Infrared sensors, Pellistor sensors, Metal Oxide sensors, Thermal conductivity sensors, Electrochemical sensors and evaluation kits. Applications in Mining, Oil and Gas, Confined space entry, Indoor air quality, Industrial area protection and Leak detection.



Quality and customer commitment

SGX Sensortech have been developing and manufacturing sensors for over 50 years and our experts have many years experience in sensor performance, applications and customer support. Listening closely to the customer has driven SGX to innovate and evolve the current technologies to design and manufacture sensors with the performance to constantly meet the demands of an ever-changing market. All new products are designed to meet the needs of the customer, to be cost-effective and above all to be reliable. Our extensive test processes including accelerated stress testing and beta testing in real applications and environments ensures any potential issues are recognised and resolved during the early life cycle of the product.

Striving to be more than just a supplier, we are your partner and the advantages are clear

- + Quality Products manufactured to the highest standards
- + Flexible approach and delivery to suit individual customer requirements
- + Application solutions that reflect the commercial reality
- + Experts available to discuss your application or NPI requirements
- + Sensor evaluation kits
- + Electronic design capability
- + Continued improvements to existing products
- + Product upgrades
- + Bespoke designs or variations available
- + Low and high volume capability
- + Innovative new product introduction road map

Research and Development

Our R&D team is continually focused on new sensor technology and designs which offer a performance advantage to our customers. The introduction of new sensor techniques, new materials and quality controlled manufacturing processes offer your designers the opportunity to produce world-beating products.

Innovation, design, development and research continually add to our range of products.

Unrivalled customer support

Our customer support and applications engineering are part of your project team, helping you to get your development or application right first time. Our engineering team is available to discuss your requirements and application issues – engineer to engineer. Our engineers can work in direct automotive AQS application or with tier suppliers. We can offer support and EDS system upgrades.

What our customers say about SGX Sensortech

"I wanted to drop a quick note to thank you and your teams for truly outstanding support. I do realise that our many requests, especially lately have been above and beyond traditional vendor/ partner support. It is greatly appreciated."

"The fast response and competent support from SGX Sensortech's engineering team really helped a lot to launch our new product on time." **Industrial Safety Gas Sensor Products**

Catalytic Sensors

- + Over 30 variations
- + Components
- + Certified portable plug-ins
- + Rugged fixed certified

MeMs Pellistor

- + Silicon technology
- + Low power

Infrared Sensors

- + Over 20 variations
- + Twin gas versions
- + EX and IS certified
- + Rugged fixed certified
- + Integrated infrared digital sensor

Thermal Conductivity Pellistor Pair

- + detection of gases in 0 100%
- + 4 sensors variations

Electrochemical Cells

- + Lead-free oxygen
- + 4 series
- + 10 gases











Environmental Monitoring Products

MOS Gas Sensors

- + Small size (7 x 5 x 2 mm3)
- + High-volume production
- + Fast response
- + High sensitivity
- + Long lifetime

Indoor Air Quality Modules

- + Detection of VOC
- + CO2 equivalent
- + Intelligent algorithms
- + Multiple signal outputs
- + Compact design

Automotive AQS Modules

- + Triple gas sensor
- + Gasoline, diesel and odour detection
- + Fast sensor response
- + Auto-adaptation algorithms
- + LIN 2.0 and PWM outputs

USB Plug and Play Evaluation Electronics









PELLISTOR SENSORS

Designed to monitor combustible gases up to the explosive limits. These sensors are used both in fixed and portable instrumentation.

Main features of these sensors are:

- > Response to a wide range of combustible gases
- > Simple circuitry
- > A wide range of sensor types and operating voltages
- > Poison & shock resistant versions available
- Full technical support



VQ500 Series

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.



VQ600 Series

Pellistor Gas Sensor for Hazardous Areas (Fixed Systems)

The VQ600 Series is designed to detect and monitor various gases in the range 0 to 100% LEL for combustible gases and 0 to 100% volume in thermal conductivity mode when using the SGX range of pellistor gas sensors.

The VQ600 Series is designed for use as an integral part of a fixed gas detection system. The head comprises a stainless steel flameproof enclosure constructed with an integral stainless steel sinter which allows the safe entry of the atmosphere being tested.







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Catalytic Pellistors flammable gases (No poison resistance)

Part Number	Description
VQ10B	Standard Pellistor Pair, 2V/175mA, Solid Legs
VQ10SB	Standard Pellistor Pair, 2V/175mA, Solid Legs
VQ1B	SttandardPellistor Pair, 2V/300mA, Solid Legs
VQ2B	Standard Pellistor Pair, 2V/175mA, Solid Legs
VQ3BJ	Standard Pellistor Pair 2.5V/335mA Solid Legs
VQ41TSB	Ammonia Pellistor Pair, 2V/100mA

Catalytic Pellistors flammable gases (with poison resistance)

Part Number	Description
VQ21B	Poison Resistant Pellistor Pair, 2V/300mA, Solid Legs
VQ21TB	Poison Resistant Pellistor Pr, 2V/300mA OC Solid Legs
VQ21TBJ	Poison Resistant Pellistor Pr, 2V/300mA OC Solid Legs
VQ21TSB	Poison Resistant Pellistor Pair 2V/300mA OC Solid Legs
VQ22TB	Poison Resistant Pellistor Pair 2V/175mA OC Solid Legs
VQ23TB	Poison Resistant Pellistor Pair 2.5V/335mA OC Solid Legs
VQ25B	Poison Resistant Pellistor 2V, Hydrocarbon, Solid Legs

Certified thermal conductivity heads for 100% volume gases with and without air

Part Number	Description
VQ546M	VQ46 Pellistor, VQ500 Head
VQ546MR	VQ46 Pellistor, VQ500 Head, +ve Output
VQ605M/1	VQ5 Pellistor, VQ600 Head, Metric Thread
VQ606M/1	VQ6 Pellistor, VQ600 Head, Metric Thread
VQ606M/3	VQ6 Pellistor, VQ600 Head, 0.75" 14 NPT
VQ631M/1	VQ31 Pellistor VQ600 Head, Metric Thread
VQ631M/2	VQ31 Pellistor, VQ600 Head, 0.5" 14 NPT
VQ631M/3	VQ31 Pellistor, VQ600 Head, 0.75" 14 NPT
VQ635M/1	VQ35 Pellistor VQ600 Head, Metric Thread
VQ635M/2	VQ35 Pellistor, VQ600 Head, 0.5" 14 NPT
VQ635M/3	VQ35 Pellistor, VQ600 Head, 0.75" 14 NPT

PELLISTOR SENSORS

Certified Catalytic pellistor heads for flammable gases

Part Number	Description
VQ547TS	VQ47 Ammonia Sensor, VQ500 head for portable applications
VQ548ZD	3.0V - VQ48 Pellistor in a VQ500 head for portable applications
VQ548ZD/W	3.0V- VQ48 Pellistor in a VQ500 Head for Mining Applications
VQ548ZD-S	3.0V - VQ548ZD - Zero Tested
VQ549ZD	4.25V -VQ49 Pellistor in a VQ500 head for portable applications
VQ549ZD/W	4.25V -VQ49 Pellistor in a VQ500 Head for Mining Applications
VQ601/1	VQ1 Pellistor, VQ600 Head, Metric Thread
VQ601/2	VQ1 Pellistor, VQ600 Head, 0.5" 14 NPT
VQ601/3	VQ1 Pellistor, VQ600 Head, 0.75" 14 NPT
VQ603/1	VQ3 Pellistor, VQ600 Head, Metric Thread
VQ603/2	VQ3 Pellistor, VQ600 Head, 0.5" 14 NPT
VQ641TS/1	VQ41 Pellistor VQ600 Head, Metric Thread
VQ641TS/3	VQ41 Pellistor, VQ600 Head, 0.75" 14 NPT
VQ621T/1	VQ21 Pellistor VQ600 Head, Metric Thread
VQ621T/2	VQ21 Pellistor, VQ600 Head, 0.5" 14 NPT
VQ621T/3	VQ21 Pellistor, VQ600 Head, 0.75" 14 NPT
VQ621TS/1	VQ21 Pellistor VQ600 Head, Metric Thread
VQ621TS/3	VQ21 Pellistor, VQ600 Head, 0.75" 14 NPT
VQ622T/1	VQ22 Pellistor VQ600 Head, Metric Thread
VQ622T/2	VQ22 Pellistor, VQ600 Head, 0.5" 14 NPT
VQ622T/3	VQ22 Pellistor, VQ600 Head, 0.75" 14 NPT
VQ623/1	VQ23 Pellistor VQ600 Head, Metric Thread
VQ625/1	VQ25 Pellistor VQ600 Head, Metric Thread
VQ625/2	VQ25 Pellistor, VQ600 Head, 0.5" 14 NPT
VQ625/3	VQ25 Pellistor, VQ600 Head, 0.75" 14 NPT

MEMS PELLISTOR

The MPEL is an industrial-suited MEMS (Micro Electro Mechanical System) pellistor which has been developed for a new generation of low-power and rugged sensors for the detection of combustible gases, in particular methane.

Innovative process technologies combined with optimized sensing and filter materials are engineered to achieve exceptional performance compared to existing products. These sensors can provide a significant power reduction, in continuous operation and compared with existing pellistor gas sensors it can be up to 50 percent.

The micron silicon heater design delivers improved resistance to shock, with millimetre diced components this unique structure allows reductions in the sensor size and a large flexibility within the certified package design.

DIFFERENTIATING FEATURES

- Low power (continuous operation typically 110mW)
- > Exceptional poison resistant to HMDS and H2S
- Miniature package MP-7217 (14.4 x 6.7 mm)
- > Compatible packaging available for the existing market sensors e.g. 4 series
- > Extreme resistance to mechanical shock.
- Enabling stability performance, for very low power applications pulsed mode operation (10-20mW)
- Low orientation effect.
- > ATEX, IECEx certified for ia





MEMS PELLISTOR

Part Number	Description
MP7217	Miniature MEMS Pellistor for Flammable Gas Sensing
VQ548MP	4 Series MEMS Pellistor for Flammable Gas Sensing
MP7217TC	Combined Flammable and Volume Percent Methane Sensor
VQ548MP-2	4 Series series 2 MEMS Pellistor for Flammable Gas Sensing
MP7227	Miniature series 2 MEMS Pellistor for Flammable Gas Sensing

MP-7217 & VQ548MP

Sensor has been designed to provide the basic sensor performance that will enable a suitable instrument to meet the various (Group 1) mining performance standards. Both sensors are optimised for its methane response (up to 5% volume in air), will also detect some other flammable gases and vapours. For further information, contact SGX Sensortech.





Size Ø14x6,7mm



VO548MP





Size Ø20x16,5mm Compatible with instruments using VQ500 type sensor

VQ548MP2

The VQ548MP2-DA type sensor is designed for low power operation in continuous mode providing additionally ultra-low power consumption when used in pulse mode operation, which makes this sensor a preferred choice for battery operated devices.

The VQ548MP2-DA has been designed to provide the basic sensor performance that will enable a suitable instrument to meet the various (Group 1) mining and industrial (Group 2) performance standards.



Size Ø20x16,5mm





MEMS PELLISTOR

MP-7217-TC

The MP-7217-TC gas sensor has been designed to measure Methane over the explosive concentration range and up to 100% by volume. The explosive range is measured with the sensor in Catalytic mode where the target gas is reacted on the detector bead. The 100% volume range is measured with the detector bead replaced by a resistor and the compensating bead measuring the target gas concentration by virtue of its change in thermal conductivity.



MP7227

The MP7227-DA pellistor is a low power, hazardous area safe, extremely robust and poisonresistant device in a certified flameproof enclosure. The MP7227-DA type sensor is designed for low power operation in continuous mode providing additionally ultra-low power consumption when used in pulse mode operation, which makes this sensor a preferred choice for battery operated devices.

The MP7227-DA has been designed to provide the basic sensor performance that will enable a suitable instrument to meet the various (Group 1) mining and industrial (Group 2) performance standards.

Whilst being optimised for its methane response (up to 5% volume in air), will also detect some other flammable gases and vapours. For further information, contact SGX Sensortech. Small size and ultra-low power consumption in pulsed operation mode make the proposed sensor a preferred choice for applications where size and long battery operation are essential.





Designed for long-term continuous sensing of CO_2 and numerous hydrocarbon gases including vapours in fixed systems, SGX IR sensors are suited for portable instrumentation where shorter term usage is more usual. The metal mesh gas entrance aperture is also flame arresting and the whole body structure is explosion proof to ATEX, CSA and UL standards. The series-4 size provides compatibility with other electrochemical and catalytic sensors in multi-gas instrumentation. Our twin gas sensors have two active gas channels for simultaneous detection of carbon dioxide and methane (or other hydrocarbons).

Main features of these sensors are:

- > Diffused gas sampling via mesh
- Low power
- > Series 4 size to complement miniature catalytic and electrochemical gas sensors
- Reference channel for self-compensation
- > Special gold plated optical/gas cavity for stable signal levels
- > Operational in varying ambient temperatures, pressures and humidity's
- Fast response
- Rugged stainless steel construction
- No moving parts
- Resistance to corrosion
- Immunity from 'poisoning'
- Reliable fail-safe operation
- Low maintenance
- > Suitable for fixed or portable instrumentation
- Series expandable to other gases or vapours



Now available is the **INIR** which is our **Infra Red gas sensor with integrated electronics** which makes flammable gas and carbon dioxide sensing easy.

It is designed to operate in the harshest of environments and produces accurate, fast readings with the minimum of circuity design. The new INIR integrated infra-red sensor incorporates a high performance optical cavity coupled with leading edge electronics. All necessary driver circuitry and firmware is included to produce a linearised, temperature compensated digital output.







The SGX infrared sensors use the proven Non-Dispersive Infrared (NDIR) principle to detect and monitor the presence of gases. With an infrared source and specific filtering on the pyroelectric detectors mounted inside the optical/gas cavity, individual gases or types of gas can be identified and their concentrations determined.

IR1 Single Gas Series

Infrared Single Gas Sensor for Hazardous Environments (Portable and Fixed Systems).

These sensors are suitable for reliable monitoring of gas levels in general safety applications where the sensor size is restricted and require a flameproof enclosure for hazardous environments.

APPLICATIONS

- > Oil & Gas
- Petrochemical
- > Biogas
- Wastewater
- > Utilities

- > Steelworks
- Confined Space Entry
- Indoor Air Quality

For detection of the following gases:

- Carbon Dioxide (IR11 Series)
- Hydrocarbons (IR12 series, IR13 series)
- Acetylene (IR14 series)







Gas concentration ranges:

- > 0 5% Carbon Dioxide (also suitable for 0 to 0.5%v/v)
- 0 100% Carbon Dioxide (also suitable for 0 to 10%)
- 0 100%v/v Hydrocarbons (also suitable for 0 to 100%LEL)
- 0 100%v/v Acetylene (also suitable for 0 to 100%LEL)

IR2 Single Gas Series

Infrared Single Gas Sensor for Mining (Portable and Fixed Systems)

These sensors are suitable for reliable monitoring of gas levels in mining applications where the sensor size is restricted and require a flameproof enclosure for the hazardous environment.

The IR2xxx Series share the same build and performance standard as the IR1xxx Series, but are labelled as being intrinsically safe for methane monitoring in mining applications

APPLICATIONS > Mining

For detection of the following gases:

- Carbon Dioxide (IR21 Series)
- Hydrocarbons (IR22 series, IR23 series)

Gas concentration ranges:

- > 0 5% Carbon Dioxide (also suitable for 0 to 0.5% v/v)
- 0 100% Carbon Dioxide (also suitable for 0 to 10%)
- 0 100%v/v Hydrocarbons (also suitable for 0 to 100%LEL)



IR3 Single Gas Series

Uncertified Infrared Single Gas Sensor (Portable and Fixed Systems)

These sensors are suitable for reliable monitoring of gas levels in general applications that do not require a flameproof enclosure for hazardous environments.

The IR3 series range of infrared sensors are suitable for reliable monitoring of gas levels where the infrared sensor size is restricted. On their own, these sensors cannot be placed in hazardous areas, but they are suitable for installation in instrumentation that is hazard certified.

The IR3 series range has been designed for installation into certified housings, monitoring of CO2 in hyperbaric applications (e.g. diving) where high pressures can exist or applications where the accuracy is not too important (e.g. school science projects) where the sensor zero can be set before use.

APPLICATIONS

- > Oil & Gas*
- Petrochemical*
- Steelworks*
- Wastewater
- * When built into certified housing
- School Science Equipment
- Confined Space Entry
- > Indoor Air Quality
- SCUBA Diving Equipment

For detection of the following gases:

- Carbon Dioxide (IR31 Series)
- Hydrocarbons (IR32 series, IR33 series)

Gas concentration ranges:

- 0 5% Carbon Dioxide (also suitable for 0 to 0.5%v/v)
- > 0 100%v/v Hydrocarbons (also suitable for 0 to 100%LEL)



IR600 Series

Infrared Gas Sensor for Hazardous Areas (Fixed Systems)

The IR600 Series gas sensors are designed to detect and monitor the presence of CO2, hydrocarbons and acetylene using the same non-dispersive infrared (NDIR) principle as used in the SGX Sensortech range of miniature infrared gas sensors. Dual detector channels are used with a reference for background compensation. A temperature sensor is mounted for temperature compensation.

IR600 sensors are designed to be integrated with fixed gas detection systems. Their construction is a stainless steel flameproof enclosure with an integral stainless steel sinter for the safe entry of the gases being tested.

Three types of mounting thread are available to allow easy fixing to the junction box of the fixed system. On the front face there is an external M46 thread for attaching optional accessories for use in different applications. The IR600 Series incorporates an inbuilt and sealed preamplifier/buffer and require connection to suitable transmitter systems for their power supply, operation and signal processing. The IR600 lead in/out terminates in an 8-pin connector.

For detection of the following gases:

- Carbon Dioxide (IR601)
- Hydrocarbons (IR602, IR603)
- Acetylene (IR604)

Gas concentration ranges:

- > 0 5% Carbon Dioxide
- > 0 100% LEL and 0 100% vol. Hydrocarbons (same sensor is suitable for both ranges)
- > 0 100% LEL and 0 100% vol. Acetylene (same sensor is suitable for both ranges)





TABLES OF IR GAS SENSOR TYPES

MINIATURE SENSORS - SINGLE GAS/SINGLE CHANNEL		NON-CERTIFIED		
Gas	Concentration Range			
Carbon Dioxide	0 - 0.3, 0 - 2, 0 - 5% vol.	IR31SC IR31SE		
MINIATURE SENSORS - SING	GLE GAS/DUAL CHANNELS			
Gas	Concentration Range	IR3xxx Series	IR4xxx Series	
Carbon Dioxide	0 - 0.3, 0 - 2, 0 - 5% vol.	IR31BC		IR31CE
Methane and Hydrocarbons	0 – 100% LEL, 0 - 100% vol.	IR32BC	IR42BC	
Broadband Hydrocarbons	0 - 100% LEL, 0 - 100% vol.	IR33BC		
Acetylene	0 - 100% LEL, 0 - 100% vol.	IR34BC		
MINIATURE SENSORS - SINGLE GAS/DUAL CHANNELS		CERTIFIED FOR HAZARDOUS AREAS	CERTIFIED	FOR ATIONS
Gas	Concentration Range	IR1xxx Series 1	IR2xxx Series 1	
Carbon Dioxide	0 - 0.3, 0 - 2, 0 - 5% vol.	IR11BD	IR21BD	
Methane and Hydrocarbons	0 - 100% LEL, 0 - 100% vol.	IR12BD	IR22BD	
Broadband Hydrocarbons	0 - 100% LEL, 0 - 100% vol.	IR13BD	IR23BD	
Acetylene	0 - 100% LEL, 0 - 100% vol.	IR14BD		
Gas	Concentration Range	IR1xxx Series 2	IR1xxx Series 2	
Carbon Dioxide	0 - 0.3, 0 - 2, 0 - 5% vol.	IR11EJ / IR11GJ	IR21EJ / IR21GJ	
	, ,	IR11EM / IR11GM	IR21EM / IR21GN	Λ
Methane and Hydrocarbons	0 - 100% LEL, 0 - 100% vol.	IR12EJ / IR12GJ	IR22EJ / IR22GJ	
		IR12EM / IR12GM	IR22EM / IR22GN	Λ
MINIATURE SENSORS – TWI				
Gas	Concentration Ranges	IR15T Series	IR25T Series	
Carbon Dioxide and	0 - 0.3, 0 – 2, 0 - 5% vol	IR15TT	IR25TT	
Broadband Hydrocarbons	0 - 100% LEL, 0 - 100% vol.			
Carbon Dioxide, Methane and	0 - 0.3, 0 – 2, 0 - 5% vol	IR15TT-M	IR25TT-M	
Hydrocarbons	0 - 100% LEL, 0 - 100% vol.			
SENSOR HEADS - SINGLE GAS/DUAL CHANNEL		CERTIFIED FOR		EAS
Gas	Concentration Ranges	IR600 Series		
Carbon Dioxide	0 - 0.3, 0 - 2, 0 - 5% vol.	IR601		
Methane and Hydrocarbons	0 - 100% LEL, 0 - 100% vol	IR602		
Broadband Hydrocarbons	0 - 100% LEL, 0 - 100% vol.	IR603		
Acetylene	0 - 100% LEL, 0 - 100% vol.	IR604		

Carbon Dioxide

Infrared sensor miniature 4 series - certified Ex or flameproof

Part Number	Description
IR11BD	19mm, 0-5% volume CO2 Infrared Gas Sensor
IR11BR	19mm, 100% volume CO2 Infrared Gas Sensor
IR11EJ	19mm, 0-5% volume CO2 Infrared Gas Sensor with Thermistor
IR11EM	16mm, 0-5% volume CO2 Infrared Gas Sensor with Thermistor
IR11GJ	19mm, 0-5% volume CO2 Infrared Gas Sensor with Temp Sens IC
IR11GM	16mm, 0-5% volume CO2 Infrared Gas Sensor with Temp Sens IC
IR11GM_1	16mm,0-5% volume CO2 Infrared Gas Sensor with Temp Sens IC and Supported Lamp

Infrared sensor miniature 4 series - certified intrinsically Safe

Part Number	Description
IR21BD	Series 2, 19mm. 0-5% CO2 IR Sensor (IS for Mining)
IR21EJ	Series 2, 19mm, 0-5% CO2 IR Sensor with Thermistor
IR21EM	Series 2, 16mm, 0 to 5% CO2 IR Sensor with Thermistor
IR21GJ	Series 2, 19mm, 0-5% CO2 IR Sensor with Temp Sens IC
IR21GM	Series 2, 16mm, 0-5% CO2 IR Sensor with Temp Sens IC

Infrared sensor miniature 4 series - uncertified

Part Number	Description
IR31BC	19mm, 0-5% CO2 Infrared Sensor – uncertified
IR31CE	19mm, 0-5% CO2 Infrared Gas Sensor - for high pressure applications i.e. Diving
IR31SE	19mm, 0-5% CO2 Infrared Sensor - uncertified(Single Channel), with mesh

Fixed Infrared certified Ex or flameproof sensing heads

Part Number	Description
IR601/1	IR Sensor Head for 0-5%CO2 - M20 Thread, built in Amplifier circuit
IR601/2	IR Sensor Head for 0-5%CO2 - 1/2 inch Thread, built in Amplifier circuit
IR601/3	IR Sensor Head for 0-5%CO2 - 3/4 inch Thread, built in Amplifier circuit

Methane and Hydrocarbons

Infrared sensor miniature 4 series - certified Ex or flameproof

Part Number	Description
IR12BD	19mm, Hydrocarbon infrared Gas Sensor can be used 0-5% or 0-100% volume
IR12EJ	19mm, Hydrocarbon infrared Gas Sensor can be used 0-5% or 0-100% volume with internal thermistor fitted.
IR12EM	16mm, Hydrocarbon infrared Gas Sensor can be used 0-5% or 0-100% volume with internal thermistor fitted.
IR12GJ	19mm, Hydrocarbon infrared Gas Sensor can be used 0-5% or 0-100% volume with internal Temp IC fitted.
IR12GM	16mm, Hydrocarbon infrared Gas Sensor can be used 0-5% or 0-100% volume with internal Temp IC fitted.
IR12GM_1	16mm, Hydrocarbon infrared Gas Sensor can be used 0-5% or 0-100% volume with internal Temp IC fitted.
IR13BD	19mm, Hydrocarbon infrared Gas Sensor can be used 0-5% or 0-100% volume
IR14BD	19mm, 0-100% LEL Acetylene Infrared Gas Sensor

Infrared sensor miniature 4 series - certified intrinsically Safe

Part Number	Description
IR22BD	Series 2 , 19mm, 0-5%/100% HC IR Sensor (IS for Mining)
IR22EJ	Series 2, 19mm, 0-5%/100% HC IR Sensor with Thermistor
IR22GJ	Series 2 , 19mm, 0-5%/100% HC IR Sensor with Temp Sens IC
IR23BD	Series 2, 19mm, 0-5%/100% Broadband HC IR Sensor

Infrared sensor miniature 4 series - uncertified

Part Number	Description
IR32BC	Series 3, 19mm 0-5%/100% HC IR Sensor - Uncertified, no mesh
IR33BC	19mm 0-5%/100% Broadband HC IR Sensor - Uncertified, no mesh

Methane and Hydrocarbons

Fixed Infrared certified Ex or flameproof sensing heads

Part Number	Description
IR602/1	IR Sensor Head for 0-5%/100% HC - M20 Thread, built in Amplifier circuit
IR602/2	IR Sensor Head for 0-5%/100% HC - 1/2 inch Thread, built in Amplifier circuit
IR602/3	IR Sensor Head for 0-5%/100% HC - 3/4 inch Thread, built in Amplifier circuit
IR603/1	IR Sensor Head for 0-5%/100% Broadband HC - M20 Thread, built in Amplifier circuit
IR603/2	IR Sensor Head for 0-5%/100% Broadband HC - 1/2" Thread, built in Amplifier circuit
IR603/3	IR Sensor Head for 0-5%/100% Broadband HC - 3/4" Thread, built in Amplifier circuit

Twin Gas Carbon Dioxide and Hydrocarbons

Infrared sensor miniature 4 series - certified Ex or flameproof

Part Number	Description
IR15TT	19mm, 0-5% CO2 and 0-5%/100% Broadband HC IR Sensor with internal thermistor fitted
IR15TT-M	19mm, 0-5% CO2 and 0-5%/100% HC IR Sensor with internal thermistor fitted
IR15TT-R	0-100% CH4 & CO2 IR Gas Sensor for Bio-gas applications with internal thermistor

Infrared sensor miniature 4 series - certified intrinsically Safe

Part Number	Description
IR25TT	Series 2 , 19mm, 0-2%CO2 & 0-5%/100% Broadband IR Sensor (IS for Mining) with internal thermistor
IR25TT-M	Series 2, 19mm, 0-2%CO2 & 0-5%/100% HC IR Sensor (IS for Mining) with internal thermistor

Acetylene

Fixed Infrared certified Ex or flameproof sensing heads

Part Number	Description
IR604/1	IR Sensor Head for 0-100% LEL Acetylene - M20 Thread, built in Amplifier circuit
IR604/2	IR Sensor Head for 0-100% LEL Acetylene - 1/2" Thread, built in Amplifier circuit
IR604/3	IR Sensor Head for 0-100% LEL Acetylene - 3/4" Thread, built in Amplifier circuit

Accesssories

Part Number	Description
DPP546618DA	Calibration cap for IR600 (andVQ600)
DAS546633AA	Flow Cap adaptor for IR600 (and VQ600)
DAS546632AA	Weather protection cover for IR600 (and VQ600)

INIR - Integrated Infrared

The Integrated IR (INIR) sensor has been designed with the latest technology, using a microcontroller with an ARM7 core and via software design the necessary techniques have been implemented to increase the reliability of the device therefore minimize the probability of faults.

The INIR is a user-friendly digital Gas Sensor, which is designed to use the latest SGX Sensortech's Infrared technology.

The sensor is designed to decrease the implementation time therefore increase productivity. The Integrated IR sensor incorporates the necessary electronics and embedded software to operate from a low voltage DC power supply. The sensor will process the raw signals to output a linear, temperature compensated signal proportional to the gas concentration applied. The output signal is available in digital and analogue forms.

The SGX Sensortech Integrated IR Gas Sensor provides users with a simple method of incorporating an Infrared Sensor into their gas detection instrument which will significantly reduce the development time and expertise required during the design and implementation phase. The Integrated IR can also be factory calibrated to allow installation without the need for recalibration.

Integrated IR FEATURES:

- > Triple Range with linear approximation in each case
- Gas Sensor with Automatic Switchover between ranges,
- High Resolution up to 10ppm,
- Detectivity Level at 100ppm,
- Analog Output of gas concentration,
- Serial port communication,
- Internal Temperature sensor
- > Active & Reference **Signals Monitored**
- Full Faults Diagnostics & Error Generation
- Cyclic Redundancy Check (CRC)
- Four Different Modes of Operation
- **Typical Low power** consumption < 32mA (Average)
- > Factory calibrated for Methane, Propane or Carbon Dioxide
- Evaluation Kit available including PC software for easy testing and production calibration functions
- Easy implementation into Sensors Network
- > Design for use in Hazardous Areas
- Certified Sensor for use in Explosive Atmospheres (EX)



Infra Red gas sensor with integrated electronics

Part Number	Description
INIR-ME100%	Integrated Infrared - Methane - 0-100%
INIR-ME5%	Integrated Infrared - Methane - 0-5%
INIR-CD5%	Integrated Infrared - Carbon Dioxide - 0-5%
INIR-PR2.1%	Integrated Infrared - Propane - 0-2.1%
INIR-EK4	Box and cable - testing Kit for INIR sensor

THERMAL CONDUCTIVITY SENSORS

Because pellistors measure the flammability of a gas, they cannot be used to measure levels of gas above the Lower Explosive Limit (LEL), since the reducing level of oxygen will result in a fall-off of signal.

However, a similar device can be used to monitor these high levels of gas, the themal conductivity pellistor.

We have a range of thermal conductivity sensors, which are designed to complement the pellistor range in terms of electrical characteristics, so that they can be used in the same Wheatstone Bridge circuits. They are supplied with a compensator bead which is in a sealed enclosure of air. This enclosure acts as the thermal conductivity reference in exactly the same way as it acts as the reference for a pellistor.

Because thermal conductivity measurements do not rely on the flammability of the gas, the technique can be used to analyse a whole range of gas mixtures, provided that there are only two gases present and that the two gases have significantly different thermal conductivities.

Examples include:

- 0 100% Hydrogen in Air
- 0 100% Methane in Air
- 0 100% Carbon Dioxide in Air
- 0 100% Carbon Dioxide in Methane
- 0 100% Helium in Air

Thermal conductivity cannot be used for gas mixtures where the thermal conductivities of the two gases are similar. The best example of this is oxygen levels in air, as the thermal conductivities of oxygen and nitrogen are too close to give a meaningful signal.

VQ31 Series

Thermal Conductivity Gas Detector Elements

The VQ31 series devices consist of two matched elements which are used for the detection of gases in 0 - 100% by volume concentrations using the recommended bridge circuit (see below) and the mounting arrangement

BRIDGE CIRCUIT

THERMAL CONDUCTIVITY SENSORS

VQ500 Series

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.

MAXIMUM GAS CONCENTRATIONS

VQ546M, VQ546MR	100%v/v
VQ547TS, VQ548, VQ549	100%LEL

VQ600 Series

Pellistor Gas Sensor for Hazardous Areas (Fixed Systems)

The VQ600 Series is designed to detect and monitor various gases in the range 0 to 100% LEL for combustible gases and 0 to 100% volume in thermal conductivity mode when using the SGX range of pellistor gas sensors.

The VQ600 Series is designed for use as an integral part of a fixed gas detection system. The head comprises a stainless steel flameproof enclosure constructed with an integral stainless steel sinter which allows the safe entry of the atmosphere being tested.

For detection of the following:

- Combustible gases (Catalytic Sensors)
- > Light gases (e.g. hydrogen and helium). (Thermal Conductivity Sensors)

THERMAL CONDUCTIVITY SENSORS

Thermal conductivity pellistors for 100% volume gases with and without air

Part Number	Description
VQ5MB	Pellistor Pair 2V/175mA, Thermal Conductivity, Closed Can Compensator, Solid Legs
VQ6MB	Pellistor Pair 2V, Thermal Conductivity, Closed Can Compensator, Solid Legs
VQ35MB	Pellistor Pair 4.2V/55mA Thermal Conductivity, Closed Can compensator, Solid Legs
VQ31MB	Pellistor Pair 3.5V/90mA Thermal Conductivity Closed Can compensator Solid Legs,

Certified thermal conductivity heads for 100% volume gases with and without air

Part Number	Description
VQ546M	VQ46 Pellistor, VQ500 Head
VQ546MR	VQ46 Pellistor, VQ500 Head, +ve Output
VQ605M/1	VQ5 Pellistor, VQ600 Head, Metric Thread
VQ606M/1	VQ6 Pellistor, VQ600 Head, Metric Thread
VQ606M/3	VQ6 Pellistor, VQ600 Head, 0.75" 14 NPT
VQ631M/1	VQ31 Pellistor VQ600 Head, Metric Thread
VQ631M/2	VQ31 Pellistor, VQ600 Head, 0.5" 14 NPT
VQ631M/3	VQ31 Pellistor, VQ600 Head, 0.75" 14 NPT
VQ635M/1	VQ35 Pellistor VQ600 Head, Metric Thread
VQ635M/2	VQ35 Pellistor, VQ600 Head, 0.5" 14 NPT
VQ635M/3	VQ35 Pellistor, VQ600 Head, 0.75" 14 NPT

ELECTROCHEMICAL SENSORS

Electrochemical sensors work on a different principle from the pellistor and IR devices. With electrochemical sensors the target gas undergoes a chemical reaction, producing a current that is directly proportional to the concentration of gas present. The sensors use very little power and show good responses to various gas concentrations over a wide range of ambient conditions.

A range of 20 mm electrochemical sensors is available for several toxic gases including Carbon Monoxide ,Hydrogen Sulfide and Oxides of Nitrogen and Sulfur. These sensors are 'drop-in' replacements for existing sensor types in this size.

The range of toxic sensors is complemented by the EC410 , RoHS compliant, Oxygen sensor. This unique sensor contains no lead, has a greatly increased life span and is of significantly lower mass compared to other Oxygen sensors of this size. The sensor contains no consumable components.

New range of commercial sensors

SGX Sensortech are pleased to announce the launch of eight new sensors to complement their range of industrial and commercial gas sensing products. The new products allow instrument manufacturers a greater choice when selecting sensors for carbon monoxide, hydrogen sulfide and oxygen and are available in two industry standard packages: 20mm and 32mm diameter.

In addition, SGX are proud to include an innovative combined carbon monoxide and hydrogen sulfide sensor in the same package which provides industry compliant performance in a single miniature housing, saving valuable space in portable instrument designs.

ELECTROCHEMICAL SENSORS

Part Number	Description
EC410	Oxygen Sensor
EC4-10-ETO	4 series ETO gas sensor 10ppm
EC4-100-H2S	4 series H2S gas sensor 100ppm
EC4-1000-H2	4 series H2 gas sensor 1000ppm
EC4-1000-H2S	4 series H2S gas sensor 1000ppm
EC4-20-NO2	4 series NO2 gas sensor 20ppm
EC4-20-SO2	4 series SO2 gas sensor 20ppm
EC4-200-CL2	4 series Chlorine Sensor 200 ppm Range
EC4-2000-CO	4 series CO gas sensor 2000ppm
EC4-2000-NO	4 series NO gas sensor 2000ppm
EC4-2000-SO2	4 series SO2 gas sensor 2000ppm
EC4-250-NO	4 series NO gas sensor 250ppm
EC4-500-CO	4 series CO gas sensor 500ppm
EC4-1-CLO2	4 series Chlorine dioxide gas sensor 1ppm
EC4-50-CLO2	4 series Chlorine dioxide gas sensor 50ppm

Part Number	Description
SGX-4OX	4 Series Oxygen sensor 0-25% 2 year life
SGX-4CO	4 Series CO sensor - 1,000ppm
SGX-4H2S	4 Series H2S sensor - 100ppm
SGX-4NH3	4 Series Ammonia sensor - 100ppm
SGX-4NO2	4 Series Nitrogen Dioxide Sensor - 30ppm
SGX-7NH3	7 Series Ammonia sensor - 100ppm
SGX-7OX	7 Series O2 sensor 0-25% 2 year life
SGX-7CO	7 Series CO sensor for fixed applications - 1,000ppm
SGX-7H2S	7 Series H2S sensor for fixed applications - 50ppm
SGX-4DT	4 Series Dual-Tox CO/H2S sensor - 500ppm/200ppm

METAL OXIDE SENSORS

SGX has a proprietary MOS technology utilizing state of the art MEMS technology, combining a specialized nano-particle sensing layer with a patented poly-silicon heater.

This unique design creates a highly sensitive and responsive semiconductor sensor, manufactured on an automotive production line for outstanding quality and performance.

These sensors are easily capable to detect and measure combustible and pollution gasses in parts per billion (PPB) and are suitable for many environmental, automotive and industrial applications worldwide.

Main features of these sensors offer:

- Low heater current
- Wide detection range
- High sensitivity
- Available in SMD packages
- High resistance to shocks and vibrations
- Miniature dimensions
- Long life expectancy
- > Has the benefit of a patented low power heater design
- > Very fast thermal response Electrostatic discharge protected
- > Suitable for measurement or alarm warning applications.

Part Number	Description
MICS-2714	SMD Nitrogen dioxide sensor range 50 ppb to 5 ppm
MICS-4514	SMD Carbon Monoxide/Nitrogen Dioxide Dual sensor range 1 ppm to 1000ppm CO and 50 ppb to 5 ppm NO2
MICS-5524	SMD General Purpose CO/ Combustible Gas/ VOC Sensor. Range 10-100ppm CO
MICS-5914	SMD Ammonia Sensor - range 100-10,000 ppb
MICS-6814	SMD Carbon Monoxide/Nitrogen Dioxide/Ammonia Triple sensor

METAL OXIDE SENSORS

MiCS-2714

Detectable gases:					
\succ	Nitrogen dioxide	NO ₂	0.05 – 10ppm		
\succ	Hydrogen	H ₂	1 – 1000ppm		

MiCS-4514

Detectable gases:

ppm
opm
opm
om
m

MiCS-5524

Detectable gases:

\succ	Carbon monoxide	CO	1 – 1000ppm
\geq	Ethanol	C₂H₅OH	10 – 500ppm
\succ	Hydrogen	H ₂	1 – 1000ppm
\succ	Ammonia	NH ₃	1 – 500ppm
\succ	Methane	CH ₄	>1000ppm

MiCS-5914

Detectable gases:

> Ammonia NH_3 1 - 500ppm> Ethanol C_2H_5OH 10 - 500ppm> Hydrogen H_2 1 - 1000ppm> Propane C_3H_8 >1000ppm> Iso-butane C_4H_{10} >1000ppm

MiCS-6814

Detectable gases:

\succ	Carbon monoxide	CO	1 – 1000ppm
\succ	Nitrogen dioxide	NO ₂	0.05 – 10ppm
\succ	Ethanol	C ₂ H ₅ OH	10 – 500ppm
\succ	Hydrogen	H ₂	1 – 1000ppm
\succ	Ammonia	NH_3	1 – 500ppm
\succ	Methane	CH_4	>1000ppm
\succ	Propane	C ₃ H ₈	>1000ppm
\succ	Iso-butane	C_4H_{10}	>1000ppm

INDOOR AIR QUALITY SENSORS

Historically, three variables have been used to define indoor air quality; temperature, humidity and CO_2 .

It is becoming more widely accepted that volatile organic compounds (VOCs) such as smoke, cooking odours and outdoor pollutants impact the air quality. VOCs can also be emitted from building materials, furnishing and operational equipment such as photocopiers.

The indoor air we breath every day has a paramount effect on our health and our productivity. It has been established that VOCs are harmful to human health. "Indoor air quality has a major influence on the health, comfort and well-being of occupants. Poor air quality has been linked to sick Building Syndrome, reduced productivity in offices and impaired learning in schools".

Cars, trucks, buses, hospitals, schools, offices and industrial plants are areas most likely in need of air quality monitoring and control. This is where occupants are subjected to the same environment for many hours a day.

Our cost effective indoor air quality sensor system (IAQ) allows automatic control of ventilation to ensure the best air quality with the lowest waste of energy.

SGX is a proud partner in the SENSIndoor project.

The **MiCS-VZ-89TE** is an integrated sensor board for Indoor Air Quality monitoring.

Features

- Calibration-free
- Low power
- Wide VOCs detection range
- High sensitivity
- > High resistance to shocks and vibrations

Detectable gases

- Volatile Organic Compounds VOCs
- Equivalent Carbon Dioxide CO2 (equiv)

NATURAL GAS MODULE

The Natural gas module is a battery operated detection device designed for detection of natural gas (methane) in concentrations below 100% LEL (4.4% CH4 in air). The sensor is not suitable for measuring propane and butane.

The heart of the device is an MP-7227 MEMS pellistor sensor which allows for low power operation on standard AA type batteries.

The module is equipped with visual (LED) and audible (buzzer) alarms to inform of potential gas leakage as well as transmit data related to actual state of the module and concentration of gas if the module is connected to external receiver working with serial RS232 standard. The estimated maintenance-free operation on 2xAA (2600mAh) batteries is 6 months.

Features

- Detectable gases: methane
- Maximum concentration: 4.4% v/v
- Sensor sensitivity: >10 mV/% CH₄
- Sensor response time: <30s
- Power supply: 5V DC when connected to USB port 21/ DC when connected to USB port

3V DC when operated from battery

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NATURAL GAS MODULE - WIFI

The Natural gas module is a battery operated detection device designed for detection of natural gas (methane) in concentrations below 100% LEL (4.4% CH4 in air). The sensor is not suitable for measuring propane and butane.

The sensor is equipped with WiFi module allowing for communication over wireless connection. It also includes test button as well as an audible alarm option realized with embedded buzzer like a standard NGM module.

The heart of the device is an MP-7227 MEMS pellistor sensor which allows for low power operation on standard AA type batteries.

The module is equipped with visual (LED) and audible (buzzer) alarms to inform of potential gas leakage as well as transmit data related to actual state of the module and concentration of gas if the module is connected to external receiver working with serial RS232 standard. The estimated maintenance-free operation on 2xAA (2600mAh) batteries is 6 months.

Features

- > Detectable gases: methane
- Maximum concentration: 4.4% v/v
- Sensor sensitivity: >10 mV/% CH₄
- Sensor response time: <30s</p>
- Power supply: 5V DC when connected to USB port
 - 3V DC when operated from battery

Power consumption

The typical current consumption of the module is <0.6mA on average, with 50mA (180mA in WiFi transmission state) peak current consumption at 2.5V-5V power supply.

WiFi communication

The WiFi NGM provides means to propagate information on the status of the module as well as send information on alarm or low battery situation. The set-up of wireless module is realized using RS232 connection.

Module operation

The Natural gas module monitors the concentration of methane in air atmosphere. Sensor operates in pulse mode measuring actual concentration of gas during 1 second with 20 seconds intervals. The sensor is equipped with buzzer

and diode indicators.

EVALUATION KITS

The evaluation kit allows the user to get started quickly in gas sensor instrument design using gas sensors from SGX.

Simply attach the universal power supply, connect to a PC USB port and plug in the appropriate gas sensor.

The SGX data logging and control software allows the performance of the gas sensors to be assessed and makes it easy to capture performance data.

Users can experiment with different settings before designing their own instrument.

MICS-EK1 Metal Oxide Semiconductor Gas Sensor Evaluation Kit

The SGX MICS-EK1 Gas Sensor Evaluation Kit will drive the SGX range of Metal Oxide Semiconductor gas sensors and automatically measure the sensor resistance as it changes with applied gas.

IR-EK2 Infrared Gas Sensor Evaluation Kit

The SGX IR-EK2 Gas Sensor Evaluation Kit will drive the SGX range of infrared gas sensors and automatically measure the sensor outputs and calculate gas concentration levels.

ECVQ-EK3 Electrochemical and Pellistor Gas Sensor Evaluation Kit

The SGX ECVQ-EK3 Gas Sensor Evaluation Kit will drive the SGX range of electrochemical and pellistor (including thermal conductivity) gas sensors, automatically measure the sensor outputs and calculate gas concentration levels.

INIR-EK4 - EVALUATION KIT FOR INIR GAS SENSOR

The SGX INIR-EK4 Gas Sensor Evaluation Kit for testing of the INIR gas sensors.

AUTOMOTIVE AIR QUALITY SENSORS

Our air quality sensors (AQS) feature an intelligent sensor and signal analysis system that calculates external pollution levels and prevents polluted air and toxic gases from entering a car's cabin.

From petrol and diesel engine fumes to industrial and agricultural odours, our sensors lead the market when it comes to safeguarding drivers' health, improving energy efficiency and enhancing vehicle safety.

As a trusted OEM supplier we have provided millions of devices to the automotive industry, with customers including leading OEMs such as GM, Volkswagen, BMW, Citroën, Ford, Mercedes, Renault and Volvo.

Our cost-effective AQS modules:

- AQS Micro double sensor (CO/HC, NO2)
- AQS PWM double sensor (CO/HC, NO2)
- AQS LIN double sensor (CO/HC, NO2)
- AQS triple sensor module (CO/HC, NO2, NH3)
- > APMS Air Particular Meter Sensor (PM2,5/PM10)

Excellence and performance through innovation and quality

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