AquiTron
MSR Range

AT-SC
Refrigerant Gas Sensors

DATA SHEET

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leak detection solutions

AT-SC
Refrigerant Gas Sensors

The AT-SC includes a semiconductor sensor element and an amplifier as well as a controller for processing of the measured values.

DESCRIPTION

The AT-SC is used for the detection of refrigerant gases which is used in conjunction with the AT-DGC digital controller for larger networked systems . All relevant measured values of the sensor element are stored in the main controller and digitally transmitted via the local bus to the Sensor-Board (SB2)

FEATURES & BENEFITS

- Digital measurement value processing
- Internal functional control with integrated Hardware Watchdog
- Data/measured values in main controller means simple exchange of Sensor Head or calibration
- Low zero-point drift
- Sensor with long life expectancy
- Modular technology (plug-in and replaceable)
- Easy maintenance and calibration by exchange of the Sensor or by comfortable on-site calibration
- Reverse polarity protected, overload and short-circuit proof
- IP65 when used with AT-SC-SB2 Housing

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TECHNICAL INFORMATION

Power Supply	5 V DC from Sensor-Board (SB2), reverse polarity protected
Power Consumption	160 mA, max. (0.8 VA)
Operating Temperature	-30°C - +60°C
Humidity	0-95% RH non-condensing
Dimensions	Sensor Housing Dimensions (WxHxD) 94 x 154 x 57mm (Including Sensor)
Cable Entry	Standard 6x M20mm/25mm
Weight	30g
Housing Plastic	Polycarbonate; UL 94 V2 RAL 7032
IP Rating	IP65
Mounting	Screw mounting / M25
Wire Connection	3 Pin Connector
Serial Interface Local Bus	1-wire / 19200 Baud
Cable Length	Ca. 150 mm (5.91 in.) standard version w/o cable extension
Gas Type/Range	See Ordering Information Range 20-2000ppm for all freon gas types
Sensor Element	Semiconductor sensor
Pressure Range	90–110 kPa
Oxygen Concentration	21 % (standard) 18 % minimum level
Storage Temperature	0 °C to +50 °C
Storage Time	12 months- if stored for a longer period of time then stated, we recommend checking the zero point and recalibrating if necessary
Sensor Lifetime	Up to 5 years depending on environmental conditions and servicing/calibration schedules
Calibration	Calibration Interval recommended max 12 months
Poisoning	Semiconductor sensors can be poisoned by silicone-containing substances or other catalyst poisons, up to complete loss of sensitivity. Their sensitivity is irreversibly impaired by halogen-containing compounds

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ORDERING INFORMATION

8038	AT-SC-R1234YF - Remote Semi-Conductor, 20-2000ppm
8039	AT-SC-R452A - Remote Semi-Conductor, 20-2000ppm
8040	AT-SC-R513A - Remote Semi-Conductor, 20-2000ppm
8041	AT-SC-R454C - Remote Semi-Conductor, 20-2000ppm
8042	AT-SC-R455A - Remote Semi-Conductor, 20-2000ppm
8043	AT-SC-R454B - Remote Semi-Conductor, 20-2000ppm
8044	AT-SC-R1234ZE - Remote Semi-Conductor, 20-2000ppm
8045	AT-SC-1234ZD - Remote Semi-Conductor, 20-2000ppm
8046	AT-SC-R515B - Remote Semi-Conductor, 20-2000ppm
8047	AT-SC-R134A - Remote Semi-Conductor, 20-2000ppm
8048	AT-SC-R407A - Remote Semi-Conductor, 20-2000ppm
8049	AT-SC-R416A - Remote Semi-Conductor, 20-2000ppm
8050	AT-SC-R417A - Remote Semi-Conductor, 20-2000ppm
8051	AT-SC-R422A - Remote Semi-Conductor, 20-2000ppm
8052	AT-SC-R422D - Remote Semi-Conductor, 20-2000ppm
8053	AT-SC-R427A - Remote Semi-Conductor, 20-2000ppm
8054	AT-SC-R437A - Remote Semi-Conductor, 20-2000ppm
8055	AT-SC-R438A - Remote Semi-Conductor, 20-2000ppm
8056	AT-SC-R449A - Remote Semi-Conductor, 20-2000ppm
8057	AT-SC-R407F - Remote Semi-Conductor, 20-2000ppm
8058	AT-SC-R450A - Remote Semi-Conductor, 20-2000ppm
8059	AT-SC-R125 - Remote Semi-Conductor, 20-2000ppm
8060	AT-SC-R32 - Remote Semi-Conductor, 20-2000ppm
8061	AT-SC-R404A - Remote Semi-Conductor, 20-2000ppm
8062	AT-SC-R407c - Remote Semi-Conductor, 20-2000ppm
8063	AT-SC-R410A - Remote Semi-Conductor, 20-2000ppm
8064	AT-SC-R434A - Remote Semi-Conductor, 20-2000ppm
8065	AT-SC-R507A - Remote Semi-Conductor, 20-2000ppm
8066	AT-SC-R448A - Remote Semi-Conductor, 20-2000ppm
8067	AT-SC-R452B - Remote Semi-Conductor, 20-2000ppm
8068	AT-SC-R143A - Remote Semi-Conductor, 20-2000ppm

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APPROVALS

BS EN 378*	European standard that specifies safety and environmental requirements for refrigerating systems and heat pumps
EMC Directives 2014/30/EU CE UKCA	Regulation of electromagnetic compatibility of equiment
IEC/EN 61010-1:2010*	General saftey requirements for the following types of electrical equipment and accessories
ANSI/UL 2017 / UL 61010-1*	Defines safety requirements for electrical equipment
CAN/CSA-C22.2 No. 61010-1*	The purpose of the requirements of this standard is to ensure that hazards to the operator and the surrounding area are reduced to a tolerable level.
EN 50271	Functional saftey and software realiability in gas detection systems
EN14624	Performance of portable locationg leak detectors and of fixed fas detectors for all refrigerants

*Directives (only in connection with the SensorBoards)

ORDERING INFORMATION

8070	AT-SC-SB2 - Housing For AT-SC Sensors, IP65, RAL7035 (LT Grey) 94x130x57mm
8071	AT-SC-SB2-AV - Sensor Housing, Inc. Audio.Visual Module, IP65, RAL7035 (LT Grey) 94x130x57mm
8072	AT-SC-WAO - Audio Visual Module For SB2 Board
8078	AT-G-CALHOOD3 - Hose & Hood Kit3 (AT-MC/SC Only)
8035	AT-DGC-C Digital Gas Controller, 230Vac, inc. Housing & PSU
8036	AT-DGC Digital Gas Controller, 24Vdc (Controller Only)

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The AT-SC includes a pellistor sensor element and an amplifier as well as a controller for processing of the measured values.

DESCRIPTION

The AT-MC pellistor sensor is used for the detection of combustible gases using a catalytic sensor element. Calibration is done either by exchanging the sensor unit or by using the AT-MSR-PT portable hand held tool and using he correct calibration technique directly at the system at the correct intervals.

FEATURES & BENEFITS

- Digital measurement value processing
- Internal functional control with integrated Hardware Watchdog
- Data/measured values in main controller means simple exchange of Sensor Head or calibration
- Low zero-point drift
- Sensor with long life expectancy
- Modular technology (plug-in and replaceable)
- Easy maintenance and calibration by exchange of the Sensor or by comfortable on-site calibration
- Reverse polarity protected, overload and short-circuit proof
- IP65 when used with AT-SC-SB2 Housing

MEASURING VALUES

Gas Type	Measuring Range	Accuracy	Zero-point variation	Drift in Air	Relative Gas Density
	% LEL / ppm	± % sig.	± % LEL	< % /Month	Air=1
C3H8 (R290)	0–100 % LEL	1 (CH4)	0.5 (CH4)	2 (C3H8)	1.55

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TECHNICAL INFORMATION

Power Supply	5 V DC from Board (SB2), reverse polarity protected
Operating Temperature	-30°C - +60°C
Operating Humidity	0-95% RH non-condensing
Dimensions	Sensor Housing Dimensions (WxHxD) 94 x 154 x 57mm (Including Sensor)
Cable Entry	Standard 6x M20mm/25mm with Housing (WxHxD) 94 x 130 x 57mm
Weight	30g
Housing Plastic	Polycarbonate; UL 94 V2 RAL 7032
IP Rating	IP65 when used with approved housing
Mounting	Screw mounting / M25
Wire Connection	3 Pin connector
Serial Interface/Local Bus	19200/Baud
Cable Length	Standard Ca. 150mm Cable extension (5, 10 or 15 metres) Cable extension (5, 10 or 15 metres)
Gas Type/Measuring Principles	R290 0-100% LEL Pellistor
Sensor Element	Pellistor Catalyctic Bead Principle
Pressure Range	90–110 kPa
Oxygen Concentration	21 % (standard) 18 % minimum level
Storage Temperature	0 °C to +20 °C
Storage Time	Calibration Interval. 12 months max
Sensor Lifetime	5 years / normal ambient conditions with calibration intervals
Poisoning	Pellistor sensors can be poisoned by silicone-containing substances or other catalyst poisons up to complete loss of sensitivity.

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AT-SC-SB2

Digital Sensor Housing

The AT-SC-SB2 houses the AT-SC digital sensors for the AT-DGC. The SB2 board comes with RS-485 interface for integration of the sensor and connection port for the hand held service tool. Up to 3 different sensors of the AT-SC series can be connected to the SB2 Sensor-Board via local bus.

DESCRIPTION

The AT-SC-SB2 is used for integration of the AT-SC Sensors, mounted in a IP65 rated polycarbonate housing for remote installation and protection. The SB2 boad provides the power supply of the AT-SC sensors and makes the measured data available for digital communication.

FEATURES & BENEFITS

- Digital measurement value processing incl. temperature compensation
- Internal functional control with integrated Hardware Watchdog
- Data/measured values in µC of the Sensor, therefore simple exchange of Sensor uncalibrated <> calibrated
- Upto 3 different sensors
- Sensor with long life expectancy
- Modular technology (plug-in and replaceable)
- Easy maintenance and calibration by exchange of the Sensor or by comfortable on-site calibration
- Reverse polarity protected, overload and short-circuit proof
- IP65 version
- Serial RS-485 interface with protocol for DGC-06 or Modbus
- Warning module device WAO (Optional)

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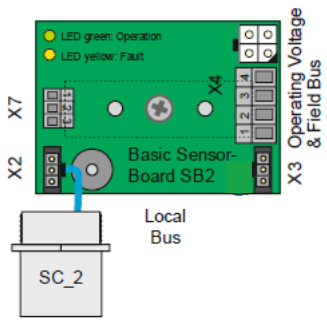
TECHNICAL INFORMATION

Power Supply	16–29 V DC, reverse-polarity protected 24 V AC ± 15 % (only 1x SC2 connected, not for DGC-06 mode)
Power Consumption	10 mA (0.24 VA)
Operating Temperature	-35°C - +60°C
Humidity	15-90% RH non-condensing
Housing Dimensions	Sensor Housing Dimensions (WxHxD) 94 x 154 x 57mm (Including Sensor)
Cable Entry	Standard 3x M25 for M25 Housing
Weight	30g
Housing Plastic	Polycarbonate; UL 94 V2 RAL 7032
IP Rating	Nema 4X IP65
Mounting	Wall Mounting
Field Bus Wiring **Local Bus Wiring**	Screw-type terminal min. 0.25-2.5 mm2, max. 1.3 mm2 ,3-pin, 24 to 10 AWG 3 Pin Connector
Serial Interface Local Bus **Field Bus** **Tool Bus**	1-wire / 19200 Baud RS-485 / 19200 Baud 2-wire / 19200 Baud
MODBUS Protocol RS-485	Transmission of measured values & alarm stages
Output for Local Bus	5 V DC, 250 mA max. Overload, short-circuit and reverse-polarity protected
Pollution Degree	2 (installation only indoors), not suitable for wet environment
LED Colour Mode	Red (Fault) Green (Standby) Yellow (Warm Up)
WAO (Optional)	>85 dB (A) (0.1m distance) Frequency 2300 Hz ± 300 Hz
Storage Temperature	-20 °C to 65 °C (32 °F to 68 °F)

SB2 BOARD EXAMPLE

Fig 1. SB2 Board with sensors



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APPROVALS - SENSOR AT-SC

BS EN 378-1	Basic requirements, and definitions to produce eco-friendly refrigerators complying to the standard protocols.
EMC Directives 2014/30/EU	Regulation of electromagnetic compatibility of equiment
ANSI/ UL EN 61010-1	Safety reqs for electrical equipment for measurement, control, and laboratory use
CAN/CSA-C22.2 No. 61010-1	The purpose of the requirements of this standard is to ensure that hazards to the operator and the surrounding area are reduced to a tolerable level
EN 50545:2017	Electrical apparatus for the detection and measurement of toxic and combustible gases in car parks and tunnels
EN 50271	Functional saftey and software realiability in gas detection systems

APPROVALS - HOUSING AT-SB2

IEC/EN 61010-1:2010*	General saftey requirements for the following types of electrical equipment and accessories
EN 502071	Functional safety and software reliability in gas detection systems. Applies to any device designed to detect/measure flammable, toxic gases, or oxygen in industrial settings
EMC Directive 2014/30/EU	This Directive regulates the electromagnetic compatibility of equipment. It aims to ensure the functioning of the internal market by requiring equipment to comply with an adequate level of electromagnetic compatibility
ANSI/UL 61010-1	To ensure the safety of personnel and the environment by addressing potential electrical, mechanical, and functional hazards associated with laboratory equipment
CAN/CSA-C22.2 No. 61010-1	CSA Group, ISA, and ULSE standard for Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use

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ORDERING INFORMATION

8069	AT-SC-R290 - Remote Sensor, R290, Pellistor, 0-100% LEL
8070	AT-SC-SB2 - Housing For AT-SC Sensors, IP65, RAL7035 (LT Grey) 94x130x57mm
8071	AT-SC-SB2-AV - Sensor Housing, Inc. Audio.Visual Module, IP65, RAL7035 (LT Grey) 94x130x57mm
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