

USER MANUAL

REMOTE SENSOR

S/3-T1 & S/2-T1

TOXIC GASES



included



fidegas



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WARNINGS



Read carefully the user manual before commissioning or operating. Instructions for using the Test Kit FIDEGAS® is supplied with the equipment for verifying the proper operation and warning of false conclusions that can result from the use of other methods, such as gas lighters, flammable gases or vapours, etc.

- This equipment should not be opened in hazardous area when powered. Periodic calibration can only be performed by the manufacturer or by an authorized service.
- Avoid cleaning near the remote sensor with detergents containing bioalcohols, industrial solvents or brighteners with silicones in suspension. To clean the detector use a cloth dampened with clean water only.
- During the construction, installation or maintenance of the installations, remote sensors must be protected so as to prevent the sensor from damage resulting from work such as welding or paints and should be installed as late as possible, but always before there is a risk of the presence of gas or vapor. If remote sensors are already installed, during the works they must be protected by an airtight packaging and clearly pointed out as not in operation.
- Remote sensors must be protected from vibration, against the risk of mechanical impact and direct exposure to sunlight.
- Do not submerge the remote sensor in water or other liquid under any circumstances.
- It is recommended to send the equipment to the manufacturer or authorized service center for calibration at the end of life or when it does not work with the supplied FIDEGAS® Test Kit.
- Note that the failure to observe these basic precautions can lead to equipment malfunction, the manufacturer is not liable.
- The TLV-TWA toxicity limit (maximum workplace exposure concentration, 8 hours per day, 40 hours per week) is:

Ammonia (NH ₃)	25 ppm
Chlorine (Cl ₂)	0,5 ppm
Sulphur Dioxide (SO ₂)	2 ppm
Nitrogen Monoxide (NO)	25 ppm
Nitrogen Dioxide (NO ₂)	3 ppm
Carbon Monoxide (CO)	25 ppm
Hydrogen Sulphide or Hydrogen Silphide (H ₂ S)	10 ppm
For other gases please consult	

- Sudden changes in temperature can lead to erroneous sensor readings.

LIMITATIONS

- Remember that if the remote sensor has been disconnected, there may be a build-up of gas and it will not be detected.
- Ensure that the supply voltage (12 - 24) Vdc and connections are correct.
- When installing the remote sensor, the locations where it should NOT be installed must be taken into consideration (section 4).
- No component of the device should be manipulated under any circumstances, as there is a risk of irreversible damage.
- S/2-T1 version in plastic housing NOT suitable for use in potentially explosive atmospheres.
- LP output: Not suitable for voltages higher than 30 Vdc and power consumption higher than 0.5 A.

WARRANTY

- Warranty two (2) years is given by C.A.E., S.L., manufacturer of FIDEGAS®, against any manufacturing defect from the date of purchase and cease to be effective if this equipment is not installed, used and maintained according to the guidelines stated in the User Manual.
- This warranty becomes void in cases where it is found that:
 - a) The equipment has been repaired, tampered with or external accessories have been added, with the involvement of people outside our Authorized Service Center.
 - b) It has suffered any impact or damage.
 - c) The serial number has been altered or modified and does not match with our records.
- C.A.E., S.L., manufacturer of FIDEGAS®, is not liable for damages that may arise as result of misuse of the equipment.
- All the necessary efforts have been made to ensure the accuracy of the information provided in this document. However, C.A.E., S.L., manufacturer of FIDEGAS®, reserves the right to make improvements or modifications to this equipment without prior notice.
- Any failure to follow these instructions automatically voids the warranty and the expenses are responsibility of the user.

QUALITY CONTROL



This product is designed, manufactured and commercialised under the honesty of the after-sales service, controlled within a Quality Management System certified according to ISO 9001:2015 and audited by AENOR.

OPTIONAL EQUIPMENT

REFERENCE	OPTIONAL EQUIPMENT
03645	Gas collector cone for sensor S/3 & S/2
03665	LS3 support for S/3 sensors
01314	S/3 mask with active carbon filter
consult	FIDEGAS Test Kit
03146	RS-485 module for remote sensor
03932	Relay module MS3-RE V1.1
03807	Calibration module MS3-CAL
consult	Display module MIR
03297	Calibration mask MK-E7

SUPPORTED PRODUCTS

- Control units Ref. CA-
- Control units Ref. CS4
- SCAEDA
- Telecontrol GPRS
- Remote indicator MIR V3
- Industrial communication modules

DIRECTIVE 2014/34/UE (ATEX)

Classification of hazardous areas

ZONE	Definition
0	A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapor or mist is present continuously or for long periods or frequently
1	A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapor or mist is likely to occur in normal operation occasionally.
2	A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapor or mist is not likely to occur in normal operation but, if it does occur, will persist for a short period only

Equipment category

Categoríy	Definition	Zone (s) of use
1	Equipment with a “very high” degree of security	0
2	Equipment with a “high” degree of security	1 and 2
3	Equipment with a “normal” degree of security	2

Group of gases

Group	Reference gas	Definition
I	Methane	Equipment intended for use in mines susceptible to firedamp, above and below ground.
IIA	Propane	
IIB	Ethylene	
IIC	Hydrogen	

Temperature Classification

The equipment shall be selected so that the ignition temperature of the material is not reached during operation.

Explosive Limit

The relationship between the % LEL (Lower Explosive Limit) and the % v/v (volumen/volumen) varies from gas to another. Examples extracted from EN 60079-20-1:

Gas	Formula	100% LEL
Methane	CH ₄	4,4 % v/v
Hydrogen	H ₂	4,0 % v/v
Butane	C ₄ H ₁₀	1,4 % v/v
Propane	C ₃ H ₈	1,7 % v/v

1. GENERAL

The remote gas detection sensors Ref. S/3-T1 and S/2-T1 detect the presence of the selected toxic gas in the defined ranges, with a high degree of accuracy, due to the use of electrochemical technology sensors, thus achieving excellent stability and linearity in the measurements. In addition, the internal microcontroller contains a mathematical model of the sensor behaviour, thus compensating for variations in the reading over the entire temperature range.

They are available in the S/3-T1 version in an ATEX antidefragrant enclosure or in the S/2-T1 version in a plastic housing.

They are particularly suitable for connection to control units and/or data logging systems for monitoring the concentration of toxic gas.

For this purpose they have an industrial standard 4-20 mA current loop output proportional to the gas concentration in the air and a UART-TTL serial communication port. They can be integrated into industrial communication systems by means of RS-485 connectivity via an optional module.

They also have a potential-free (LP) normally open (NO) output associated with the alarm and fault status that can be used to control external elements such as optical-acoustic alarms. By default, the alarm is configured at 20% of full scale.

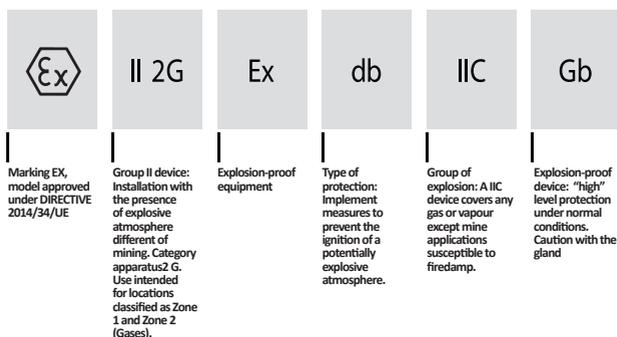
2. MARKING

C.A.E., S.L. declares that the toxic GRS FIDEGAS® Ref. S/3-T1 is designed and marked in compliance with the requirements of Standards EN 60079-0 and EN 60079-1 (ATEX enclosures).

The marking labels are located on the bottom (Ref. S/3-T1) and on the side (Ref. S/2-T1) of the equipment enclosure and allow the user to identify all the main characteristics of the equipment purchased:



Figure 1: Identification tags and marking (Serial Nº and Gas specified in paragraph 7)



* GRS: acronym for Gas Remote Sensor.

3. OPERATION

When the supply voltage is switched on, the remote sensor requires a warm-up time during which the 4-20mA output signal is disabled and the concentration reading is zero. After the warm-up time has elapsed, it functions as a linear meter of the gas concentration in the atmosphere.

Depending on the gas and its detection range, the response and recovery times of the sensors vary as shown in the following table:

		CO	H2S	H2S	NH3	NH3	CL2	SO2	NO2	NO	
Detection range (ppm)		0-300	0-50 0-100	0-500	0-100	0-5000	0-5	0-20	0-20	0-100	
Response times	T50	T=-20 °C	30 s	10 s	10 s	10 s	10 s	10 s	10 s	10 s	10 s
		T=20 °C	15 s	10 s	10 s	10 s	10 s	10 s	10 s	10 s	10 s
		T=55 °C	10 s	10 s	10 s	10 s	10 s	10 s	10 s	10 s	10 s
	T90	T=-20 °C	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	40 s
		T=20 °C	40 s	40 s	40 s	40 s	40 s	40 s	40 s	40 s	20 s
		T=55 °C	30 s	40 s	40 s	40 s	40 s	40 s	40 s	40 s	20 s
Stabilisation times	T99	T=-20 °C	5 min	5 min	5 min	5 min	5 min	5 min	5 min	5 min	4 min
		T=20 °C	5 min	5 min	5 min	5 min	5 min	5 min	5 min	5 min	4 min
		T=55 °C	5 min	5 min	5 min	5 min	5 min	5 min	5 min	5 min	2 min
Recovery times	T50	T=-20 °C	30 s	5 s	5 s	5 s	5 s	10 s	5 s	10 s	10 s
		T=20 °C	10 s	5 s	5 s	5 s	5 s	5 s	5 s	5 s	10 s
		T=55 °C	10 s	10 s	10 s	10 s	10 s	10 s	10 s	10 s	10 s
	T10	T=-20 °C	2 min	10 s	10 s	10 s	10 s	1 min	10 s	1 min	30 s
		T=20 °C	30 s	10 s	10 s	10 s	10 s	10 s	10 s	10 s	20 s
		T=55 °C	30 s	15 s	15 s	15 s	15 s	15 s	15 s	15 s	15 s

The measured gas concentration information is accessible through 2 means:

4-20 mA current loop proportional to the existing gas concentration. The measured gas concentration is easily calculated by applying the following transfer function to the 4-20 mA output signal:

$$\%C = \frac{FS \times (mA - 4)}{16}$$

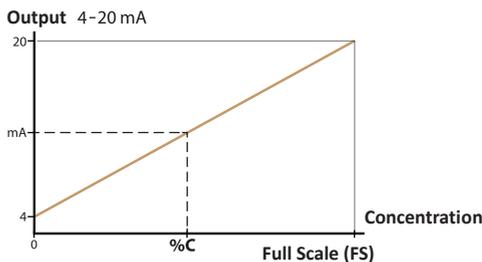


Figure 1: Relationship between concentration and 4-20 mA output

Output signal	Output status
<1 mA	Fault
2 mA	Output disabled, heating
4-20 mA	Concentration reading
>20 mA	Overrange

Serial communication, where in addition to the measured concentration it is possible to obtain further information from the sensor, such as internal temperature, detection range, operating status or sensor supply voltage.

An industrial communication module FIDE GAS can be used to access this information.

4. LOCATION

The remote sensor Ref. S/3-T1 and S/2-T1 must be located so that any accumulation of gas is detected before a significant hazard is created. Improper location of the remote sensor may decrease the effectiveness of the gas detection system.

The remote sensor should be installed with the sensor pointing vertically downwards, where gas tends to accumulate, approximately 1,5 metres away from gas consumption points or flues and away from draughts.



Figure 2: Correct position of GRS placement

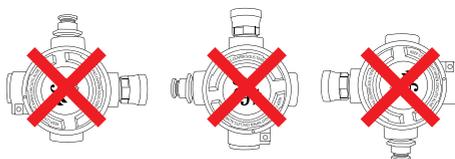


Figure 3: Incorrect placement positions of the GRS

The position of the remote sensor must be determined in collaboration with persons who are familiar with the operation of the installations and equipment concerned and also with the technical personnel involved in the safety procedure. Further details or assistance can be obtained by contacting FIDEGAS® or your authorised distributor.

The position of each remote sensor must be recorded and this data must be provided to the safety personnel.

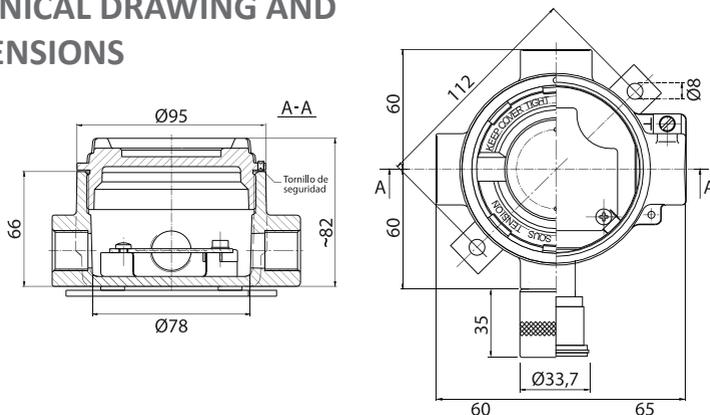
As a general rule, the remote sensor should be positioned depending on its density with respect to the air as shown in the following table:

Gas	Formula	Density (air=1)	Position
Ammonia	NH ₃	0,59	About 30cm from the ceiling
Chlorine	Cl ₂	2,50	30-50 cm from the ground
Sulphur Dioxide	SO ₂	2,25	
Nitrogen Dioxide	NO ₂	1,58	
Hydrogen sulphide	H ₂ S	1,19	About 1.5 to 2m from the ground
Carbon Monoxide	CO	0,97	
Nitrogen Monoxide	NO	1,04	

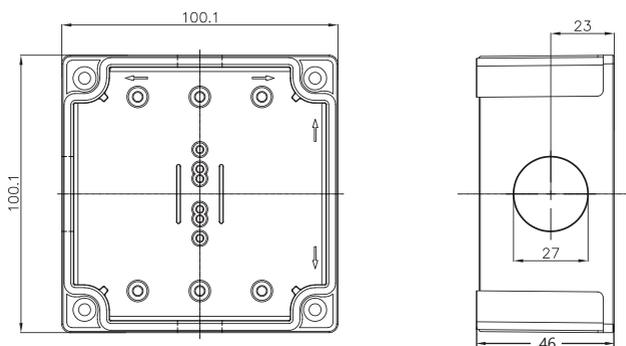
In addition, the following warnings should be taken into account when positioning remote sensors:

- Access to the equipment must be convenient for maintenance and inspection operations.
- The equipment with its ATEX cable gland must be protected against risks related to the operation of the installations.
- The remote sensor must be protected against vibrations and risks of mechanical impact.
- When located outdoors, protection against rain and/or sun must be provided.
- Do not install in a draught, near a door, window, fan or exhaust fan.
- Do not install in a damp or wet location.
- Do not install where dirt and dust may obstruct the gas inlet to the sensor.
- Avoid locations where the temperature may exceed the limits of the operating range.
- Avoid locations where sudden temperature changes may occur.

5. TECHNICAL DRAWING AND DIMENSIONS



Drawings and dimensions remote sensor S/3-T1



Drawings and dimensions remote sensor S/2-T1

6. INSTALLATION

6.1 Wiring for version S/3-T1

- The wiring must comply with the local rules and regulations.
- The outer diameter of the cable must not exceed the maximum dimensions of the ATEX cable gland.
- The conductors must be stripped and inserted in such a way that no unwanted contacts can occur.
- The cable gland must be tightened on the cable sheath to ensure a tight seal.
- The cable screen must be connected to ground at the control unit. For this purpose, the control unit is equipped with clamps for easy connection of the cable screen to earth.
- In the remote sensor, the shield must make contact inside the cable gland, detailed specification in section 7.1.



For more information regarding the connection to the control unit, please refer to the user manual of the gas control unit.

To ensure the ATEX protection of the system, the Control Unit - Remote Sensor connection must be made by means of a shielded cable with a minimum cross-section of 3 x 0.75 mm² for a maximum length of 200 metres.



For the correct transmission of the signals, remember not to make splices.

It is highly recommended the use of the cable contemplated in our certification Ref. Cable S3 or a similar one respecting the following characteristics:

Composition: Z1C4Z1-K Shielded 3x0.75 mm², polished copper braid 85% tin plated, halogen free polyolefin. Outer diameter 6.6 mm. 400V, -10 °C / +60°C, < 26 Ω/Km for 0.75 mm².

Compliance: Reaction to fire CPR Cca-s1b,d1,a1 according to UNE-EN 50575:2014+A1:2016.

6.2 Installation S/3-T1 and S/2-T1



The S/3-T1 ATEX remote sensor is provided with an accessory bag containing: an ATEX cable gland, a gasket and an Allen key.

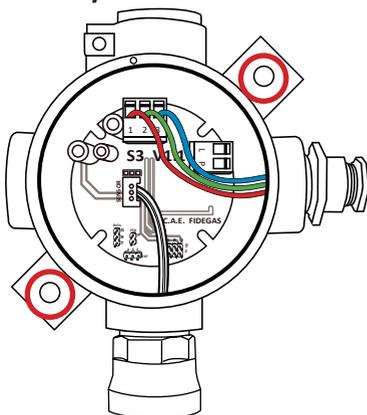


The remote sensor S/2-T1 ABS is provided with an accessory bag containing: one cable gland with sealing ring.

Steps to follow for the installation of the remote sensor Ref. S/3-T1 and S/2-T1:

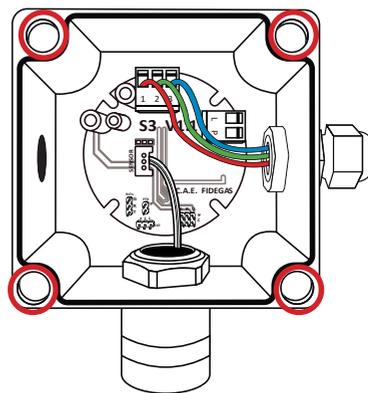
1. a) Loosen the Allen locking screw on the cover and unscrew the cover in a counterclockwise direction.
- b) Unscrew the four screws and remove the cover.

S/3-T1 ATEX



Installation S/3-T1 ATEX

S/2-T1 ABS



Installation S/2-T1 ABS

2. Secure the main body of the enclosure with its fixed location.
3. Insert the wiring through the cable gland.
4. Make the connections to the electronic circuit in accordance with the wiring diagram (see section 7).
5. Adjust the length of the cables so that they can be housed inside the enclosure.
6. a) Screw the cover clockwise and tighten the Allen locking screw on the cover.
- b) Mount the cover and tighten the four screws.

7. CONNECTIONS

Map of connections available on remote sensor Ref. S/3-T1 and S/2-T1.

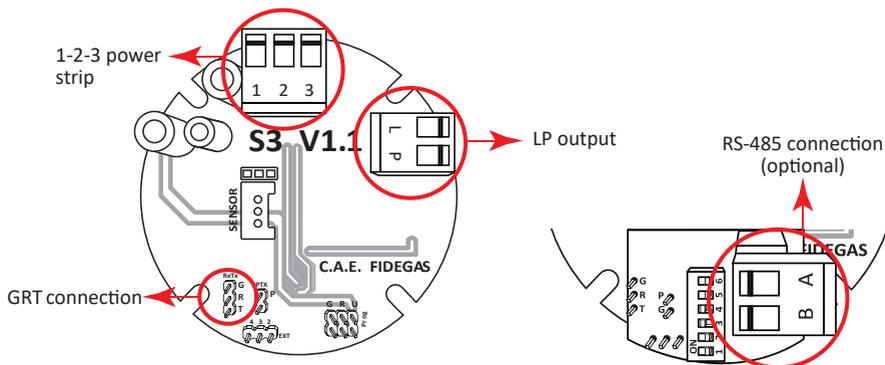


Figure 4: Connections

Terminal block 1-2-3: sensor power supply and 4-20 mA signal output terminal block numbered 1 to 3.

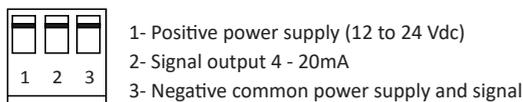


Figure 5: 4-20 mA connection identification

LP outlet strip: normally open (NO) potential free (LP) output not latched associated with the alarm and fault status. By default, the alarm is configured at 20% of full scale.

- Maximum values: 30 Vdc, 0.5 A.

GRT connection: serial connection at TTL values.

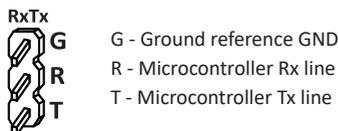


Figure 6: GRT connection identification

RS-485 connection (optional): with this optional factory-installed module, the sensor can be equipped with RS-485 communication for integration in industrial buses.

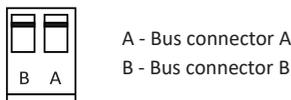


Figure 7: RS-485 connection identification

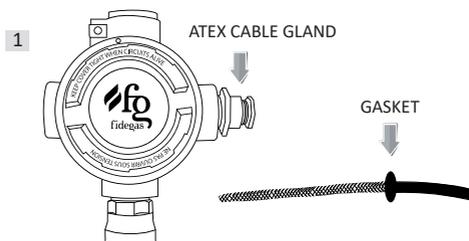
7.1 Connection of the 3-wire remote sensor

To connect the remote sensor to a 3-wire system, use the 1-2-3 terminal block, respecting the polarity as shown in figure 5.

Note that it is not possible to connect several sensors together, either in series or in parallel, via this output.

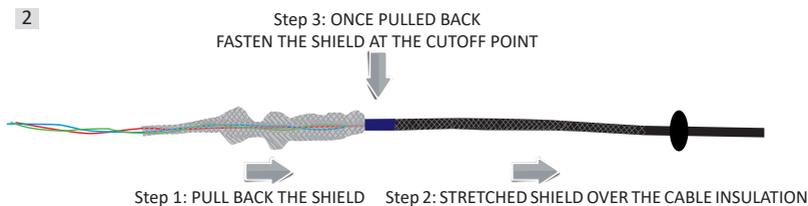
Version S/3-T1 ATEX enclosure:

A) Install the ATEX cable gland on the GRS and tighten it with a spanner. Loosen the adjusting ring of the ATEX cable gland. Pass the supplied gasket through the cable and strip the cable to about 15 centimetres, as shown in figure 1.



A common break down source are the loose wires before cable peeling.

B) Pull back the cable shield over the insulation until it is fully stretched . Fasten the shield at the cutoff point with adhesive tape so it has no return.



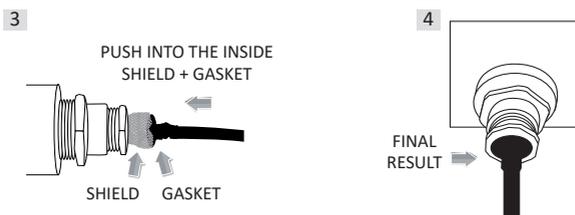
C) Insert the cable through the gland until the tape appears, tighten the adjustment ring with a wrench so that the cable and the shield are firmly tied.

D) Finally push the shield with the gasket into inside of the gland, finishing by fixing both as shown in pictures 3 and 4.

E) Remove and cut the plastic protection and connect the wires to the GRS terminal block, so that the colours and numbering match both in the control unit and in the GRS (1-2-3), detailed specification in section 7.1.



Remember that the cable shield must not touch the electronic circuit.



F) Close the cover and tighten the locking Allen screw.

7.2 Connection of the remote sensor to the FIDEGAS® Control Unit

Connect the wiring in such a way that the colours and the 1-2-3 numbering of the terminal block match both in the remote sensor and in the control unit.

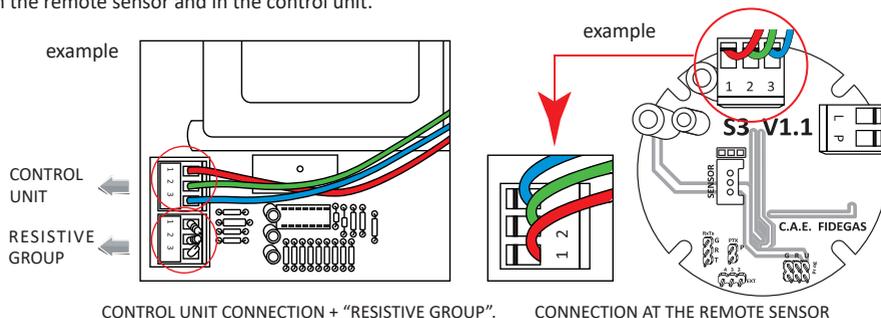


Figure 8: Connection Control Unit-Remote Sensor



If any Remote Sensor input is not used in the Control Unit, a "Resistive Group" must be installed for each unused input, these are supplied inside the Control Unit.

The cable must NOT be tight neither in the Control Unit nor in the Remote Sensor, thus minimising the force exerted on the terminal strip.



For more information regarding the connection to the gas control unit, please refer to the user manual of the gas control unit.

7.3 Connection of the remote sensor via serial communication

It is possible to use the GRT connection to connect the sensor at TTL levels.

For further information please contact the manufacturer.

7.4 Connection of the remote sensor via RS-485 module

By means of an optional module it is possible to switch from TTL values to RS-485 connectivity compatible with FIDEGAS® communication modules.

For more information see the user manual "RS485 Communication Module for S3 FIDEGAS® boards Ref. MS3-RS485 V1".

7.5 Connecting the remote sensor to other devices

If the Remote Sensor is connected to another PLC type device, check that it has standard 4-20 mA input(s), analogue voltage inputs or some type of industrial serial communication.



For more information regarding the connection to the device, please refer to the user manual of the device.

In the case of live inputs, it will be necessary to transform the current signal into voltage by connecting a resistor between the negative of the power supply (3) and the 4-20 mA signal output (2). The value of this resistor depends on the voltage range, applying the formula $R=V/I$.

Example: to transform the 4-20 mA range to 1-5 Vdc, a 250 Ω resistor is used.

$$\begin{array}{lll}
 I = 4 \text{ mA} = 0.004 \text{ A} & V = 1 \text{ Vdc} \Rightarrow & R = V / I = 1 / 0.004 = 250 \Omega \\
 I = 20 \text{ mA} = 0.02 \text{ A} & V = 5 \text{ Vdc} \Rightarrow & R = V / I = 5 / 0.02 = 250 \Omega
 \end{array}$$

8. MAINTENANCE



Before carrying out maintenance operations, the property must be advised that the alarms of the gas detection system and the programmed actions will be activated.

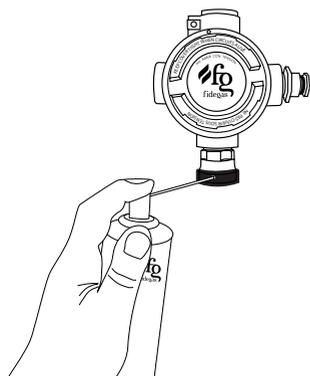
Regularly check that there is no dust obstructing the gas inlet.

The minimum recommended maintenance is:

- Functional check at start-up of the installation.
- Field calibration every 6 months.
- Once the sensor has exceeded its useful life, it is recommended to send it to the factory for assessment or replaced with a spare part.

8.1 Operating test

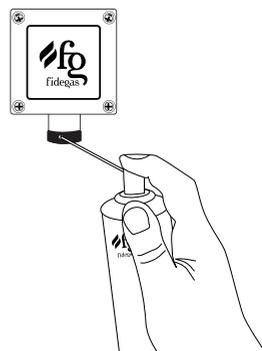
The purpose of the function test is to check not the accuracy of the measurement, but whether the sensor is able to detect the target gas in safe concentrations. For this purpose, FIDEGAS® TEST KITS are used to apply a known and approximate gas concentration, which must be detected by the sensor and trigger the alarm.



1. Remove the mask from the Test Kit (tester) and place it on the sensing head.

2. Insert the cannula (tube) through the hole in the mask, release gas for 2-3 seconds and wait for the alarm to be activated. If the alarm is NOT activated in the control unit, repeat this operation releasing more gas.

3. Once the check has been carried out, do not forget to remove the mask and keep it together with the tester.



When the Test Kit has low pressure, more gas application time is required to perform the test. Test Kit is not valid for further tests when there is no outlet pressure.

8.2 Field calibration

The aim of field calibration is to check the accuracy of the measurement and, if necessary, to correct any detected deviations.



Field calibration must only be carried out by the manufacturer or the authorised service technician.

To carry out the calibration in the field follow the CALIBRATION PROCEDURE FOR IN SITU CALIBRATION OF TOXIC AND/OR OXYGEN GAS SENSORS P-SAT-02.

8.3 Replacing the GRS



A spare SRG is composed of an electronic circuit and a cap incorporating the sensor. These elements have been calibrated together at the factory, therefore should not be interchanged with other parts.

Before replacing the electronic circuit of the GRS, disconnect the system from the mains supply and / or auxiliary batteries, the GRS must not be opened or tampered with tension.

- Loosen the Allen security screw and unscrew the cover (S/3-T1) or unscrew the 4 screws and remove the cover (S/2-T1).
- Disconnect the terminal strip (1-2-3) and the sensor connector from the electronics board.
- Unscrew the two fastening screws of the electronics board and remove it, unscrew the cap that incorporates the sensor, attach it to its electronics board and remove it.
- Unseal the new GRS spare part, disconnect the cap from the electronic board and screw it into place, finish tightening it with the help of a tool.
- Fix the new electronic board in place and screw the two screws into position.
- Connect the terminal strip (1-2-3) and the sensor cap connector to the electronic board.
- Finally, screw on the cover of the GRS and tighten the locking Allen screw (S/3-T1) or screw on the cover (S/2-T1).
- Attach the supplied marking label(s).

8.4 Spare parts

List of spare parts available:

Gas	Ref. S/3-T1	Ref. S/2-T1	Range	Spare part
CO	00151	03375	0-300 ppm	00155
H2S	00152	03326	0-50 ppm 0-100 ppm	00156
	03634	03636	0-500 ppm	03635
	03640	03638	0-2000 ppm	03639
NH3	00086	03376	0-100 ppm	00164
	00386	03377	0-5000 ppm	03285
SO2	00150	03380	0-20 ppm	00166
NO	00153	03418	0-100 ppm	00285
NO2	00250	03381	0-20 ppm	00340
Cl2	00217	03379	0-5 ppm	00281
ClO2	00322	04248	0-5 ppm	04249
HF	04190	04222	0-10 ppm	04223
HCl	00325	04181	0-20 ppm	00357
O3	04220	03822	0-5 ppm	04221
METANOL	00206	04211	0-1000 ppm	00417

* For other gases, please consult

Read carefully the procedure for a correct maintenance of the product.



9. TECHNICAL CHARACTERISTICS

Supply voltage	12 a 24 Vdc	
Consumption	At 12 Vdc: 15 mA At 24 Vdc: 10 mA If the 4-20 mA output is used, the power consumption can be increased by up to 20 mA.	
Serial connectivity	TTL RS-485 (optional)	
Output signal	4-20 mA current loop (three-wire)	
LP output	Voltage max. 30 Vdc Max. current 0.5 A	
Sensor type	Electrochemical	
Lifetime	Two (2) years approx. in clean air. Calibration EVERY 6 MONTHS is recommended.	
Warm-up time	5 minutes	
Stabilization time	See Table section 3	
Response times	See Table section 3	
Recovery times	See Table section 3	
Temperature range	-20 a 55 °C	
Relative humidity range	15 a 90 %HR	
Operation pressure	850 a 1150 mbar	
Marking (S/3-T1)	 II 2G Ex db IIC Gb Group II apparatus: installation with presence of explosive atmosphere other than mining. Category 2 G. intended for use on sites classified as zone 1 and zone 2 (Gases)	
Serial Nº	C C C C C C : Product code A A M M : Year and Month of manufacture X X X X X X : Manufacturer's number	
Degree of protection	S/3-T1: IP66	S/2-T1: IP66/67
Dimensions	S/3-T1: 140 x 162 x 91 mm	S/2-T1: 130 x 140 x 75 mm
Weight	S/3-T1: 1150 gr	S/2-T1: 300 gr

MANUFACTURER: Comercial de Aplicaciones Electrónicas S.L.

ADDRESS: Paseo Ubarburu 12 - 20014 San Sebastián - Spain

PRODUCT DESCRIPTION:

Remote Gas Sensor Ref. S/3-T1 ATEX y S/2-T1 ABS Toxic Gas:

The above mentioned product is declared, under our sole responsibility, to be in conformity with the provisions of the following directives:

1. **Directive 2014/34/EU** Equipment and protective systems intended for use in explosive atmospheres and repealing Directive 94/9/EC (OJEC 29/03/2014 - Series L, No 96/309). (Only version S/3-T1 ATEX).
2. **Directive 2014/35/EU** Electrical equipment designed for use within certain voltage limits (Low Voltage) and repealing Directive 2006/95/EC (OJEC 29/03/2014 - Series L, No 96/357).
3. **Directive 2014/30/EU** Electromagnetic compatibility and repealing Directive 2004/108/EC (OJEC 29/03/2014 - L series, No 96/379).

This conformity is assumed by reference to the following harmonised standards:

- **EN 60079-0:2012+A11:2013** Explosive atmospheres - Part 0: Equipment - General requirements. *(S/3-T1 ATEX version only)*.
- **EN 60079-1:2014** Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d" *(S/3-T1 ATEX version only)*.
- **EN 45544-1:2015** Workplace atmospheres - Electrical apparatus used for direct detection and direct concentration measurement of toxic gases and vapours - Part 1: General requirements and test methods.
- **EN 45544-3:2015** Workplace atmospheres - Electrical apparatus used for direct detection and direct concentration measurement of toxic gases and vapours - Part 1: General requirements and test methods. *(CO, NO and NO2 version only)*.
- **EN 50545-1:2011+1A:2016** Electrical apparatus for the detection and measurement of toxic and combustible gases in car parks and tunnels - Part 1: General performance requirements and test methods for the detection and measurement of carbon monoxide and nitrogen oxides.
- **EN 60335-1:2012** Household and similar electrical appliances. Safety. Part 1: General requirements.
- **EN 50270:2015** Electromagnetic compatibility - Electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen.
- **EN 50271:2010** Electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen - Requirements and tests for apparatus using software and/or digital technologies.

In San Sebastian,

A handwritten signature in black ink, appearing to be 'J. Bouzas'.

JULIO BOUZAS FUENTETAJA
GERENTE



Respectful and Solidarity with the Environment

This product complies with the European Directive 2012/19/UE WEEE, transposed to the Spanish legislation through RD 110/2015 WEEE (Waste of Electrical and Electronic Equipment). The Directive provides the general framework valid throughout the field of the European Union for the removal and reuse of waste from electrical and electronic equipment. Do not throw this product in the trash at the end of its life, take it to your FIDEGAS® distributor or to the collection points authorized by the town halls.



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