seitron
Innovation Technology

Refrigerant gas transmitter
Combustible and toxic gas transmitter

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SAFETY

CAUTION
The transmitter IS NOT certified or approved for working in oxygen-enriched atmospheres. Disregarding this rule can cause serious injury or death.

WARNING
Use this product ONLY for the purposes and under the conditions listed in the user manual. By not doing so may result in injury and/or damage to the product.

WARNING
The transmitter is not designed to be inherently safe for use in areas classified as hazardous. For your safety, DO NOT use in hazardous areas.

CAUTION
Before connecting transmitter to any device not mentioned in this manual, consult a qualified professional.
Not paying attention to this warning may result in injury and/or damage to the product.

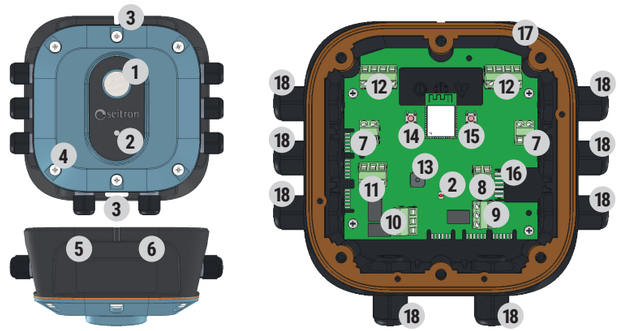
WARNING
Except for the maintenance described in this manual, this product should be opened and/or serviced only by authorized personnel. Not doing so may void the warranty.

CODE CONFORMITY
Comply with all local and national laws, rules and regulations associated with this equipment. Operators should be aware of the regulations and standards in their industry/location for the operation of the transmitter.

ONLY FOR TECHNICAL USE
The transmitter must be installed by a properly qualified technician who will install the unit in accordance with these instructions and the standards of your industry/location. This document is intended as a guide only and the manufacturer assumes no responsibility for the installation or operation of this unit. Failure to install and operate the unit in accordance with these instructions and industry guidelines may result in serious injury or death and the manufacturer will not be held responsible in this regard.

WIST03490ESE 044177 151024

MECHANICAL DESCRIPTION



COMPONENTS DESCRIPTION	
1	Sensing element.
2	Multicolor LED for indication of transmitter states.
3	Wall mounting screw seats.
4	Screws for access product internal parts.
5	Magnetic Switch **A**.
6	Magnetic Switch **B**.
7	Power supply terminals (x2).
8	Analog output terminals 4 .. 20 mA / 0 .. 10 V configurable by Seitron Guard App.
9	Relay 1 (voltage-free changeover contacts): Threshold alarm 1.

COMPONENTS DESCRIPTION	
10	Relay 2 (voltage-free changeover contacts): Threshold alarm 2.
11	Relay 3 (voltage-free changeover contacts): Threshold alarm 3.
12	Modbus® output terminals (x2).
13	Internal buzzer for acoustic signaling.
14	Tactile Switch **SW1** (function corresponding to magnetic switch **A**).
15	Tactile Switch **SW2** (function corresponding to magnetic switch **B**).
16	Flat cable connection to the sensor.
17	Rubber Gasket.
18	M16 Cable Glands (x8) for cable ingress. Featured with custom caps (x8).

MAGNETIC SWITCHES FUNCTIONS

The "A" and "B" magnetic switches are activated by calibration the magnet to the respective seats. The magnet is included in the provided calibration kit (code ACKC01). On the table below are shown the functionalities, activations times indicated by the LED lit in a specific color, starting from the initial condition of the steady lit green LED.

	A	B	LED (Steady lit)
Bluetooth® Activation.	**1 < .. < 5 s**		**White**
Bluetooth® Deactivation if previously activated.	**5 < .. < 10 s**		**Yellow**
Starting bump test from the transmitter, measure acquisition in progress. Automatic exit for result.		**1 < .. < 5 s**	**White**
Transmitter Zero calibration Input / output (with Bluetooth® deactivated).	**5 < .. < 10 s**		**Yellow**
Transmitter Span calibration Input / output (with Bluetooth® deactivated).		**5 < .. < 10 s**	**Yellow**
Transmitter restart.		**10 < .. < 20 s**	**Violet**
Reset Password.	**> 20 s**		**Azure**
Reset Modbus® parameters.		**> 20 s**	**Azure**
Reset alarms (with latching enabled).	**SEQUENCE 10 < .. < 20 s Release and Press again 10 < .. < 20 s**		**Violet** **Violet**

LED - BUZZER - RELAY OPERATION

STATUS	OUTPUT				
	LED	BUZZER	RELAY 1	RELAY 2	RELAY 3
Heating sensor	Green 1 blink/s	OFF	OFF	OFF	OFF
Measure	Green steady on	OFF	OFF	OFF	OFF
Bluetooth enabled	Green steady on	**ON 1 beep / s**	OFF	OFF	OFF
Connected app	Blue 1 blink/s	OFF	OFF	OFF	OFF
On going Bump test	Green 5 blinks/s	OFF	OFF	OFF	OFF
Bump test is over with positive result	Green 5 blinks/s	**ON continuous 3 s**	OFF	OFF	OFF
Bump test is over with negative result	Green 5 blinks/s	**ON 5 beep**	OFF	OFF	OFF
Zero calibration from transmitter active	Blue steady on	OFF	OFF	OFF	OFF
Zero calibration from transmitter, acquisition in progress	Blue 5 blinks/s	OFF	OFF	OFF	OFF
End of Zero calibration from transmitter with positive result	Blue 1 blink/2 s	OFF	OFF	OFF	OFF
End of Zero calibration from transmitter with negative result	RGB 1 blink/s	OFF	OFF	OFF	OFF
Span calibration from transmitter activated	Red lit steady	OFF	OFF	OFF	OFF
Span calibration from transmitter, acquisition in progress	Red 5 blinks/s	OFF	OFF	OFF	OFF
End of Span calibration from transmitter successful	Red 1 blink/2 s	OFF	OFF	OFF	OFF
End of calibration Span from transmitter with negative result	RGB 1 blink/s	OFF	OFF	OFF	OFF
ALARM 1 - MINIMUM threshold exceeded	Red 1 blink/s	**ON 1 beep / s**	**ON**	OFF	OFF
ALARM 2 - MAXIMUM threshold exceeded	Red 2 blinks/s	**ON 2 beep / s**	**ON**	**ON**	OFF
Sensor not detected	RGB 1 blink/sec.	OFF	OFF	OFF	**ON**
Measurement error	Green 2 blinks/sec.	OFF	OFF	OFF	**ON**
Sensor communication error	Blue steady on	OFF	OFF	OFF	**ON**
Password reset	RGB 5 blinks/sec.	OFF	OFF	OFF	OFF
Modbus parameters reset	RGB 5 blinks/sec.	OFF	OFF	OFF	OFF

TECHNICAL FEATURES

This transmitter should be used to measure the gas for which it has been calibrated (see marking on device for gas type and flow rate).

Power supply voltage:	12 .. 24 Vac ± 10% or 12 .. 24 Vdc ± 10%
Power absorption:	5 W
Relay outputs:	Contact rating: 3 x 1A 30 Vac (voltage free)
Analog output:	4-20mA or 0-10 Vdc - configurable via App
Communication port:	RS-485 with Modbus® RTU protocol Up to 32 connectable devices
Protection degree:	IP65 (With the cables/plugs inserted in the cable glands)
Operating temperature*:	-40 .. +50 °C (-40 .. +122 °F)
Operating humidity:	20% .. 90% RH (non-condensing)
STORAGE	
Temperature:	-40 .. +50 °C (-40 .. +122 °F)
Humidity:	20% .. 90% RH (non-condensing)
SIZE (W x H x D):	192x176x83 mm (7.5x6.9x3.3 inch)

* The actual working temperature depends on the sensor type used to detect the target gas.

INSTALLATION

Mount the transmitter securely on a wall using accessories (screws and dowels) appropriate for the mounting surface.

The part of the transmitter cover with the top ledge should be facing upward so as to protect the sensor from dust.

About the precautions to achieve a good functional behavior of the device, it is important to note that the transmitters placement in the controlled environment, it is important to check:
- Possible openings in walls and ceilings and air currents
- Composition and shape of the environment
- Extent of the area to be protected
- The accessibility required for maintenance.
- Gas density (heavier or lighter than air)
- Gas emission rate (flow)

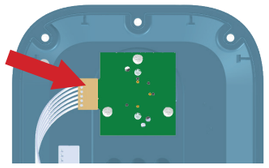
The response time of the sensor is closely related to its position in the environment and the type of gas to be detected.

For gases to be detected, it is necessary to assess their relative density to air and position the transmitter accordingly.

WARNING
- **During the phase of electrical connections, DO NOT let the cover/sensor hang on the flat cable. Otherwise, the product may be damaged.**
- **Once the transmitter is installed, the bump test procedure must be performed to verify the functionality of the device.**

MECHANICAL INSTALLATION AND COVER REMOVAL

1. Fix the transmitter to the wall, using the two screw slots indicated by (3) in the mechanical description section.
2. Access the internal parts by unscrewing the 6 screws on the cover. Disconnect the flat cable from the sensor to avoid leaving the cover hanging on the flat cable.



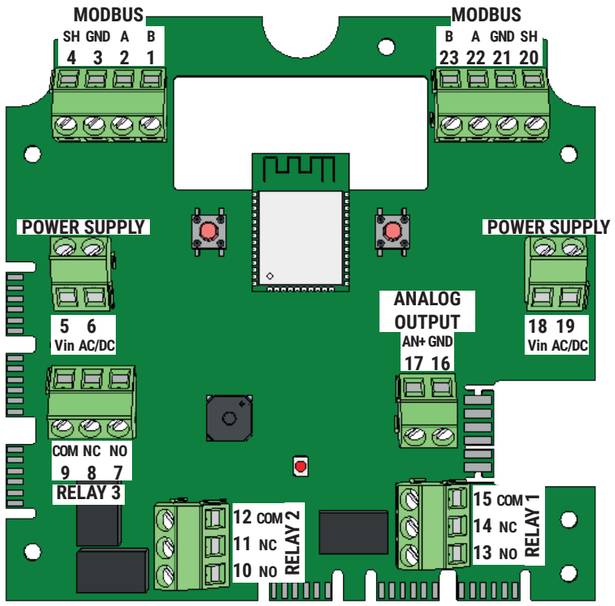
3. Set aside the cover and rubber gasket so they can be reinstalled later.

ELECTRICAL WIRING

WARNING

- **Installation and electrical connection of the device must be carried out by qualified personnel and according to the relevant national standards.**
- **Make sure that the power supply is disconnected before making any connections.**

1. Locate terminal blocks.



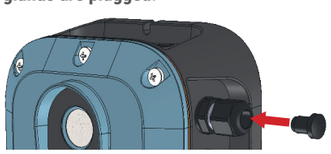
2. Make electrical connections by running cables through the opening of the cable gland.

WARNING

- **Up to 32 devices can be connected via RS-485 interface. Connections must be made with a shielded twisted pair with characteristics equivalent to BELDEN 3106A cables. The total length of the RS-485 network must not exceed 1000 meters.**
- **All other connections should be made with cables with a minimum cross section appropriate for the correct sizing of the system.**
- **Up to a maximum of 3 devices can be powered with a single power supply, taking advantage of the Vin AC/DC terminals (power input terminals 5 and 6 - power output terminals 18 and 19 or vice versa).**
- **The maximum applicable resistance as a load on the 4..20 mA output line is 350 Ohm, when the transmitter is powered at 9.6 Vdc/Vac.**

3. Remove all excess cables from the housing before firmly securing the cable glands.

4. Fit the cable gland plugs (supplied) into the cable glands without cable. **ALWAYS make sure that all cable glands are tight and that unused cable glands are plugged.**



SENSOR CONNECTION AND COVER CLOSURE

1. Place the rubber gasket on the base of the transmitter.
   Make sure the gasket is inserted correctly by matching the 4 holes in the gasket with the 4 pegs on the base of the product.
2. Reconnect the flat cable connector to the sensor.
3. Make sure that no cables interfere with the sensor module and close the cover.
4. Tighten the 6 screws.

IMPORTANT

- **In order to securely seal the product, the cover screws should be tightened to 15..20 in-lb (1,5..2,0 Nm).**

OPERATION

1. Power up the device.
   The green LED blinks slowly (1 blink per second) to indicate the warm-up phase of the sensor, after which the LED remains on steady green all the time.

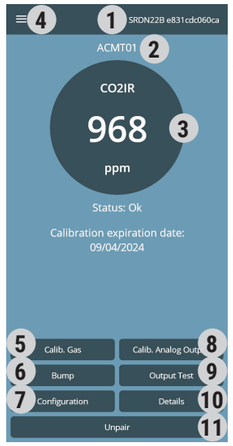
TRANSMITTER and SEITRON GUARD APP PAIRING

The transmitter uses a mobile device application that allows users to interface with the gas transmitter.

1. Download the Seitron Guard App and start it.
2. Follow the procedure described in the App to pair the gas transmitter.
   The pairing of the Gas transmitter with the App is indicated by the blinking of the blue LED (1 blink per second).
3. Enter the user password **1234**.

WARNING

- **Enabling Bluetooth® on the transmitter and pairing it with the App automatically deactivates all alarms.**
- **When exiting the App, the transmitter is disconnected or Bluetooth® is deactivated on the transmitter, the product is automatically restarted and goes into sensor warm-up mode (green LED flashing - 1 flash per second).**



	DESCRIPTION
1	Transmitter code and its MAC address.
2	Installed sensor code.
3	Measured value.
4	Main menu.
5	**Access Zero and Span sensor calibration menu.** *Configuration password: **123456**.
6	Bump test access menu.
7	**Access parameters of the gas transmitter menu.** *Configuration password: **123456**.
8	**Access analog output menu.** *Configuration password: **123456**.
9	**Access testing of outputs and audible and visual signals menu.** *Configuration password: **123456**.
10	View detailed transmitter information.
11	Unpair the App from the transmitter.

* Once one of the menus is accessed, the configuration password will no longer be required.

4. Proceed to configure the main parameters of the gas transmitter by pressing on **"Configuration". At the first installation it is necessary to configure all parameters in this menu.**
5. Proceed to calibrate the analog output, previously set accessing the menu **"Calib. Output."**

GENERAL PROCEDURE FOR CALIBRATION IN GAS

WARNING

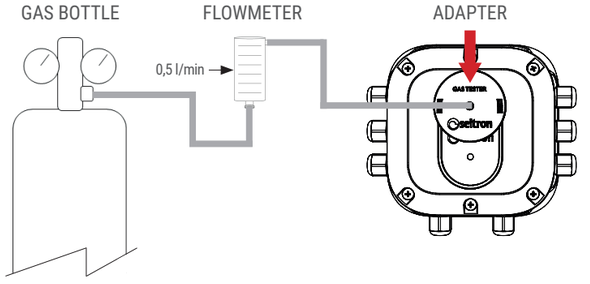
- The transmitter must **NOT** be in an **alarm or fault condition**.
- **Be aware of any alarms or faults BEFORE** starting the Calibration/Bump test procedure.
- At altitudes above 6,560 ft (2,000 m), calibration will result in a lower reading. Refer to the user's manual for more information.
- Calibration or Bump test procedure can be performed out:
  - Via the Seitron Guard App - follow the boxes "[redacted]".
  - On the transmitter using the magnetic switches-follow the boxes "[redacted]".
- If the calibration procedure or Bump test is performed via the Seitron Guard App, all outputs are automatically deactivated.
- If the calibration procedure or Bump test is performed from transmitter, Bluetooth® must be turned off.
- For Span calibration and Bump test from transmitter, make sure you have entered the value of gas concentration to be used in the menus "Configuration -> Calib. Manual Gas -> Span Concentration" and "Configuration -> Manual Bump-> Threshold" found in the Seitron Guard App.
- If the Bump test is performed by transmitter, the outputs can be enabled according to the configuration set on the Seitron Guard App at the "Configuration -> Manual Bump -> Enable Alarm" menu.

THE FOLLOWING TOOLS AND EQUIPMENT ARE NEEDED TO PERFORM THE CALIBRATION OR BUMP TEST:

- **Mixture for Zero calibration gas**
  For the CO2 sensor use nitrogen as the Zero gas.
  For the O2 sensor use air as the Zero gas.
  For all other gas sensors use nitrogen or air without the gas to be sensed as the gas of Zero.
  In any case, the gas bottle must be equipped with a pressure regulator with a flow rate of 0,5 l/min.
- **Mixture for Span gas calibration or Bump Test execution.**
  Mixture of titrated gas suitable for the sensor to be checked **with known gas concentration such as to trigger the alarm at the set threshold**; the cylinder shall be equipped with a pressure regulator with a flow rate of 0,5 l/min.
- Calibration kit ACKC01 (including magnet); mount the calibration adapter on the lid of the gas detector.
- Flowmeter.
- Pipe for connecting the cylinder to the instrument and flow meter.

Procedure:

1. Connection diagram:



PERFORM THE BUMP TEST

After installation and configuration is complete, the manufacturer requires a Bump test to be performed to verify the functionality of the device.

1. Connect the adapter and gas cylinder following the instructions under "General procedure for calibration in gas".
2. Start the execution of the bump test:

From Seitron Guard App
a. Press the "Bump" button and fill in the required data.
b. Apply gas to the transmitter and follow the instructions in the App to perform the Bump test.

From Transmitter
a. Apply gas to the transmitter.
b. Rest the magnet on the magnetic switch B for more than one second: LED is still white, then remove the magnet.

3. The green LED flashes quickly (5 times per second) indicating that the Bump test is running.
4. At the end of the Bump test, the transmitter and App communicate the result:
   a. The buzzer sounds continuously for 3 seconds if the Bump test is successful.
   b. The buzzer beeps 5 times if the Bump test is negative.
   c. The Seitron Guard App shows a pop-up containing the test result: **"Bump test completed" or "Bump test to be repeated."**
5. Shut off the gas flow and remove the calibration adapter.

GAS SENSOR CALIBRATION

If the Bump test has failed, it is necessary to proceed with the calibration of the gas sensor.
During the sensor calibration phase, the transmitter is on OFFLINE mode, meaning that all outputs are deactivated.

Zero calibration

1. Connect the adapter and gas bottle following the instructions under "General procedure for calibration in gas".
2. Start Zero calibration:

From Seitron Guard App
a. Press the "Calib. Gas" and fill in the required data from the "Zero" menu.
b. Apply gas to the transmitter and follow the instructions in the App to perform sensor zero calibration.

From Transmitter
a. Rest the magnet on the magnetic button **A** for more than 5 seconds: when the LED is solid yellow, remove the magnet.
b. The blue LED is steady on.
c. Apply gas to the transmitter.
d. Start calibration by touching the magnet on the magnetic switch **A** for one second.
e. The blue LED flashes quickly (5 times per second) indicating that Zero calibration is in progress.

3. When the Zero calibration is completed, the App and the transmitter communicate the result:

From Seitron Guard App
a. A pop-up appears containing the test result: "Zero calibration completed" or "Calibration to be repeated."

From Transmitter
a. The blue LED flashes slowly (1 time every 2 seconds) if the calibration is successful.
b. The red-green-blue LEDs flash alternately if the calibration is unsuccessful and therefore needs to be repeated.

4. To exit the Zero calibration mode:

From Seitron Guard App
a. Press "Exit" on the pop-up containing the test result.

From Transmitter
a. Touch the magnet on the magnetic switch **A** for more than 5 seconds: when the LED is steady yellow, remove the magnet.
The LED will turn on steady green.

5. Shut off the gas flow and remove the cylinder.

Span calibration

1. Connect Span's gas bottle to the adapter following the instructions under "General procedure for calibration in gas".
2. Start Span Calibration:

From Seitron Guard App
a. Press the "Calib. Gas" and fill in the required data from the "Span" menu.
b. Apply gas to the transmitter and follow the instructions in the App to perform sensor span calibration.

From Transmitter
a. Touch the magnet on the magnetic button B for more than 5 seconds: when the LED is steady yellow, remove the magnet.
b. The red LED is lit steadily.
c. Apply gas to the transmitter.
d. Start calibration by touching the magnet on the magnetic switch **B** for one second.
e. The red LED flashes quickly (5 times per second) indicating that Span calibration is in progress.

3. When the Span calibration is completed, the App and the transmitter communicate the result:

From Seitron Guard App
a. A pop-up appears containing the test result: **"Span calibration completed" or "Calibration to be repeated."**

From Transmitter
a. The red LED flashes slowly (1 time every 2 seconds) if the calibration is successful.
b. The red-green-blue LEDs flash alternately if the calibration is unsuccessful and therefore needs to be repeated.

4. To exit the Span calibration mode:

From Seitron Guard App
a. Press "Exit" on the pop-up containing the test result.

From Transmitter
a. Touch the magnet on the magnetic switch **B** for more than 5 seconds: when the LED is steady yellow, remove the magnet. The LED will turn on solid green.

5. Shut off the gas flow and remove the calibration adapter.

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