

USER MANUAL

Sauermann Control App

APP AND SOFTWARE FOR CLASS 320 TRANSMITTERS

Kimo, a Sauermann brand.

sauermanngroup.com



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1. Introduction

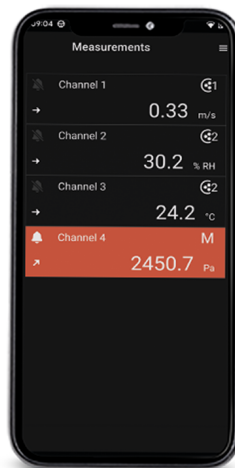
The Sauermann Control app allows you to control and configure the Class 320 transmitters with a computer, a smartphone or a tablet. This app allows the user to manage all the device's parameters via its wireless connection module (USB wired for computers). This app can also easily update the firmware of the instrument and its probes.

Main features:

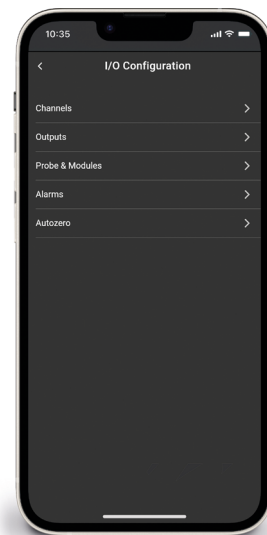
- Remote measurement viewing
- Simultaneous display of up to 4 measurements
- Full device control
- One-click firmware update
- Access to all parameters and options of the transmitters and their probes
- Real-time measurement display
- Configuration of the measurement channels
- Configuration of analogue and digital outputs
- Configuration of alarm thresholds
- Security locks management
- Complete configuration of each probe



Smartphone data view



Smartphone alarm view



Smartphone configuration view



PC alarm view

2. Warning and safety instructions

2.1 Exclusions and restrictions of liability


The application operation is under the exclusive customer or user entity responsibility, who acknowledges using this system at his/her own risks. The customer or user entity explicitly excludes Sauermann and every other company through which the it could have been sold of any kind of responsibility or warranty regarding any direct, indirect, accidental, consecutive or non-consecutive damage that could have been subjected, for some or all, by partial or total non-respect, voluntary or involuntary, of recommendations, conditions and prerequisites indicated hereafter.

2.2 Exclusions and warranty limitations


Sauermann guarantees that the application, which is made available for the customer or user entity through digital content such as a downloaded link as indicated in our commercial documents, are in a state enabling its correct installation and operation. Within the limits of the law, this warranty is exclusive. Therefore, we do not guarantee the application operation after its availability to the customer or user entity of this digital support or downloaded link. There is no other explicit or implicit guarantee regarding the application merchantability and fitness for a particular purpose. The customer or user entity acknowledges accepting all the present guarantee limitations or exclusions.

2.3 Symbols used

For your safety and in order to avoid any damage of the device, please follow the procedure

described in this user manual and read carefully the notes preceded by the following symbol: 

The following symbol will also be used in this user manual:

Please read carefully the information notes indicated after this symbol. 

3. Download the app and create an account

3.1 Download the Sauermann Control app

- Download the app for smartphone for free from Apple Store and Google Play Store or download the PC software for free from Sauermann website.
- Install the app on your device.



Minimum required versions to install and use the app: Android 8.0, iOS 12.4, BLE 4.0 Low Energy or compatible

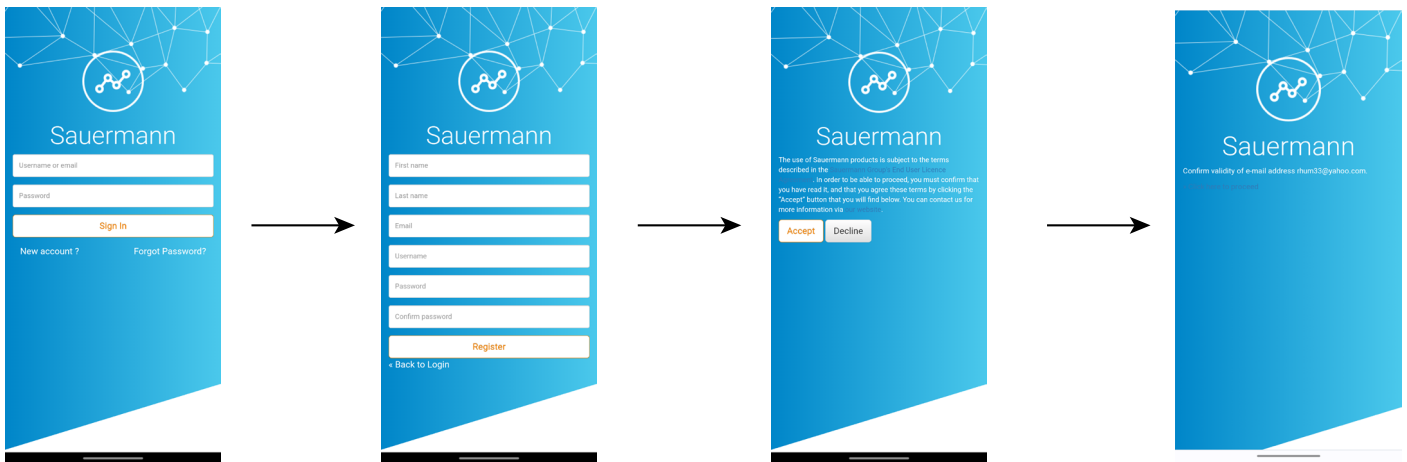
3.2 Create a Sauermann account and launch the app

When you first connect, you have to create a Sauermann account. This step is necessary to use the application.



The smartphone or computer must be connected to the internet to create a Sauermann account.

- Launch the app.
- Tap **"New account"**.
- Enter your first and last names.
- Enter an valid email address and confirm it.
- Choose a password and confirm it.
- Tap **"Register"**.
- Tap **"Accept"** to accept the End User Licence Agreement.
- A verification email is sent, open it and click the link to verify your email address.
- Back to the Sauermann Control app and enter your user name and password.



Once the account is created, enter your email address and password for further connections when required.

4. Connect the transmitter and search for transmitters

The transmitter can be connected via the app through wireless connection (app or PC software) or through USB connection (PC software only).

4.1 Wireless connection

First, activate your wireless connection on your device (smartphone or computer).

The wireless connection is activated by default on the transmitter. If not, follow the following steps to activate it:

- Turn on your transmitter.
- Tap **"Settings"** icon.
- Enter the security code (default code: 0101)
- Tap **"Security/Connectivity"**.
- Activate the wireless connection.

The wireless connection indicator lights up blue.

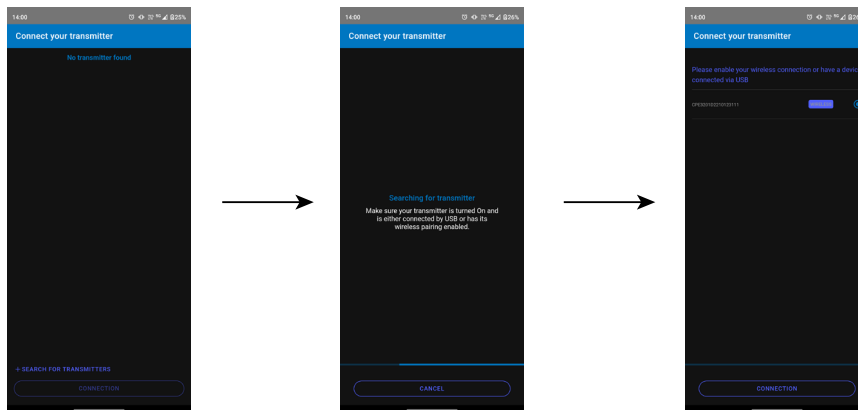
- Launch the app.
- Tap **"Search for transmitters"**.

The list of detected devices appears with their names and serial numbers.

- Tap the required transmitter then **"Connection"**.
- After a few moment, the transmitter is connected to the smartphone or computer.



When the transmitter is connected to the app or software, the following message is displayed on the transmitter: **"This product is being controlled remotely by another device"**.



4.2 USB Connection

For the USB connection:

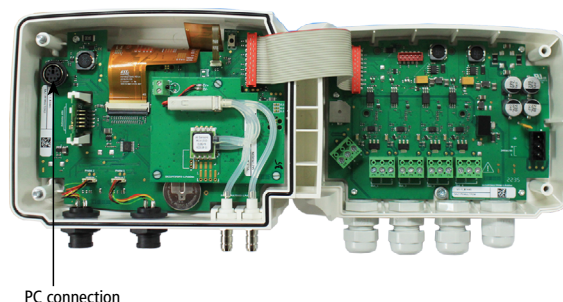
- Connect the transmitter to the computer via the USB cable.
- Launch the software app.

The detected device appears, named **"Transmitter"**.

- Click on it and then on **"Connection"**.
- After a few moment, the transmitter is connected to the computer.



Si-CPE 320 PC connection




Si-C320 PC connection

5. Set the transmitter

"Device Settings" menu allows to set the following items for the transmitter:

- Country
- Date, time and time zone
- Brightness

To access this menu:

- Tap  on the measurement screen.
- Tap "Device Settings".

5.1 Set the country

"Device settings" menu is displayed.

- Tap "Country".
- Select the continent.
- Select the country.

5.2 Set the date, time zone and time

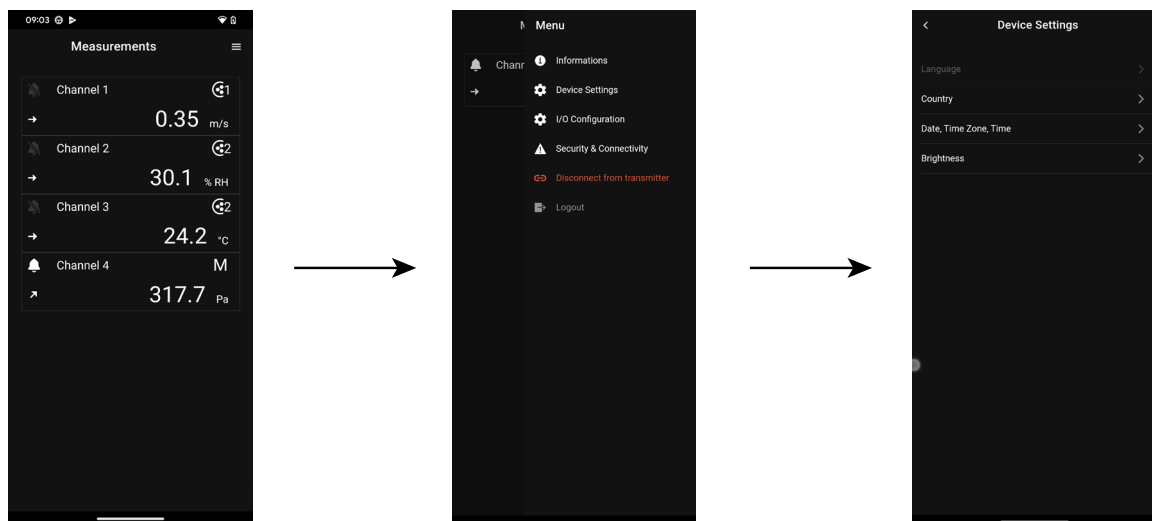
"Device settings" menu is displayed.

- Tap "Date, Time Zone, ...".
- Tap "Date", "Time" or "Time zone" depending on the settings to be made.
- Perform the settings.

5.3 Set the brightness

"Device settings" menu is displayed.

- Tap "Brightness".
- Adjust the brightness of the screen from 1 to 5.
- Tap "Save".




6. Set inputs and outputs

"I/O Configurations" menu allows to set the following items:

- **Channels:** activate and set the probes and modules connected to the transmitter.
- **Outputs:** activate and set outputs corresponding to the channels.
- **Probes and Modules:** define normative values according to probes and modules connected to the transmitter and define some parameters linked to probes and modules.
- **Alarms:** activate and set alarm features.
- **Autozero:** activate and set the autozero interval.

To access this menu:


- Tap  on the measurement screen.
- Tap "I/O Configuration".

6.1 Set the measurement channels



At least one probe or one differential pressure module must be connected to the transmitter.

"I/O Configurations" menu is displayed.

- Tap "Channels".
- Tap the desired channel number (Channel 1, 2, 3 or 4 for a Si-C320 or Channel 1, 2 or 3 for a Si-CPE320).
Features of the channel are displayed.
- Tap  on the top right of the screen to activate the channel.
- Tap "PROBE 1", "PROBE 2" (Si-C320 only) or "MODULE" according to the required attribution for the channel.

"Measures" becomes available.

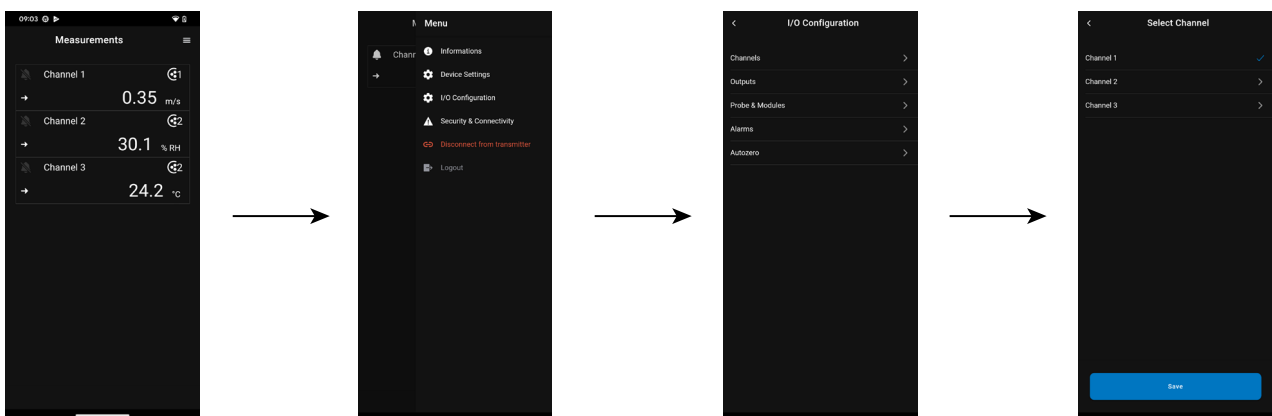
- Tap "Measures".
- Select the required parameter.
- Tap "Units".
- Select the required measurement unit.
- If required, enter a coefficient and an offset to the channel.
- Tap "Save".

Values measured by the probe or the module are displayed.

Special case:



Two units are available for the VOC probe: ppb and ppm CO₂ equivalent. If ppm is selected, the transmitter will take 15 minutes to display the first measurements (pre-heating phase).



6.2 Set the outputs

Two types of outputs are available: analog outputs and digital outputs.


6.2.1 Set the analog outputs

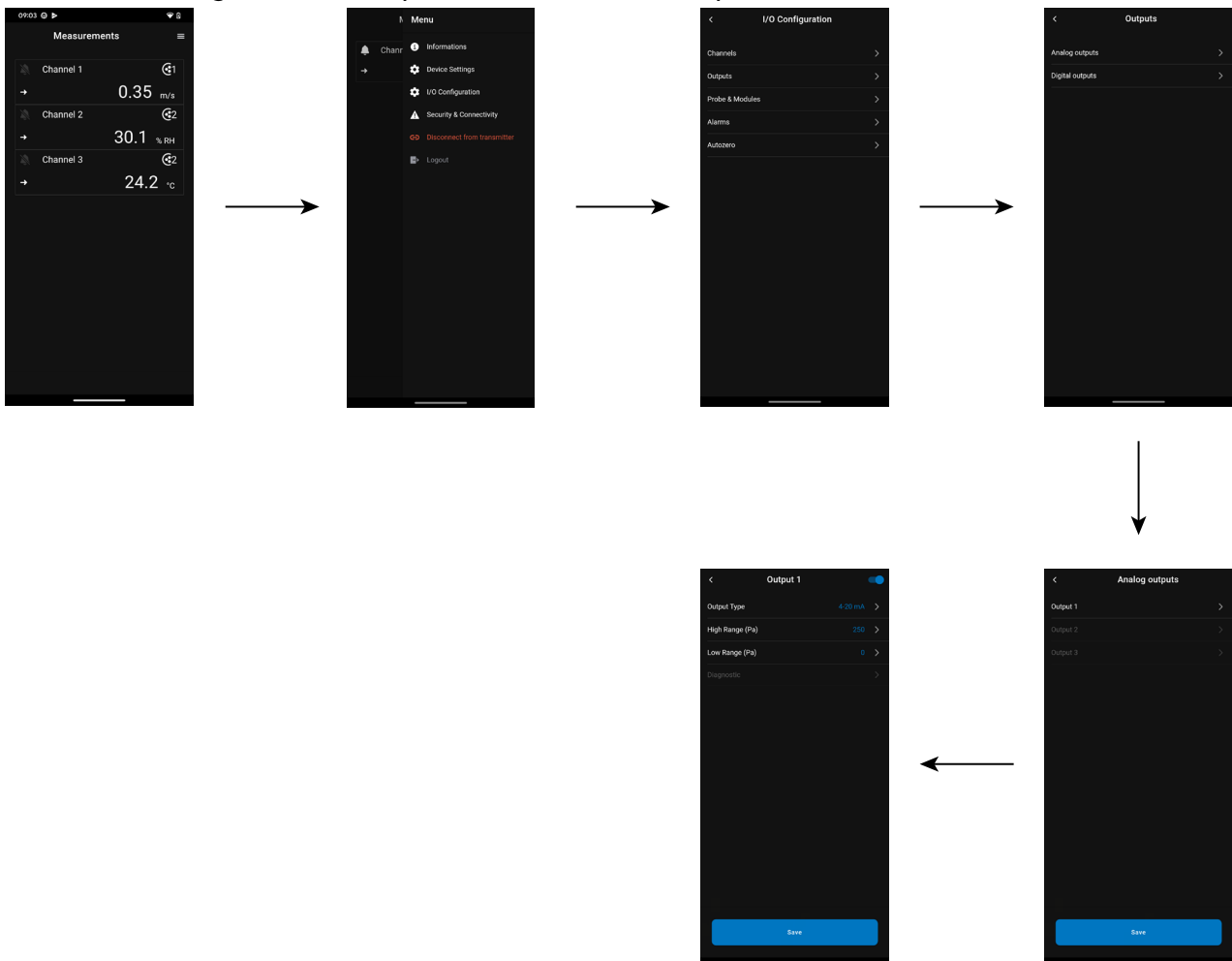


At least one measurement channel must be configured.

If no channel has been configured, no analog output will be delivered.

"I/O Configurations" menu is displayed.

- Tap "Outputs".
- Tap "Analog Outputs".
- Tap the desired output (Output 1, 2, 3 or 4 depending on the number of the previously configured channel).
Features of the output are displayed.
- Tap  on the top right of the screen to activate the output.
- Tap "Output type".
- Select the output type: 0-5 V, 0-10 V, 0-20 mA or 4-20 mA then tap the back arrow on the top left of the screen.
- Tap "5 V Signal", "10 V Signal" or "20 mA Signal" (according to the output type) to set the high range for the output.
- Define the high range value then tap the back arrow on the top left of the screen.
- Tap "0 V Signal", "0 mA Signal" or "4 mA Signal" (according to the output type) to set the low range for the output.
- Define the low range value then tap the back arrow on the top left of the screen.




6.2.2 Set the digital output (Modbus RTU)

"I/O Configurations" menu is displayed.

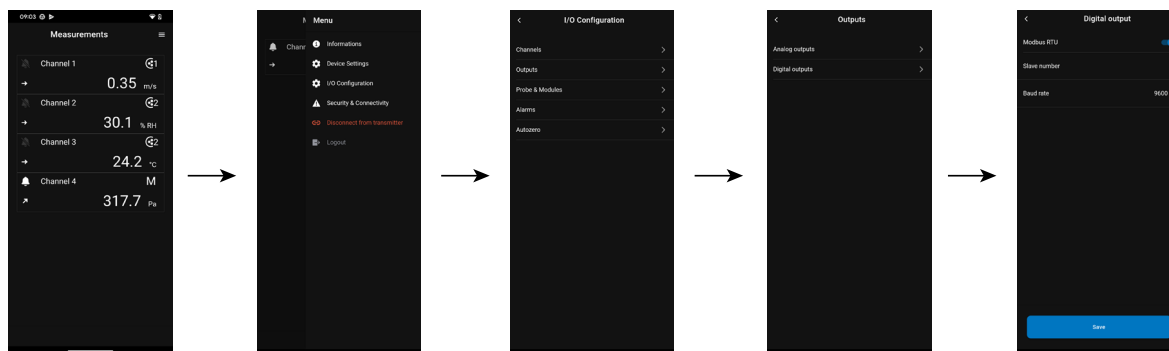
- Tap "Outputs".
- Tap "Digital Outputs".

Features of Modbus are displayed.

- Tap  on the top right of the screen to activate the output.
- Tap "Slave address".
- Define the slave address number between 1 and 255.
- Tap "Baud rate".
- Select the baud rate between 2400, 4800, 9600, 19200, 38400, 57600, 76800 and 115200.
- Tap "Save".



Default baud rate: 9600



6.3 Set the probes and modules

This menu allows to define relevant values related to the probes and modules connected to the transmitter and define some parameters linked to them:

- **For an air velocity probe (hotwire probe):** duct dimensions and type of section, the correction factor, the integration in air velocity and the compensation in atmospheric pressure for airflow calculation.
- **For a pressure module:** for air velocity and airflow calculation the duct dimensions and type of section, the airflow coefficient, the pressure probe coefficient, the integration in pressure and the compensation in atmospheric pressure and temperature.
- **For a CO₂ probe:** the compensation in atmospheric pressure
- **For an hygrometry/temperature probe:** the compensation in atmospheric pressure for the psychrometry calculations



At least one probe or one module must be connected to the transmitter.

6.3.1 Normative values

For the airflow calculations, it is possible to convert the value into normative values (ex: Nm³/h).

The conversion can be done according to two standards:

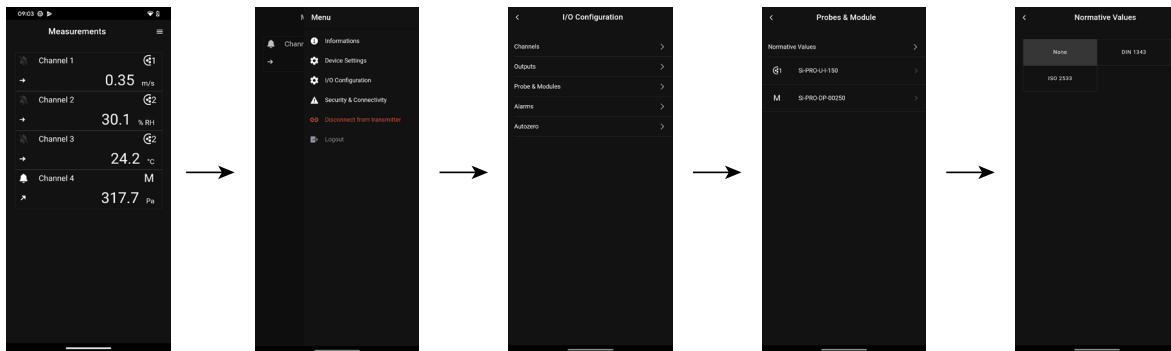
- DIN 1343: 1013.25 hPa, 273,15 K (0°C)
- ISO 2533: 1013.25 hPa, 288,15 K (15°C)

"I/O Configurations" menu is displayed.

- Tap "Probes & Modules".

The screen displays the connected probes and modules.

- Tap "Normative values".
- Select the normative value according to your needs: DIN 1343 or ISO 2533.



6.3.2 Configure the compensation of a CO₂ or hygrometry probe



A CO₂ or hygrometry probe must be connected to the transmitter.

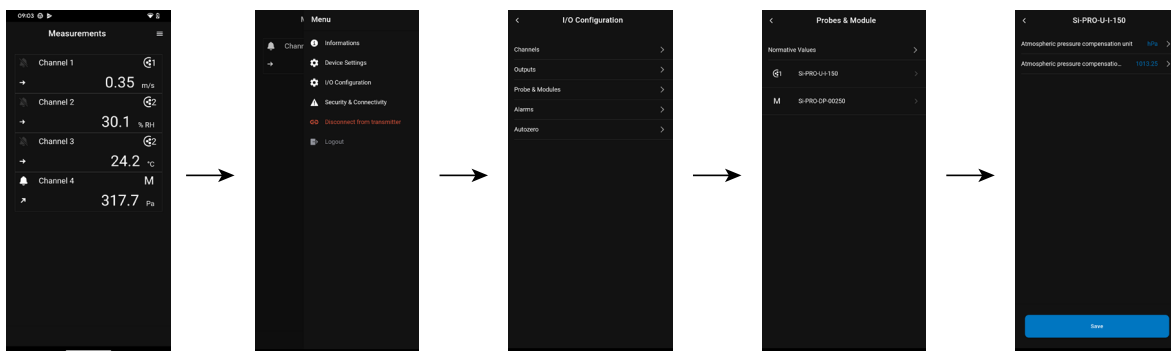
Set the compensation in atmospheric pressure:

"I/O Configurations" menu is displayed.

- Tap "Probes & Modules".

The screen displays the connected probes and modules.

- Tap the line corresponding to the temperature/hygrometry probe or to the CO₂ probe.
- Tap "Atmospheric pressure compensation unit" and select the unit.
- Tap "Atmospheric pressure compensation" to enter a value. This value must be between:
 - 0 and 4000 hPa
 - 0 and 4000 mbar
 - 0 and 3000.24 mmHg
 - 0 and 10 000 m (altitude)
- Tap "Save".



6.3.3 Configure a differential pressure module



A differential pressure module must be connected to the transmitter (Si-C320 only).

Select the measuring device:


"I/O Configurations" menu is displayed.

- Tap "Probes & Modules".

The screen displays the connected probes and modules.

- Tap the line corresponding to the pressure module.
- Tap "Pressure equipment used".
- Tap the desired measurement mean between:
 - Pitot tube L (coefficient: 1.0015)

- Pitot tube S (coefficient: 0.84)
- Debimo blades (coefficient: 0.8165)
- Other equipment (free coefficient)

 If **"Other equipment"** is selected, the coefficient of the other measurement mean should be entered. This coefficient must be between 0.0001 and 9.9999.

- Tap **"Save"**.


Select the type of duct section:

"I/O Configurations" menu is displayed.

- Tap **"Probes & Modules"**.
The screen displays the connected probes and modules.
- Tap the line corresponding to the pressure module.
- Tap **"Section type"**.
- Tap the requested section:
 - Rectangular
 - Circular
 - Other


For a rectangular section:

- Tap **"Unit"** to select the unit: mm or in.
- Enter the length and width of the section.
- Tap **"Save"** to save the data.

 Length and width of the section must be between 1 and 3000 mm (0.039 to 118.11 in).

For a circular section:


- Tap **"Unit"** to select the unit: mm or in.
- Enter the diameter.
- Tap **"Save"** to save the data.

 Diameter of the section must be between 1 and 3000 mm (0.039 to 118.11 in).

For a custom coefficient (airflow coefficient):

- Tap **"Other"** then enter an airflow coefficient.
- Tap **"Save"** to save the data.

This airflow coefficient allows to calculate an airflow from the pressure. It is indicated by the manufacturer of the devices supplied with pressure connections (+ and -). From the square root of the measured pressure (Delta P) and from this coefficient, you get the airflow. $\text{Airflow} = C_d \times \sqrt{\Delta P}$

 The coefficient must be between 0.1 and 9999.9.

Set the compensation in temperature:

It is possible to modify the compensation temperature value. Indeed, the measured value of air velocity and airflow with a Pitot tube or Debimo blades (or other differential pressure element) depends on the operating temperature. It is required to enter the operating temperature in order to get more accurate results. It is possible to enter the value manually, to use the temperature value from a connected temperature probe to the transmitter or to use the temperature measured by an internal sensor for an automatic temperature compensation.

"I/O Configurations" menu is displayed.

- Tap **"Probes & Modules"**.
The screen displays the connected probes and modules.

- Tap the line corresponding to the pressure module.
- Tap **"Temperature compensation source"** to select the temperature source between:
 - Internal sensor
 - Manual: enter manually a temperature: press **"Manual"** then select the unit (°C or °F) then tap **"Temperature"** to enter a value between -50 and 50 °C.
 - Probe 1: the transmitter will take into account the measured temperature by a temperature probe connected to the transmitter at the "Probe 1" location.
 - Probe 2: the transmitter will take into account the measured temperature by a temperature probe connected to the transmitter at the "Probe 2" location (Si-C320 only)
 - Differential pressure module: the transmitter will take into account the measured temperature by a K-type thermocouple probe connected to the differential pressure module (thermocouple probe not included) (Si-C320 only).

Set the compensation in atmospheric pressure:

"I/O Configurations" menu is displayed.

- Tap **"Probes & Modules"**.
The screen displays the connected probes and modules.
- Tap the line corresponding to the pressure module.
- Tap **"Atmospheric pressure compensation unit"** to select the atmospheric pressure unit.
- Tap **"Atmospheric pressure compensation"** to enter a value. This value must be between:
 - 0 and 4000 hPa
 - 0 and 4000 mbar
 - 0 and 3000.24 mmHg
 - 0 and 10 000 m (altitude)
- Tap **"Save"**.

Enter an integration in pressure:

"I/O Configurations" menu is displayed.

- Tap **"Probes & Modules"**.
The screen displays the connected probes and modules.
- Tap the line corresponding to the pressure module.
- Tap **"Integration coefficient"**.
- Enter the integration.



The pressure integration must be between 0 and 9.

Enter a correction factor:

The correction factor allows to adjust the transmitter according to data in air velocity of the installation.

How to calculate it? For example, the air velocity in your section is 17 m/s and the transmitter displays 16.6 m/s. The coefficient to apply is $17 / 16,6$, it means 1.024.

"I/O Configurations" menu is displayed.

- Tap **"Probes & Modules"**.
The screen displays the connected probes and modules.
- Tap the line corresponding to the pressure module.
- Tap **"Correction factor"**.
- Enter the correction factor then **"Save"**.
- Tap **"Save"** to save the data.



The correction factor must be between 0 and 9.

Set the purge mode:

The purge mode enables to freeze the measurement when being displayed, enables to lock the analogue outputs, and to activate the relay 1, in order to actuate a de-dust system of an air movement conditions system and to activate the relay 2 in order to isolate the transmitter.


Here is the detailed process of the purge mode:

1. Measurement is frozen.
2. Wait for 3 seconds.
3. Activation of the relay 2 (isolation of the transmitter).
4. Wait for time-delay (e.g : 10 seconds).
5. Activation of the relay 1 (sending compressed air into the network to clean the installation).
6. Purge duration (e.g : 30 seconds).
7. Deactivation of the relay 1 (stop sending compressed air).
8. Wait for time-delay (e.g : 10 seconds).
9. Deactivation of the relay 2.
10. Wait for 3 seconds.
11. Recovery of the measurement.

"I/O Configurations" menu is displayed.

- Tap **"Probes & Modules"**.
The screen displays the connected probes and modules.
- Tap the line corresponding to the pressure module.
- Tap **"Purge mode"**.

If needed, customize de default value for Purge mode parameters:

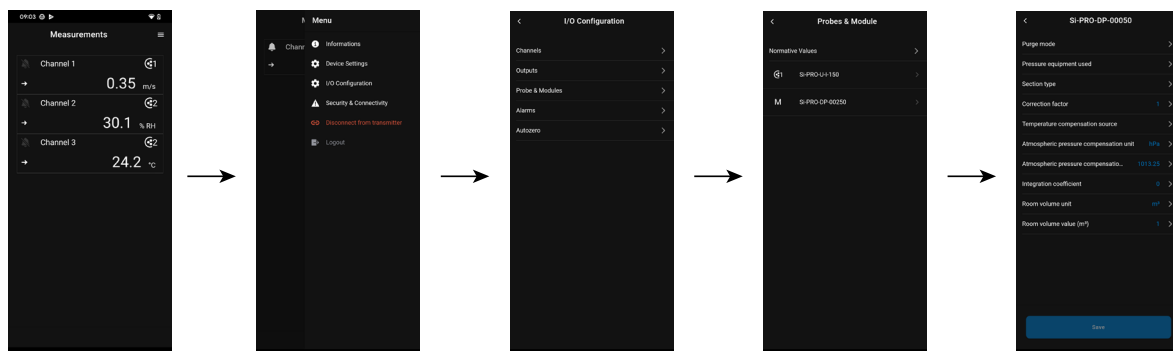
- Purge duration
- Delay between two purges
- Delay duration
- Once the settings finished, launch the purge mode by clicking on the switch 



The purge duration must be between 1 and 60 seconds.

The duration between 2 purges must be between 1 and 9999 minutes.

The delay duration must be between 1 and 60 seconds.



6.4 Set the alarms

This part allows to activate and define the alarms conditions on one or several channels.



One channel must be configured at least (see chapter 8.1 on page 10)

If no channel has been configured, the alarm corresponding to the channel will be not available.

6.4.1 Select the channel


Before setting the alarms, select the channel corresponding to the alarm:

"I/O Configurations" menu is displayed.

- Tap "**Alarms**".
The screen displays the alarm available.
- Tap the required alarm.
- Tap "**Select channel**".
- Tap the required channel corresponding to the alarm.
- Tap the back arrow on the top left of the screen.

6.4.2 Set the alarm type

"I/O Configurations" menu is displayed.

- Tap "**Alarms**".
The screen displays the alarm available.
- Tap the line of the alarm to configure.
- Tap "**Alarm type**".
- Select and activate one of the three following possibilities:
 - Either a "**high threshold**" or a "**low threshold**" or the 2 thresholds (by manually entering the values) relating to the probe / module of the channel associated with this alarm
 - Either an "**Out of range**" relating to the probe / module of the channel associated with this alarm
 - Or a "**Channel error**" relative to the probe/module associated with this alarm
- Tap the back arrow on the top left of the screen and tap  on the top right of the screen to activate the alarm.

6.4.3 Set the alarms parameters

It's then possible to set the parameters of the alarm: Time delay, Hysteresis, Acoustic alarm and Acknowledgement.


"I/O Configurations" > "**Alarm**" menu is displayed.

Set the time delay:

Time Delay: this is the time in seconds before the alarm is triggered when the measurement exceeds the threshold or is below the threshold.

Example: time delay set to 5 s. The alarm will be triggered when the threshold is exceeded for 5 s or more or when the measurement is below the threshold for 5 s or more.


- Tap "**Time delay (seconds)**".
- Enter the time delay in second.

 The time delay must be between 0 and 600 s.

Set the hysteresis:

Hysteresis: hysteresis value impacts the return to normal state. Example for an alarm with a high threshold at 80 Pa, a low threshold at 20 Pa and a hysteresis at 5 Pa: the alarm stay triggered until the value goes below 75 (or up to 25).


- Tap "**Hysteresis**".
- Enter the hysteresis.

 The hysteresis must be between the low threshold and the high threshold (only if two thresholds are configured).

Set the alarm acknowledgement

Alarm acknowledgement: when an alarm goes off, it is possible to acknowledge it by pressing the value in alarm on the screen: the audible alarm, if activated, turns off and the displayed value remains in red during the acknowledgement duration. At the end of the acknowledgement duration, if the transmitter is still in alarm state, the audible alarm is reactivated.

- Tap "**Acknowledge**".
- Enter the alarm acknowledgement in minute.

 The acknowledgement duration must be between 0 and 60 min.

6.5 Set the autozero

Enter the interval between two autozeros: thanks to the temperature compensation of the gain (from 0 to 50 °C / 14 à 122 °F) and to the autozero system, Class 320 transmitters guarantee an excellent long-term stability, along with a great measurement accuracy.

Autozero principle: the microprocessor drives a solenoid valve that compensates for any long-term drift of the sensitive element.

Compensation is made by regular automatic adjustment of the zero. True differential pressure measurement is then made regardless of the environmental conditions of the transmitter.

"I/O Configurations" menu is displayed.

- Tap "Autozero".
- Enter the autozero interval in minute.



The autozero interval must be between 10 and 60 min.

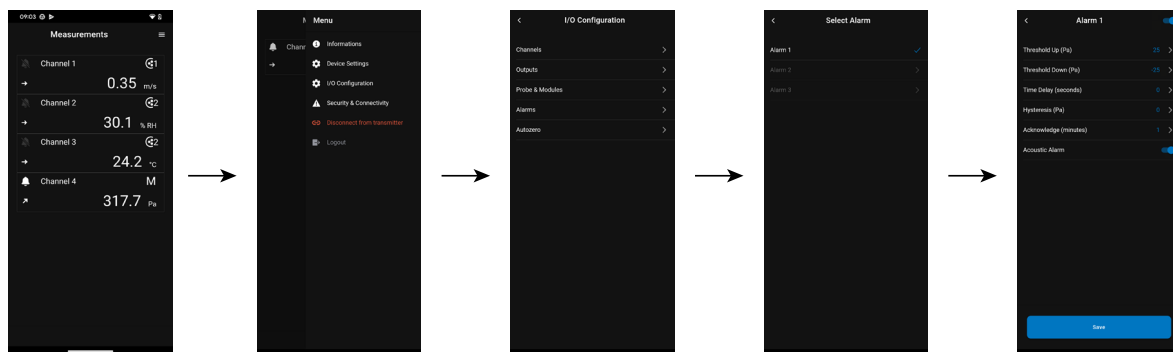
The autozero is managed by a solenoid valve. The behaviour of this solenoid valve is linked to the ambient temperature. An automatic monitoring of the internal of the temperature of the device ensures the correct operation of the solenoid valve.

When starting the device or when the solenoid valve is activated for the first time, the solenoid valve is automatically triggered for 30 seconds (160 seconds if the internal temperature of the device is lower than 0 °C/32 °F) if the internal temperature of the device is higher than 0 °C/32 °F.

During the first 20 minutes, the solenoid valve is automatically triggered to perform an autozero every 3 minutes. Between 20 minutes and 60 minutes, the solenoid valve is automatically triggered to perform an autozero every 10 minutes.

After the first hour of operation, the device will perform an autozero according to the user's configuration.

If the internal temperature of the device falls below 1 °C/34 °F, the solenoid valve is automatically activated every 30 minutes. The autozero is not take into account during this operation.



7. Download measuring data

The Sauermann Control App allows to retrieve data measured every 30 seconds by the transmitter over the last 24 hours.

This data will be saved in an Excel file and presented as follows:

Date	Channel	Measure	Unit	Status
17/07/23 05:00:00	Channel 1	24.02	°C	OK
17/07/23 05:00:00	Channel 2	34	m/s	OK
17/07/23 05:00:00	Channel 3	41.02	hPa	OK
17/07/23 05:00:00	Channel 4	0.02	g/kg	OK
17/07/23 05:00:30	Channel 1	23.82	°C	OK
17/07/23 05:00:30	Channel 2	37	m/s	OK
17/07/23 05:00:30	Channel 3	43.01	hPa	OK
17/07/23 05:00:30	Channel 4	0.02	g/kg	OK

To access to this function, follow this procedure:


Main menu is displayed.

- Tap **"Measurement history"**.
- A pop-up window opens.
- Tap OK to confirm the data downloading.
- The data downloading progression is displayed.
- At the end of the downloading, select the location where to save the file.
- Open this file with a spreadsheet software.

8. Security and connectivity

This part allows to define the security code, the touch lock functionality and the reset to factory settings.

To access this menu:

- Tap  on the measurement screen.
- Tap **"Security & Connectivity"**.

8.1 Define the security code

To configure the transmitter, and for security purposes, a security code must be entered. The default code is 0101. This code can be modified:


"Security/Connectivity" menu is displayed.

- Tap **"Security code"**.
- Tap **"New code"**.
- Enter a new code of 4 digits.
- Tap **"Confirmation"**.
- Enter the code to confirm it.
- Tap **"Save"**.

8.2 Define the Touch Lock functionality

It's possible to lock the screen of the transmitter after a certain time of non-use. To unlock it, tap the lock icon for 3 seconds.

"Security/Connectivity" menu is displayed.

- Tap **"Touch Lock"**.
- Tap **"Delay (seconds)"**.
- Enter the lock delay then **"Save"**.
- Tap  to activate the touch lock.

8.3 Reset instrument from factory

It's possible to reset the transmitter to factory parameters.

"Security/Connectivity" menu is displayed.

- Tap **"Reset Instrument from factory"**.
The transmitter displays a message asking if you are sure to back to factory settings.
- Tap **"Reset"** to confirm the reset.

or

- Tap **"Cancel"** to cancel the reset from factory settings.



The transmitter will be reset to original delivery settings. All your configurations will be deleted.
Units and values of measurement settings of the factory setting:


Feature	Default value
Channel N output	Output type 4-20 mA
Channel N range	N/A
Channel N's name	Channel N
Alarms	Off
Display brightness	5
Graph timespan	24 hours
Wireless communication	On
Access code to enter the configuration menu	0101
Modbus output	Off

Modbus address	1
Modbus baud rate	9600 bps
Date and time	Last set value
Device's time zone	UTC+1
Correction coefficients	None
ΔP element for Air flow/Air velocity calculation	None
Duct size/conversion factor	None
Autozero of the differential pressure sensor	10 minutes
Pressure integration	0
Air flow/Air velocity standardized value	No
Air flow/Air velocity compensation temperature	Manual, 20 °C
Language	English
Time Zone	UTC+1

9. Information about transmitter, probes and modules

"Information" menu allows to access to information such as serial numbers, firmware version, date of last adjustment and calibration, date of next service,...

To access this menu:

- Tap  on the measurement screen.
- Tap "Information".

9.1 Instrument and probes/modules information

"Information" menu is displayed.

- Tap "Instruments/probes".
- Tap "Instruments" or "Probes/modules".

The screen displays the following information:

- Model
- S/N (Serial Number)
- Build
- Firmware version
- Installation ID (instruments only)



In case of a trouble with your device and when contacting the after-sale service or the hotline, this information will be useful.

9.2 Adjustment and calibration information

This menu displays information about adjustment and calibration for probes and modules connected to the transmitter.

"Information" menu is displayed.

- Tap "Adjustment/Calibration".
- Tap the requested probe or module.
- Tap the requested parameter depending on the probe or module previously selected.

The screen displays the following information:

- Last adjustment date
- Last calibration date
- Date of next service

9.3 Firmware update

This menu allows to check if a firmware update is available for transmitter, probes and module.

"Information" menu is displayed.

- Tap "Firmware Update".

The screen displays the current firmware version. If no update is available, the following messages are displayed :

"Your device has the last firmware version installed"

"Probes are already running the latest firmware."

If an update is available, the following message is displayed: "A firmware is available. Installing the new firmware will restart the transmitter. Measurements will neither be collected nor available during this process".

- Tap "Install".

The transmitter displays the following message: Updating X to x.x.xx (firmware version).



Do not disconnect the probe from the transmitter during this step.

Once the installation of the new firmware is finalized, the transmitter restarts and measurements are displayed.

10.1 Configuration of parameters

- Communication speed: between 2400 and 115200 bauds, 9600 bauds by default
- Data bits: 8 bits
- Stop bit: 1 bit
- Parity: None
- Flow control: None
- Transmitter addressing: between 1 and 255 (automatically answers the requests from address 0)
- Data sending: made by words of 2 bytes, in the following order most-significant then least-significant byte

10.2 Functions

- Register function: Function 03
- Register writing: Function 16
- Communication loop test: Function 08

10.3 Data format

UNIT8	Byte 1	Byte 0 (lsb)
Value (0x01)	0x00	0x01
Registers	Reg0	
	0x00	0x01

UNIT16	Byte 1	Byte 0 (lsb)
Value (0x0102)	0x01	0x02
Registers	Reg0	
	0x01	0x02

UNIT32	Byte3	Byte2	Byte1	Byte0 (lsb)
Value (0x01020304)	0x01	0x02	0x03	0x04
Registers	Reg0		Reg1	
	0x03	0x04	0x01	0x02

FLOAT32	Byte3	Byte2	Byte1	Byte0 (lsb)
Value (0x01020304)	0x01	0x02	0x03	0x04
Registers	Reg0		Reg1	
	0x03	0x04	0x01	0x02

10.4 Enumeration table

10.4.1 Languages enumeration

Identifier	Language
0	English
1	French
2	Spanish
3	Italian
4	German
5	Portuguese
6	Chinese
7	Dutch

10.4.2 Units enumeration

Identifier	Unit	Identifier	Unit
0	°C	29	t/d
1	°F	30	cm ²
2	mbar	31	in ²
3	inwg	32	m ³
4	mmh2O	33	cf
5	mmHg	34	%RH
6	Pa	35	kJ/kg
7	hPa	36	m
8	kPa	37	mm
9	psi	38	ft ³ /h
10	ppm	39	in
11	ppb	40	%
12	mg/m ³	41	ratio
13	g/m ³	42	°Ctw
14	%	43	°Ftw
15	mg/kWh	44	°Ctd
16	g/kWh	45	°Ftd
17	g/GJ	46	unused
18	g/bhp-hr	47	unused
19	m/s	48	g/kg
20	fps	49	ACH
21	fpm	50	V
22	km/h	51	mA
23	m ³ /min	52	daPa
24	m ³ /h	53	m ³ /s
25	cfm	54	dam ³ /h
26	ft ³ /h	55	l/s
27	kg/h	56	fps
28	lb/h		

10.4.3 Measurements enumeration

Identifier	Unit	Identifier	Unit
0	Temperature (internal NTC)	13	VOC
1	Temperature (Pt100)	14	CO2eq
2	Relative humidity	15	Air flow
3	Air velocity	16	ACR
4	Pressure (module 50 Pa)	17	Mixing ratio
5	Pressure (module 250 Pa)	18	Absolute humidity
6	Pressure (module 1000 Pa)	19	Enthalpy
7	Pressure (module 10000 Pa)	20	Wet bulb temperature
8	CO	21	Atmo pressure
9	CO ₂	22	Battery level
10	Temperature (TK)	23	Temperature (external NTC)
11	Dew point	24	Vacuum
12	Frost point	25	Air velocity

10.4.4 Other enumeration

Identifier	0	1	2	3	4	5	6

Graph timespan	30 minutes	1 hour	12 hours	24 hours	Unused		
Date format	mm/dd/yyyy	dd/mm/yyyy	Unused				
Hour format	12 h	24 h	Unused				
Channel unit	cf. units enumeration						
Channel measurement	cf. measurements enumeration						
Channel trend	Down	Equal	Up	Not available	Unused		
Channel error reason	None	Internal	Not configured	Measurement	Unplugged probe	Invalid probe	Probe to update
Probe	Probe 1	Probe 2	Module	Unused			
Analogue output	0-5 V	0-10 V	0-20 mA	4-20 mA	Unused		
Alarm mode	None	Down threshold	Up threshold	Both thresholds	Unused		
Pressure Equipment Type	Pitot tube S	Pitot tube L	Debimo blades	Other	None	Unused	
Temperature compensation mode	Use internal sensor	Manual	Use probe 0	Use probe 1	Use probe 2	Unused	
Section type	Rectangular	Circular	Other	Not configured	Unused		
Normative values	None	DIN1343	ISO2533	Unused			
Measurement status	Ok	Out of range	Error	Heating	Unused		

10.5 Description of function and Modbus connections

10.5.1 Device

Modbus	Register type	Description	Possibilities
1000	STR	Serial number of the transmitter	12 characters
1010	STR	Firmware version	
1020	STR	Device identification	
1030	STR	Probe 1 identification	
1040	STR	Probe 2 identification	
1050	STR	Module identification	
1060	STR	Probe 1 serial number	
1070	STR	Probe 2 serial number	
1080	STR	Module serial number	
1090	STR	Probe 1 version	
1100	STR	Probe 2 version	
1110	STR	Module version	
1120	U8	Backlit value	In percent, from 0 to 100.
1150	U8	Graph timespan	Time zone offset relative to UTC/GMT in seconds
1160	U8	Graph selected channel	0-indexed channel identifier
1200	U8	Language	cf. languages enumeration
1300	U32	Timestamp	The number of seconds that have elapsed since January 1, 1970 (midnight UTC/GMT)

1310	U32	Time offset	Time zone offset relative to UTC/GMT in seconds
1320	U8	Date format	0: mmdyyy, 1: ddmmyy (where dd is day, mm is month, yy is year)
1330	U8	Hour format	0: 12 h, 1: 24 h
1350	BOOLEAN	Sound	0: deactivated, 1: activated
1400	BOOLEAN	Keypad locking	0: unlocked, 1: locked
1410	U16	Safety code	Safety code string converted in digital value (ex: 1234 for code = '1' '2' '3' '4')
1500	U8	Modbus slave number	Slave address of the device in Modbus network from 1 to 247
1510	U32	Modbus speed communication	2400 / 4800 / 9600 / 19200 / 38400 / 57600 / 76800 / 115200 bds
1710	BOOLEAN	Activation of the Modbus option	0: deactivated, 1: activated
1900	BOOLEAN	Back to factory configuration	1: Launch factory reset
1910	U8	Delay time (in min) between 2 auto-zeros	From 10 to 60.
1920	BOOLEAN	Instantaneous autozero	1: launch instantaneous autozero

10.5.2 Channels

Modbus	Register type	Description	Possibilities
2000	U8	Unit selection of the channel 1	cf. units enumeration table
2010	U8	Selection of probe or module	0: probe1, 1: probe2, 2: module
2020	U8	Selected measure	cf. measures enumeration table
2030	I8	Measure resolution	Number of digits after comma.
2040	F32	Channel 1 coefficient	This value must be between 0.1 and 2.0
2050	F32	Channel 1 offset	This value must be between 0.0 and 10.0
2100	U8	Unit selection of the channel 2	cf. units enumeration table
2110	U8	Selection of probe or module	0: probe1, 1: probe2, 2: module
2120	U8	Selected measure	cf. measures enumeration table
2130	I8	Measure resolution	Number of digits after comma.
2140	F32	Channel 2 coefficient	This value must be between 0.1 and 2.0
2150	F32	Channel 2 offset	This value must be between 0.0 and 10.0
2200	U8	Unit selection of the channel 3	cf. units enumeration table
2210	U8	Selection of probe or module	0: probe1, 1: probe2, 2: module
2220	U8	Selected measure	cf. measures enumeration table
2230	I8	Measure resolution	Number of digits after comma.
2240	F32	Channel 3 coefficient	This value must be between 0.1 and 2.0
2250	F32	Channel 3 offset	This value must be between 0.0 and 10.0
2300	U8	Unit selection of the channel 4	cf. units enumeration table
2310	U8	Selection of probe or module	0: probe1, 1: probe2, 2: module
2320	U8	Selected measure	cf. measures enumeration table
2330	I8	Measure resolution	Number of digits after comma.
2340	F32	Channel 4 coefficient	This value must be between 0.1 and 2.0

2350	F32	Channel 4 offset	This value must be between 0.0 and 10.0
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10.5.3 Outputs

Modbus	Register type	Description	Possibilities
3000	U8	Analog output selection of the channel 1	0 : 0-5 V, 1 : 0-10 V, 2 : 0-20 mA, 3 : 4-20 mA
3100	U8	Analog output selection of the channel 2	0 : 0-5 V, 1 : 0-10 V, 2 : 0-20 mA, 3 : 4-20 mA
3200	U8	Analog output selection of the channel 3	0 : 0-5 V, 1 : 0-10 V, 2 : 0-20 mA, 3 : 4-20 mA
3300	U8	Analog output selection of the channel 4	0 : 0-5 V, 1 : 0-10 V, 2 : 0-20 mA, 3 : 4-20 mA
3010	F32	Channel 1 diagnostic: generation of a current or a voltage	This value must be between 0.0 and 1.0
3110	F32	Channel 1 diagnostic: generation of a current or a voltage	This value must be between 0.0 and 1.0
3210	F32	Channel 1 diagnostic: generation of a current or a voltage	This value must be between 0.0 and 1.0
3310	F32	Channel 1 diagnostic: generation of a current or a voltage	This value must be between 0.0 and 1.0
3020	F32	Channel 1 minimum range	Depends on the connected probe and the measure type
3030	F32	Channel 1 maximum range	Depends on the connected probe and the measure type
3120	F32	Channel 2 minimum range	Depends on the connected probe and the measure type
3130	F32	Channel 2 maximum range	Depends on the connected probe and the measure type
3220	F32	Channel 3 minimum range	Depends on the connected probe and the measure type
3230	F32	Channel 3 maximum range	Depends on the connected probe and the measure type
3320	F32	Channel 4 minimum range	Depends on the connected probe and the measure type
3330	F32	Channel 4 maximum range	Depends on the connected probe and the measure type

10.5.4 Alarms paramaters

Modbus	Register type	Description	Possibilities
Alarm 1			
4000	U8	Alarm mode	0: none, 1: down threshold, 2: up threshold, 3: both thresholds
4010	F32	Hysteresis	Positive value that must belong to the range defined by up and down thresholds
4020	F32	Threshold Up	Up threshold for alarm raising condition

4030	F32	Threshold Down	Down threshold for alarm raising condition
4040	U32	Delay Time	Time to wait before activating alarm when conditions are reached. This value must be between 0 and 600
4050	U32	Delay End	Time to wait before deactivating alarm when conditions are no more reached. This value must be between 0 and 600
4060	BOOLEAN	Enabled/Disabled	0: disabled, 1: enabled (always disabled if alarm mode is 0)
4080	BOOLEAN	Audible alarm	0: no sound, 1: Sound in case of alarm
4090	U8	Acknowledgement duration	Allowed delay to acknowledge the alarm. This value must belong to range [0, 60]
Alarm 2			
4100	U8	Alarm mode	0: none, 1: down threshold, 2: up threshold, 3: both thresholds
4110	F32	Hysteresis	Positive value that must belong to the range defined by up and down thresholds
4120	F32	Threshold Up	Up threshold for alarm raising condition
4130	F32	Threshold Down	Down threshold for alarm raising condition
4140	U32	Delay Time	Time to wait before activating alarm when conditions are reached. This value must be between 0 and 600
4150	U32	Delay End	Time to wait before deactivating alarm when conditions are no more reached. This value must be between 0 and 600
4160	BOOLEAN	Enabled/Disabled	0: disabled, 1: enabled (always disabled if alarm mode is 0)
4180	BOOLEAN	Audible alarm	0: no sound, 1: Sound in case of alarm
4190	U8	Acknowledgement duration	Allowed delay to acknowledge the alarm. This value must belong to range [0, 60]
Alarm 3			
4200	U8	Alarm mode	0: none, 1: down threshold, 2: up threshold, 3: both thresholds
4210	F32	Hysteresis	Positive value that must belong to the range defined by up and down thresholds
4220	F32	Threshold Up	Up threshold for alarm raising condition

4230	F32	Threshold Down	Down threshold for alarm raising condition
4240	U32	Delay Time	Time to wait before activating alarm when conditions are reached. This value must be between 0 and 600
4250	U32	Delay End	Time to wait before deactivating alarm when conditions are no more reached. This value must be between 0 and 600
4260	BOOLEAN	Enabled/Disabled	0: disabled, 1: enabled (always disabled if alarm mode is 0)
4280	BOOLEAN	Audible alarm	0: no sound, 1: Sound in case of alarm
4290	U8	Acknowledgement duration	Allowed delay to acknowledge the alarm. This value must belong to range [0, 60]

Alarm 4

4300	U8	Alarm mode	0: none, 1: down threshold, 2: up threshold, 3: both thresholds
4310	F32	Hysteresis	Positive value that must belong to the range defined by up and down thresholds
4320	F32	Threshold Up	Up threshold for alarm raising condition
4330	F32	Threshold Down	Down threshold for alarm raising condition
4340	U32	Delay Time	Time to wait before activating alarm when conditions are reached. This value must be between 0 and 600
4350	U32	Delay End	Time to wait before deactivating alarm when conditions are no more reached. This value must be between 0 and 600
4360	BOOLEAN	Enabled/Disabled	0: disabled, 1: enabled (always disabled if alarm mode is 0)
4380	BOOLEAN	Audible alarm	0: no sound, 1: Sound in case of alarm
4390	U8	Acknowledgement duration	Allowed delay to acknowledge the alarm. This value must belong to range [0, 60]

10.5.5 Probes and module parameters

Modbus	Register type	Description	Possibilities
Probe Entry 1			
6000	F32	Lower limit of probe range, for each available measure	For maximum 10 measures (@6000: lower range of measure 1, @6002: lower range of measure 2, etc...).

6020	F32	Upper limit of probe range, for each available measure	For maximum 10 measures (@6000: upper range of measure 1, @6002: upper range of measure 2, etc...).
6040	U8	Atmospheric pressure compensation unit	cf. units enumeration
6050	F32	Atmospheric pressure compensation value. In case of pressure, this value is used for velocity calculation	In Pa.
6060	U8	Type of pressure equipment plugged in order to determine the air velocity	0: Pitot tube S, 1: Pitot tube L, 2: debimo blades, 3: other (set pressure Equipment Coeff instead), 4: None
6070	F32	Custom coefficient for pressure device plugged in order to determine the air velocity	From 0.0001 to 9.9999.
6080	U8	Room volume unit	cf. units enumeration
6090	F32	Room volume value in cubic meter used for computing air renewing rate (ACR)	In cubic meter.
6100	U8	Measurement integration	From 0 to 9.
6110	U8	Temperature compensation mode	0: Use internal sensor, 1: Manual – refer to user value, 2: Use probe id 0 (or user if not present), 3: Use probe id 1 (or user if not present), 4: Use probe id 2 (or user if not present).
6120	U8	Manual temperature compensation unit	cf. units enumeration
6130	F32	Manual temperature compensation value in Celsius degrees	From -50 to 50, in Celsius degrees.
6140	F32	Correction factor used for air velocity and airflow probes	From 0.2 to 2 - Used for air velocity and airflow probes (default = 1).
6150	U8	Type of section used for air velocity and airflow probes	0: rectangular, 1: circular, 2: other (set airflow coefficient instead), 3: None (not configured)
6160	U8	Unit for section diameter, section length and section width	cf. units enumeration
6170	F32	Section diameter value in meters (used when section type is circular)	From 0.001 to 3.
6180	F32	Section length value in meters (used when section type is rectangular)	From 0.001 to 3.
6190	F32	Section width value in meters (used when section type is rectangular)	From 0.001 to 3.
6200	F32	Airflow coefficient (allows to calculate an airflow from the pressure)	From 0.1 to 9999.9.
Probe Entry 2			
6300	F32	Lower limit of probe range, for each available measure	For maximum 10 measures (@6300: lower range of measure1, @6302: lower range of measure2, etc...).

6320	F32	Upper limit of probe range, for each available measure	For maximum 10 measures (@6300: upper range of measure 1, @6302: upper range of measure 2, etc...).
6340	U8	Atmospheric pressure compensation unit	cf. units enumeration
6350	F32	Atmospheric pressure compensation value. In case of pressure, this value is used for velocity calculation	In Pa.
6360	U8	Type of pressure equipment plugged in order to determine the air velocity	0: Pitot tube S, 1: Pitot tube L, 2: Debimo blades, 3: other (set pressureEquipmentCoeff instead), 4: None
6370	F32	Custom coefficient for pressure device plugged in order to determine the air velocity	From 0.0001 to 9.9999.
6380	U8	Room volume unit	cf. units enumeration
6390	F32	Room volume value in cubic meter used for computing air renewing rate (ACR)	In cubic meter.
6400	U8	Measurement integration	From 0 to 9.
6410	U8	Temperature compensation mode	0: Use internal sensor, 1: Manual – refer to user value, 2: Use probe id 0 (or user if not present), 3: Use probe id 1 (or user if not present), 4: Use probe id 2 (or user if not present).
6420	U8	Manual temperature compensation unit	cf. units enumeration
6430	F32	Manual temperature compensation value in Celsius degrees	From -50 to 50, in Celsius degrees.
6440	F32	Correction factor used for air velocity and airflow probes	From 0.2 to 2] - Used for air velocity and airflow probes (default = 1).
6450	U8	Type of section used for air velocity and airflow probes	0: rectangular, 1: circular, 2: other (set airflow coefficient instead), 3: None (not configured)
6460	U8	Unit for section diameter, section length and section width	cf. units enumeration
6470	F32	Section diameter value in meters (used when section type is circular)	from 0.001 to 3
6480	F32	Section length value in meters (used when section type is rectangular)	from 0.001 to 3
6490	F32	Section width value in meters (used when section type is rectangular)	from 0.001 to 3
6500	F32	Airflow coefficient (allows to calculate an airflow from the pressure)	from 0.1 to 9999.9
Module			
6600	F32	Lower limit of probe range, for each available measure	for maximum 10 measures (@6600: lower range of measure 1, @6602: lower range of measure 2, etc...)

6620	F32	Upper limit of probe range, for each available measure	for maximum 10 measures (@6600: upper range of measure 1, @6602: upper range of measure 2, etc...)
6640	U8	Atmospheric pressure compensation unit	cf. units enumeration
6650	F32	Atmospheric pressure compensation value. In case of pressure, this value is used for velocity calculation	in Pa
6660	U8	Type of pressure equipment plugged in order to determine the air velocity	0: Pitot tube S, 1: Pitot tube L, 2: Debimo blades, 3: other (set pressureEquipmentCoeff instead), 4: None
6670	F32	Custom coefficient for pressure device plugged in order to determine the air velocity	from 0.0001 to 9.9999
6680	U8	Room volume unit	cf. units enumeration
6690	F32	Room volume value in cubic meter used for computing air renewing rate (ACR)	in cubic meter
6700	U8	Measurement integration	from 0 to 9
6710	U8	Temperature compensation mode	0: Use internal sensor, 1: Manual – refer to user value, 2: Use probe id 0 (or user if not present), 3: Use probe id 1 (or user if not present), 4: Use probe id 2 (or user if not present)
6720	U8	Manual temperature compensation unit	cf. units enumeration
6730	F32	Manual temperature compensation value in Celsius degrees	From -50 to 50, in Celsius degrees.
6740	F32	Correction factor used for air velocity and airflow probes	From 0.2 to 2 - Used for air velocity and airflow probes (default = 1).
6750	U8	Type of section used for air velocity and airflow probes	0: rectangular, 1: circular, 2: other (set airflow coefficient instead), 3: None (not configured).
6760	U8	Unit for section diameter, section length and section width	cf. units enumeration
6770	F32	Section diameter value in meters (used when section type is circular)	From 0.001 to 3.
6780	F32	Section length value in meters (used when section type is rectangular)	From 0.001 to 3.
6790	F32	Section width value in meters (used when section type is rectangular)	From 0.001 to 3.
6800	F32	Airflow coefficient (allows to calculate an airflow from the pressure)	From 0.1 to 9999.9.

10.5.6 Normative values

Modbus	Register type	Description	Possibilities
6900	U8	Normative Value	

10.5.7 Measurement alarms

Modbus	Register type	Description	Possibilities
7000	BOOLEAN	Alarm 1 raised	0: Inactive, 1: Active
7010	F32	Channel 1 measured value	In unit selected for the channel (cf register 2000).
7020	U8	Channel 1 measure status	0: OK, 1: Out of range, 2: Error, 3: Heating
7030	I8	Channel 1 trend	0: down, 1: equal, 2: up, 3: not available
7040	U8	Channel 1 error reason	0: none, 1: internal, 2: not configured, 3: measure, 4: unplugged probe, 5: invalid probe, 6: probe to update
7100	BOOLEAN	Alarm 2 raised	0: Inactive, 1: Active
7110	F32	Channel 2 measured value	In unit selected for the channel (cf register 2100).
7120	U8	Channel 2 measure status	0: OK, 1: Out of range, 2: Error, 3: Heating
7130	I8	Channel 2 trend	0: down, 1: equal, 2: up, 3: not available
7140	U8	Channel 2 error reason	0: none, 1: internal, 2: not configured, 3: measure, 4: unplugged probe, 5: invalid probe, 6: probe to update
7200	BOOLEAN	Alarm 3 raised	0: Inactive, 1: Active
7210	F32	Channel 3 measured value	In unit selected for the channel (cf register 2200).
7220	U8	Channel 3 measure status	0: OK, 1: Out of range, 2: Error, 3: Heating
7230	I8	Channel 3 trend	0: down, 1: equal, 2: up, 3: not available
7240	U8	Channel 3 error reason	0: none, 1: internal, 2: not configured, 3: measure, 4: unplugged probe, 5: invalid probe, 6: probe to update
7300	BOOLEAN	Alarm 4 raised	0: Inactive, 1: Active
7310	F32	Channel 4 measured value	In unit selected for the channel (cf register 2200).
7320	U8	Channel 4 measure status	0: Ok, 1: Out of range, 2: Error, 3: Heating
7330	I8	Channel 4 trend	0: down, 1: equal, 2: up, 3: not available
7340	U8	Channel 4 error reason	0: none, 1: internal, 2: not configured, 3: measure, 4: unplugged probe, 5: invalid probe, 6: probe to update

11. Disconnection

To disconnect the transmitter from the app:

- Tap .
- Tap "Disconnect from transmitter".

The transmitter is disconnected from the app. Follow the connection procedure to connect the transmitter again.

To log out from the app:

- Tap .
- Tap "Logout".



You will no longer be connected to the app. The email and password will have to be re-entered to log in to the app.

It is not necessary to log out each time you close the app.

Sauermann Industrie
ZA Bernard Moulinet
24700 Montpon-Ménestérol
France
T. +33 (0)5 53 80 85 00
services@sauermanngroup.com

Sauermann NA
10 W. College Avenue, Unit B
Yardley, Pennsylvania 19067
T. (+1) 215-750-1212

Sauermann GmbH
Leibnizstraße 6
D – 74211 Leingarten
T. +49 (0)7131/399990
F. +49 (0)7131/399992


Sauermann UK
Units 7-9, Trident Business Park
Amy Johnson Way
Blackpool - FY4 2RP
T. +44 (0) 870 950 6378
F. +44 (0) 870 950 6379

Sauermann Italia srl S.U
Via G. Golini 61/10
40024 Castel S.Pietro Terme (BO)
T. (+39)-051-6951033
F. (+39)-051-942254

Sauermann Ibérica
C/Albert Einstein 33.
Planta 3. P. I. Santa Margarida II-
08223 Terrassa (Spain)
T. +34 931 016 975

Sauermann Australia
Unit 1/36 Campbell Ave,
Cromer, NSW, 2099
T. (+612) 8880 4631

Sauermann China
Room 209, Building 7,
No. 3000 Longdong Ave.
Pudong New District
Shanghai 201203
R.P. China
T. (+86) 21 6100 1877

 **BE CAREFUL!** Material damages can happen, so please apply the precautionary measures indicated.

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