KIMO
INSTRUMENTS

USER MANUAL

Si-ATE320
PANEL DISPLAY

Kimo, a Sauermann brand.

sauermanngroup.com

CE

Table of contents

1. Safety instructions

Before using the device, please read carefully this user manual. It delivers important information about the device operations, maintenance and storage.

1.1 Warnings

- Interior use.
- This device has been developed to display simultaneous parameters including differential pressure, temperature (Pt100 and thermocouple), hygrometry, air quality (CO/CO_2/VOC), air velocity, airflow, air change rate. It must not be used in any other purpose.
- This device has been developed and produced to be sold exclusively to trained and qualified HVACR technicians and engineers. Appropriate training might be necessary in order to ensure safe use of this instrument. Sauermann is not responsible for any possible accident during its use.
- Please always use the device in accordance with its intended use and within parameters described in the technical features in order not to compromise the protection ensured by the device.
- When using the device, the safety of the system integrating the device is the responsibility of the system assembler.
- This device can pose a risk for pacemaker wearers. Respect a distance of at least 10 cm (4") between the device and the wearer.
- Respect a safety distance with other electronic devices like computers, credit cards, computer or TV screens which could be damaged by the magnetic field of the apparel.
- Only the accessories provided with the device or available as an option must be used.
- Do not use the device if it is damaged or if it operates abnormally. Inspect the device before every use. In case of doubt, please contact Sauermann's After-sales service.
- The device must not be exposed to rain or any other humid environments (> 85 %RH) without using a proper protection.
- Do not use the device next to explosive and corrosives gases, vapours or dust.
- Do not place your fingers in movable zones of the device (articulations).
- The device must not be used in ATEX zones according to applicable standards.
- Do not store the device with solvents. Do not use desiccants. Do not use isopropanol.
- During use, keep inspecting the device and accessories for effective operation and your own safety.
- Do not give this product to a child.
- If the device falls or in case of similar inconveniences, or if an irregular malfunction appears, please send back the device to Sauermann's After-sales service for a technical check and to ensure your own safety.

1.2 Environment protection

Send back the device at its end of working life for waste collection center of electrical and electronic components (according to local regulations), or send it back to Sauermann to ensure a required waste collection in the respect of the environment.

1.3 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.

The panel display complies with 2015/863 EU (RoHS 3). Document available on request.

2.1 FCC rules

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference's by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by Sauermann could voice the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules.

Operation is subject to the following two conditions:

1. This device may not cause interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

2.2 Canadian standard

This device contains licence-exempt transmitter(s)/receiver(s) that comply with innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference
2. This device must accept any interference, including interference that may cause undesired operation of the device.

3.1 Description of the panel display

3.1.1 Overall description

1 - Touch screen
2 - Access to device settings menu
3 - Software connection
4 - Panel display power indicator

3.1.2 Screen description

1. Channel ID
2. Alarm pictogram
3. Trend indicator
4. Measured value
5. Unit of the measured value
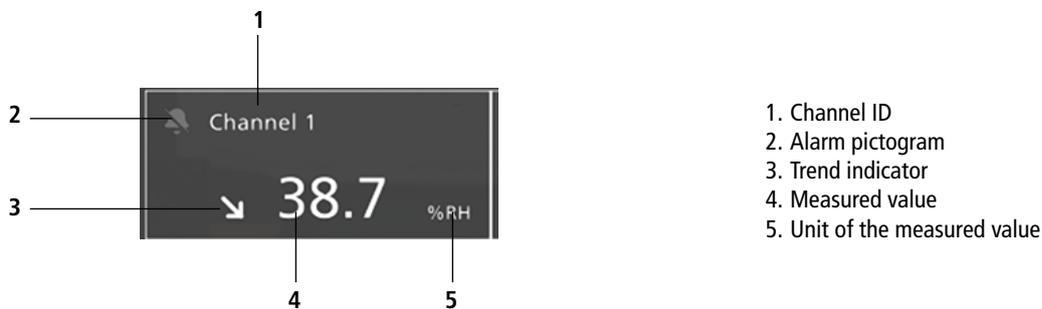
Trend indicator: on the screen, a trend indicator represented by a rising arrow, a going down arrow or a stable arrow is displayed on the left of the measurement unit. It means the calculation of a moving average on the last hour (M1) to compare with a moving average on the last 5 minutes (M2):
• If M1 = M2, the trend is stable.
• If M1 < M2, the trend is upwards.
• If M1 > M2, the trend is downward.
This trend indicator is displayed after 5 minutes.

Alarm pictogram: on the screen, an alarm pictogram is displayed for each channel. Two different pictograms can be displayed:

There is no alarm configured and activated for the channel

An alarm is configured and activated for the channel

In case of alarm, the background of the channel concerned by the alarm turns red on the screen.

In case of error, the concerned channel's background will change to orange. By tapping on the screen a message with additional information about the problem is displayed.

3.2 Connections

ModBus Slave
13 14 15

B- A+ 0 V

24 V$_{AC}$/V$_{DC}$ ±10 %, 50-60 Hz, 15 VA
Power supply terminal block

12 11 10

Phase (L)+
Neutral (N)-

NC NC NC NC NC NC

ModBus Master
3   2   1

0V1
A1 +
B1 -
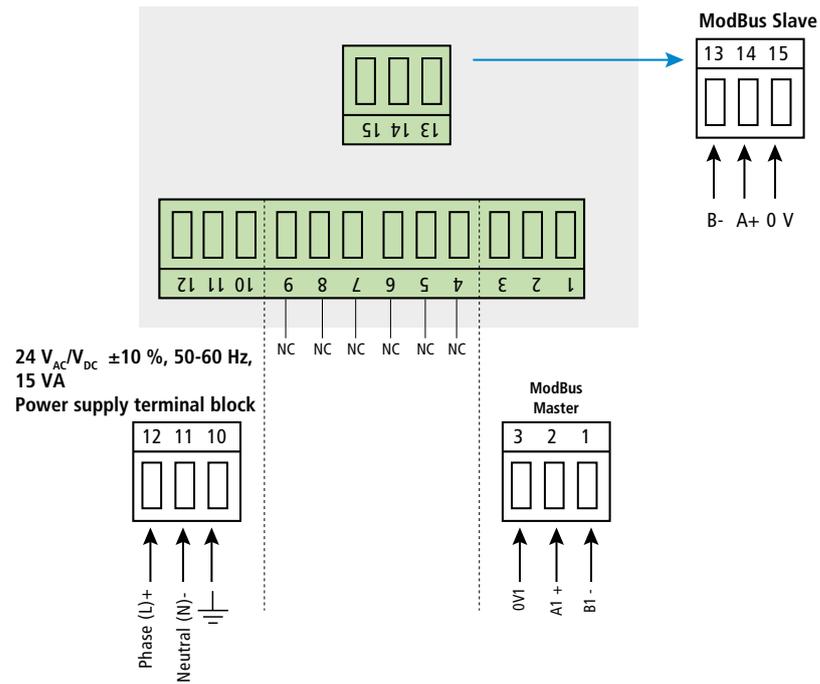
⚠️ **The panel display must be mounted before any wire connections.
The panel display must not be powered before mounting it.**

To install the transmitter on a wall:
- Make a cutting of 200 x 82 mm in the wall.
- Drill 4 holes around the cutting as shown below.
- Insert the transmitter into the wall.
- Fix it with the 4 screws (supplied with the transmitter).

ℹ️ The fixing screw is in a plastic bag into the box of the Si-ATE320. Type of screw: Cruciform screw Ø 3.5 x 12 mm

82 mm (3.23'')
76 mm (2.99'')
3 mm (0.12'')
Ø2.2 mm (0.08'')
218 mm (8.58'')
200 mm (7.87'')
Cut-out depth = 45 mm (1,77'')
9 mm (0.35'')
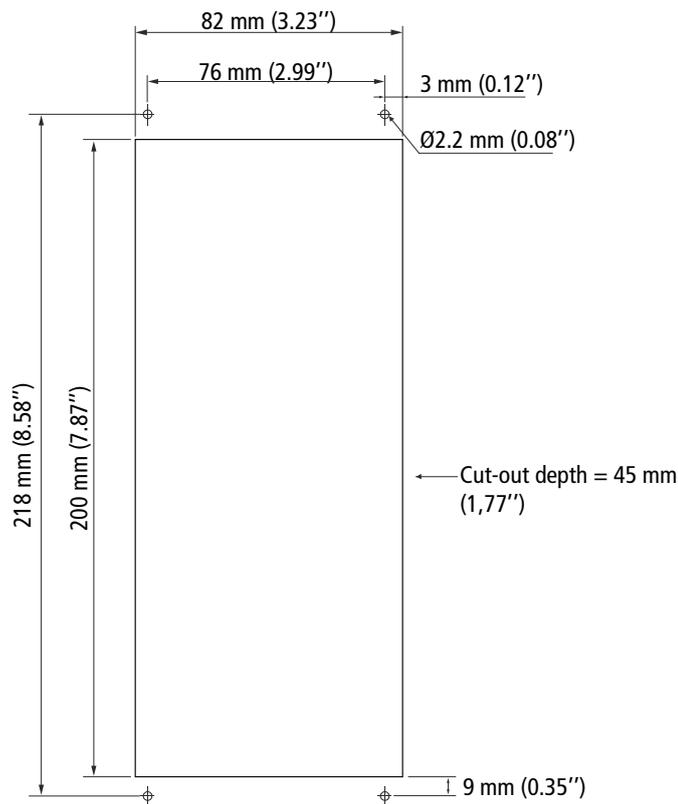
⚠️ To ensure a proper isolation of the rear side of the instrument,, use sealant of silicone type between the wall and the panel display If VHP (Vaporized hydrogen peroxide) is used, check that the seal is VHP resistant.

ℹ Electrical connections are as per NF C 15-100 standard.

⚠ **This connection must be made by a trained and qualified technician. Whilst making the connection, the transmitter must not be energized. The presence of a switch or a circuit breaker upstream the device is compulsory.**
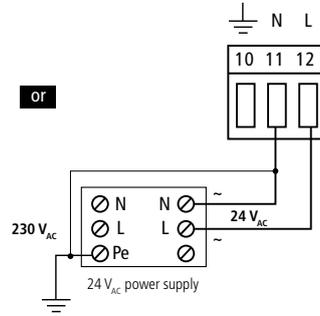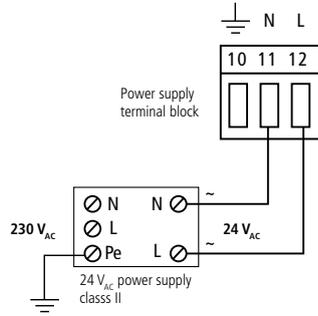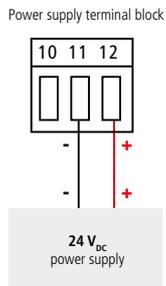
6. Modbus connection diagram between transmitters

6.1 Si-ATE320 with Si-CPE320 and Si-C320 transmitters

Si-ATE320 ModBus Master

Si-CPE320 ModBus Slave #1

Si-C320 ModBus Slave #2

Si-CPE320 ModBus Slave #3

6.2 Si-ATE320 with generic devices

Si-ATE320 ModBus Master

ModBus Slave #1

ModBus Slave #2

ModBus Slave #3
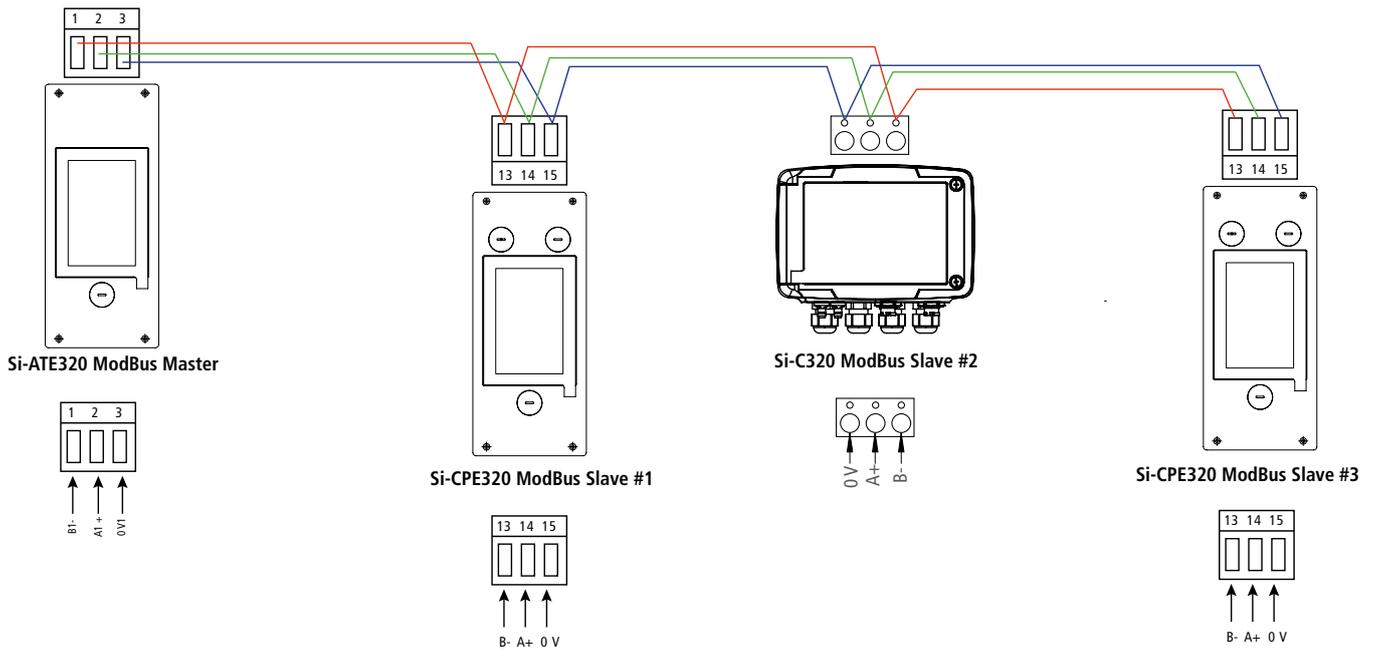
Si-ATE320 with generic devices
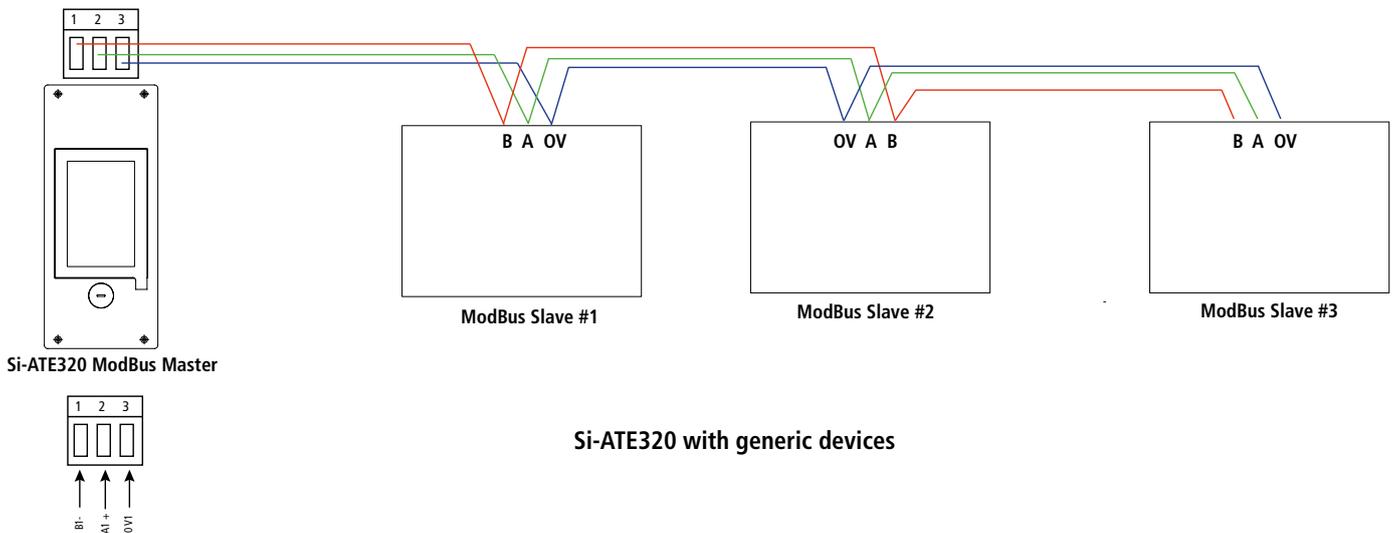
7. First Start-up

When the panel display is first started up, parameters of the transmitter must be set
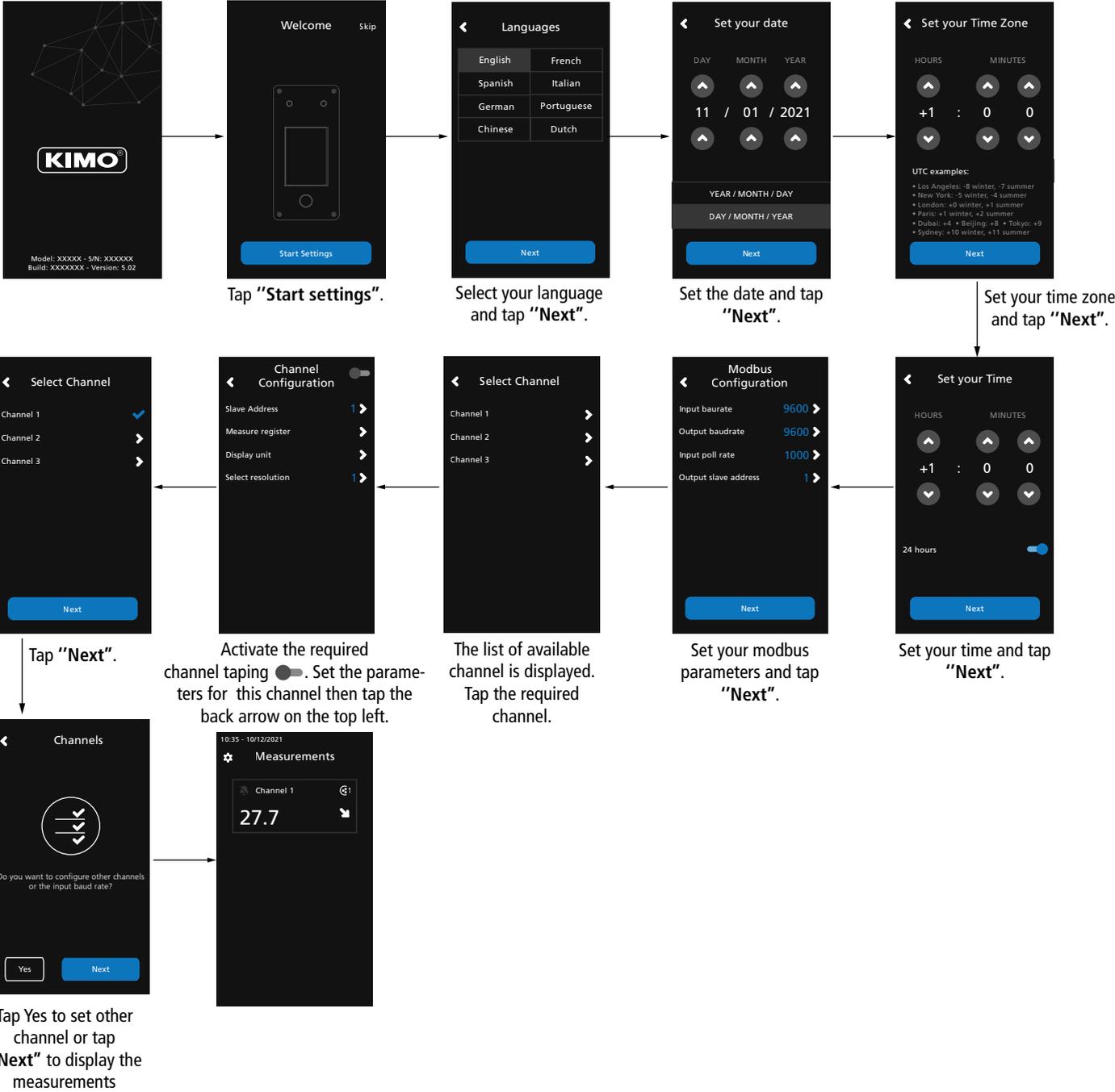
Tap **"Start settings"**.

Select your language and tap **"Next"**.

Set the date and tap **"Next"**.

Set your time zone and tap **"Next"**.

Tap **"Next"**.

Activate the required channel taping ⬤. Set the parameters for this channel then tap the back arrow on the top left.

The list of available channel is displayed. Tap the required channel.

Set your modbus parameters and tap **"Next"**.

Set your time and tap **"Next"**.

Tap Yes to set other channel or tap **"Next"** to display the measurements

8.1 General features

Power supply	24 V$_{AC}$ / V$_{DC}$ ±10% Warning: risk of electric shock ⚡
Consumption	15 VA
Electrical connections	Screw terminal block for cables from 0.05 to 1.5 mm^2 or from 30 to 16 AWG Carried out according to the code of good practices
Communication RS485	Modbus RTU protocol, configurable communication speed from 2400 to 115,200 Bauds
Input	x3 modbus RTU protocol inputs
Output	x1 modbus RTU protocol output
Audible alarm	Buzzer (60 dB at 10 cm)
Environment and type of fluid	Air and neutral gases
Conditions of use (°C/%RH/m)	From -10 to 50 °C (14 to 122 °F) In non-condensing condition From 0 to 2000 m (0 to 6561')
Storage temperature	From -10 to 70 °C (14 to 158 °F)
Security	Protection class 2 - Pollution degree 2 - Overvoltage category 2
European directives	2014/30/EU EMC - 2014/35/EU Low Voltage - 2015/863 EU (RoHS 3) - 2012/19/EU WEEE

8.2 Table of the pre-programmed units

The Si-ATE320 has a list of pre-progammed units:

Domain	Units	Resolution
Pressure	Pa, mmH$_2$O, inwg, mbar, mmHg, daPa, kPa, hPa	
Hygrometry	%RH, g/m³ g/kg, kJ/kg, °C$_{td}$, °F$_{td}$, °C$_{tw}$, °F$_{tw}$, °C$_{tf}$, °F$_{tf}$	1 / 0.1 / 0.01 / 0.001 / 0.0001 / 0.00001
Temperature	°C, °F	
Air velocity	m/s, fps	
Airflow	m³/h, l/s, m³/s, dam³/h, cfm	
Gas concentration	ppm, ppm, ppb	
Air change rate	ACH	

8.3 Features of the housing

Front face	Brushed stainless steel 316 L
Back housing	ABS V0
Protection	IP66 in front face, resistant against VHP
Display	Graphic touchscreen Size: 480 x 272 pixels
Height of the digits	14 mm (0.56")
Weight	700 g (1.54 lb)

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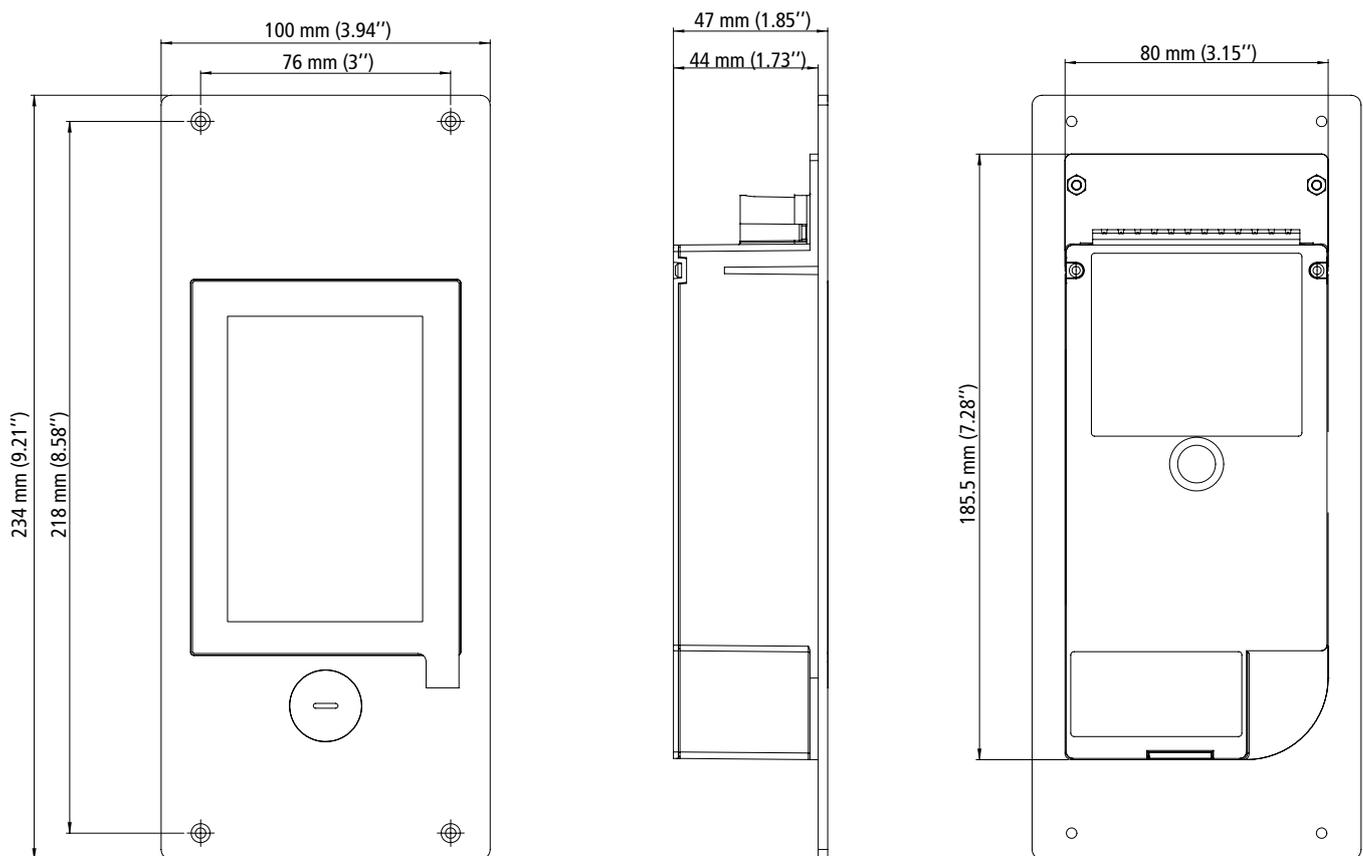
"Device Settings" menu allows to set the following items for the transmitter:

- Language
- Date, time and time zone
- Brightness

To access this menu:

- Tap ⚙ on the measurement screen.
- Enter the security code.

ⓘ Default security code is **0101**. This code can be modified in **"Security/Connectivity"** menu. See chapter 9.2 on page 18.

- Tap **"Device Settings"**.

9.1 Set the language

"Device settings" menu is displayed.

- Tap **"Languages"**.
- Tap the requested language.

ⓘ Available languages: English, French, Spanish, Italian, German, Portuguese and Chinese.

9.2 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.

9.3 Set the brightness

"Device settings" menu is displayed.

- Tap **"Brightness"**.
- Adjust the brightness of the screen from 1 to 5.
- Tap the back arrow on the top left of the screen to back to **"Device Settings"** menu.

"I/O Configurations" menu allows to set the following items:
• **Channels:** activate and set the channels
• **Modbus Configuration:** allows to set the modbus parameters
• **Alarms:** activate and set alarm features

To access this menu:

• Tap {☼} on the measurement screen.
• Tap the security code.

(i) Default security code is **0101**. This code can be modified in **"Security/Connectivity"** menu. See chapter 9.2 on page 18.

• Tap **"I/O Configurations"**.

10.1 Set the channels

"I/O Configurations" menu is displayed.
• Tap **"Channels"**.
• Tap the desired channel number (Channel 1, 2 or 3).
  Features of the channel are displayed.
• Tap **"Slave address"** to select the correct slave address between 1 and 255.
• Tap **"Measures register"** to set it.
    • **Measure register address:** enter the address number
    • **Endianness:** select the endianness between: Big Endian, Little Endian, Big Endian Byte Swap and Little Endian Byte Swap
    • **Encoding:** select the encoding type between: I8, I16, I32, U8, U16, U32, FLOAT32, CHAR or Undefined
• Tap **"Display unit"** to select the unit to display according to the parameter:
    • **Pressure:** Pa, mmH2O, inwg, mbar, mmHg, daPa, kPa, hPa
    • **Hygrometry:** %RH, g/m³ g/kg, kJ/kg, °Ctd, °Ftd, °Ctw, °Ftw, °Ctf, °Ftf
    • **Temperature:** °C, °F
    • **Air velocity:** m/s, fps
    • **Airflow:** m³/h, l/s, m³/s, dam³/h, cfm
    • **Concentration:** ppm, ppb, mg/m³, g/m³, %, g/kWh, g/GJ, g/bhp-hr or g/kg
    • **Air change rate:** ACH
    • **Custom unit:** create a custom unit according to your needs. This custom unit can have 9 characters maximum.
• Tap **"Select resolution"** to select the resolution between: 1, 0.1, 0.01, 0.001, 0.0001 and 0.00001.
• Tap the toogle at the top right of the screento activate the channel.
• Tap the back arrow on the top left of the screen until main screen is displayed.

10.2 Set the modbus

"I/O Configurations" menu is displayed.
• Tap **"Modbus Configuration"**.
• Select the input baudrate between: 2400, 4800, 9600, 19200, 38400, 57600, 76800 and 115200.
• Select the output baudrate between: 2400, 4800, 9600, 19200, 38400, 57600, 76800 and 115200.
• Select the input poll rate between 500 and 5000.
• Selelct the output slave address between 1 and 255.

10.3 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 16)**
If no channel has been configured, the alarm corresponding to the channel will be not available.

10.3.1 Set the alarm thresholds

"I/O Configurations" menu is displayed.
- Tap **"Alarms"**.
  The screen displays the alarm available.
- Tap the line of the alarm to configure.
- Tap **"Threshold up"** to enter and validate the high threshold then tap the back arrow on the top left of the screen.
- Tap **"Threshold down"** to enter and validate the low threshold then tap the back arrow on the top left of the screen.
- Tap ⬤▬ on the top right of the screen to activate the alarm.

10.3.2 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 **"Alarm parameters"**.
- Tap **"Time delay"**.
- 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 **"Alarm parameters"**.
- 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 **"Alarm parameters"**.
- Tap **"Acknowledge"**.
- Enter the alarm acknowledgement in minute.

ⓘ The acknowledgement duration must be between 0 and 60 min.

This part allows to define the security code and the touch lock functionality.

To access this menu:

- Tap {icon} on the measurement screen.
- Tap the security code.

(i) Default security code is **0101**. This code can be modified in **"Security/Connectivity"** menu. See chapter 9.2 on page 18.

11.1 Define the security code

To configure the panel display, 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 then tap OK.
- Tap **"Confirmation"**.
- Confirm the new code then tap OK.
- Tap **"Save code"** button.

11.2 Define the Touch Lock functionality

It's possible to lock the screen of the panel display 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 **"Lock delay"**.
- Enter the lock delay then tap OK.
- Tap {toggle icon} to activate the touch lock.

11.3 Reset instrument from factory

It's possible to reset the panel display to factory parameters.
"Security/Connectivity" menu is displayed.

- Tap **"Reset Instrument From Factory"**.
  The panel display displays a message asking if you are sure to back to factory settings.
- Tap Yes to confirm the reset.

or

- Tap the back arrow on the top left of the screen to cancel.

⚠ **The panel display 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
Alarms	Off
Display brightness	5
Graph timespan	24 hours

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	Last set value
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

"Information" menu allows to access to information about the device.
To access this menu:

- Tap ⚙ on the measurement screen.
- Tap the security code.

ⓘ Default security code is **0101**. This code can be modified in **"Security/Connectivity"** menu. See chapter 9.2 on page 18.

- Tap **"Information"**.
  The screen displays the following information:
  - Model
  - S/N (Serial Number)
  - Build
  - Firmware version

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

13.1 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

13.2 Functions

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

13.3 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

13.4 Enumeration table

13.4.1 Languages enumeration

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

13.4.2 Units enumeration

Identifier	Unit		Identifier	Unit
0	°C		29	t/d
1	°F		30	cm²
2	mbar		31	in²
3	inwg		32	m³
4	mmh2O		33	cf
5	mmHg		34	%RH
6	Pa		35	kj/kg
7	hPa		36	m
8	kPa		37	mm
9	psi		38	ft³/h
10	ppm		39	in
11	ppb		40	%
12	mg/m³		41	ratio
13	g/m³		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	m³/min		52	daPa
24	m³/h		53	m³/s
25	cfm		54	dam³/h
26	ft³/h		55	l/s
27	kg/h		56	fps
28	lb/h			

13.4.3 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

13.4.4 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		

13.5 Description of function and Modbus connections

13.5.1 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: mmddyyyy, 1: ddmmyyyy (where dd is day, mm is month, yyyy 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

13.5.2 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

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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

13.5.3 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 2 diagnostic: generation of a current or a voltage	This value must be between 0.0 and 1.0
3210	F32	Channel 3 diagnostic: generation of a current or a voltage	This value must be between 0.0 and 1.0
3310	F32	Channel 4 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

13.5.4 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]

13.5.5 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.

13.5.6 Normative values

Modbus	Register type	Description	Possibilities
6900	U8	Normative Value	

13.5.7 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

14. Maintenance and precautions for use

14.1 Maintenance

Please avoid any aggressive solvents. Please protect the transmitter and its probes from any cleaning product containing formalin, that may be used for cleaning rooms or ducts.

14.2 Precautions for use

Please always use the device in accordance with its intended use and within parameters described in the user manual in order not to compromise the protection ensured by the device.

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

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