E4000 air quality probe RS485 setting

Ver	Date	Modification / Update
V1	Initial	Initial version
V2	11 oct. 2012	Choice between ASCII & RTU
V3	09 dec 2013	Ventilation thresholds setting

Summary

1. Modbus

The E4000 motherboard has an embedded RS485 Modbus port.
When there is no daughter board (wired or wireless EnOcean Bus) this port is configured as a slave and can be queried to provide ventilation, cooling an heating controls as well as measures.
Refer to the E4000 Modbus document for details on the protocol.

2. Setting Tool

The probe E4000 is using an LCD configuration tool that allows setting the probe. This LCD fits on the motherboard. It is not necessary to shut down the probe to plug the tool.
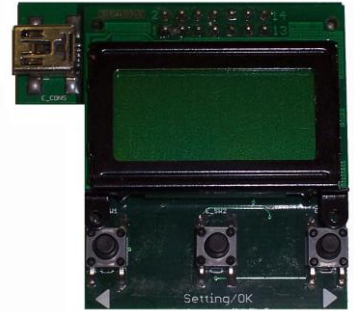
Control buttons
• The left and right buttons allow navigation in the menus.
• The middle button allows validating the menu.

3. Procedure

1) Insert the LCD, the screen displays the first line in black.
2) Start the learning mode by pressing Setting (Middle button).
3) The display shows the serial number of the probe for 3 seconds and then displays:

>	R	S	4	8	5		
	E	N	O	C	E	A	N
	S	E	T	T	I	N	G
	E	X	I	T			

The third blank line is not visible but is still accessible via the navigation buttons.

4. RS485 Address

4.1) Select "**RS485**" with the navigation buttons and press OK (Middle button).
The screen displays the following choices.

>	A	D	D	:	1	4	
	R	E	T	U	R	N	

Please note that the default address is linked to the serial number. So there is one chance for 255 to have the same address in the same manufacturing batch.

4.2) Select "ADD" (address) with the navigation buttons and press OK (Middle button).

The screen displays the following choices.

	A	D	D	:	2	5	5
<	-		O	K		-	>

Please note that the maximum address is 255. Beyond, it goes back to 1.

4.3) Press + or - to select the desired address and press OK (Middle button) to confirm
The screen displays the following choices.

>	S	A	V	E			
	C	A	N	C	E	L	

Select "**SAVE**" to save the selected address or "**CANCEL**" to cancel.

4.4) If you have saved, the screen displays the following message.

>	S	A	V	E	D		

To return to the main menu press OK

5. RS485 Protocol

5.1) Select "**RTU**" (default protocol) with the navigation buttons and press OK (Middle button) to switch to **ASCII** mode and vice versa.
The screen indicates the choice made.

	A	D	D	:	1	4	
>	R	T	U				
	R	E	T	U	R	N	

	A	D	D	:	1	4	
>	A	S	C	I	I		
	R	E	T	U	R	N	

5.2 Select "**RETURN**" with the navigation buttons and press OK (Middle button) to comeback in the main menu.

	A	D	D	:	1	4	
	A	S	C	I	I		
>	R	E	T	U	R	N	

BE CAREFUL
YOU WILL HAVE TO LEAVE VIA THE EXIT FUNCTION IF YOU WANT TO RECORD THE CHANGE.

6. Temperature Setpoint

The E4000 probe can be used as temperature sensor and control heating and cooling according to set points.
The temperature control by the E4000 probe benefits from its self-adaptive PID function.
Derogation buy the Modbus of those setpoints is permitted and will change the values set by with LCD tool.
A configuration without a Room operating panel is more suitable for facilities where the operator does not want occupants to act on the temperature setting.

The heater default setting is 20°C (18°C for ECO mode) and 30°C (33°C for ECO mode) for air conditioning but it is possible to change this setting as follows.

	R	S	4	8	5		
	E	N	O	C	E	A	N
>	S	E	T	T	I	N	G
	E	X	I	T			

6.1) From the main menu, select "SETTING" and press OK (Middle button).
The screen displays the following choices:

	S	T	E	P	S		
>	T	E	M	P			
	R	E	P	E	A	T	
	R	E	T	U	R	N	

6.2) Then select "TEMP" and press OK (Middle button).(STEPS and REPEAT are not available in RS485)
The screen displays the following choices:

>	H	E	A	T	I	N	G
	C	O	O	L	I	N	G
	R	E	T	U	R	N	

6.3) Select "**HEATING**" or "**COOLING**" to determine the temperature of heating or cooling set point and press OK (Middle button).
The screen displays the following choices:

>	C	O	N	F	O	R	T
	E	C	O	N	O	M	Y
	R	E	T	U	R	N	

6.4) Select "**CONFORT**" or "**ECONOMY**" and press OK (Middle button).
The screen displays the following choices:

	2	0	.	0	°	C	
	6	8	.	0	°	F	
	R	E	T	U	R	N	

6.5) Select °**C** or °**F**, press OK (Middle button) and adjust the temperature with + and - and then confirm by pressing (Middle button).

	2	0	.	1	°	C	
<	-	-	O	K	-	-	>

The economic mode value temperature set point is limited to the one of the comfort mode. Therefore the comfort temperature must be set first.

Beware the temperature setting is limited to 5 ° C between heating and cooling (comfort zone). If it becomes impossible to increase the heating temperature set point, come back to the cooling set point and increase the value.
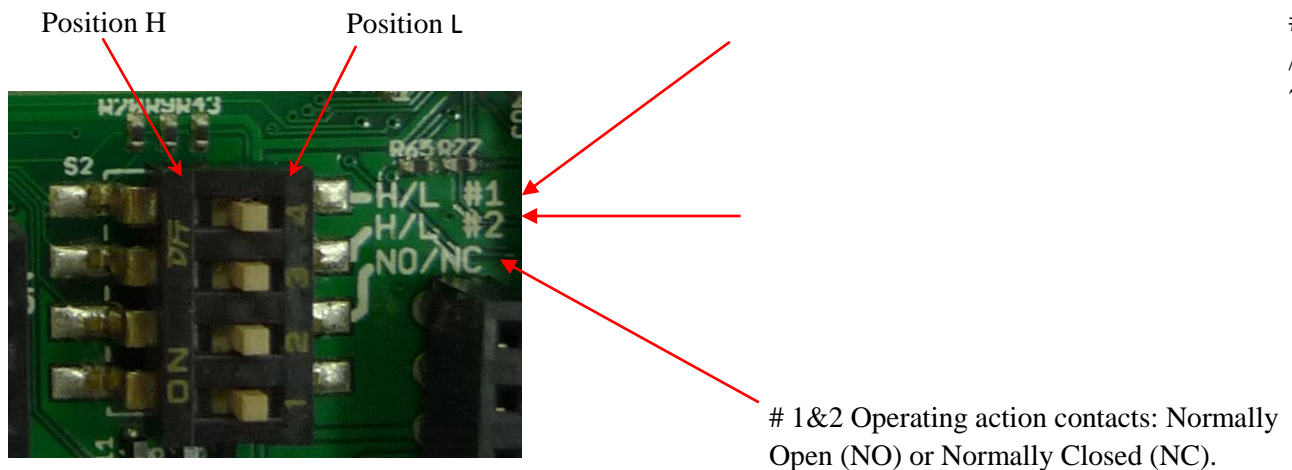
Please note that the choice of parameters in ECO mode is not available in RS485 slave mode (without EnOcean, LON or KNX board) (see next page).

6.6) Comeback in the main menu.

	R	S	4	8	5		
>	E	N	O	C	E	A	N
	S	E	T	T	I	N	G
	E	X	I	T			

7. Ventilation thresholds setting

Modbus commands operate based on CO2, VOCs and RH parameterized thresholds by three micro switches:

Position H   Position L

1 Thresh
/ 0.5 ppm f
75% RH o

2 Thresh
(selectable
(VOCs) or
L = Low

1&2 Operating action contacts: Normally Open (NO) or Normally Closed (NC).

Modbus return the status of the three micro-switches and dry contacts of a virtual or real analog board based on threshold settings. Hystereses of contacts: CO2: 100ppm, VOC: 10% of the formaldehyde threshold equivalent, HR: 10% of the threshold.

A continuously Modbus command is also matching the 0-10V output of a virtual or actual analog board.
In both cases see http://www.nano-sense.com/Docs/UK/E4000/E4000-Analog-option.pdf

Continuous command corresponds to a mix of CO2, VOC and humidity (with an OR function: the most significant prevailing over others). Only the switch # 1 has an action on the control of continuous ventilation. Minimum ventilation of 10% is always provides for building hygiene.

SN# 41111
21000530

FRM N°
1.93

RS485
ENOCEAN
SETTING
EXIT

RS485
ONLY — NO / YES

SCAN
RETURN

ADD
XX SLAVE

ADD:XXX
RTU
RETURN

ADD
XXX

ASCII

SAVE
CANCEL

SAVED

GATEWAY — YES / NO

CHANNEL
TEST
RETURN

1 XXX
2 XXX
3 XXX
4 ---
5 ---
6 ---

A1 ---
A2 ---
A3 ---
RETURN

WAITING
TELEGRAM

1- XXX
ID XXX

FAN
TEMP
ECO
CO2
VOC
RADON
PART
OZONE
RETURN

XXX
RETURN

HVAC.1
HVAC.2
HVAC.3
STEPS
2SPEEDS
UNUSED
RETURN

CMD LS
CMD HS
RETURN

YES
NO

LEARN
VIEW ID
ERASE
RETURN

ACTUATOR — YES / NO

SENDING
LRN MS

WAITING
TELEGRAM

BI DIR — YES / NO

ID
XXX

YES
NO

ERASED

ID
XXX

SAVE
CANCEL

SAVED

STEPS
TEMP
REPEAT
RETURN

REPEATER
YES / NO
RETURN

YES
NO

SAVE
CANCEL

L PRESS
DIM TIM
STEPS
RETURN

L PRESS
X.XX S

DIMMING
X.X S

STEPS
XXX

HEATING
COOLING
RETURN

1 XXX
2 ---
3 ---
4 ---
5 ---
RETURN

HVAC.10
VALVE.1
VALVE.2
VALVE.3
TMP REG
RETURN

1 SWIN
2 HAND
3 CARD
4 ---
5 ---
6 ---
7 ---
8 ---
9 ---
10 ---
RETURN

HANDLE
WINDOW
OCCUPCY
L T°OCC
CARD
OCCU SW
RETURN

HEATING
COOLING
RETURN

ENOCEAN
MODULE — YES / NO

CONFORT
ECONOMY
RETURN

20.0°C
68.0°F
RETURN

18.0°C
64.4°F
RETURN

ENOCEAN
MODULE — YES / NO

CONFORT
ECONOMY
RETURN

30.0°C
86.0°F
RETURN

33.0°C
91.4°F
RETURN

XX°C>
<--OK-->

XX°F>
<--OK-->

SAVE
RETURN

SAVE
RETURN