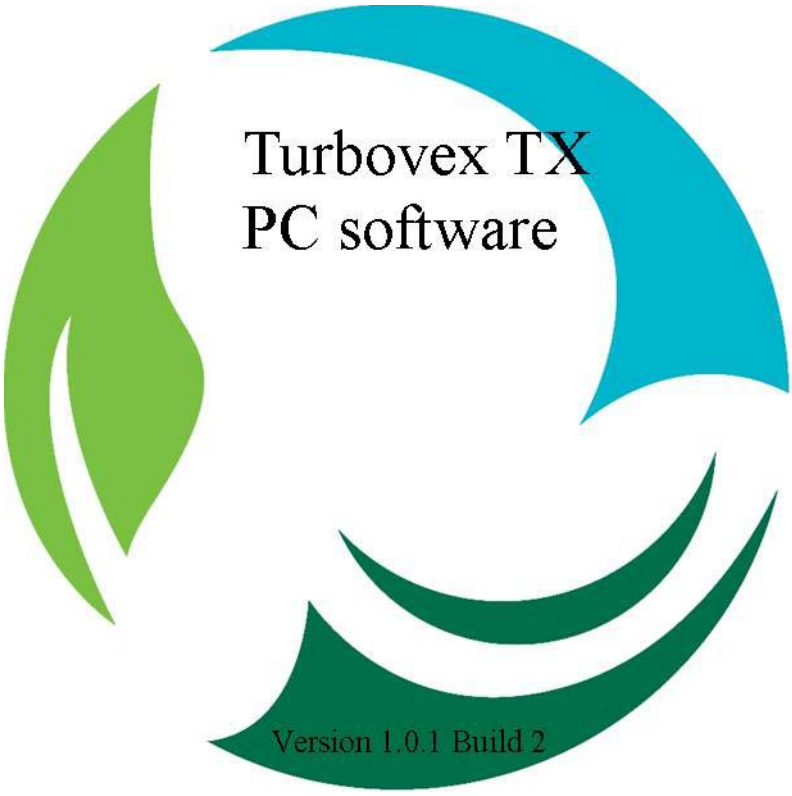
Turbovex TX Modbus configuration guide



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1.0 Table of content

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2.0 General Information

With Turbovex TX MODBUS it possible to control the units using an existing network or trough the Turbovex TX PC software.

To use the Modbus network function you must use an additional circuit board for each unit. These circuit boards must be mounted on the existing master circuit board of each unit.

Since the master circuit board only has one expansion slot, it is not possible to connect any units to the MODBUS network that are using the master/slave function since they also require an expansion board.

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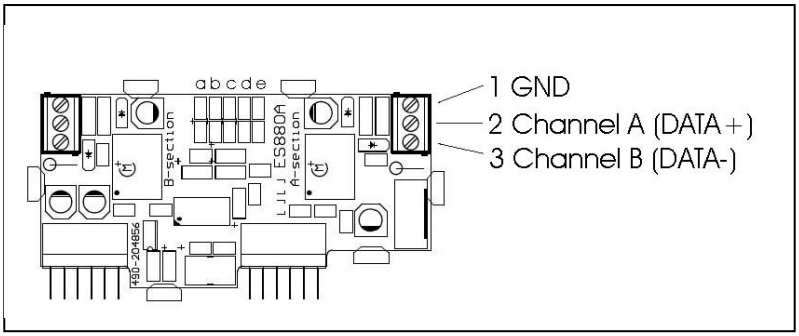
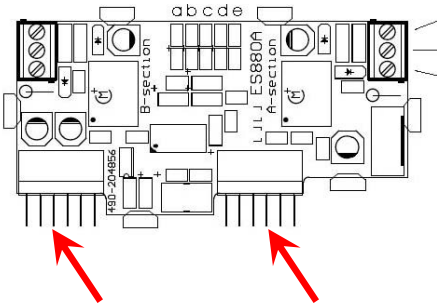
3.0 Modbus Print installation

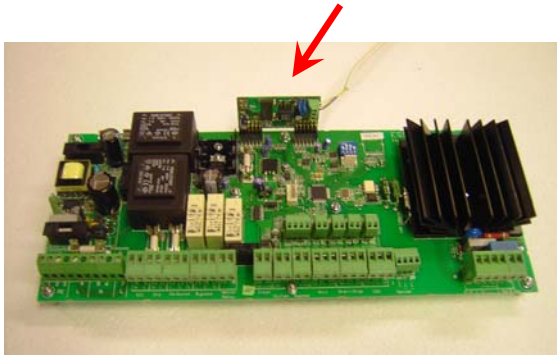
Turbovex TX Modbus print:



- IMPORTANT!! Turn the power off the unit.

- Mount the MODBUS expansion board on the master circuit board of the unit.





The print mounded on the main print

- Connect the MODBUS circuit board to the network. (See section 5.0 Electrical Diagram)

- Turn the power on

- Use the display to give each unit a network address (D18 = address nb.(imported not the same number on each unit.) and connect the Modbus print (D5 = 1)

> Note!
>
> You find the parameters in the settings menu on the display. (Password 9662)

- After setting the address on the display, reboot the unit by turning off the power at turning it back on.

Now the unit is ready to setup the network.

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4.0 Turbovex TX PC software

4.1 Convertor box

The convertor box from Turbovex is a box that translates the signal from the unit (RS485) to the computer (USB).

Before you can use the box on the computer, you have to install a driver. The driver is on the included CD.

- Inset the disk in the computer.
- Connect the box to the computer through the USB cable.

- A guide for installing new hardware will pop up on the screen.

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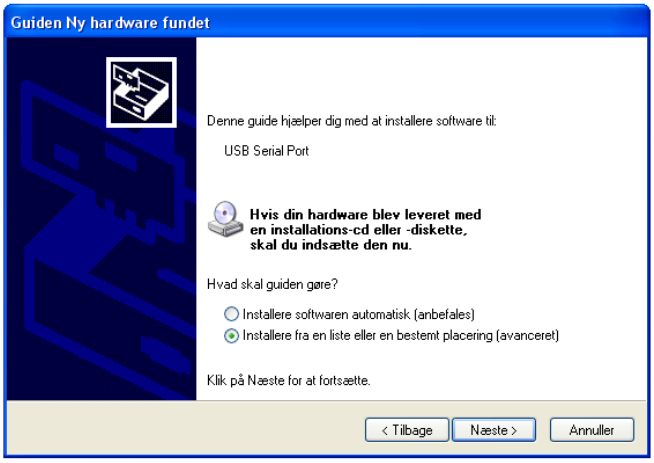
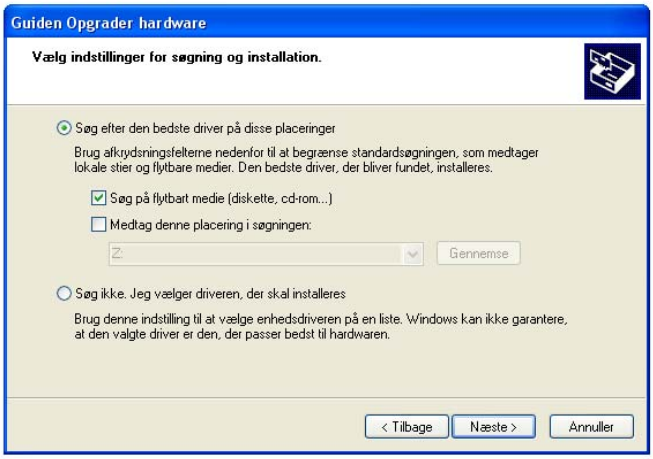
- Select No, not this time and continue.



- Select install for a list or a specific location and continue.



- Search for the best driver. And continue
- The installation will now start over again. Do the same and the driver installation will be complete.

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4.2 PC Software installation.

- Inset the CD with the Turbovex TX PC software

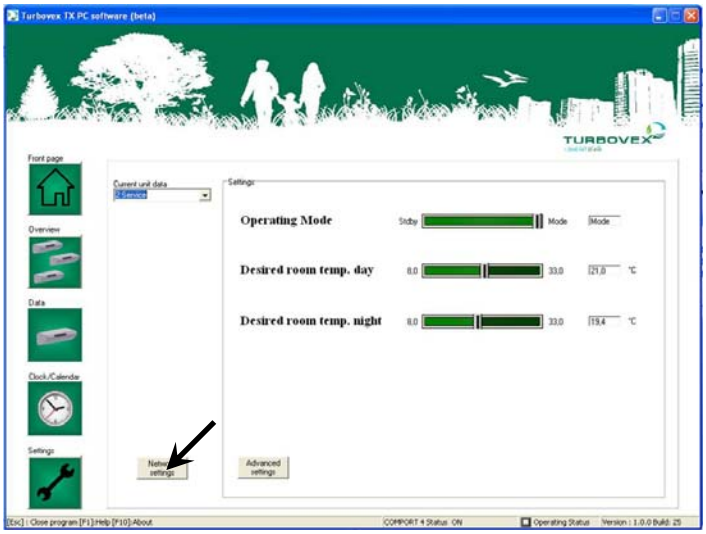
- Double click on the “TX Master setup” button.
- Follow the installations guide.

4.3 Create new network

Before the TX PC program, can be used you have to make sure that the units are connected correct. See section 5.0 Electrical diagram.

The first time you use the program, you will have to create a new network.

- Open the program, and go to setting and click “Network settings”



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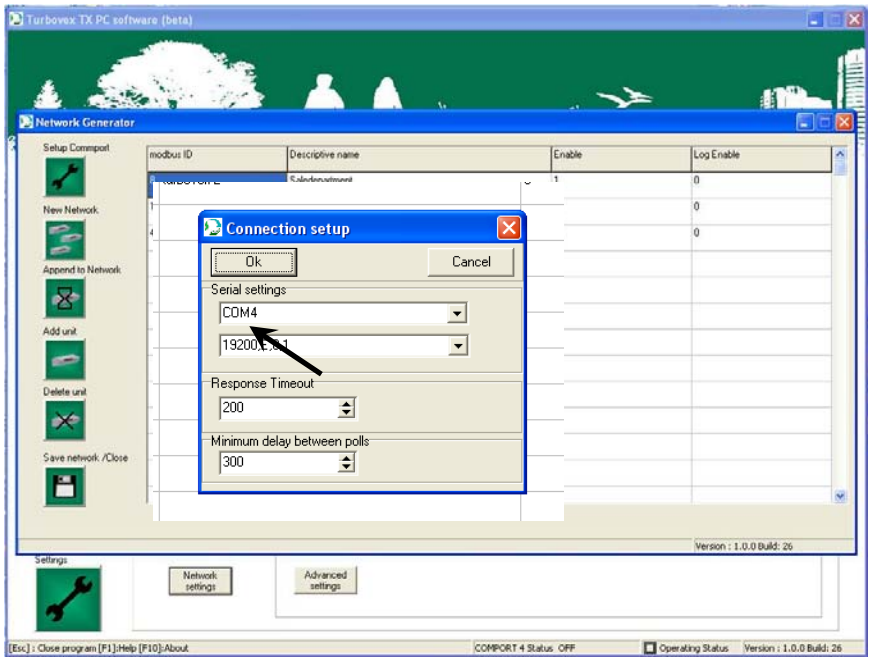
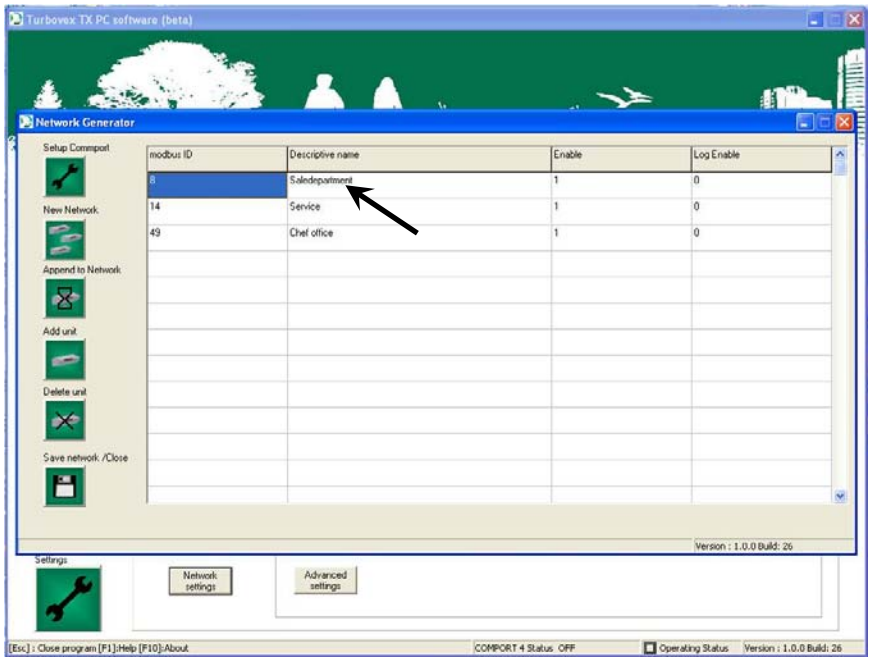
- Go to Setup comport and select the correct Com settings.



- Now create a new network, push the button ”New network” and the program will search for units.

When the program has found all the units, you can write a new name for each unit. Remember to press “save network file” when done.



Close and the program is ready to run.

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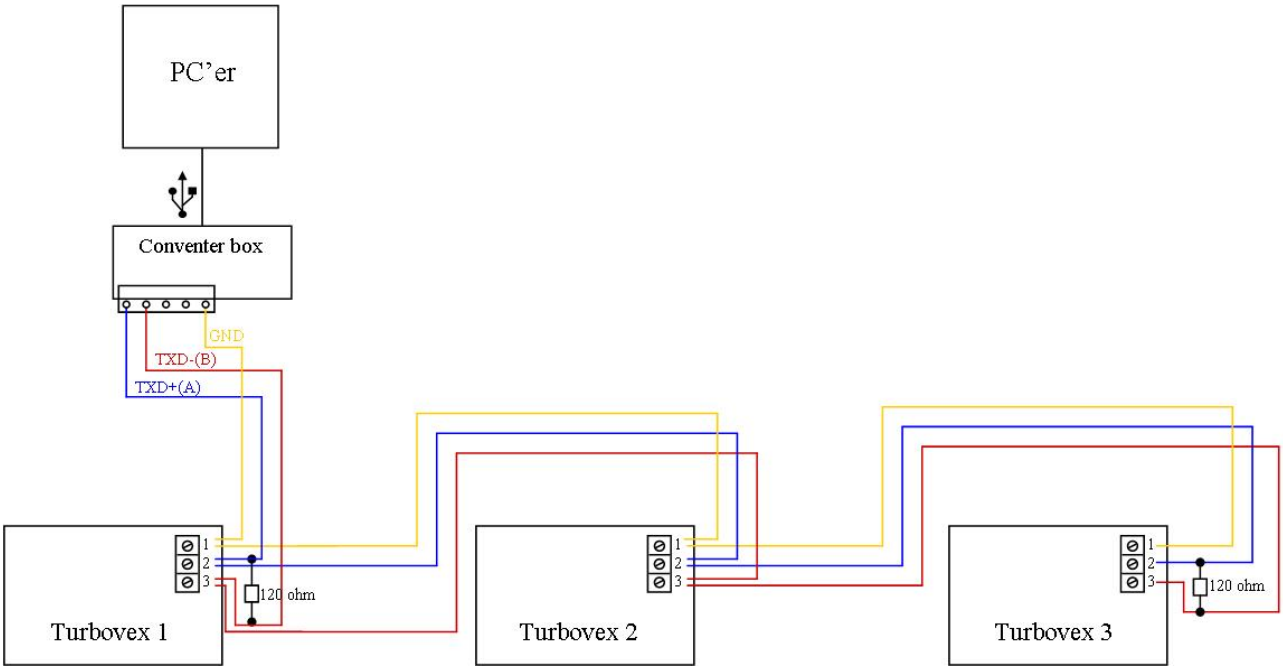
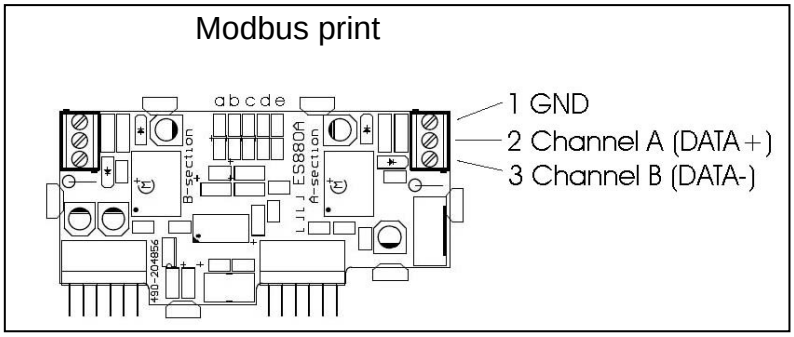
5.0 Electircal diagram

The following diagram shows the Modbus print installed on each unit and connected to a computer using the USB/RS485 converter box.

Connect the units to the converter box according to the electrical diagram.

The cable must be a 2-wire twisted cable with screen (AWG26)





Use the display to give each unit a network address (D18 = address nb.(imported not the same number on each unit.) and connect the Modbus print (D5 = 1)

> Note!
>
> You find the parameters in the Teknik menu in the display. (Password 9662)

After setting the address on the display, reboot the unit by turning off the power and then turning it on again.

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6.0 Existing Network

To use an existing network, you have to use this protocol in the next pages.

Modbus Protocol for ES880 Turbovex

Mode:	RTU	(MSB first)
Baud:	9600/19200	Default = 19200
Start bits:	1	
Data bits:	8	
Stop bits:	1/2	Default = 1
Parity:	Even/Odd/None	Default = Even
Address:	1 - 247	Default = 55
Registers map:		
Support function:	3, 4, 6, 17, 8	

Register number	Data description	R/W	Length	Units	Valid responce	Remarks
3x0000	T1 Inlet outdoor temperature (0.1^0 C)	R	1	UINT16	-30^0C – 70^0C	To find the temperature from the returned value, use this equation: $\frac{Value - 300}{10} = Temperature$ eg: 00 = -30^0C, 01 = -29.9^0C 299 = -0.1^0C, 300 = 0.0^0C, 301 = 0.1^0C 999 = 69.9^0C, 1000 = 70^0C
3x0001	T2 Inlet room temperature (0.1^0 C)	R	1	UINT16	-30^0C – 70^0C	
3x0002	T3 Exhaust room temperature (0.1^0 C)	R	1	UINT16	-30^0C – 70^0C	
3x0003	T4 Exhaust outdoor temperature (0.1^0 C)	R	1	UINT16	-30^0C – 70^0C	
3x0004	CO_2 external input	R/W	1	UINT16	0 – 2000 ppm	Write with function 6. Invalid value 9999 disable external input
3x0005	CO_2 internal output (ppm)	R	1	UINT16	0 – 2000 ppm	
3x0006	Fan, Inlet speed (%)	R	1	UINT16	0 – 100 %	
3x0007	Fan, Exhaust speed (%)	R	1	UINT16	0 – 100 %	
3x0008	Heat level (%)	R	1	UINT16	0 – 100 %	
3x0009	Bypass damper position (%)	R	1	UINT16	0 – 100 %	
3x0010	Current unit status	R	1	UINT16	0 – Standby 1 – Day mode 2 – Night mode	
3x0011	Current alarm bits	R	1	UINT16		Bit 0 = Normal Bit 1 = Fire Bit 2 = Filter
3x0012	Current set point	R	1	UINT16		8 – 33^0C
3x0013	Program version, controller	R	1	UINT16		1 = 0.1
3x0014	Program version, display	R	1	UINT16		1 = 0.1
3x0015	Program version, Modbus controller	R	1	UINT16		1 = 0.1
3x0016	Version, Modbus library	R	1	UINT16		1 = 0.1

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Register number	Data description	R/W	Length	Units	Valid responce	Remarks
4x0059	Modbus Address	R/W	1	UINT16	1 - 247	Write with function 6
4x0060	Modbus Baud rate	R/W	1	UINT16	1 = 19200 2 = 9600	Write with function 6
4x0061	Modbus Parity	R/W	1	UINT16	1 = Even 2 = Odd 3 = None	Write with function 6
4x0062	Modbus stop bits	R/W	1	UINT16	1 = 1 2 = 2	2 stop bits must be chosen if parity none is chosen
4x0021	C4 Bypass on (Off/On)	R/W	1	UINT16	0 = Off 1 = On	Write with function 6
4x0018	C1 Force time (min)	R/W	1	UINT16	0 - 250	Write with function 6
4x0019	C2 Extend time (min)	R/W	1	UINT16	0 - 250	Write with function 6
4x0020	C3 PIR time (min)	R/W	1	UINT16	0 - 250	Write with function 6
4x0029	C12 CO_2 reg ON	R/W	1	UINT16	0 = off 1 = with stop 2 = without stop	Write with function 6
4x0030	C13 CO_2 Setpoint, Day mode (ppm)	R/W	1	UINT16		Write with function 6
4x0031	C14 CO_2 Setpoint, Night mode (ppm)	R/W	1	UINT16		Write with function 6
4x0000	A1 Temp Setpoint, Day mode (^{0}C)	R/W	1	UINT16		Write with function 6
4x0001	A2 Temp Setpoint, Night mode (^{0}C)	R/W	1	UINT16		Write with function 6
4x0115	Scheduler mode	R/(W)	1	UINT16	0 = Standby 1 = day mode 2 = Night mode 3 = PIR mode	Write with function 6 (6x0142). This will override the calendar if value < 9. 9 = disable input
4x0038	C21 Night cool ON (OFF/ON)	R/W	1	UINT16		Write with function 6
4x0039	C22 Night cool fixed speed inlet (%)	R/W	1	UINT16		Write with function 6
4x0040	C23 Night cool fixed speed outlet (%)	R/W	1	UINT16		Write with function 6
4x0041	C24 Night cool bood time (min)	R/W	1	UINT16		Write with function 6
4x0014	C25 Night cool frost protection (^{0}C)	R/W	1	UINT16		Write with function 6
4x0015	C26 Night cool room temp. hysteresis (^{0}C)	R/W	1	UINT16		Write with function 6
4x0016	C27 Night cool start time (Time)	R/W	1	UINT16		Write with function 6
4x0017	C28 Night cool stop time (Time)	R/W	1	UINT16		Write with function 6
4x0038	C21 Night cool ON (OFF/ON)	R/W	1	UINT16		Write with function 6
4x0039	C22 Night cool fixed speed inlet (%)	R/W	1	UINT16		Write with function 6
4x0040	C23 Night cool fixed speed outlet (%)	R/W	1	UINT16		Write with function 6
4x0041	C24 Night cool boot time (min)	R/W	1	UINT16		Write with function 6
4x0014	C25 Night cool frost protection (°C)	R/W	1	UINT16		Write with function 6
4x0015	C26 Night cool room temp. hysteresis (°C)	R/W	1	UINT16		Write with function 6
4x0016	C27 Night cool start time (Time)	R/W	1	UINT16		Write with function 6
4x0017	C28 Night cool stop time (Time)	R/W	1	UINT16		Write with function 6

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Register number	Data description	R/W	Length	Units
6x0059	Modbus address	W	1	UINT16
6x0060	Modbus Baudrate	W	1	UINT16
6x0061	Modbus Parity	W	1	UINT16
6x0062	Stop Bits	W	1	UINT16
6x0004	CO2 external input	W	1	UINT16
6x0021	C4 Bypass ON (OFF/ON)	W	1	UINT16
6x0018	C1 Force time	W	1	UINT16
6x0019	C2 Extend time	W	1	UINT16
6x0020	C3 PIR time	W	1	UINT16
6x0029	C12 CO2reg	W	1	UINT16
6x0030	C13 CO2 Setpoint Daymode [ppm]	W	1	UINT16
6x0031	C14 CO2 Setpoint Nightmode [ppm]	W	1	UINT16
6x0000	A1 Temp setpoint Daymode [°C]	W	1	UINT16
6x0001	A2 Temp setpoint Nightmode [°C]	W	1	UINT16
6x0142	Scheduler Mode	W	1	UINT16
6x0143	External CO2 input	W	1	UINT16

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