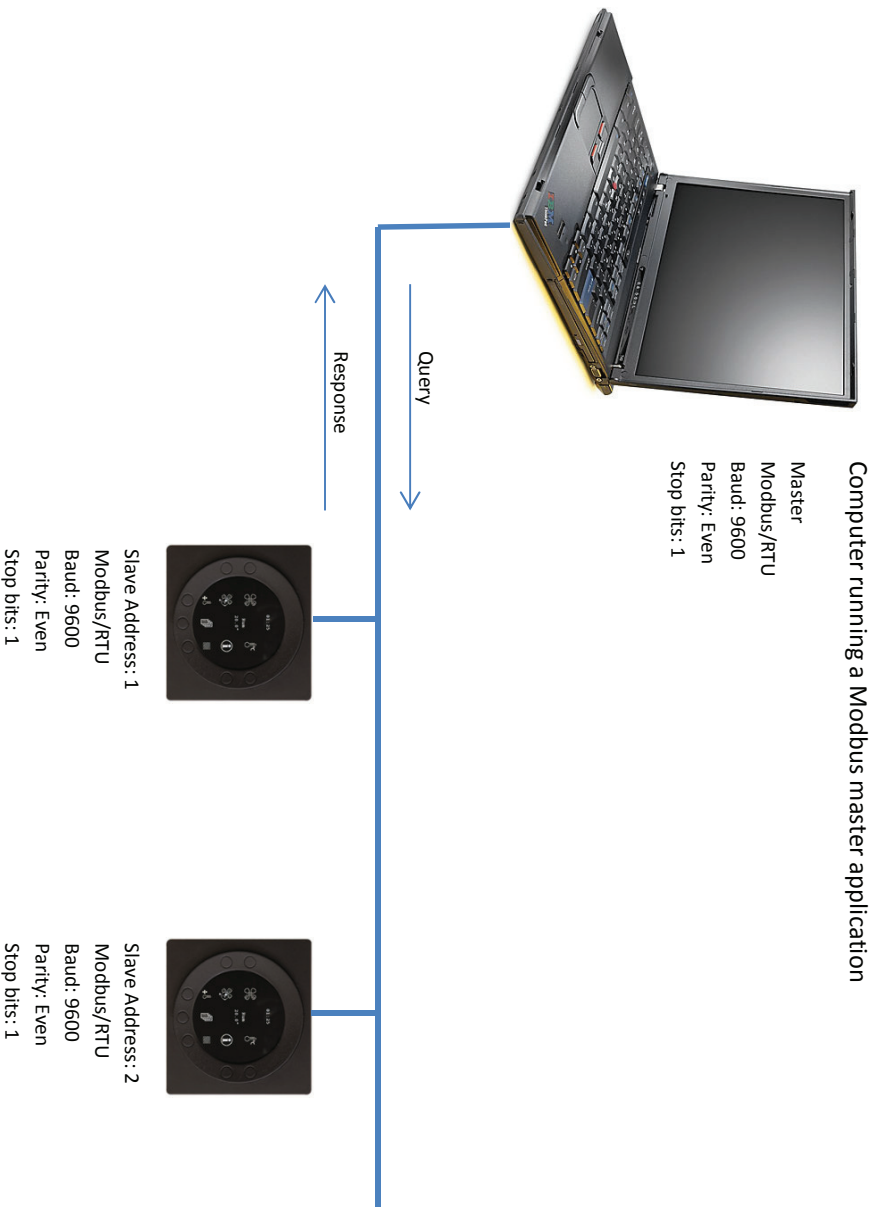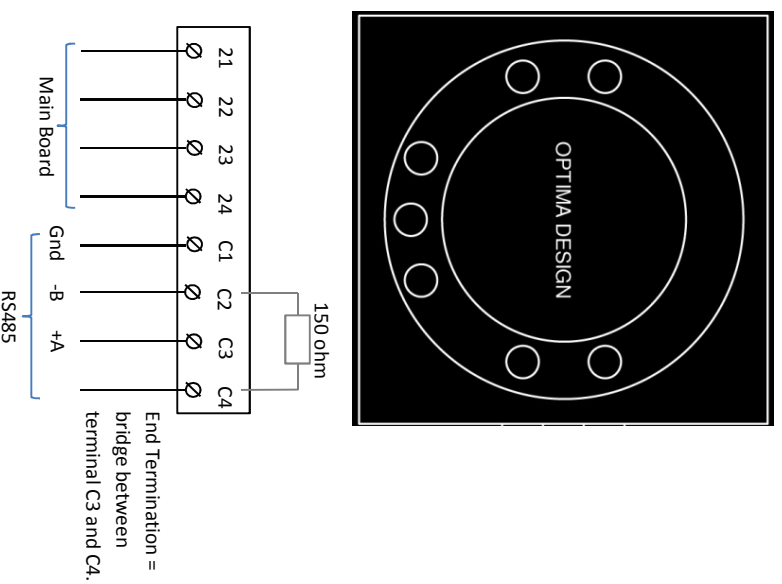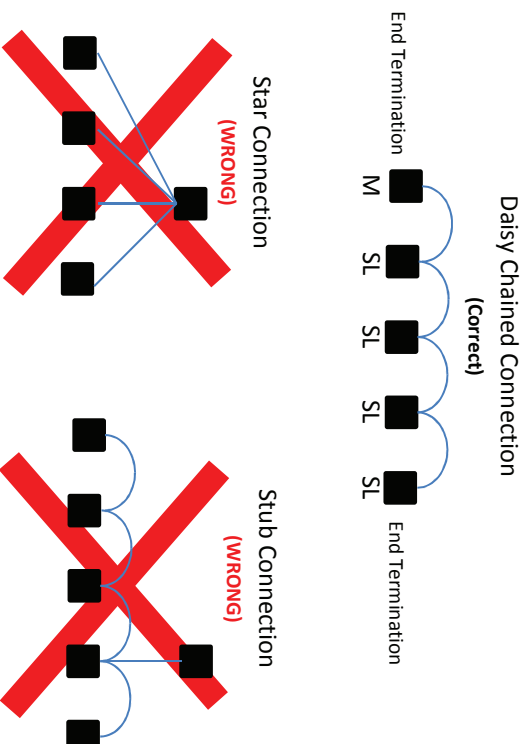# Modbus Communication:

Optima 250, Design Panel SW 2.3 with MODBUS.

A Modbus network consists of one Master unit and one or more Slave units. The master controls the communication and requests information from the slave units. The rules for communication are set by the protocol. The Modbus protocol specification can be downloaded for free from the Modbus Organization. www.modbus.org

Computer running a Modbus master application

Master
Modbus/RTU
Baud: 9600
Parity: Even
Stop bits: 1

Response

Query

Slave Address: 1
Modbus/RTU
Baud: 9600
Parity: Even
Stop bits: 1

Slave Address: 2
Modbus/RTU
Baud: 9600
Parity: Even
Stop bits: 1

Connection.

Screened twisted pair cable should be used 2x2x0,25mm². The cable screen should be connected to the "Gnd" terminal. The cable should be terminated at each end with a 150 ohm resistor and "Daisy Chain" or "straight line" connection should be used. A "Star" or network with "Stubs (Tees)" is not recommended as reflection within the cable may result in data corruption.

Daisy Chained Connection

(Correct)

End Termination

M SL SL SL SL SL

End Termination

Star Connection

(WRONG)

Stub Connection

(WRONG)

OPTIMA DESIGN

21 22 23 24 C1 C2 C3 C4

Main Board

Gnd -B +A

RS485

150 ohm

End Termination = bridge between terminal C3 and C4.

RS485 setup:

Standard:

Modbus application protocol specification V1.1b3 Modbus over serial line V1.02

Mode:	RTU		(MSB first)	
Baud:	0=Modbus off, 1=9600, 2=19200	default		0
Start bits	1	fixed		
Data bits	8	fixed		
Stop bits	1	fixed		
Parity	Even	fixed		
Adress	1-247	default		1

Function:

Code	Description	Description
01	Read coils	Read the status off the coils (0X)
02	Read Discrete Inputs	Read the status off discrete inputs. (1X)
03	Read Holding Registers	Read the contents of read/write location (4X)
04	Read Input Registers	Read the contents of read only location (3X)
06	Write Single Register	Used to write a single holding register in a remote device.
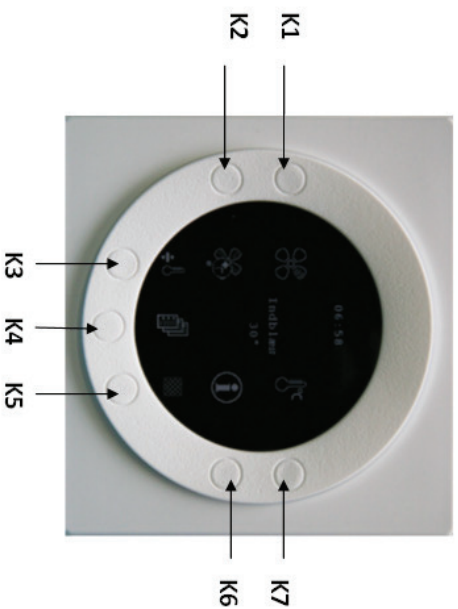
1. Press K4 to enter the main menu

2. Press K5 ("arrow up") choose service menu

3. Press K4 ("enter")

4. Press K5 until the arrow reaches menu point 30

5. Press K4 ("enter") choose mode

6. Press K3 ("-") or K5 ("+") to choose menu point

Menupunkt 30 = modbus mode

- 0 = modbus off (USB ON)
- 1 = 9600 baud (USB OFF)
- 2 = 19200 baud (USB OFF)
- *Factory set points: 0*

7. Press K4 ("enter") save the setting

8. Press K6 ("exit") back to the main menu

9. Press K6 ("exit")

Register:

Register No	Data description	R/W	Size	Units	Valid response	Remarks						
0x0000	Relay 1	R	1	UINT16	ON/OFF	0=OFF 1=ON						
0x0001	Relay 2	R	1	UINT16	ON/OFF	0=OFF 1=ON						
0x0002	Relay 3	R	1	UINT16	ON/OFF	0=OFF 1=ON						
0x0003	Relay 4	R	1	UINT16	ON/OFF	0=OFF 1=ON						
0x0004	Relay 5	R	1	UINT16	ON/OFF	0=OFF 1=ON						
0x0005	Relay 6	R	1	UINT16	ON/OFF	0=OFF 1=ON						
0x0006	Relay 7	R	1	UINT16	ON/OFF	0=OFF 1=ON						
0x0007	Relay 8	R	1	UINT16	ON/OFF	0=OFF 1=ON						
0x0008	Relay 9	R	1	UINT16	ON/OFF	0=OFF 1=ON						
0x0009	Relay 10	R	1	UINT16	ON/OFF	0=OFF 1=ON						
0x0010	Relay 11	R	1	UINT16	ON/OFF	0=OFF 1=ON						
0x0011	Not Used Digital out 1	R	1	UINT16	ON/OFF	0=OFF 1=ON						
0x0012	Not Used Digital out 2	R	1	UINT16	ON/OFF	0=OFF 1=ON						
0x0013	Not Used Digital out 3	R	1	UINT16	ON/OFF	0=OFF 1=ON						
0x0014	Not Used Digital out 4	R	1	UINT16	ON/OFF	0=OFF 1=ON						
1x0000	Hygrostat	R	1	UINT16	ON/OFF	0=OFF 1=ON						
1x0001	Start/stop	R	1	UINT16	ON/OFF	0=OFF 1=ON						
1x0002	Not Used Digital in1	R	1	UINT16	ON/OFF	0=OFF 1=ON						
1x0003	Not Used Digital in2	R	1	UINT16	ON/OFF	0=OFF 1=ON						
1x0004	Not Used Digital in3	R	1	UINT16	ON/OFF	0=OFF 1=ON						
1x0005	Not Used Digital in4	R	1	UINT16	ON/OFF	0=OFF 1=ON						

Register No	Data description	R/W	Size	Units	Valid response	Remarks						
3x0000	T1	R	1	UINT16	-30°C - 70°C	300=0.0°C						
3x0001	T2	R	1	UINT16	-30°C - 70°C	300=0.0°C						
3x0002	T3	R	1	UINT16	-30°C - 70°C	300=0.0°C						
3x0003	T4	R	1	UINT16	-30°C - 70°C	300=0.0°C						
3x0004	T5	R	1	UINT16	-30°C - 70°C	300=0.0°C						
3x0005	T6	R	1	UINT16	-30°C - 70°C	300=0.0°C						
3x0006	T7	R	1	UINT16	-30°C - 70°C	300=0.0°C						
3x0007	T8	R	1	UINT16	-30°C - 70°C	300=0.0°C						
3x0008	T9	R	1	UINT16	-30°C - 70°C	300=0.0°C						
3x0009	T2 Panel	R	1	UINT16	-30°C - 70°C	300=0.0°C						
3x0010	Not Used CO2	R	1	UINT16	0-2000 ppm							
3x0011	Not Used Hum	R	1	UINT16	0-100%							
3x0101	Alarm	R	1	UINT16	Bits							
3x0102	Inlet fan	R		UINT16	0-100%							
3x0103	Extract fan	R	1	UINT16	0-100%							
3x0104	Bypass	R	1	UINT16	0-100%							
3x0105	Watervalve	R	1	UINT16	0-100%							
3x0106	Not Used volt1	R	1	UINT16	0-1000 (0-10V)	0-10V output						
3x0107	Not Used volt2	R	1	UINT16	0-1000 (0-10V)	0-10V output						
3x0108	Inlet fan RPM	R	1	UINT16	0-9999							
3x0109	Extract fan RPM	R	1	UINT16	0-9999							
3x0200	Programme Version Controller	R	1	UINT16	0-9999	1=0.1						
3x0201	Programme Version Display	R	1	UINT16	0-9999	1=0.1						
3x0202	Sub Version Controller	R	1	UINT16	0-9999	ascii 97=a, 98=b						
3x0203	Sub Version Display	R	1	UINT16	0-9999	ascii 97=a, 98=b						

Register No	Data description	R/W	Size	Units	Valid response	Remarks					Display +offset	
							Min	Max	Offset	Resolution	Min	Max
3x0204	ModbusVersion	R	1	UINT16	0-9999	1=0.1						
3x0205	Sub ModbusVersion	R	1	UINT16	0-9999	ascii 97=a, 98=b						
4x0000	01) Temperature (°C)	R/W	1	UINT16			0	200	100	0,1	10,0	30,0
4x0001	02) Preheat (on/off)	R/W	1	UINT16			0	1	0	1	0	1
4x0002	03) Reheat (on/off)	R/W	1	UINT16			0	1	0	1	0	1
4x0003	04) Timer level 3-4 (on/off)	R/W	1	UINT16			0	1	0	1	0	1
4x0004	05) Filter change (mdr)	R/W	1	UINT16			0	6	0	1	0	6
4x0005		R/W	2	UINT16			0	0	0	1		
4x0006	10) Level 1 supply (%)	R/W	1	UINT16			0	100	0	1	0	100
4x0007	11) Level 2 supply (%)	R/W	1	UINT16			0	100	0	1	0	100
4x0008	12) Level 3 supply (%)	R/W	1	UINT16			0	100	0	1	0	100
4x0009	13) Level 1 extract (%)	R/W	1	UINT16			0	100	0	1	0	100
4x0010	14) Level 2 extract (%)	R/W	1	UINT16			0	100	0	1	0	100
4x0011	15) Level 3 extract (%)	R/W	1	UINT16			0	100	0	1	0	100
4x0012	16) T2 adjustment (°C)	R/W	1	UINT16			0	50	-50	0,1	-5,0	0,0
4x0013	17) Level 3-4 (hour)	R/W	1	UINT16			1	9	0	1	1	9
4x0014	18) Filter change autostop (on/off)	R/W	1	UINT16			0	1	0	1	0	1
4x0015	19) Regform (0=Rum,1=indbl, 2=udsug)	R/W	1	UINT16			0	2	0	1	0	2
4x0016	20) Preheat Temperature (°C)	R/W	1	UINT16			0	150	-150	0,1	-15,0	0,0
4x0017	21) Bypass max (°C)	R/W	1	UINT16			10	100	0	0,1	1,0	10,0
4x0018	22) Water reg interval (sec)	R/W	1	UINT16			1	250	0	1	1	250
4x0019	23) Power reg interval (min)	R/W	1	UINT16			1	30	0	1	1	30
4x0020	24) Frost reduction (°C)	R/W	1	UINT16			0	100	0	0,1	0,0	10,0

Register No	Data description	R/W	Size	Units	Valid response	Remarks	Min	Max	Offset	Resolution	Min	Max
4x0021	25) Frost (on/off)	R/W	1	UINT16			0	1	0	1	0	1
4x0022	26) Frost Default (°C)	R/W	1	UINT16			0	100	0	0,1	0,0	10,0
4x0023	27) Aux. relay R9	R/W	1	UINT16			0	5	0	1	0	5
4x0024	28) Stop unit (on/off)	R/W	1	UINT16			0	1	0	1	0	1
4x0025	29) End bypass at low fresh air (°C)	R/W	1	UINT16			0	20	0	1	0	20
4x0026	30) Modbus mode (0=OFF, 1=9600, 2=19200)	R/W	1	UINT16		0=Modbus Off, 1=9600, 2=19200	0	2	0	1	0	2
4x0027	31) Modbus address	R/W	1	UINT16			1	247	0	1	1	247
4x0100	Panel fan mode speed switch	R/W	1	UINT16	0-4	0=Off, 1=S1, 2=S2, 3=S3, 4=S4						
4x0200	Hour	R/W		UINT16	0-23							
4x0201	Minute	R/W		UINT16	0-59							
4x0202	Day	R/W		UINT16	1-7							
4x0203	Date	R/W		UINT16	1-31							
4x0204	Month	R/W		UINT16	1-12							
4x0205	Year	R/W		UINT16	0-99	0= jahr 2000						
4x0500	1 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0501	2 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0502	3 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0503	4 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0504	5 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0505	6 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						

Register No	Data description	R/W	Size	Units	Valid response	Remarks						
4x0506	7 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0507	8 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0508	9 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0509	10 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0510	11 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0511	12 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0512	13 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0513	14 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0514	15 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0515	16 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0516	17 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0517	18 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0518	19 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0519	20 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0520	21 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0521	22 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						

Register No	Data description	R/W	Size	Units	Valid response	Remarks						
4x0522	23 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0523	24 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0524	25 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0525	26 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0526	27 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0527	28 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0528	29 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0529	30 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0530	31 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0531	32 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0532	33 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0533	34 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0534	35 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0535	36 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0536	37 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0537	38 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						

Register No	Data description	R/W	Size	Units	Valid response	Remarks						
4x0538	39 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0539	40 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0540	41 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0541	42 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0542	43 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0543	44 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0544	45 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0545	46 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0546	47 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0547	48 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0548	49 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0549	50 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0550	51 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0551	52 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0552	53 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0553	54 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						

Register No	Data description	R/W	Size	Units	Valid response	Remarks						
4x0554	55 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0555	56 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0556	57 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0557	58 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0558	59 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0559	60 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0560	61 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0561	62 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0562	63 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0563	64 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0564	65 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0565	66 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0566	67 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0567	68 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0568	69 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						
4x0569	70 Calendar change merged hour+Min	R/W	1	UINT16		HB:Hour LB:Min						

Register No	Data description	R/W	Size	Units	Valid response	Remarks						
4x0600	1 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0601	2 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0602	3 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0603	4 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0604	5 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0605	6 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0606	7 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0607	8 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0608	9 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0609	10 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0610	11 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0611	12 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0612	13 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0613	14 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0614	15 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0615	16 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						

Register No	Data description	R/W	Size	Units	Valid response	Remarks						
4x0616	17 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0617	18 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0618	19 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0619	20 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0620	21 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0621	22 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0622	23 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0623	24 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0624	25 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0625	26 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0626	27 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0627	28 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0628	29 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0629	30 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0630	31 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0631	32 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						

Register No	Data description	R/W	Size	Units	Valid response	Remarks						
4x0632	33 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0633	34 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0634	35 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0635	36 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0636	37 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0637	38 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0638	39 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0639	40 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0640	41 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0641	42 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0642	43 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0643	44 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0644	45 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0645	46 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0646	47 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0647	48 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						

Register No	Data description	R/W	Size	Units	Valid response	Remarks						
4x0648	49 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0649	50 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0650	51 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0651	52 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0652	53 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0653	54 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0654	55 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0655	56 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0656	57 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0657	58 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0658	59 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0659	60 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0660	61 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0661	62 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0662	63 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0663	64 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						

Register No	Data description	R/W	Size	Units	Valid response	Remarks						
4x0664	65 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0665	66 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0666	67 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0667	68 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0668	69 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						
4x0669	70 Calendar change merged Speed+Reduction	R/W	1	UINT16		HB: Speed LB: Reduction						

Alarm bit	Description	Value
bit0	External stop	1
bit1	Main Filter	2
bit2	High Pressure	4
bit3	Frost	8
bit4	CommError Panel -> Controller	16
bit5	External Filter	32
bit6	Fan Speed	64
bit7		128
bit8		256
bit9		512
bit10		1024