MultiController E Regulate

Multi function controller with display, scheduler function and Modbus interface

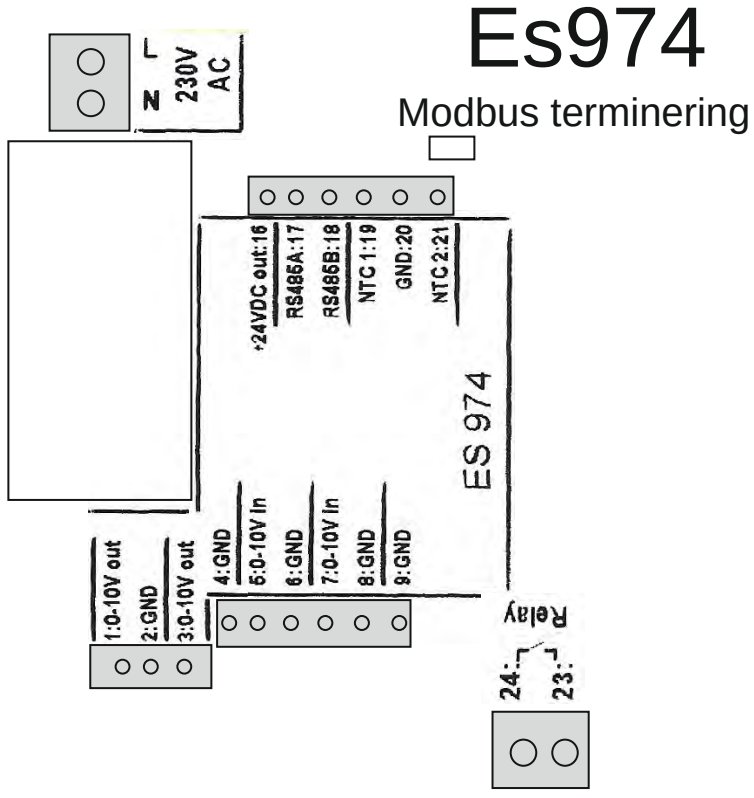
Content

Description

The MultiController E Regulate is a PID/XP multi function controller with integrated display.
It is equipped with a built-in week scheduler for automatic control of setpoints and ON/OFF.
Furthermore it is compatible with a number of different input signals, e.g. pressure, flow, temperature, CO_2 and humidity.
MultiController E Regulate is equipped with a 0-10VDC output and a pulse/pause output for adjustment of heating elements. Furthermore it features outdoor temperature compensation, flexible sensor adaptation and Modbus via RS485 connection.
Built-in quick guide for easy setting up and adjustment. Integrated micro SD card reader for easy updating of software.

1 Mounting

The MultiController E is mounted according to the general applicable installation rules in the low voltage directive. The unit is to be fixed on a plane and stable surface with screws in the 4 corner holes. The unit is not to be fixed on moving or vibrating surfaces. Avoid exposure to high temperatures and direct sunlight on the unit.
If long connection cables are used, ensure that the unit is not disturbed by electromagnetic interference.

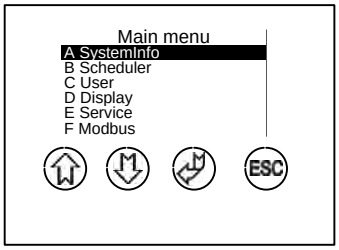


Connector	Description	Comments
1 and 2	0-10V output 1	10mA
3 and 4	0-10V output 2	10mA
5 and 6	0-10V input 1	7K OHM
7 and 8	0-10V input 2	7K OHM
L and N	Connection of power supply	230V AC ±10%
16	Power supply auxiliary outlet	+24VDC max 100mA
17 and18	RS 485 Modbus	
19 and 20	NTC1 temperature sensor for temperature adjustment	22K NTC
21 and 20	NTC2 temperature sensor for outdoor temperature compensation	22K NTC
9	0V, GND	
23 and 24	Voltage free contact. Function depending on model.	5A-AC1, 250VAC

Jumper for connection of 120 Ohm termination resistor on Modbus (end termination).

2 Functions

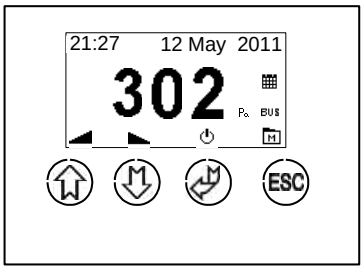
2.1 User interface



The display is operated by push buttons. The general function of each button is shown below:

Icon	Function
⏎	Enter
⇧	Increase / Step up
⇩	Decrease / Step down
ESC	Escape / Cancel

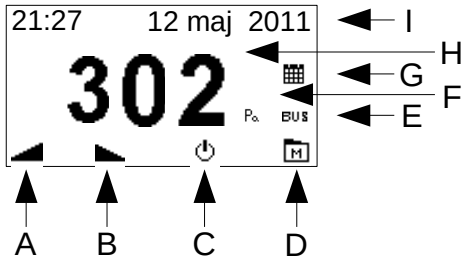
Shortcuts are available in the main window. They are indicated by an icon above the button.



Icon	Function
⇦	Changes between Normal/Alternative/Stop mode
⇧	Increase of setpoint
⇩	Decrease of setpoint
ESC	Go to menu

2.2 Main window

In this window the status of the enabled functions (scheduler, Modbus, etc), and the current setpoint or measured value are displayed.
The icons at the bottom of the display indicate the function of the buttons.

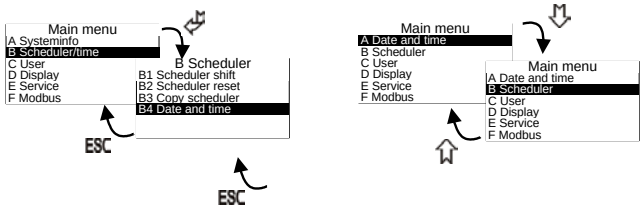


A) By pressing ”arrow up” the selected setpoint is increased.
B) By pressing ”arrow down” the selected setpoint is decreased.
C) By pressing ”ON/OFF” the controller changes between on normal/alternative and off.
D) By pressing ”menu” the displayed window changes to main menu.
E) Icon indicating that Modbus communication is enabled.
F) Icon indicating current unit setting (E1).
G) Icon indicating that scheduler function is enabled.
H) Setpoint is indicated with ”Set” after figure.
I) Display of time and date.

2.3 Menu structure

The menu is operated by 4 buttons. The function of the button is indicated on the button.
The menu consists of a main menu with submenus. Configuration parameters are accessed from the submenus.
Automatic time out from menu, if the buttons have not been activated for 2 minutes.

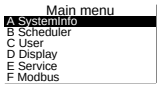
Example – menu operation:



Different pop up boxes are available for editing of model parameters.
Arrow up and Arrow down are used for editing of values. The cursor is moved by activating the Enter key. After the last figure the value is saved by pressing Enter. ESC to cancel editing without saving it.

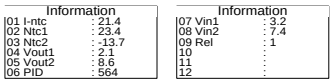
2.4 Main menu and submenus

The submenus, A-F, are accessible from the main menu.



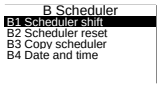
2.5 System information (A-menu)

In this menu the controller in- and output signals and current operating data are indicated.
The window is updated approx. every 5 seconds.



2.6 Scheduler menu (B-menu)

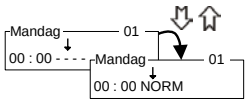
The built-in scheduler function is a week scheduler with up to 10 shifts per day.
The scheduler function is enabled/disabled in the user menu (menu point C3).
An icon in the main window indicates current scheduler status.



B1:
Setpoint, time and minute are set for the shift.
The scheduler shifts when the event shift time is passed, and an icon in the main window indicates whether the scheduler function is enabled.
It is stil possible to manually edit the scheduler, but at the next event shift, the scheduler will revert to the settings.

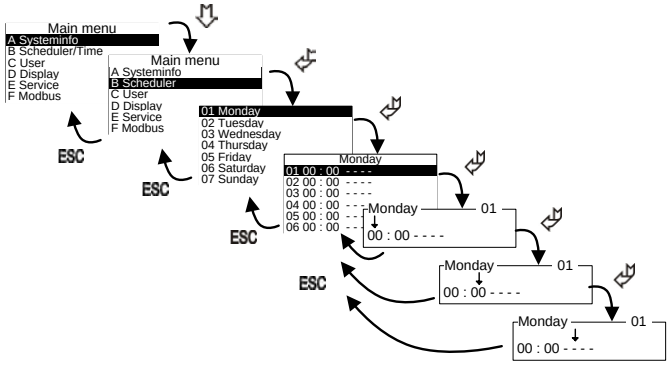
An event is enabled if the starting level is different from - - - -.

Example of setting of scheduler shift:



To disable the event, the level is reset to - - - -.

Example of adjustment of scheduler shift:

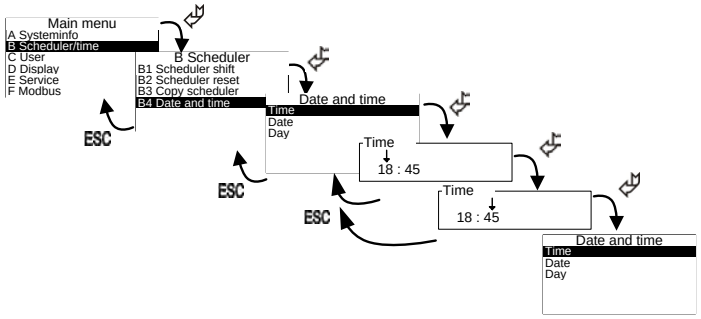


B2:
Scheduler reset. Uset his function to reset the scheduler. All scheduler settings will be deleted!

B3:
Copy of scheduler settings from one day to another day. Previous settings will be overridden during copying.

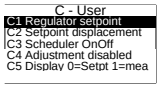
B4:
Date and time. In this menu time, date and week day are set.
The clock is a 24 hour clock. Summer / winter time is not adjusted automatically.
The clock in the Multicontroller E is equipped with battery backup to ensure that short power cuts do not affect the clock. In case of longer power cuts (> 72 hours) the clock must be reset.

Example of setting of time



2.7 User menu (C-menu)

The user menu comprises frequently used control configurations. The below functions can be edited in this menu:



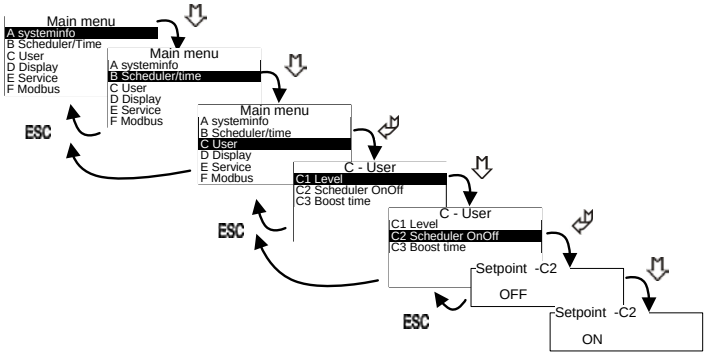
C1:
The controller setpoint is set in this function. This setpoint is also the setpoint that the scheduler will use as NORM value.
The setpoint is edited in the main window (arrow up / arrow down). However this is only valid until the next event transition from the scheduler or the On/Off in the main window.

C2:
Offset of setpoint. A ALTR setpoint can be set in the scheduler function. This setpoint is an addition of C1 and C2.

Example:
C1= 300 Pa
C2= -50 Pa
At ALTR operation the setpoint will be 250 Pa.

C3:
Enabling and disabling of scheduler.

Example of scheduler enabling:



C4:
Permission to manually adjust the setpoint in the main window is enabled in this function.

C5:
Display of setpoint or measured value of connected sensor.
In this function it is possible to change the value displayed in the main window to be either the setpoint or the measured value. Note that if it is chosen to have the measured value displayed, the setpoint will be displayed for approx. 5 seconds (indicated with ”Set” after the figure), when the setpoint is adjusted in the main window or at operation shift.

2.8 Display menu (D-menu)

The display menu included general display configurations. The following functions are displayed / can be edited:

D1:
Information on version and model.

D2:
Display language. Danish, Swedish, German and English are available.

D3:
Contrast. If the text is blurred, the contrast may be adjusted. The changes are displayed immediately.

D4:
Factory reset.
Factory reset may have an effect on vital configurations and approval prior to reset is therefore required. Note that scheduler events will also be reset.

After reset the MultiController will restart showing the quick start guide for selection of model and function.

2.9 Service menu (E-menu)

The service menu contains vital configurations. Erroneous adjustment of these configurations may destroy the functionality. This menu is password protected.

The password is 5550

The following configurations can be edited in the service menu:

E1:
Setting of controller input.
Type of sensor is set in this function.
Options: temperature, pressure, flow, humidity and CO_2.

E2:
Controller output direction.
The direction of the controller output can be inverted in this function.

E3:
Selection of temperature sensor.
If the controller is set for temperature, it is possible to choose whether the controller is to use the integrated NTC sensor or an external NTC sensor (clamps 19-20).

E4:
Controller output.
The controller output can be set as a 0-10V signal or a pulse output.
1 PWM signal output, 2 PWM output signals or 2 PWM output signals + relay switch are available as pulse output signal. The first PWM signal is modulated in relation to the pulse length. This is described in E19.

E5:
Relay direction.
The integrated change-over relay can be configured to be NC or NO in active mode.

E6:
Relay change by volt.
Indicating at which output level the relay is to change from inactive to active.

E7:
Controller type.
The integrated controller output can be configured as a XP controller or a PI controller.

E8:
XP band
If the point E7 is selected as the XP, this parameter is used for adjustment of the band width (steepness). The band represents the +- sensor deviation relative to the setpoint. A low value will result in a considerable change in the output signal (steep), and a high value will result in a less important change in the output signal (less steep).

E9:
XP volt at setpoint.
The output voltage is set in this function.

Illustration 1

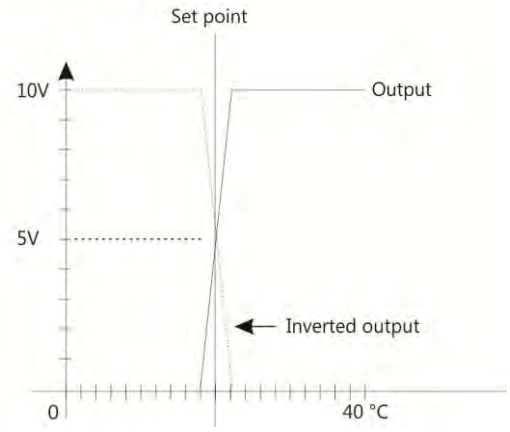


Figure 1: XP controller output signal with normal and inverted output.

E10:
PID controller - P term.
If E7 is selected as PI controller this value is used as proportional gain parameter.

E11:
PID controller – I term.
If E7 is selected as PI controller this value is used as integral gain parameter.

E12
PID controller – H term.
The parameter indicates the sampling frequency or how often this signal is required to be adjusted.
The resolution is 100 ms.

E13..E16
The controller is designed for configuration with different sensors (See E1).
The sensor range and voltage are adjustable on the parameters E13-E16.

E13:
Minimum output voltage of connected sensor.

E14:
Maximum output voltage of connected sensor.

E15:
Sensor value at minimum.
Minimum output voltage of sensor is set in this function (E13). The unit is defined in E1.

E16:
Sensor value at maximum.
Maximum output voltage of senros is set in this function (E14). The unit is defined in E1.

E17
Minimum output voltage.
If the connected equipment cannot be adjusted to 0 volt as minimum, the minimum output signal can be adjusted in this function.

E18:
Maximum output voltage.
If the connected equipment cannot be adjusted to 10 volt as maximum, the maximum output signal can be adjusted in this function.

E19:
Periode time for pulse adjustment.
If the controller is set to pulse adjustment output, the pulse period time is edited on output 1 (clamps 1 and 2) in this function.
This parameter does not take effect if the output is set as a 0-10V output. See menu point E4.

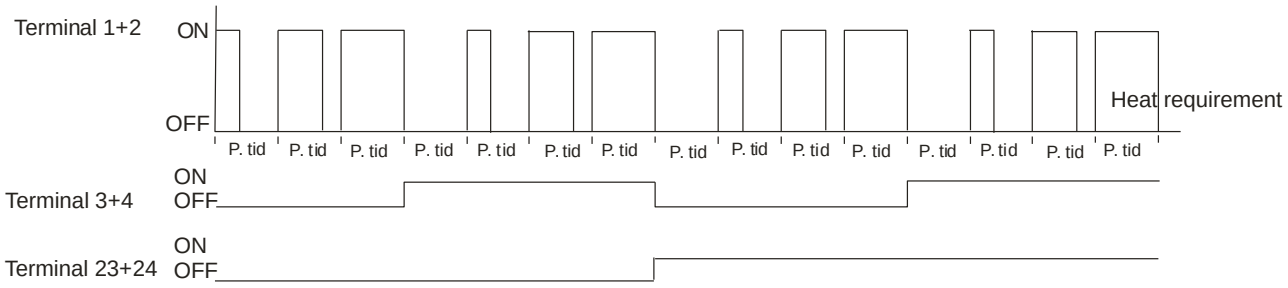


Figure 2: Pulse output sequence

E20..E23:

The MultiController E Regulate features an outdoor compensation function. The outdoor temperature is measured by a temperature sensor fitted in clamps 20 and 21. The measuring range of the sensor is –40,0 and +60,0˚ C. The outdoor temperature compensation function is enabled by adjusting setpoint E20.
If the outdoor temperature drops below setpoint E23, the pressure/air speed setpoint will start to decrease. This decrease will continue until the value for setpoint E22 is reached. The reduction range is adjusted in setpoint E21.
Note:
The outdoor temperature compensation function is only active, if the pressure regulator or the flow regulator has been selected (See E1).

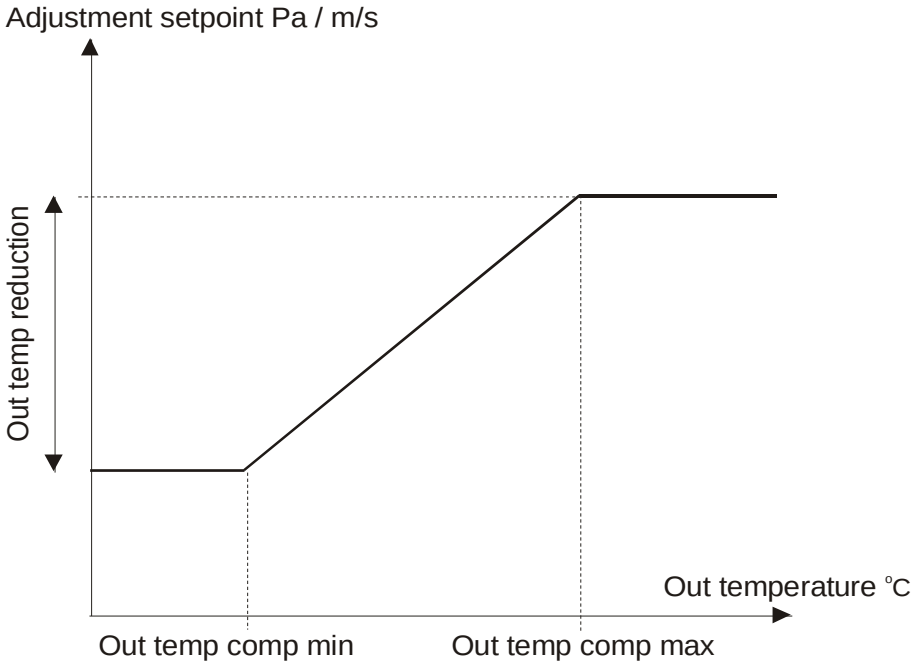


Figure 3: Out door temperature compensation

2.10 Modbus menu (F-menu)

MultiController E Regulate is prepared for configuration as Modbus slave. The interface is serial RS485.
The Modbus unit communicates in accordance with the RTU standard with up to 19200Baud.

Note: The data points in the menus can be set from a Modbus master. With exception of F4 which will function as a blocking if editing of the configuration via Modbus is not allowed.

It is possible to edit the following Modbus configurations in the Modbus menu.

F1:
Address: Editing of slave address.

F2:
Baudrate: Editing of Baudrate options; Off, 9600 and 19200.
The unit is not enabled on Modbus until the baudrate is set at 9600 or 19200.

F3:
Parity: Parity is to be set at EVEN, ODD, or NONE.

F4:
Permits writting from Modbus. Set the configuration at 1 to edit the Modbus master configuration. Note that this parameter cannot be edited in Modbus. It mus be edited manually in point F4.

3 Setpoint overview

Name	Factory setting	Min	Max	Unit
C1 Controller setpoint Dep. on input selection. E1	Temp: 21.0 Pressure: 200 Flow: 2.00 Humidity: 60 CO2: 800	Temp: 8.0 Pressure: 10 Flow:0.10 Humidity:20 CO2:500	Temp:33.0 Pressure:5000 Flow:50.0 Humidity:90 CO2:1500	Temp: °C Pressure: Pa Flow: m/s Humidity: % CO2: ppm
C2 setpoint offset Dep. on input selection. E1	Temp:0.0 Pressure:0 Flow:0 Humidity:0 CO2:0	Temp: -5.0 Pressure: -500 Flow:-5.0 Humidity:-20 CO2: -200	Temp: 5.0 Pressure: 500 Flow: 5.0 Humidity: 20 CO2: 200	Temp: °C Pressure: Pa Flow: m/s Humidity: % CO2: ppm
C2 SchedulerOnOff	0	0	1	ON/OFF
C4 Disable adjustment on main side 0=allow adjust. 1= adjust. not allowed	0	0	1	ON/OFF
E1 Controller input (Temp,pressure,flow,humidity,ppm)	0	0	4	Temp,pressure, flow,humidity,Co2
E2 Controller direction 0=not inverted 1=inverted	0	0	1	
E3 Temperature sensor (0=internal 1=external 1) NTC1	0	0	1	
E4 Controller outputs (0=0-10V 1=PWM 2=PWM+1 3=PWM+2)	0	0	3	
E5 Relay direction (NC=0,NO=1)	0	0	1	NC=0,NO=1
E6 Relay change at volt	0	0.0 V	10.0 V	Volt
E7 Controller selection 0=PID 1=XP	0	0	1	

E8 XP Band Dep. on input selection. E1	Temp:3.0 Pressure: 500 Flow: 5.00 Humidity: 20 CO2: 200	Temp: 0.5 Pressure: 0 Flow: 0.00 Humidity: 0 CO2: 0	Temp:5.0 Pressure: 1000 Flow: 10.0 Humidity: 40 CO2: 500	Temp: °C Pressure: Pa Flow: m/s Humidity: % CO2: ppm
E9 XP volt out at setpoint	5.0	0.0	10.0	Volt
E10 PID P	20	1	100	
E11 PID I	200	0	2000	
E12 PID reg time (H) @100ms	3	1	10	ms
E13 MinvoltIN	0.0	0.0	10.0	Volt
E14 MaxvoltIN	10.0	0.0	10.0	Volt
E15 Sensor value at MinvoltIN Dep. on input selection. E1	Temp:-40.0 Pressure:0 Flow:0.00 Humidity:0 CO2:0	Temp:-40.0 Pressure:0 Flow:0.00 Humidity:0 CO2:0	Temp:60.0 Pressure:5000 Flow:50.00 Humidity:100 CO2:5000	Temp: °C Pressure: Pa Flow: m/s Humidity: % CO2: ppm
E16 Sensor value at MaxvoltIN Dep. on input selection. E1	Temp:-40.0 Pressure:500 Flow:0.00 Humidity:0 CO2:0	Temp:-40.0 Pressure:0 Flow:0.00 Humidity:0 CO2:0	Temp:60.0 Pressure:5000 Flow:50.00 Humidity:100 CO2:5000	Temp: °C Pressure: Pa Flow: m/s Humidity: % CO2: ppm
E17 MinVoltOUT	0.0	0.0	5.0	V
E18 MaxVoltOUT	10.0	5.0	10.0	V
E19 PulseOut period time (s)	0	0	250	Sec
E20 OutTempOnOff (NTC2)	0	0	1	ON/OFF
E21 OutTemp reduction Dep. on output selection. E1	Pressure: 50 Flow:0.50	Pressure: 0 Flow:0.00	Pressure: 500 Flow:5.00	Pa m/s
E22 Out temp min temp.	-10 °C	0,0 °C	-25 °C	°C
E23 Out temp max temp.	5 °C	-10 °C	15 °C	°C
F1 ModbusAddress (1-247)	50	1	247	Address
F2 Modbus baudrate (0=Off 1=9600 2=19200)	0	0	2	Speed
F3 Modbus Parity (1=EVEN 2=ODD 3=NONE)	1	1	3	Data
F4 ModbusAllowWrite	0	0	1	On/Off

4 Modbus data points

Mode:	RTU	(MSB first)	
Standard:	Modbus application protocol specification V1.1a Modbus over serial lin V1.02		
WWW address	Modbus.org		
Baud	0=Modbus Off, 1=9600, 2=19200	default	0
Start bits	1	default	1
Data bits	8	default	8
Stop Bits	1	default	1
Parity	Even	default	Even
Address	1-247	default	50
Registers Map			
Support function	3,4,6,17		

Register number	Data description	R/W	Length	Units	Valid response	Remarks
3x0000	out 1 [%]	R	1	UINT16	0-100 %	Terminal 1+2
3x0001	out 2 [%]	R	1	UINT16	0-100 %	Terminal 3+4
3x0002	in1 [%]	R	1	UINT16	0-100 %	Terminal 5+6
3x0003	in2 [%]	R	1	UINT16	0-100 %	Terminal 7+8
3x0004	intern NTC [x0.1]	R	1	INT16	-400-600	-400=-40 deg °C
3x0005	Ekstern NTC1 NTC [x0.1]	R	1	INT16	-400-600	-400=-40 deg °C
3x0006	Ekstern NTC2 NTC [x0.1]	R	1	INT16	-400-600	-400=-40 deg °C
3x0007	Relay State	R	1	UINT16	0-1	
3x0008	Current setpoint	R	1	INT16		dep. of input E1
3x0009	Current InputValue	R	1	INT16		dep. of input E1

4x0001	Setpoint C2	R/W	1	UINT16	see setpoint	Use fct6 to write
4x0020	Setpoint C1	R/W	1	UINT16	see setpoint	Use fct6 to write
4x0021	Setpoint C3	R/W	1	UINT16	see setpoint	Use fct6 to write
4x0022	Setpoint E7	R/W	1	UINT16	see setpoint	Use fct6 to write
4x0023	Setpoint E1	R/W	1	UINT16	see setpoint	Use fct6 to write
4x0024	Setpoint E2	R/W	1	UINT16	see setpoint	Use fct6 to write
4x0025	Setpoint E8	R/W	1	UINT16	see setpoint	Use fct6 to write
4x0026	Setpoint E9	R/W	1	UINT16	see setpoint	Use fct6 to write
4x0027	Setpoint E10	R/W	1	UINT16	see setpoint	Use fct6 to write
4x0028	Setpoint E11	R/W	1	UINT16	see setpoint	Use fct6 to write
4x0029	Setpoint E12	R/W	1	UINT16	see setpoint	Use fct6 to write
4x0030	Setpoint E5	R/W	1	UINT16	see setpoint	Use fct6 to write
4x0031	Setpoint E6	R/W	1	UINT16	see setpoint	Use fct6 to write
4x0032	Setpoint E3	R/W	1	UINT16	see setpoint	Use fct6 to write
4x0033	Setpoint E13	R/W	1	UINT16	see setpoint	Use fct6 to write
4x0034	Setpoint E14	R/W	1	UINT16	see setpoint	Use fct6 to write
4x0035	Setpoint E15	R/W	1	UINT16	see setpoint	Use fct6 to write
4x0036	Setpoint E16	R/W	1	UINT16	see setpoint	Use fct6 to write

Register number	Data description	R/W	Length	Units	Valid response	Remarks
4x0037	Setpoint E17	R/W	1	UINT16	see setpoint	Use fct6 to write
4x0038	Setpoint E18	R/W	1	UINT16	see setpoint	Use fct6 to write
4x0039	Setpoint E19	R/W	1	UINT16	see setpoint	Use fct6 to write
4x0040	Setpoint E4	R/W	1	UINT16	see setpoint	Use fct6 to write
4x0041	Setpoint E20	R/W	1	UINT16	see setpoint	Use fct6 to write
4x0042	Setpoint E21	R/W	1	UINT16	see setpoint	Use fct6 to write
4x0043	Setpoint E22	R/W	1	UINT16	see setpoint	Use fct6 to write
4x0044	Setpoint E23	R/W	1	UINT16	see setpoint	Use fct6 to write
4x0100	Modbus address	R/W	1	UINT16	1-247	Use fct6 to write
4x0101	Modbus Baudrate	R/W	1	UINT16	0-2	Use fct6 to write
4x0102	Modbus Paritet (1=EVEN 2=ODD 3=NONE)	R/W	1	UINT16	1-3	Use fct6 to write
4x0103	ModbusAllowWrite	R	1	UINT16	0-1	Use fct6 to write
4x0200	Hours	R/W		UINT16	0-23	Use fct6 to write
4x0201	Minutes	R/W		UINT16	0-59	Use fct6 to write
4x0202	Day	R/W		UINT16	1-7	Use fct6 to write
4x0203	Date	R/W		UINT16	1-31	Use fct6 to write
4x0204	Month	R/W		UINT16	1-12	Use fct6 to write
4x0205	Year	R/W		UINT16	0-99	Use fct6 to write

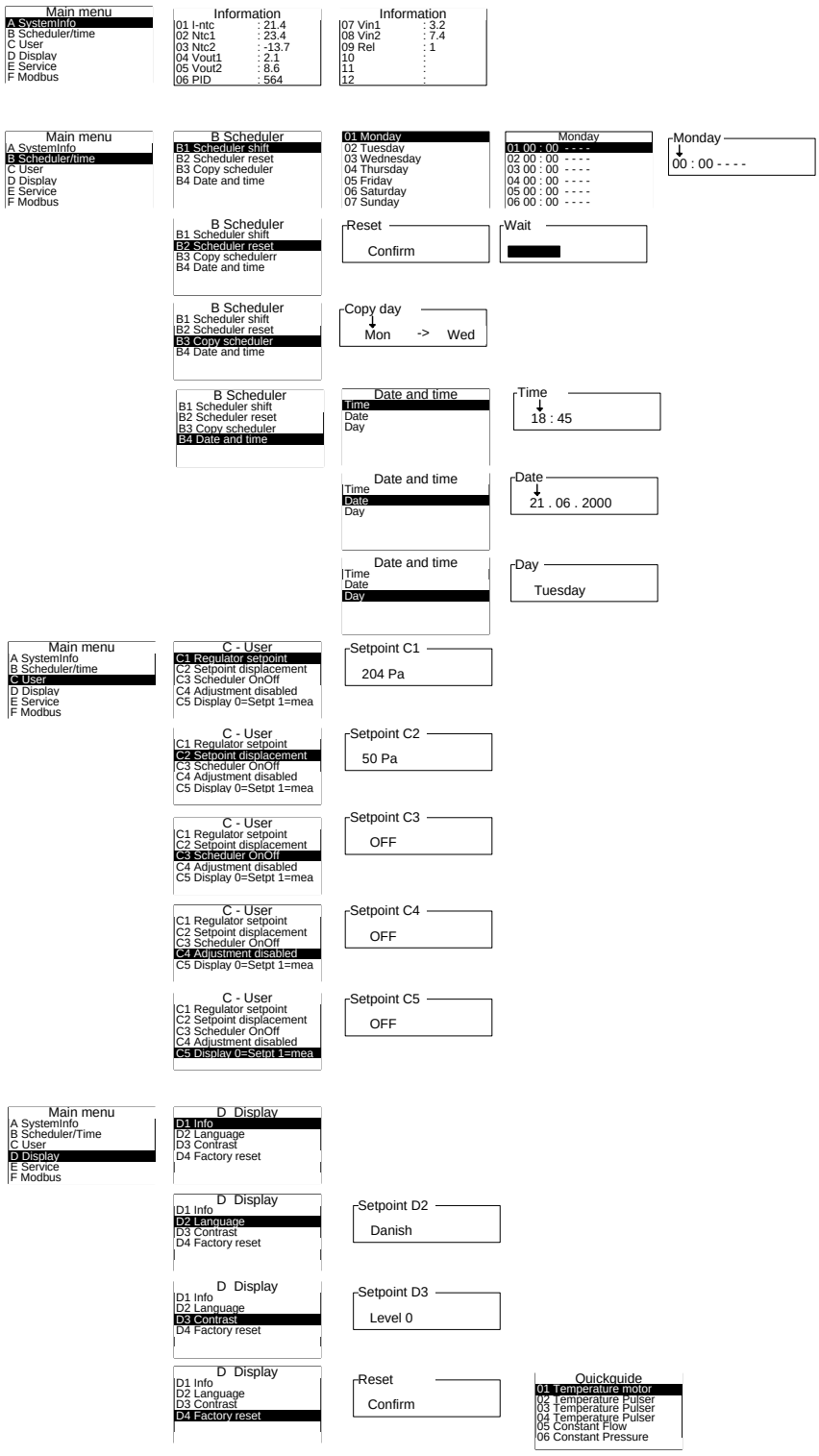
4x0500	1 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0501	2 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0502	3 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0503	4 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0504	5 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0505	6 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0506	7 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0507	8 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0508	9 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0509	10 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0510	11 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0511	12 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0512	13 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0513	14 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0514	15 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0515	16 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0516	17 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0517	18 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0518	19 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0519	20 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0520	21 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0521	22 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0522	23 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0523	24 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0524	25 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0525	26 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0526	27 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0527	28 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write

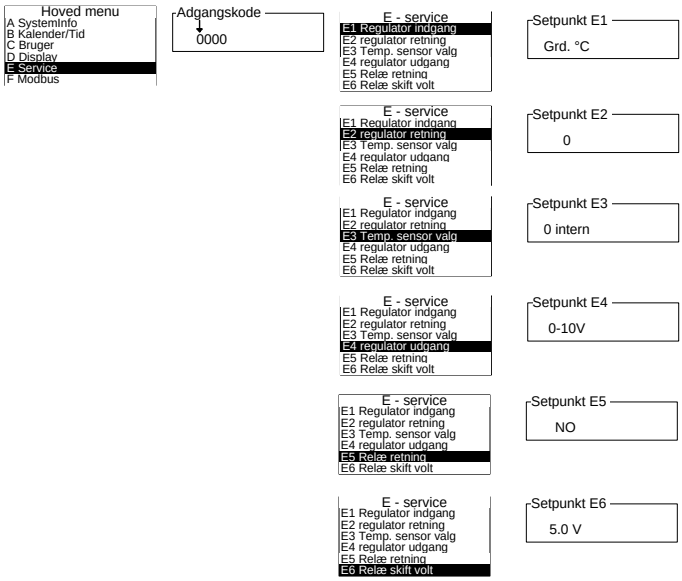
Register number	Data description	R/W	Length	Units	Valid response	Remarks
4x0528	29 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0529	30 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0530	31 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0531	32 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0532	33 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0533	34 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0534	35 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0535	36 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0536	37 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0537	38 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0538	39 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0539	40 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0540	41 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0541	42 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0542	43 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0543	44 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0544	45 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0545	46 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0546	47 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0547	48 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0548	49 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0549	50 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0550	51 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0551	52 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0552	53 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0553	54 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0554	55 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0555	56 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0556	57 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0557	58 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0558	59 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0559	60 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0560	61 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0561	62 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0562	63 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0563	64 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0564	65 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0565	66 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0566	67 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0567	68 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0568	69 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0569	70 Calendar change merged hour+Min	R/W		UINT16	0-5947	Use fct6 to write
4x0600	1 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0601	2 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0602	3 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0603	4 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0604	5 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write

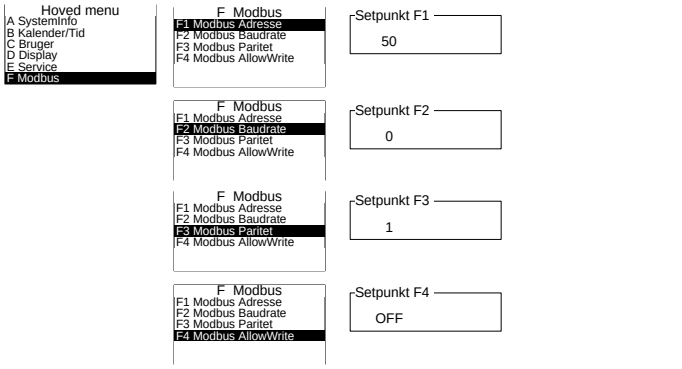
Register number	Data description	R/W	Length	Units	Valid response	Remarks
4x0605	6 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0606	7 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0607	8 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0608	9 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0609	10 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0610	11 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0611	12 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0612	13 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0613	14 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0614	15 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0615	16 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0616	17 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0617	18 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0618	19 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0619	20 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0620	21 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0621	22 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0622	23 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0623	24 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0624	25 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0625	26 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0626	27 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0627	28 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0628	29 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0629	30 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0630	31 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0631	32 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0632	33 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0633	34 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0634	35 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0635	36 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0636	37 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0637	38 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0638	39 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write

Register number	Data description	R/W	Length	Units	Valid response	Remarks
4x0639	40 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0640	41 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0641	42 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0642	43 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0643	44 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0644	45 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0645	46 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0646	47 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0647	48 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0648	49 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0649	50 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0650	51 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0651	52 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0652	53 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0653	54 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0654	55 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0655	56 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0656	57 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0657	58 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0658	59 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0659	60 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0660	61 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0661	62 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0662	63 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0663	64 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0664	65 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0665	66 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0666	67 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0667	68 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0668	69 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write
4x0669	70 Calendar Change level	R/W		UINT16	0=Stop 1=Normal 2=Alternative setpoint	Use fct6 to write

5 Menu overview




Hoved menu
A SystemInfo
B Kalender/Tid
C Bruger
D Display
E Service
F Modbus
Adgangskode
0000
E - service
E1 Regulator indgang
E2 regulator retning
E3 Temp. sensor valg
E4 regulator udgang
E5 Relæ retning
E6 Relæ skift volt
Setpunkt E1
Grd. °C
Setpunkt E2
0
Setpunkt E3
0 intern
Setpunkt E4
0-10V
Setpunkt E5
NO
Setpunkt E6
5.0 V


Hoved menu
A SystemInfo
B Kalender/Tid
C Bruger
D Display
E Service
F Modbus
F Modbus
F1 Modbus Adresse
F2 Modbus Baudrate
F3 Modbus Paritet
F4 Modbus AllowWrite
Setpunkt F1
50
Setpunkt F2
0
Setpunkt F3
1
Setpunkt F4
OFF

6 Technical specifications

Power supply	:	230V AC ±10%
Mains	:	13A main fuse
Power consumption	:	Max <1W
Enclosure	:	IP 40
Dimensions (hxbxd)	:	LSBOX85: 33x85x85 mm DIN rail: 45x85x120 mm Panel mounting: 100x100x65 mm (hole: 91x91 mm)
Weight	:	100 g
Op. temperature	:	0-50 °C
Relay	:	5A-AC1, 250VAC NO, 150W or 1150VA
0-10VDC output1	:	0-10V DC, 10bit. Max 10mA
0-10VDC output2	:	0-10V DC, 10bit. Max 10mA
RS485	:	Channel A and B
SD card	:	MicroSD, max size 2 Gb
Jumper	:	120 Ohm termination RS-485
Power supply auxiliary outlet:		24VDC max 100mA load.

7 Product code

Product codes:	LS BOX 85:	43406
	Din rail:	43416
	Panel mounting:	43426

8 Applied standards

EN 61000-6-1 and EN 61000-6-3 Electromagnetic Compatibility (EMC)
EN-60335-1 The Low Voltage Directive

Drawing: 949-205425_ MultiController_E_Regulate_ES974_UK
Date: 13-03-2012
Software version: Program 2.0 Sub 3
Rev.: 1.0
Drawn by: AH/JEH
Manufactured by: Mark Climate Technology
www.markclimate.com/tel. +31 598 656623
Comments: