

MARK BOILERS - APPENDIX A: MODBUS

0660450

Technical manual **EN**



APPENDIX A - MODBUS

I GENERAL

This appendix describes how to connect a modbus controller and contains the modbus register map.

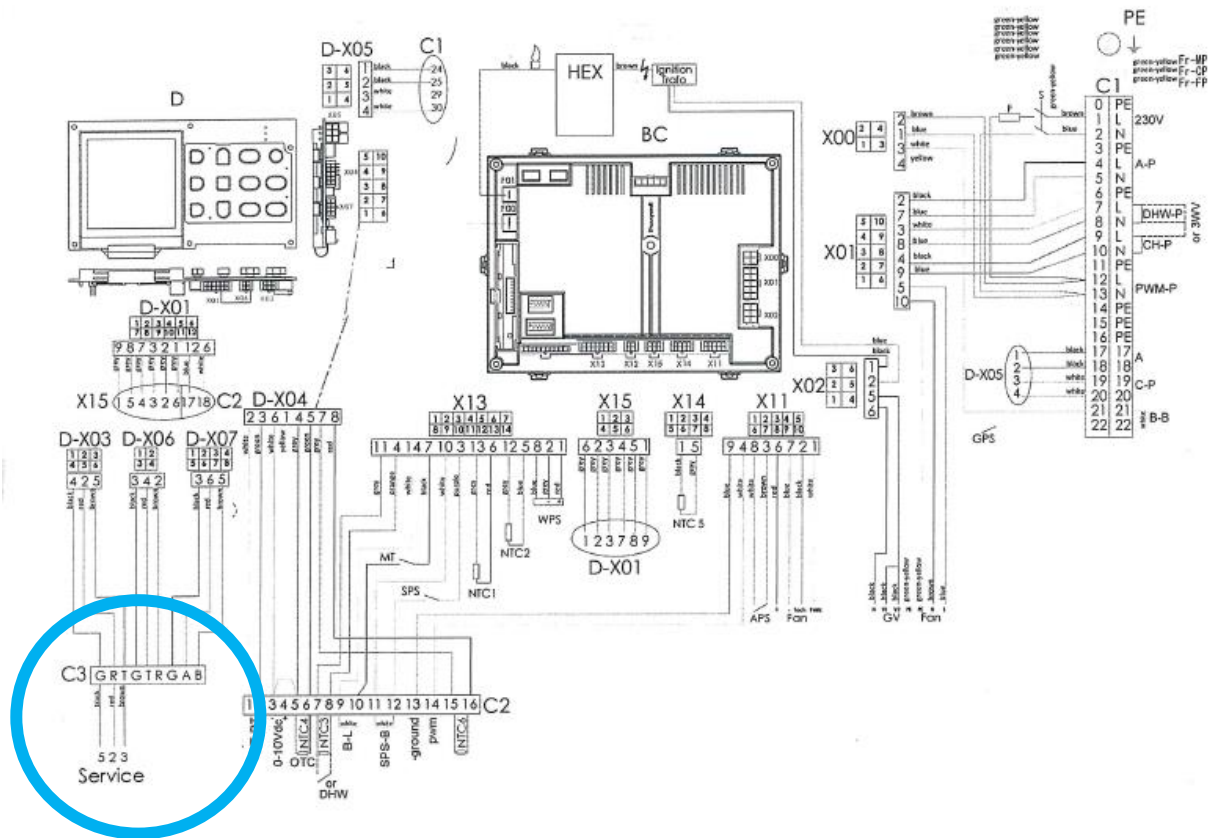
2 WIRING

Disconnect the 230V supply from the boiler and open the front.

For Modbus connections use only C3 : 7 (GND), 8 (A) , 9 (B).

Use a 3 wire (shielded) cable and use the lowest (low voltage) cable guide on the right side of the boiler.

EN



BC	Burner control
D	Display
C1	Connector 230V
C2	Connector low voltage
CH-P	Central heating pump
DHW-P	Domestic hot water pump
PWM-P	Modulating pump
A-P	Appliance pump max 0,8A
HE	Heat exchanger
NTC1	Flow temperature sensor
NTC2	Return temperature sensor
NTC3	Domestic hot water sensor or switch
NTC4	Outside temperature sensor
NTC5	Flue gas temperature sensor
NTC6	Cascade sensor
WPS	Waterpressure sensor
APS	Air pressure switch
SPS	Siphon pressure switch
GPS	Gas pressure switch
GV	Gas valve
S	Switch on/off
3WV	3 way valve
OT-RT	Opentherm or room thermostat on/off
OTC	Outdoor temperature control 12K
F	Fuse
SPS-B	Siphon pressure switch block
B-L	Burner lock
A	Alarm potential free contact
C-P	Cascade pum potential free contact
B-B	Burner block
PE	Earth cable or connector
Fr	Frame
MP	Mounting plate
CP	Cover plate
FP	Front plate

3 CONFIGURATION PARAMETERS

The Modbus communication line is set to 38400b/s by default and can be changed from the technician menu via the boiler display. (Technician menu, system settings, boiler parameters, Modbus)

Also the default communication frame is set to 8 bit, 1 stop, parity none (8N1).

The default Modbus address is 1.

4 SUPPORTED COMMANDS

The next basic Modbus commands are implanted in the boiler display.

0x03 Read Holding Registers

0x04 Read input Registers

0x06 Write Single Register

0x10 Write Multiple Registers

0x11 Report Slave ID

5 MODBUS REGISTER MAP

The next table shows the Modbus register map.

ID	R/W	Accessible by command	Name	Format	Range	Notes
0	R/-	0x04 (Input registers)	MB: Esys flags	Flag8	0-255	Bit: description 0: CH mode 1: DHW mode 2: Test mode 3: Flame
			LB: Esys flags	Flag8	0-255	Bit: description 0: fault 1: valve1 2: valve2 3: aps 4: fan 5: pump
1	R/-	0x04 (Input registers)	MB: Error flags	Flag8	0-255	Bit: description 1: lockout
			LB: Error code	U8	0-99	OEM specific error number
2	R/-	0x04 (Input registers)	MB:			
			LB: Error source	U8	0-F	0: Esys burner controller in cascade F: Dot-Matrix display
3	R/-	0x04 (Input registers)	MB:			
			LB: Comfort state	U8	0-255	Cascade comfort state: 0: standby 1: Test mode 2: DHWCH init 3: DHWCH mode 4: DHWCH cool mode 5: DHWCH frost mode 6: DHW init 7: DHW mode 8: DHW cool mode 9: CH init 10: CH mode 11: CH cool 12: Frost mode

4	R/-	0x04 (Input registers)	MB:	Flag8	0-255	Bit: description 0: test mode [active, inactive] 1: DHW mode [active, inactive] 2: CH mode [active, inactive] 3: frost mode [active, inactive] 4: flame present [present, not present] 5: CH pump [active, inactive] 6: DHW pump [active, inactive] 7: cascade pump [active, inactive]
			LB: Cascade status	Flag8	0-255	
256	-/W	0x06 (Write single register)	MB: 0xAA	U8		Dot-Matrix display provides a reset command on device which is filled in Error source. The resetting is done when previous command return none zero value.
			LB: 0x55	U8		
512	R/W	0x03 (Read Holding Registers)	MB: Heat demand flags	U8	0-255	Bit: description 0: DHW enable
		0x06 (Write single register) 0x10 (Write multiple registers)	LB: Heat demand	U8	0-255	Reading: 0 = No heat demand detected 0xFF = Heat demand present Write: 0 = No heat demand 0x55 = CH demand 0xFF = Test demand Value is valid for 30s from the last successful write. When this register is written, the modbus control logic is activated and registers 513, 514 are used for control.
513	R/W	0x03 (Read Holding Registers)	MB:			
		0x06 (Write single registers) 0x10 (Write multiple registers)	LB: Max percentage	U8	0-100	0-100% maximal percentage power Used for Modbus control
514	R/W	0x03 (Read Holding Registers)	MB:			
		0x06 (Write single registers) 0x10 (Write multiple registers)	LB: Control Set point	U8	Limited to OTC offset, CH set point and Abs max set point	Control set point in degrees of Celsius. This value is used as a target temperature for supply sensor, when Modbus heat demand is generated.
768	R/-	0x04 (Input registers)	CH supply temperature	S16		Value 0,1 [°C] example : 278 = 27,8 °C 0x8000 invalid value
769	R/-	0x04 (Input registers)	MB:			
			LB: CH return temperature	S8		Value in degrees of Celsius
770	R/-	0x04 (Input registers)	MB:			
			LB: DHW temperature	S8		Value in degrees of Celsius
771	R/-	0x04 (Input registers)	MB:			Sensor: Value in degrees of Celsius 0x8000 - invalid value Switch: ad value > 250 0x7FFF - flue sensor open ad value < 5 0x0000 - flue sensor closed If switch input is outside limits 0x8000 - invalid value
			LB: Flue temperature	S8		

772	R/-	0x04 (Input registers)	MB:			
			LB: OTC temperature	S8		Outside temperature sensor Value in degrees of Celsius 0x8000 - invalid value
773	R/-	0x04 (Input registers)	MB:			
			LB: Water pressure [bar]	U8		Value from water pressure sensor/switch value * 0,1 [bar]
774	R/-	0x04 (Input registers)	MB:			
			LB: Flame current	U8		Flame current in uA
775	R/-	0x04 (Input registers)	MB:			
			LB: Modulation	U8		Actual modulation level
776	R/-	0x04 (Input registers)	MB:			
			LB: Calculated set point	U8		Actual set point for supply sensor. Value in degrees of Celsius. 0x8000 invalid value in case no set point is set
1280	R/W	0x03 (Read Holding Registers) 0x06 (Write single registers) 0x10 (Write multiple registers)	MB:			
			LB: CH set point max	U8		User maximal CH set point
1281	R/W	0x03 (Read Holding Registers) 0x06 (Write single registers) 0x10 (Write multiple registers)	MB:			
			LB: DHW set point	U8		DHW user set point
61440	R/W	0x03 (Read Holding Registers) 0x06 (Write single registers) 0x10 (Write multiple registers)	MB:			
			LB: Modbus address	U8	1-247	Modbus device address

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