

NAVISTEM H3100

DR-SG Water Heater controller

INSTALLATION, COMMISSIONING AND SERVICING INSTRUCTIONS

IMPORTANT NOTE

**THESE INSTRUCTIONS MUST BE READ
AND UNDERSTOOD BEFORE INSTALLING,
COMMISSIONING, OPERATING OR
SERVICING EQUIPMENT**



Customer After Sales Services

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Technical Enquiries

To supplement the detailed technical brochures, technical advice on the application and use in the Hamworthy Heating range is available from our technical team in Poole and our accredited agents.

Site Assembly

Hamworthy offer a service of site assembly for many of our products where plant room access is restricted. Using our trained staff we offer a high quality of build and assurance of a boiler built and tested by the manufacturer.

Commissioning

Commissioning of equipment by our own engineers, accredited agents or specialist sub-contractors will ensure the equipment is operating safely and efficiently.

Service Contracts

Regular routine servicing of equipment by Hamworthy service engineers inspects the safety and integrity of the plant, reducing the risk of failure and improving performance and efficiency. Service contracts enable you to plan and budget more efficiently.

Breakdown service, repair, replacement

Hamworthy provide a rapid response breakdown, repair or replacement service through head office at Poole and accredited agents throughout the UK.

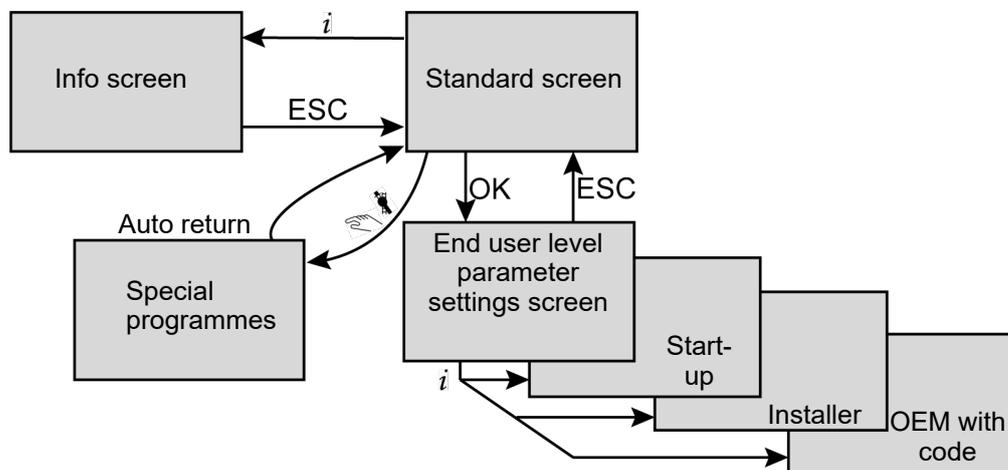
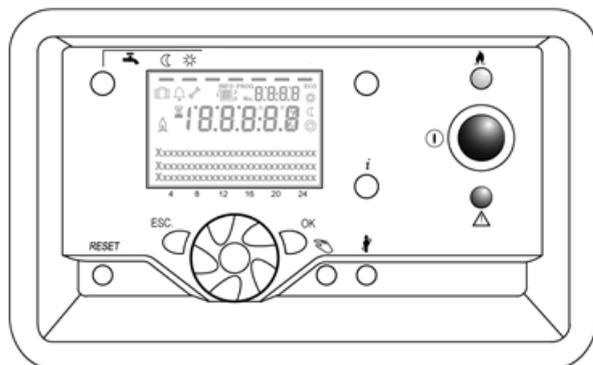
Spare Parts

We offer a comprehensive range of spare parts, providing replacement parts for both current and discontinued products. Delivery options are available to suit you. Please refer to our website hamworthy-heating.com for more details.

SIMPLIFIED USER GUIDE

This chapter gives a list of programmable settings for the basic use of the storage tank.

Browsing between the different screens



Main settings

All the following settings are accessible from the “End User” level.

Time and date		
1	Hour minutes	See paragraph
2	Day month	See paragraph
3	Years	See paragraph
DHW gas heating		
1610	Comfort setpoint	See paragraph
Error		
Current error diagnostic code		See chapter

TROUBLESHOOTING

H3100	Code		Fault		Description	1 st diagnostic
	extended		no blocking fault	blocking fault		
10	610				Exterior sensor fault, no signal.	A function has been activated that requires an outdoor sensor. => Application incompatible with Dorchester DR-SG, should be deactivated.
20	All				Dorchester DR-SG T° sensor fault, no signal.	Check sensor B2 wiring (terminals X22.1 and X22.2).
26	612				Common temperature sensor fault (Flow output).	A shared B10 flow sensor has been configured. This function must not be activated on Dorchester DR-SG
28	All				Fumes sensor short circuited	Check the exhaust temperature sensor on BX1 (terminals X22.9 and X22.10).
30	614				Circuit 1 output temperature sensor fault.	One or more heating sensors have been configured. This function must not be activated on Dorchester DR-SG
32	616				Circuit 2 output temperature sensor fault.	
40	All				Dorchester DR-SG temperature sensor fault, no signal or short circuited.	Check the B7 sensor wiring (terminals X22.3 and X22.4).
46	53				Flow feedback temperature sensor fault.	A shared B70 flow sensor has been configured. This function must not be activated on Dorchester DR-SG
50	All				DHW sensor 1 fault.	Check the B3 sensor (terminals X21.1 and X21.2).
83					BSB short circuit	No communication
84					BSB	Address collision
91					Problem with the EEPROM.	Contact After Sales.
98	0				Extension module 1 error.	Check the ribbon cable of the bus connected to the AVS75 at address 1 or 2. Caution: perform the addressing operation with the power off. Check that the AVS75 is correctly powered at 230V.
99	0				Extension module 2 error.	
110	412				Safety thermostat activated: Thermostat is triggered after the Dorchester DR-SG reaches a temperature that is too high.	
	431				Number of 110/420 faults (auto control of the Dorchester DR-SG sensor) in 24 hours is too high.	Check the sensor wiring or change sensor
	432				Tank temperature too high: The value read by the Dorchester DR-SG sensor is too high.	Seen by sensor B2 (terminals X22.1 and X22.2)
	436				Tank temperature too high: The value read by the Dorchester DR-SG sensor is too high.	Seen by sensor B7 (terminals X22.3 and X22.4)
	437				The number of 110/426 faults (rise in temperature too rapid) in 24 hours is too high.	
111					Temperatures in the Dorchester DR-SG tank too high reaching the maximum limit of the thermostat cut-off temperature.	

H3100	Code		Fault		Description	1 st diagnostic
	extended		no blocking fault	blocking fault		
119	563				Pressure switch fault if a thermostat function has been set on input H1. The pressure switch is open.	Check burner tube clogging.
128	All				Flame failure during operation.	
130					Fumes outlet temperature (fumes temperature too high)	Check the signal on input BX1.
133	All				Safety time expired. No flame detection on ignition.	Check the gas supply pressure. Purge the gas supply if it contains air. Check the power supply's phase position Check burner tube clogging.
146					Sensor or parameter configuration error.	
151	All				NAVISTEM H3100 internal contact fault.	Invert the neutral and the phase of the power supply of the NAVISTEM H3100 platform. Check the wiring of the gas valve. Otherwise, contact After Sales.
152	851				The Navistem H3100 has no factory settings	Contact the after-sales service
153	622				Unit manually locked because the clear faults button was pressed and held for too long.	Clear the fault.
160	380				Fan threshold error. Pre- and post-drain speeds higher than the maximum threshold.	
162	398				Air pressure switch error. The pressure switch did not detect any pressure during pre-ventilation.	
164	562				Anodes fault or lack of water in the product	Check that the LED on the anode control board is green. Check that the product has been correctly filled
166	396				Air pressure switch fault. The air pressure switch detects pressure when the Dorchester DR-SG is off.	Check the pressure switch signal.
171	800				External alarm wired to input H1.	Check whether H1 is set as an external alarm.
193	846				Startup is inhibited on an Hx input.	Check the parameters of the Hx inputs.
324	0				Two Bx inputs declared with the same function.	Check the declarations of the Bx inputs.
327	0				Two AVS75 modules declared with the same function.	Check the declarations of the AVS75.

H3100	Code		Fault		Description	1 st diagnostic
	extended		no blocking fault	blocking fault		
331	0				Input Bx2 without any function.	Check that the status of the Bx input is not 1, while no function is assigned to it.
332	0				Input Bx3 without any function.	
335	0				Input Bx21 without any function.	
336	0				Input Bx22 without any function.	
373					Extension module 3 error.	Check the ribbon cable of the bus connected to the AVS75 at address 3. Caution: perform the addressing operation with the power off.
384	391				Interfering light. The NAVISTEM H3100 detects a flame while the gas valve is closed	
386	All				Fan problem	Contact After Sales.
432	746				Functional earth absent. The earth of the ionisation sensor does not use the same reference and the boiler power supply.	Check that the heating body is properly earthed (reference).

Other Symptoms	Description	1 st diagnostic
The display is always turning on and off.	Spurious supply on the BSB internal bus.	Incorrect accessory connection to the bus link connector (Navipass, ...)
"No connection" display	Check the connection of the ribbon cables between the screen and regulation system, the ribbon cables (e.g.: Navipass Modbus), and the cabling	
Operation button is locked in stand-by.	Cannot select the hot water mode from the front panel buttons.	The heating circuit mode is forced by a programmable input (H1) with "switching of DHW operation".
Operation is locked in stand-by.	Cannot perform actions using front panel buttons	Screen locking is enabled. It can be disabled from the user interface menu in parameter 26.
Programming is locked in stand-by	Programming cannot be changed.	Programming locking is enabled. From the parameter to change, press and hold OK and ESC together for 5 seconds.

Maintenance code	Maintenance description
1	Number of burner operating hours exceeded
2	Number of burner starts exceeded
3	Maintenance interval exceeded


INFORMATION:

Two fuses protect the entire electrical panel; a short circuit or the excessive power consumption of all the components can trip one or both fuses.

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1. WARNINGS AND RECOMMENDATIONS

1.1. Symbols used in this document



INFORMATION: This symbol draws attention to comments.



IMPORTANT: Failure to comply with these instructions may cause damage to the installation or to other objects.



WARNING: Failure to comply with these instructions may cause electrocution.

1.2. Qualification of personnel for installation and maintenance

The operations to install, adjust and maintain the water heater must be carried out by qualified and approved professionals in compliance with current, applicable local and national regulations and practices. These operations may required intervention under voltage, with the top and front casings removed.

The basic usage operations must be performed with the front screen and top casing.

1.3. Safety instructions

Always disconnect the DR-SG water heater from the power supply and shut off the main gas supply before carrying out any work on it.

2. ELECTRICAL CONNECTION



WARNING: Ensure that the general electrical power supply has been cut off before starting any repair work.



WARNING: You must respect the live (L) - neutral (N) polarity when making electrical connections.



CAUTION: The protective earth conductor must be longer than the phase and neutral conductors.

2.1. Characteristics of the electrical power supply

The electrical connections will only be made when all of the other assembly operations (attachment, assembly, etc.) have been carried out on the boiler.

The electrical installation must comply with CE standards for electrical connection, and in particular, the earth connection.

This appliance is designed to operate under a nominal voltage of 230 V +10% / -15%, 50 Hz.

Ensure that the following rules are observed when connecting to avoid degrading the measurement of the ionisation current:

- In single phase: it is essential to respect the phase – neutral polarity
- In two-phase: because of the 120° phase shift between phases, the order that the phases are connected is not without importance. Connect the phase to terminal N of the control cabinet before the one connected to terminal L.

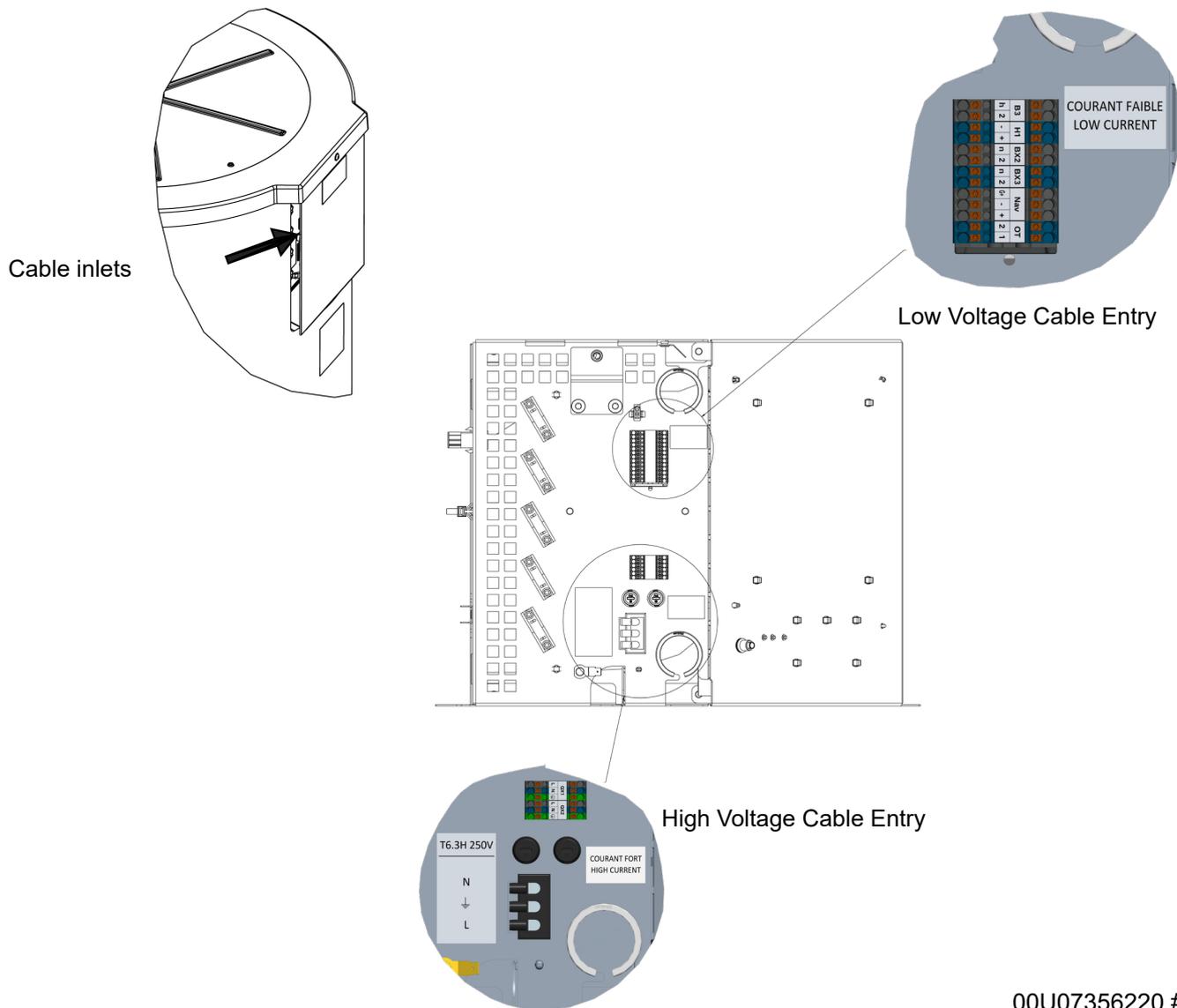
If you are not equipped to measure the phase shift, wire the control box's power supply in both configurations then in both cases check the ionization current by going to the "generator diagnostics" menu at parameter 8329 .

2.1.1. Cable sections

The following cable sections are given for information purposes only and do not exempt the installer from checking that they meet requirements and comply with standards in force.

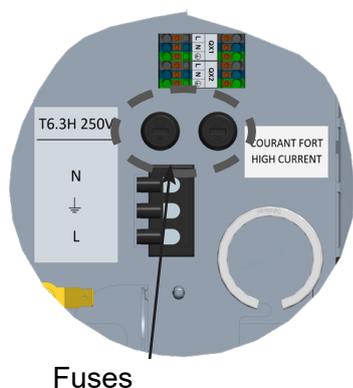
If a cable is damaged, it must be replaced by the manufacturer, its after-sales service or any suitably qualified person, in order to avoid any danger.

Cable	Terminal blocks	Copper conductor section
Power	Power supply	3 x 1.5 mm ²
	QX1 and QX2	3 x 1.5 mm ²
Signals	B3, BX2, BX3, H1, OT	2 x 0.5 mm ²
	Navipass Modbus bus	3 x 0.5 mm ²



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2.1.2. Fuses



The Dorchester DR-SG is equipped with 2 identical T6.3H 250V fuses located to the right of the connection terminals. These fuses ensure that all the boards installed in the panel are protected.

2.1.3. Electric connections to terminals

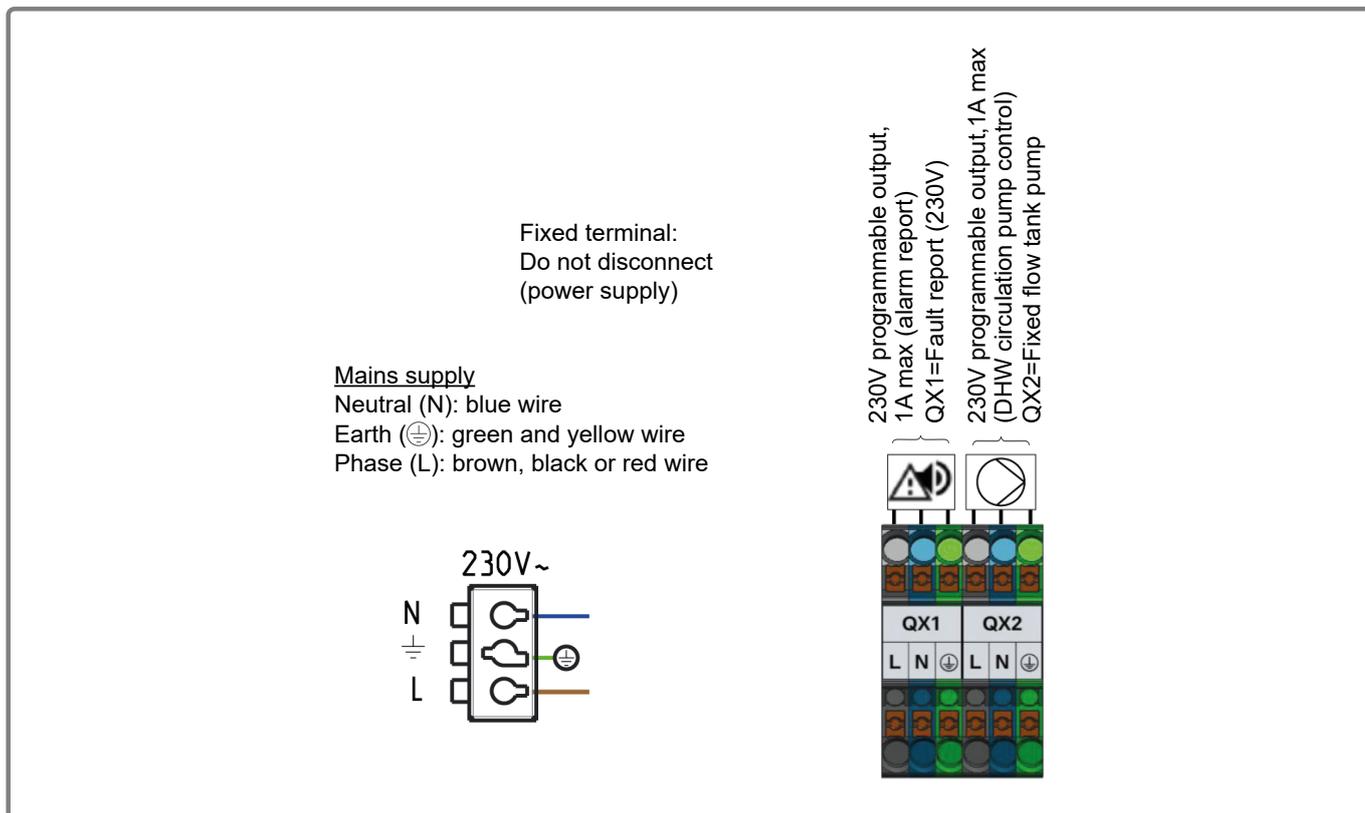


figure 1 -Power and power supply terminals

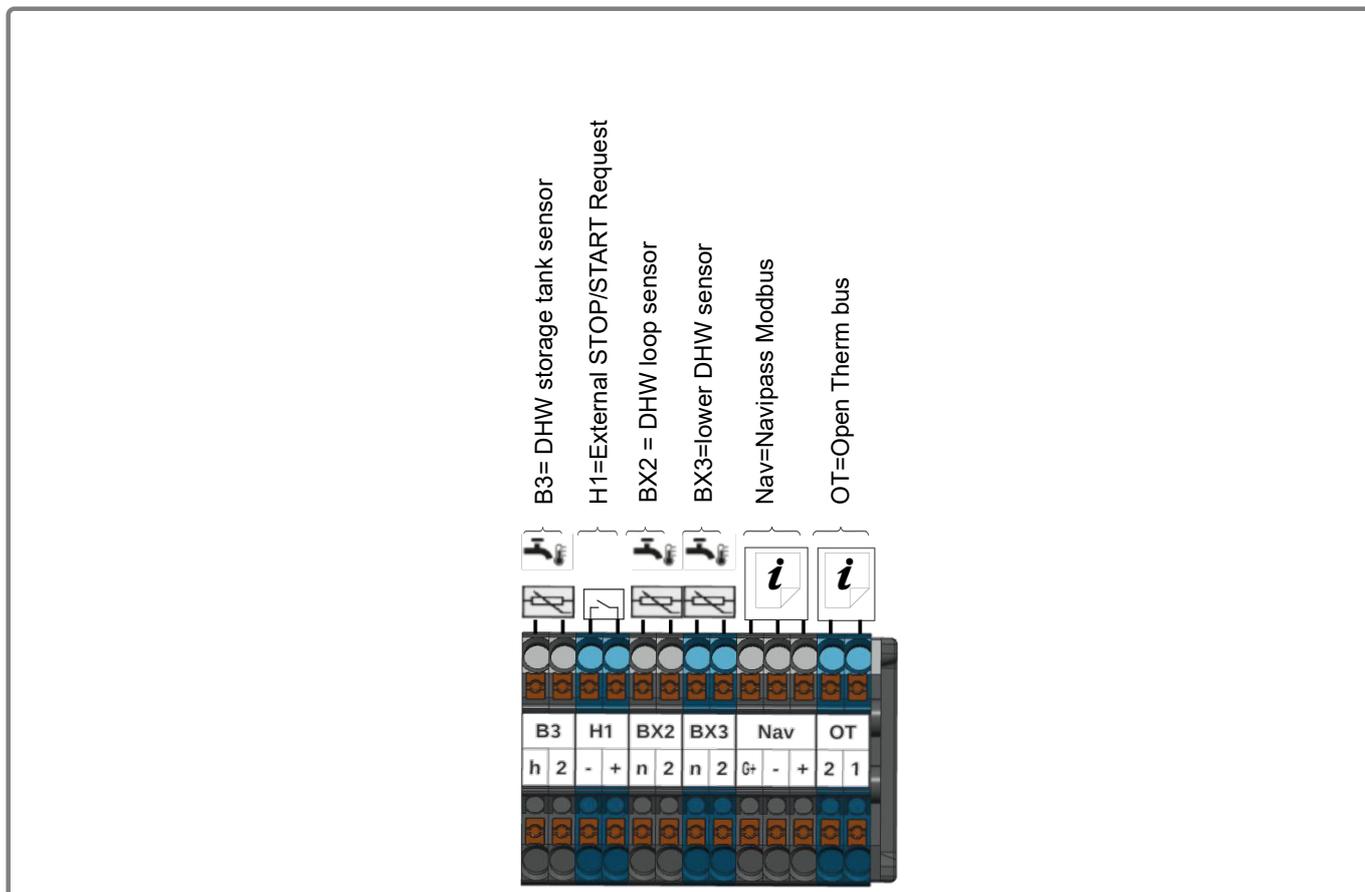


figure 2 -Signal terminals

2.1.4. Wiring diagram

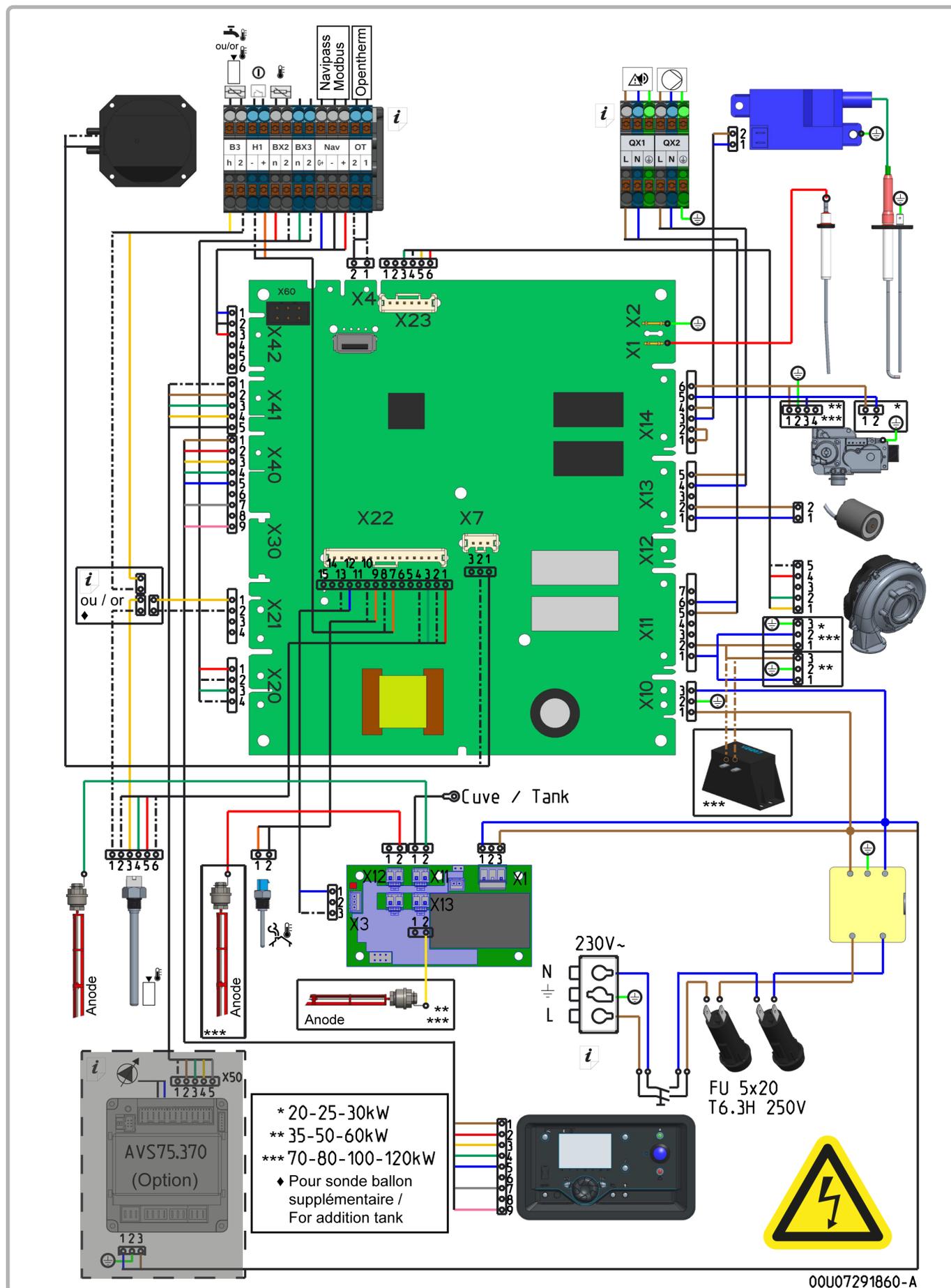


figure 3 -Complete wiring diagram

3. USER INTERFACE

3.1. Presentation of the interface

The user interface of the boiler controls includes:

- A blue push button (Start/Stop),
- A back-lit LCD display,
- 8 function buttons,
- A setting knob,
- A red LED:

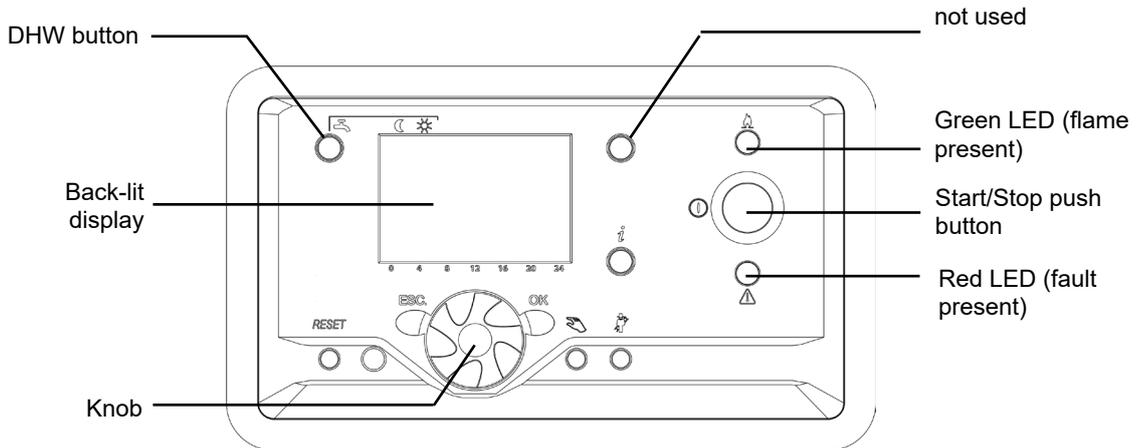
It is permanently lit in case of a non-blocking fault (after correction the LED goes out).

It flashes in the event of a blocking fault (in this case, the LED goes out after the fault has been resolved and the reset button on the interface pressed),

- A green LED:

It is lit when a flame is present.

All customer settings, and any configuration are done through this interface. It also allows information on boiler operation to be examined.

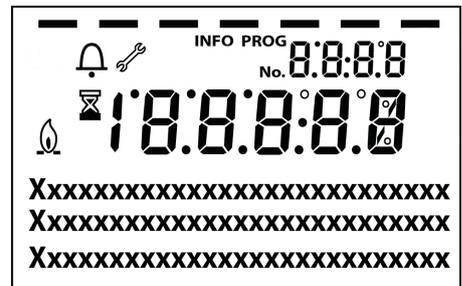


3.2. Display

The screen summarises the DHW preparation unit status (Operating regime, time, schedule programme, DHW temperature, flame presence, any fault).

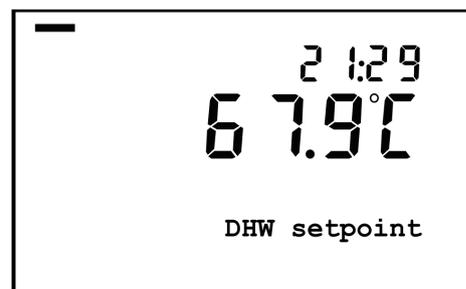
Pictograms:

- | | |
|--|---|
|  Alarm |  INFO Information |
|  Process in progress. |  Maintenance |
|  Flame present | No. Parameter number |



3.2.1. Pre-set basic display.

The basic display of the DHW preparation unit temperature set point



3.2.2. Fault display

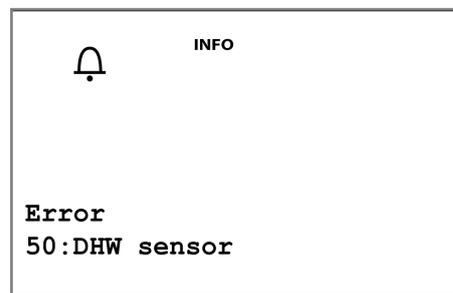
When a non-blocking fault occurs, a small bell appears in the upper left corner of the display. To display the fault, press the information key **I**. This type of fault does not cause operation to be blocked, requiring manual intervention..

Once the source of the fault has been removed, the bell disappears automatically.



When a fault causes the battery to trip, the fault code and its label are permanently displayed on the screen. Similarly, a small bell appears at the top LH corner of the display.

To reset the controller, remove the source of the fault then press the reset button.



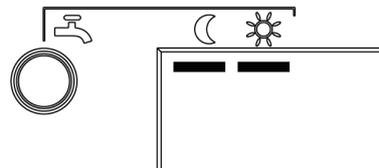
3.3. Operating modes

3.3.1. DHW programme

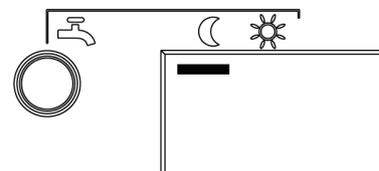
Activates / deactivates the production of domestic hot water



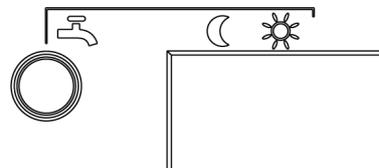
DHW production in comfort or automatic mode with timer program



Production of DHW in reduced mode



Production of DHW in standby mode (DHW frost protection setpoint)



When the appliance is in reduced mode without an additional tank, its storage setpoint is reduced.

When the device is in reduced mode with an additional tank, the circulation pump between the tank and the Dorchester DR-SG is stopped. This will only be restarted during a storage tank recharging phase or after quitting the reduced time slot mode.

3.3.2. Manual temperature setting mode

This mode allows the boiler to be operated at a particular set temperature.



WARNING: In this mode, no fault is sent to the "alarm" output.



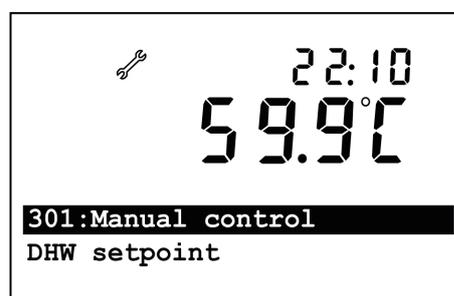
IMPORTANT: This temporary mode does not permit the performances of the product to be guaranteed (water temperature and gas consumption).

Key sequence to access the function

Access	Setting		Exit
	<i>i</i>	OK	OK

The boiler adjusts its power level to reach the selected value.

When this function is active, a override signal ¹ is generated to evacuate the heat.



WARNING:

- Activates the operation of all the pumps declared.
- if the Dorchester DR-SG is connected to a tank, this pump will operate continuously

¹ Override signal: operates the pumps to evacuate the heat (if one of them has had its parameters set on the boiler control panel).

3.3.3. Manual power setting mode

This mode allows the power level of the burner to be set manually for setting high and low combustion rates on commissioning and when carrying out servicing.

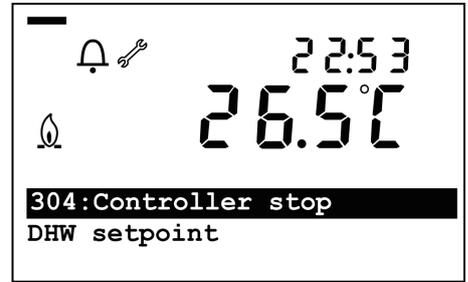


WARNING: This mode does not permit the performances of the product to be guaranteed (water temperature and gas consumption).

Key sequence to access the function

Access	Setting		Exit
<p>3 seconds</p>	<i>i</i>	OK	OK
			<p>3 seconds</p>

The burner relative ¹ power setting is displayed on the screen.
 The knob allows the setting value to be adjusted in 1% steps.
 When this function is active, a override signal ² is generated to evacuate the heat.



¹ Relative power: this is the effective power of the burner, referred to its modulation range. 0% corresponds to minimum power, 100% corresponds to maximum burner power. To calculate the burner load ratio (heat input percentage), the following formula is used (refer to values in the corresponding boiler manuals):

$$\%Q_{cal} = \frac{\text{Power} (100 - \%Q_{min})}{100} + \%Q_m$$

² Override signal: operates the pumps to evacuate the heat (if one of them has had its parameters set on the boiler control panel).

3.3.4. Sweeping mode (Full power mode)

This mode is used to operate the boiler under full load for operation testing

Key sequence to access the function

Access	Setting			Exit
	<i>i</i>	OK		OK

The burner stops when the limiting thermostat opens (88°C).
 When this function is active, a override signal ¹ is generated to evacuate the heat.



¹ Override signal: switches on the pumps, and/or opens the 3 way valves of the connected heating circuits to evacuate the heat.

3.4. Setpoint adjustment

3.4.1. DHW setpoint adjustment

The DHW temperature setpoint can be adjusted using the programme display, from 45°C to 80°C.

Access	Setting	
OK	 OK select section <i>DHW</i> <i>gas heating</i>	 OK Setpoint adjustment



WARNING:

The DHW setting must be defined in accordance with current regulations to avoid all risks with regard to legionellosis. The Dorchester DR-SG has two different DHW setpoints, comfort and reduced.

The comfort setpoint is the DHW setpoint that the Dorchester DR-SG will use if the 2 cursors are present.

The reduced setpoint is the DHW setpoint that the Dorchester DR-SG will use if one cursor is present.

In the case of an installation with an additional storage tank, the reduced mode stops the pump once this storage tank has reached its temperature. If comfort mode is selected, the pump operates continuously.

3.5. Water Heater status

The basic display provides access to the following information (the information is visible if the systems concerned are active).

Access	Setting	Exit
<i>i</i>		ESC

1	Current DHW temperature setpoint
2	DHW temperature
3	Storage tank temperature
4	Storage tank setpoint temperature
5	Return temperature
6	DHW status
7	Storage tank status

3.6. Settings

Depending on the functions commanded, there are different levels of access to the settings. There are 3 access levels:

U: End user

M: Commissioning (reception, starting up),

S: Specialist (technical level).

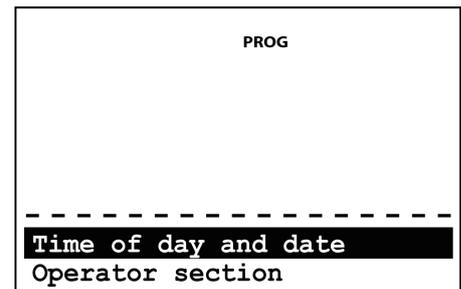
3.6.1. "End user" level parameter settings

The "end user" level configuration mode is accessed from the standard display by pressing the OK key.

The "PROG" pictogram and the first two sections are displayed on the screen.

The setting knob is used to scroll through the list of parameters. Once the parameter to be modified has been reached, press OK. The parameter values flash. Adjust this value using the knob.

The new value is validated by pressing OK.



3.6.2. "Commissioning" and "Specialist" level parameter settings

From the standard display, the "Commissioning" and "Specialist" parameter setting modes are accessed by pressing the OK button then the information key *i* for 5 seconds.

Use the knob to go to the desired level: *Commissioning* or *Specialist* then validate your choice with OK.

The *Commissioning* access level includes the *End user* level. In the same way, the *Specialist* level integrates the *Commissioning* level.

3.6.3. Adjusting the various parameters

From the main menu, after reaching the desired level:

- Turn the knob to scroll through the menu.
- When the desired menu is displayed, press OK to validate.
- Turn the knob to adjust the setting.
- Press OK to confirm the setting

If no setting is made for 8 minutes, the screen returns automatically to the basic display.

3.7. Operating cycle

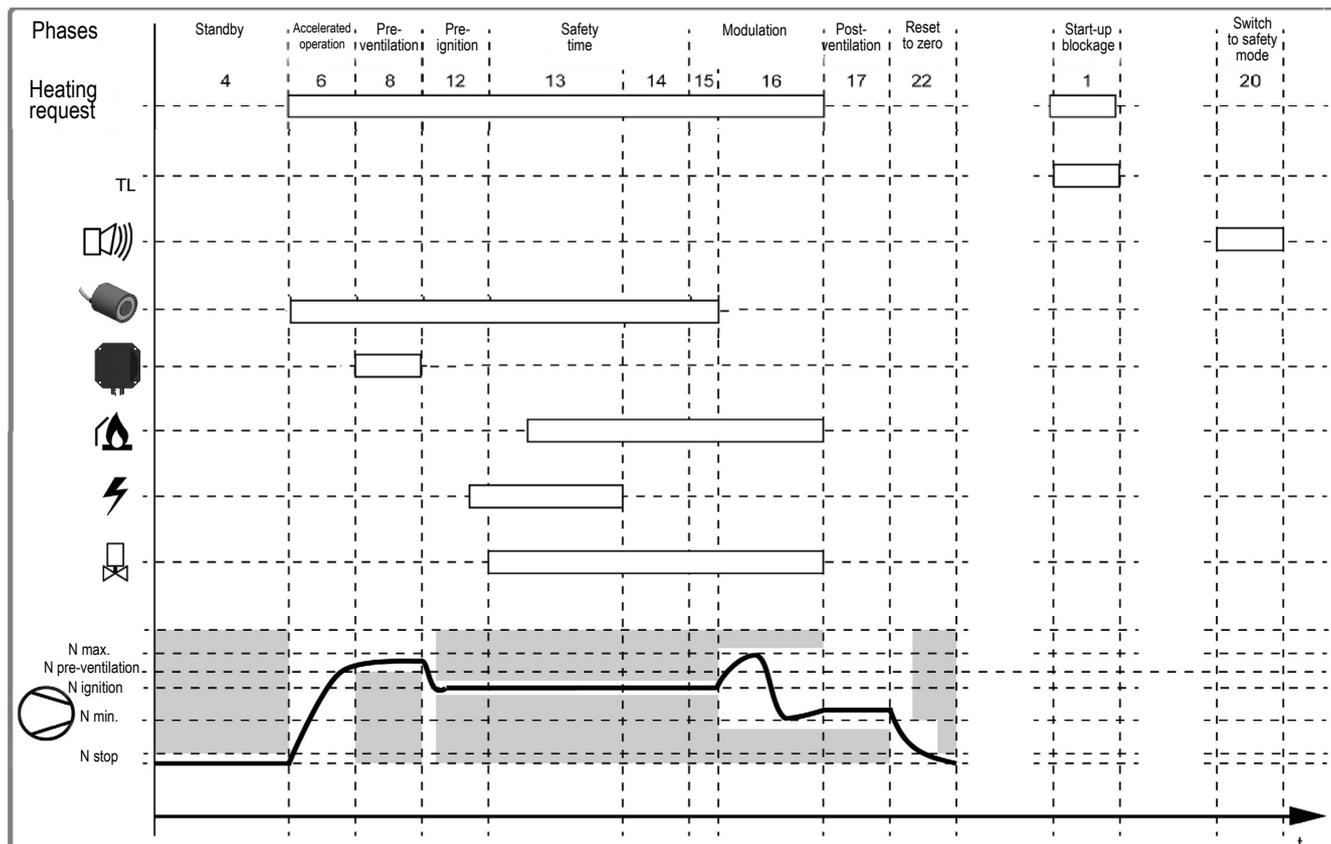


figure 4 -Cycles

Key:

- TL = Limiting thermostat
 - = Alarm
 - = Air inlet flap control
 - = Air pressure switch
 - = Flame detection
 - = Ignition electrode
 - = Gas valve
 - = Fan
- N max. = maximum authorised speed
 N pre-ventilation = pre-ventilation speed
 N ignition = ignition speed
 N min. = minimum authorised modulation speed
 N stop = speed less than 200 rev/min so considered as zero
- } Fan speed

NOTE: In the event of failure, the DHW boiler controller automatically initiates several start-up attempts.

3.8. List of parameters

Line No.	Programming	Access	See subsection..., page...	Line No.	Programming	Access	See subsection..., page...
Time setting				1641	Periodic anti-legionella function		
1	Hours / minutes		8.1.1, page 39	1642	Anti-legionella function day week		
2	Day / month		8.1.1, page 39	1644	Anti-legionella function time		
3	Year		8.1.1, page 39	1645	Anti-legionella setpoint		
5	Start of summer time	s	8.1.1, page 39	1646	Anti-legionella function duration		
6	End of summer time	s	8.1.1, page 39				
User interface				1663	Circulation setpoint		
20	Language			1668	Loop alarm times		
22	Temporary			1680	DHW regime switching		
26	Operation locking			2570	Max. output by lim. output		
27	Programming locking						
28	Direct adjustment			2571	Output lim. differential		
29	Units			5741	DHW tank heating gas		
42	Assignment appliance 1			6745	DHW loading alarm time		
70	Software version						
Time program 4: Domestic hot water (DHW) production				Boiler			
560	Preselection			2210	Min setpoint		
561	1st period start time			2212	Max. setpoint		
562	1st period stop time			2214	Manual rate setpoint		
563	2nd period start time			2217	Frost protection setpoint		
564	2nd period stop time			2243	Burner min stop duration		
565	3rd period start time			2250	Pump timed stop		
566	3rd period stop time			2253	DHW supply pump timer stop		
576	Default values			2321	Rot. speed on start		
Timer programme 5				2322	Min pump rot. speed		
600	Preselection			2323	Max pump rot. speed		
601	1st period start time			2324	Band P rotation speed Xp boiler		
602	1st period stop time			2325	Boiler speed integration time		
603	2nd period start time			2326	Boiler speed bypass time		
604	2nd period stop time						
605	3rd period start time			2330	Nom. power		
606	3rd period stop time			2331	Power at basic speed		
616	Default values			2334	Power at min. pump speed		
DHW gas heating				2335	Power at min. pump speed		
1610	Comfort setpoint			2442	Max. charge full fan speed		
1612	Reduced setpoint			2444	Max DHW fan speed		
1614	Max comfort setpoint			2454	Heating circuit activation differential		
1620	Release			2455	Min. heating circuit disc. different.		
				2460	DHW activation differential		
1640	Anti-legionella function						

Line No.	Programming	Access	See subsection..., page...	Line No.	Programming	Access	See subsection..., page...
2461	Min DHW disconnection differential			6022	Extension module 3 funct		
2550	Gas energy meter			6030	Relay output QX21 module 1		
2551	Gas meter correction			6031	Relay output QX22 module 1		
				6032	Relay output QX23 module 1		
				6033	Relay output QX21 module 2		
DHW tank				6034	Relay output QX22 module 2		
5020	Outlet setpoint T° raise			6035	Relay output QX23 module 2		
				6036	Relay output QX21 module 3		
5022	Charge type			6037	Relay output QX22 module 3		
5024	DHW differential			6038	Relay output QX23 module 3		
5101	Min pump rot. speed			6040	Module 1 BX21 sensor input		
5102	Max pump rot. speed			6041	Module 1 BX22 sensor input		
5103	Band P rotation speed Xp DHW			6042	Module 2 BX21 sensor input		
5104	DHW rotation speed integration time			6043	Module 2 BX22 sensor input		
5105	DHW rotation speed Tv			6044	Module 3 BX21 sensor input		
5106	DHW pump min. speed			6045	Module 3 BX22 sensor input		
5107	DHW pump max. speed			6046	Module 1 H2 input function		
5108	Load pump start rot. speed			6047	Mod.1 H2 contact act. direction		
5109	Circ. pump start rot. speed			6049	Mod. 1 H2 voltage value (U1)		
				6050	Module 2 H2 funct. value 1 (F1)		
General functions				6051	Mod. 1 H2 voltage value 2 1 (U2)		
5570	dT° regul on dT 1			6052	Module 2 H2 funct. value 2 (F2)		
5571	dT° regul off dT 1			6054	Module 2 H2 input function		
5572	Regul min act time dT 1			6055	Mod.2 H2 contact act. direction		
5573	Sensor 1 regulator dT 1			6057	Mod. 2 H2 voltage value 1 (U1)		
5574	Sensor 2 regulator dT 1			6058	Module 2 H2 funct. value 1 (F1)		
5575	Min regul on time dT1			6059	Mod. 2 H2 voltage value (U2)		
5577	Pump/valve kick-start K21			6060	Module 2 H2 funct. value 2 (F2)		
5580	dT° regul on dT 2			6062	Module 3 H2 input function		
5581	dT° regul off dT 2			6063	Mod.3 H2 contact act. direction		
5582	Regul min act time dT 2			6065	Mod. 3 H2 voltage value 1 (U1)		
5583	Sensor 1 regulator dT 2			6066	Module 3 H2 funct. value 1 (F1)		
5584	Sensor 2 regulator dT 2			6067	Mod. 3 H2 voltage 2 value 2 (U2)		
5585	Min regul on time dT2			6068	Module 3 H2 funct. value 2 (F2)		
5587	Pump/valve kick-start K21			6100	Ext. T° sensor correction		
				6120	Installation antifreeze		
Configuration				6127	Valve/pump kick-start duration		
5890	Relay output QX1			6200	Register sensor		
5891	Relay output QX2			6205	Reset parameters		
5931	Sensor input BX2			6220	Software version		
5932	Sensor input BX3						
5950	H1 input function						
5951	H1 contact action direction						
6020	Extension module 1 funct						
6021	Extension module 2 funct						

Line No.	Programming	Access	See subsection..., page...	Line No.	Programming	Access	See subsection..., page...
6224	Appliance identification.			6835	Software diagnostic code 4		
6230	Info 1 OEM			6840	History 5		
6231	Info 2 OEM			6845	Software diagnostic code 5		
6240	Output function UX21 module 1			6850	History 6		
6241	Logic signal output UX21 module 1			6855	Software diagnostic code 6		
6242	Signal output UX21 module 1			6860	History 7		
6243	Output function UX22 module 1			6865	Software diagnostic code 7		
6244	Logic signal output UX22 module 1			6870	History 8		
6245	Signal output UX22 module 1			6875	Software diagnostic code 8		
6246	Output function UX21 module 2			6880	History 9		
6247	Logic signal output UX21 module 2			6885	Software diagnostic code 9		
6248	Signal output UX21 module 2			6890	History 10		
6249	Output function UX22 module 2			6895	Software diagnostic code 10		
6250	Logic signal output UX22 module 2			6900	History 11		
6251	Signal output UX22 module 2			6905	Software diagnostic code 11		
6252	Output function UX21 module 3			6910	History 12		
6253	Logic signal output UX21 module 3			6915	Software diagnostic code 12		
6254	Signal output UX21 module 3			6920	History 13		
6255	Output function UX22 module 3			6925	Software diagnostic code 13		
6256	Logic signal output UX22 module 3			6930	History 14		
6257	Signal output UX22 module 3			6935	Software diagnostic code 14		
6351	OT function channel 1			6940	History 15		
6359	DHW external control			6945	Software diagnostic code 15		
				6950	History 16		
				6955	Software diagnostic code 16		
				6960	History 17		
				6965	Software diagnostic code 17		
				6970	History 18		
				6975	Software diagnostic code 18		
				6980	History 19		
				6985	Software diagnostic code 19		
				6990	History 20		
				6995	Software diagnostic code 20		
LPB bus							
6612	Alarm timeout			Maintenance / Special operation			
				7040	Burner op. hours interval		
Error				7041	Op. h since maint.		
6705	Software diagnostic code			7042	Burner start interval		
6706	Phase unit pos. fault			7043	Burner start since Maint.		
6800	History 1			7044	Maintenance interval		
6805	Software diagnostic code 1			7045	Time since maintenance		
6810	History 2			7050	Ionis. current fan speed		
6815	Software diagnostic code 2			7051	Ionis. current message		
6820	History 3			7130	Sweeping function		
6825	Software diagnostic code 3			7131	Burner power		
6830	History 4			7140	Manual mode		

Line No.	Programming	Access	See subsection..., page...	Line No.	Programming	Access	See subsection..., page...
7143	Regulator stop function			8308	Boiler pump speed		
7145	Regulator stop setpoint			8310	Boiler temperature		
7146	Drain function			8311	Boiler setpoint		
7147	Drain type			8312	Boiler switching point		
7170	After Sales Department telephone			8313	Regulation sensor		
7250	Pos memory Pstick			8314	Boiler return temperature		
7252	Pstick control			8316	Fume temperature		
7253	Pstick progress			8318	Max burnt gas temperature		
7254	PStick status			8323	Fan speed		
				8324	Burner fan setpoint		
				8325	Current fan command		
Inputs/Outputs test				8326	Boiler modulation		
7700	Relay test			8327	Hydraulic pressure		
7730	Outdoor T° B9			8329	Ionisation current		
7750	DHW temperature B3/B8			8330	1st speed operating hours		
7760	Boiler T° B2			8331	1st speed start counter		
7820	Sensor T° BX1			8339	DHW mode operating hours		
7821	Sensor T° BX2			8379	Global DHW energy		
7822	Sensor T° BX3			8380	Global energy		
7823	Sensor T° BX4			8382	DHW gas energy		
7830	Module 1 BX21 sensor T°			8383	Gas energy		
7831	Module 1 BX22 sensor T°			8390	Current phase No.		
7832	Module 2 BX21 sensor T°						
7833	Module 2 BX22 sensor T°			Consumer diagnostic			
7834	Module 3 BX21 sensor T°			8820	DHW pump		
7835	Module 3 BX22 sensor T°			8823	DHW intermediate circuit pump status (Q33)		
7840	H1 voltage signal			8825	DHW pump speed		
7841	H1 contact status			8826	Interm. circulator pump speed DHW		
7845	Module 1 H2 voltage signal			8830	DHW temperature 1 (B3)		
7846	Module 1 H2 contact status			8831	DHW setpoint		
7848	Module 2 H2 voltage signal			8832	DHW temperature 2 (B31)		
7849	Module 2 H2 contact status			8835	DHW circulation temperature		
7851	Module 3 H2 voltage signal			8836	DHW loading temperature		
7852	Module 3 H2 contact status			9016	Special temperature 1		
7860	H4 contact status			9017	Special temperature 2		
7862	H4 frequency			9031	Relay output QX1		
7872	H6 contact status			9032	Relay output QX2		
7874	H7 contact status			9033	Relay output QX3		
				9050	Relay output QX21 module 1		
Status				9051	Relay output QX22 module 1		
8003	DHW status			9052	Relay output QX23 module 1		
8005	Boiler status			9053	Relay output QX21 module 2		
8009	Burner status			9054	Relay output QX22 module 2		
				9055	Relay output QX23 module 2		
Generator diagnostic							
8304	Boiler pump status (Q1)						

3.9. "User interface" parameters

3.9.1. Time setting

Line no.	Programming	Possible values
1	Hours / minutes	00:00 ... 23:59
2	Day / month	01:01... 31.12
3	Year	1900 ... 2099
5	Start of summer time	01:01... 31.12
6	End of summer time	01:01... 31.12

The controller is provided with a yearly clock that displays the time, day and date. So that the programming sequences can operate properly, the time and the date must be correctly set on the clock.

N.B: Switching between summer/winter times Dates have been programmed for the change between summer and winter times. The time changes automatically at 2 am (winter time) to 3 am (summer time) or from 3 am (summer time) to 2 am (winter time) on the first Sunday after the respective dates.

3.9.2. User interface

Line no.	Programming	Possible values
20	Language	English Deutsch Français Italiano Nederlands Español
22	Temporary	temporary permanent
26	Operation locking	stop start
27	Programming locking	stop start
28	Direct adjustment	Automatic storage Storage with confirmation
29	Units	°C, bar °F, PSI

Info. (22):

- Temporary : After pressing the "Infos" button, the display returns to the basic "preset" display after eight minutes or by pressing the Operating modes button.
- Permanent : After pressing the "Infos" button, the display returns to the "new" standard display after a maximum of eight minutes. The last information selected is visible on the new basic display.

Operation locking (26): If the operation locking function is enabled, the following control elements cannot be adjusted any longer: heating circuit mode, DHW mode, ambient comfort setpoint temp. (button), occupied button.

Programming locking (27): If the programming locking function is enabled, the following control elements cannot be adjusted any longer.

- Temporary suspension of programming Programming locking can be temporarily deactivated at the programming level. To do this, press the OK and ESC buttons together for at least 3 seconds. The programming locking function temporary suspension remains effective until the user quits the programming level.

- Permanent suspension of programming First perform a temporary suspension then cancel the "Programming lock" on line 27.

Direct adjustment (28):

- Automatic A correction of the setpoint value with the knob is adopted without any specific validation (timeout) or by pressing the OK button.

- With validation A correction of the setpoint value with the knob is only validated after pressing the OK button.

3.9.3. Software version

Line no.	Programming
70	Software version

The indication provides the current version of the user interface

3.9.4. Timer programmes

Programming			Possible values
DHW	5		
560	600	Preselection	Mon-Sun Mon-Fri Sat-Sun Mon...Sunday
561	601	1st period start time	00:00 ... 24:00
562	602	1st period stop time	00:00 ... 24:00
563	603	2nd period start time	00:00 ... 24:00
564	604	2nd period stop time	00:00 ... 24:00
565	605	3rd period start time	00:00 ... 24:00
566	606	3rd period stop time	00:00 ... 24:00
576	616	Default values	No Yes

Several control programs are available. They are established in "Automatic" mode and control the change of temperature levels (and therefore the related setpoints (reduced and comfort)) via adjusted change times.

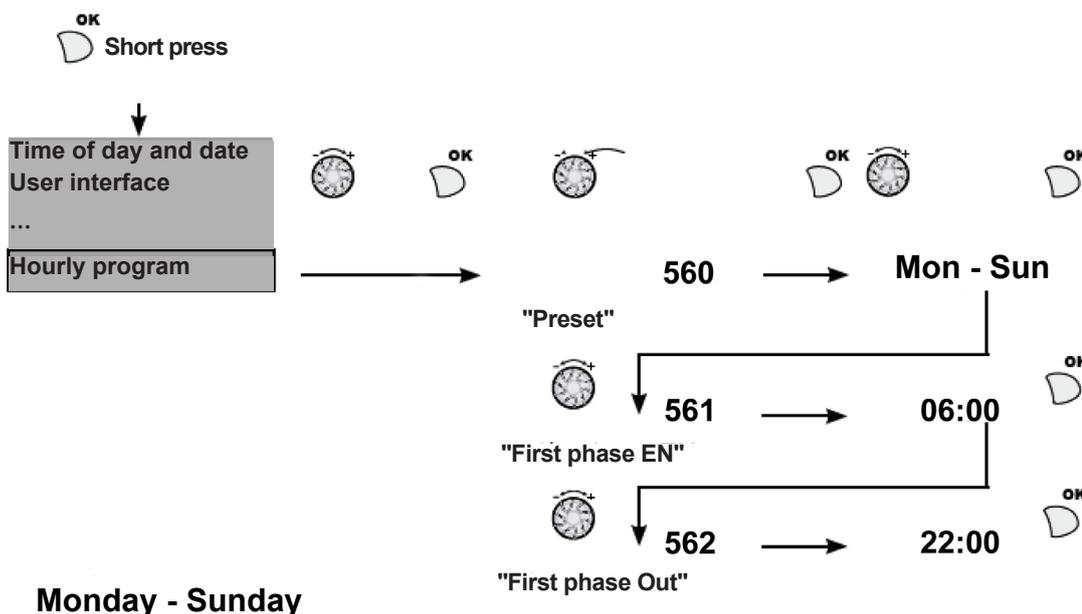
Entering the change times:

The change times can be adjusted together, i.e. setting identical times for a number of days or a number of separate times for certain days. Preselecting groups of days (e.g. Monday... Friday and Saturday...Sunday) with the same change times will considerably reduce the amount of time spent adjusting the change programme.

All of the timer programmes can be reset to their factory settings (lines 576 and 616). Every timer programme has its own control line for this reinitialisation. In this case, the individual settings will be lost.

Example of settings for loading between 06:00 and 22:00

If no setting is made for 8 minutes, the screen returns automatically to the basic display.



Monday - Sunday



INFORMATION:

Every time the user accesses the "DHW timed programme 4" menu, the 1st parameter displayed is 560 "Preset". This always displays the default values "Mon-Sun" regardless of any programming done previously.

3.10. "Domestic hot water (DHW)" settings

The Dorchester DR-SG operates with the DHW settings and adjusts its setpoint based on the DHW B3 sensor

The Dorchester DR-SG can be used with an additional storage tank. In this configuration, the DHW B3 sensor is installed in the tank and the pump located between the generator and the DHW tank will be defined as pump Q3 on a 230Vac or analogue output.

The names of the sensor and the pump used are:

	Sensor	Pump
DHW	B3	Q3

The following functions are available on the DHW circuit:

- Adjustment of timed programmes
- Adjusting the holiday programs
- Adjustment of settings
- Anti-legionella function
- DHW storage tank with charge management

The controller has a configurable anti-legionella function designed to provide protection from legionella for the hot water preparation unit, the tank (if present) and the pipes between the tank and the Dorchester DR-SG. The additional tank charging pump (Q3) can operate either continuously, in comfort mode, during tank loading, or in reduced mode.

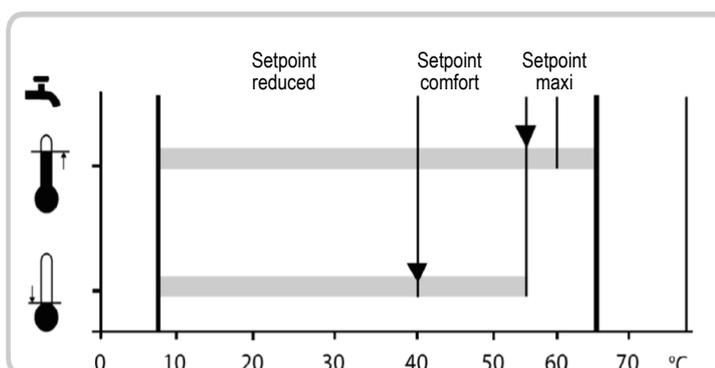
3.10.1. Basic settings

3.10.1.1. Setpoint value

Line no.	Programming	Possible values
1610	Comfort setpoint	Par.1612 ... 80 °C
1612	Reduced setpoint	45 ... 80°C
1614	Max comfort setpoint	45 ... 80 °C

The DHW is heated to different setpoints.

These setpoints depend on the operating mode that has been selected and heat to the desired temperatures in the DHW tank



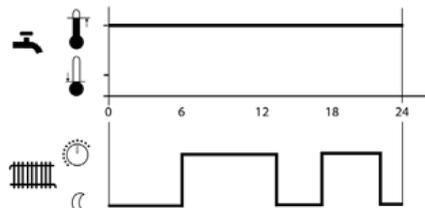
Release

Line no.	Programming	Possible values
1620	Release	24h/24 Heating circuit timed prog. Timed programme 4/DHW

24/24

Whatever the timed programs, the DHW temperature is maintained permanently at the nominal DHW setpoint.

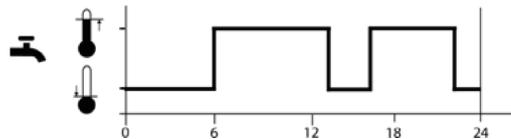
Example:



Heating circuit timed programs
Not used in our case.

Timed programme 4/DHW

Timed program 4 is taken into account for the DHW mode. Switching between the DHW comfort and reduced setpoints occurs at the program's planned changeover times.



3.10.2. ANTI-LEGIONELLA FUNCTION

Line no.	Programming	Possible values
1640	Anti-legionella function	stop / periodic / fixed day of the week

• Periodically

The anti-legionella function is repeated as per the defined periodicity (line 1641).

• Fixed day of the week

The anti-legionella function can be activated on a fixed day of the week (line 1642). With this setting, pasteurisation cycle takes place on a fixed day of the week, without taking into account the DHW tank temperatures during the previous period



CAUTION:

There is a risk of scalding when opening the valves during the anti-legionella operation.

Line no.	Programming	Possible values
1641	Periodic anti-legionella function (1641)	1 ... 7

The periodic anti- legionella setting determines how many days will pass before the anti-legionella function is reactivated (this setting only works if the anti-legionella parameter is set to Periodic).

Line no.	Programming	Possible values
1642	Anti-legionella function day week	Monday Tuesday Wednesday Thursday Friday Saturday Sunday
1644	Anti-legionella function time	00:00 ... 23:50 h:m

The anti-legionella day of the week operating function determines on which day the anti-legionella function should be activated. The anti-legionella function is then activated on the relevant day.

The anti-legionella function is started at its set time. The DHW setpoint is increased to the anti-legionella setpoint that has been fixed, and DHW loading begins.

If there is no set time, the anti-legionella function is started on the day that corresponds to the first normal DHW load. If no DHW load is scheduled for that day (permanently reduced mode), the anti-legionella function is run at 24.00.

If DHW production is deactivated (DHW mode button = Off or Holiday), the anti-legionella function will resume as soon as it is reactivated (DHW mode button = On or end of holiday).

Line no.	Programming	Possible values
1645	Anti-legionella setpoint	60 ... 90 °C

The higher the tank temperature, the faster the anti-legionella function is completed.

Line no.	Programming	Possible values
1646	Anti-legionella function duration	10 ... 360 min

The anti-legionella setpoint must not be changed during the fixed anti-legionella operation. If the temperature measured by the DHW sensor (B3) (or by the coldest sensor if there are two (B31)) is higher than the anti-legionella setpoint minus 1 K, the anti-legionella function duration begins. The anti-legionella function will be finished after this time.

If the tank temperature measured before the end of the anti-legionella function duration is lower by more than one differential + 2 K than the anti-legionella setpoint, the anti-legionella function must be repeated. If there is no anti-legionella function duration setpoint that has been configured, the anti-legionella function runs as soon as the anti-legionella setpoint is reached.

The pump is controlled via a multifunction relay that is configured accordingly.

3.10.3. DHW circulation temperature monitoring

Line no.	Programming	Possible values
1663	Circulation setpoint	8 ... 80 °C

If a sensor is installed in the DHW distribution line, the temperature is monitored by the controller. The setpoint that has been configured must be maintained on the sensor. The maximum circulation value is limited to the nominal setpoint.

Line no.	Programming	Possible values
1668	Loop alarm times	1 ... 48 hours

Setting of monitoring time up until DHW error message.

Error message for DHW:

Error Code 126 *DHW load T° not reached.*

This function ensures that the flow temperature is compliant with requirements.

An error message is generated if the desired flow temperature is not maintained throughout the set time. If the setpoint is once again reached while the alarm is active, the error message is inhibited. If the DHW tank cannot be loaded within a set time and at least up to the differential, an alarm message can be generated.

Setting of monitoring time up until DHW circulation error message..

Error message for DHW circulation:

Error code 219 *DHW circulation T° not reached.*

This function ensures that the circulation temperature is compliant with requirements.

An error message is generated if the desired flow temperature is not maintained throughout the set time. If the setpoint is once again reached while the alarm is active, the error message is inhibited.

The circulation temperature is considered correct if it deviates from the setpoint by less than 1K



CAUTION:

This alarm does not stop the appliance's operation.

3.10.4. Performance function

This function limits the burner power to limit gas consumption in the phases that do not require it. The function is temporarily deactivated if the temperature deviates from the setpoint.

Line no.	Programming	Possible values
2570	Max. output by lim. output	0 ... 100%

The burner load rate's maximum operating limit when the performance function is active.

Line no.	Programming	Possible values
2571	Output lim. differential	0 ... 20 °C

Maximum limit between the burner setpoint and the Dorchester DR-SG temperature when the performance function is active.

3.10.5. Rate switching

Line no.	Programming	Possible values
1680	Rate switching	none off on

In the case of external switching via the Hx input, the rate to be switched to should be defined in advance.

3.10.6. Dorchester DR-SG with additional tank

Line no.	Programming	Possible values
5741	DHW tank heating gas	On / off

Indicate here if the Dorchester DR-SG is paired with an additional tank equipped with a DHW sensor.

3.10.7. DHW load T° monitoring

Line no.	Programming	Possible values
6745	DHW loading alarm time	1 ... 42 hours

The regulator monitors the water temperature in the Dorchester DR-SG or in the storage tank equipped with the B3 sensor. An alarm can be programmed to provide info when the DHW temperature remains below the setpoint for too long.

The DHW temperature is considered correct if it deviates from the setpoint by less than 1K

3.11. "Boiler" parameters


IMPORTANT:

The Dorchester DR-SG comes with appropriate factory settings. Settings must be changed carefully to respond to specific application cases.

3.11.1. *Operating limits*

3.11.1.1. Min. and max. setpoints

Line no.	Programming	Possible values
2210	Min setpoint	8 °C
2212	Max setpoint	85 °C

The temperatures set here limit the setpoint that is taken into account by the burner. Note that these values do not limit the DHW setpoints that can be entered.

These limitations represent a protection function for the Dorchester DR-SG. Depending on the appliance's operating mode, the minimum burner temperature setpoint is in normal operating mode, the lower threshold of the configured boiler setpoint. In normal operation, the maximum boiler temperature is the upper limit for the configured boiler setpoint and the setpoint for the electronic safety limiting thermostat.


INFORMATION:

The min. and max. setpoint adjustment range is limited by the manual mode setpoint.

3.11.1.2. Manual mode

Line no.	Programming	Possible values
2214	Manual rate setpoint	8°C ... 85 °C

The common flow setpoint can be set to a fixed value in manual mode. This mode must remain temporary as it does not take into account any DHW settings

3.11.1.3. Frost protection setpoint

Line no.	Programming	Possible values
2217	Frost protection setpoint	-20 ... 20 °C

Dorchester DR-SG is protected from frost independently of heating requirements or connected components. This function turns on the burner when required.

3.11.2. Optimisation

3.11.2.1. Burner control

Line no.	Programming	Possible values
2243	Burner min stop duration	0 ... 20 min

The minimum burner pause time is only active between successive heating requests. The DHW preparation unit is then blocked for an adjustable period. This time is activated following regular shut-downs or the safety thermostat's activation after heating requests.

3.11.2.2. Pump timing

Line no.	Programming	Possible values
2250	Pump timed stop	0 ... 240 min

Times pump stoppage after an external heating request

Line no.	Programming	Possible values
2253	DHW supply pump timer stop	0 ... 20 min

Times pump stoppage after DHW

3.11.2.3. Boiler pump speeds

Line no.	Programming	Possible values
2321	Rot. speed on start	0 ... 100%
2322	Min pump rot. speed	0 ... 100%
2323	Max pump rot. speed	0 ... 100%

These parameters are used to set the minimum and maximum boiler pump speeds on start-up. These parameters must be set to 0% for Dorchester DR-SG.

Line no.	Programming	Possible values
2324	Band P rotation speed Xp boiler	0 ... 100%
2325	Boiler speed integration time	0 ... 100%
2326	Boiler speed bypass time	0 ... 100%

The PID regulator for the boiler pump can be influenced by the proportional band Xp, integration time Tn and derivative settings.

Line no.	Programming	Possible values
2334	Power at minimum pump speed	0 ... 100%
2335	Power at minimum pump speed	0 ... 100%

The Dorchester DR-SG parameter 2334 must be set to 0% and 2335 to 100%.

3.11.2.4. Boiler power

These settings show the minimum and nominal power of each product. These parameters cannot be changed and are Read-Only.

Line no.	Programming	Possible values
2330	Nom. power	0 ... 2000 kW
2331	Power at basic speed	0 ... 2000 kW

3.11.3. Heating and DHW regulation

Line no.	Programming	Possible values
2442	Max. charge full fan speed	0 ... 10000 rpm

This setting is used to limit the maximum power in full load mode.

Line no.	Programming	Possible values
2444	Max DHW fan speed	0 ... 10000 rpm

This setting is used to limit the maximum fan speed for DHW mode. It is compatible with shutting down. In the case of a shut-down, the fan is controlled at its maximum speed in DHW mode.

3.11.3.1. Differentials

To avoid accidental cut-offs during a transient phenomenon, the cut-off differential is dynamically adjusted based on the temperature curve. In principle, the cut-off differential is reduced based on the amplitude of the overshoot during a transient phenomenon. In the case of non-periodic phenomena, the reduction is performed on a temporal criterion

Line no.		Programming	Possible values
CC	DHW		
2454	2460	Heating circuit activation differential	0 ... 20 °C

The activation threshold is calculated from the requested setpoint minus the activation differential. The current setting designates the activation differential applied following a heating or DHW request.

Line no.		Programming	Possible values
CC	DHW		
2455	2461	Min. heating circuit disconnection differential	0 ... 20 °C

The disconnection threshold is calculated based on the requested setpoint minus the activation differential. The current setting designates the disconnection differential applied following a heating or DHW request.

During the transient period, the disconnection differential may fluctuate between the minimum and maximum value. The minimum disconnection differential is always used after the transient period is over.

3.11.3.2. Energy meter

Energy consumption is roughly evaluated using fan speed and a linear approximation of the current burner output.

The linear approximation function can be configured for determining the burner output by using the additional parameters.

Slope of the equation on the right Power slope/fan speed (9626) and y-axis section of the equation on the right Section Y power/fan speed (9627).

$$\text{Burner power} = \frac{(\text{Fan speed (8323)} - \text{Section Y power/fan speed (9627)})}{(\text{Power slope/fan speed (9626)})}$$

		9626	9627
210-20	GN	301.6	-1.5
	G31	285.7	-14.3
210-25	GN	296.6	-24.3
	G31	279.9	-27.1
210-30	GN	283.8	-13.5
	G31	262.6	-26.7
360-35	GN	178.6	0.0
	G31	161.0	-6.15
360-50	GN	178.0	-10.8
	G31	147.8	-8.9
360-60	GN	163.4	-5.2
	G31	146.7	0.0
540-70	GN	54.5	-6.5
	G31	49.6	-1.8
540-80	GN	54.2	-8.1
	G31	43.4	-4.2
540-100	GN	52.7	-3.3
	G31	46.0	-5.9
540-120	GN	53.3	-1.8
	G31	47.6	-6.3

figure 5 -Table of coefficients

Line no.	Programming	Possible values
9626	Power slope/fan speed	-1000 ... 1000
9627	Section Y power/fan speed	-1500 ... 1500

Line no.	Programming	Possible values
2550	Gas energy meter	stop start

This function must be released by this parameter (Start) to be able to start.

Stop

This function is non-operational.

Start

The function is activated

Line no.	Programming	Possible values
2551	Gas meter correction	0.7 ... 1.3

Here the energy metering can be adjusted by applying a coefficient to the calculation result.

Line no.	Programming	Possible values
8379	Global DHW energy	0 ... 2147483647 Kwh
8380	Global energy	0 ... 2147483647 Kwh
8382	DHW gas energy	0 ... 2147483647 Kwh
8383	Gas energy	0 ... 2147483647 Kwh

The gas energy meters are separated into 2 groups

The consumed gas energy is recorded separately and the sum of the heating gas and DHW gas energies is calculated as the gas energy .

The end user can optionally reset the counters individually for heating and domestic hot water (Heating gas energy (8381) and Gas energy

ECS (8382)).

Users can also individually set/reset the counters for the total gas energy for heating and domestic hot water (Global heating energy (8378) and Global DHW energy (8379)).

3.12. "DHW tank" settings

3.12.1. Load regulation

Line no.	Programming	Possible values
5020	Outlet setpoint T° raise	-20 ... 60 °C

The DHW request made to the generator includes the current DHW setpoint plus the adjustable boost.



IMPORTANT:

An incorrect configuration of this setting could result in burner cut-outs at full load.

Line no.	Programming	Possible values
5022	Charge type	reload full load full anti-legion. load full load 1st of day full load anti-legion. + 1st

The tank can be loaded with a maximum of 2 sensors. It is also possible to combine a partial load using one sensor and an anti-legionella function based on 2 sensors (setting 3).

Reloading

The DHW request is uniquely controlled by sensor B3.

Full load

The DHW request is controlled by the two tank sensors B3 and B31.

Full anti-legionella load

If the anti-legionella function is active, the DHW request is controlled by the two tank sensors B3 and B31, if not, uniquely with sensor B3

Full load 1st of the day

The DHW request for the first daily load is controlled by the two tank sensors B3 and B31, the following loads only with sensor B3.

Full anti-legionella load + 1st

The DHW request is controlled by the two tank sensors B3 and B31 for the first daily load as well as when the anti-legionella function is active, in other cases only with sensor B3

Line no.	Programming	Possible values
5024	DHW differential	0 ... 20 °C

If the DHW temperature is lower than the current setpoint despite the differential that has been set here, DHW loading is started. It ends once the temperature has reached the current setpoint

3.12.2. DHW pump speed-commanded

Line no.	Programming	Possible values
5101	Min pump rot. speed	0 ... 100%
5102	Max pump rot. speed	0 ... 100%

The speed range for controlling the DHW pump is limited by the minimum and maximum permitted speed.

Line no.	Programming	Possible values
5103	Band P rotation speed Xp DHW	0 ... 100%
5104	DHW rotation speed integration time	0 ... 100%
5105	DHW speed bypass time	0 ... 100%

The Xp proportional band defines the regulator's amplification. A fairly low Xp value produces a higher control signal for the load pump, for a control deviation that is equal.

The Tn integration time determines how quickly the regulator reacts to the deletion of the remaining control deviations. The shorter the integration time, the faster the control deviations are deleted.

The Tv derivation time determines the duration of an effect produced by a spontaneous change in the control deviation. If this derivation time is short, the action on the adjustment value will not last long either.

Line no.	Programming	Possible values
5106	Rot. speed on start	0 ... 100%
5107	Min pump rot. speed	0 ... 100%

These parameters are used to set the minimum and maximum DHW pump speeds.

Line no.	Programming	Possible values
5108	Load pump start rot. speed	0 ... 100%

This parameter is used to set the rotation speed on start-up (for 10 seconds) for the DHW pump.

3.13. "General functions" settings

The following functions allow activating one or more outputs called QX when these are declared as K21 and K22 (refer to the settings in the Configuration section). These outputs K21 and K22 can be filled in to obtain the image of:

- Monitoring when the temperature is exceeded OR
- Monitoring when the temperature is not reached OR
- Monitoring of a delta between 2 temperature measurements

This function can use the temperatures known by the NAVISTEM H3100 (e.g. Those of sensors B3 and B8, etc.) or the temperatures called "Special T° 1" and "Special T° 2". These sensors may be located by the client and declared on inputs BX2, BX21, BX22... and can be used for any purpose. These are not linked to any specific NAVISTEM H3100 function.

Line no.		Programming	Possible values
Regul 1	Regul 2		
5570	5580	dT° regul on temp. change (dT)	0 ... 40 °C
5571	5581	dT° regul off temp. change (dT)	0 ... 40 °C
5572	5582	Regul min act time temp. change (dT)	-30 ... 120 °C
5573	5583	Sensor 1 regulator dT	none DHW B31 return B7 B8 exhaust line flow line B10 cascade return B70 pool B13
5574	5584	Sensor 2 regulator dT	boiler B2 DHW B3 Outdoor T° B9 ambience 1 B5 ambience 2 B12 ambience 3 B53 CC1 B1 CC2 B12 CC3 B14 Sensor T° special 1 Special T° sensor 2
5575	5585	Machine min regul on time dT	0 ... 250 s

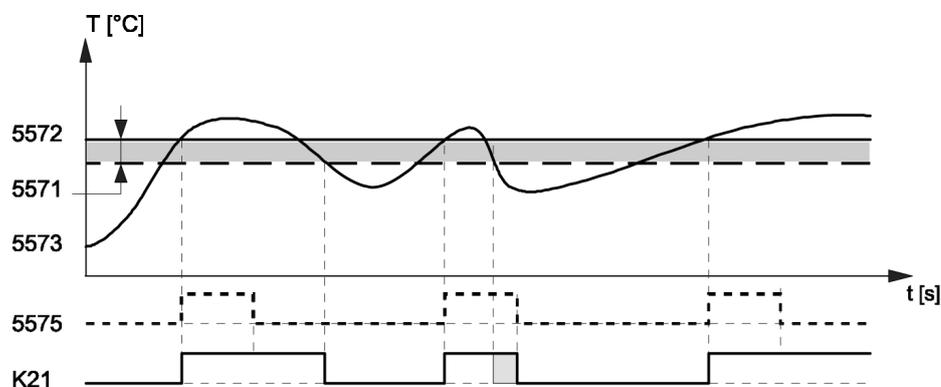
Over temperature

This function is used to compare freely chosen temperature value with an adjustable limit value.

The relay trips if the limit value is exceeded.

Example for regulator 1:

Line no.	Programming	Values
5574	Sensor 2 regulator dT 1	none

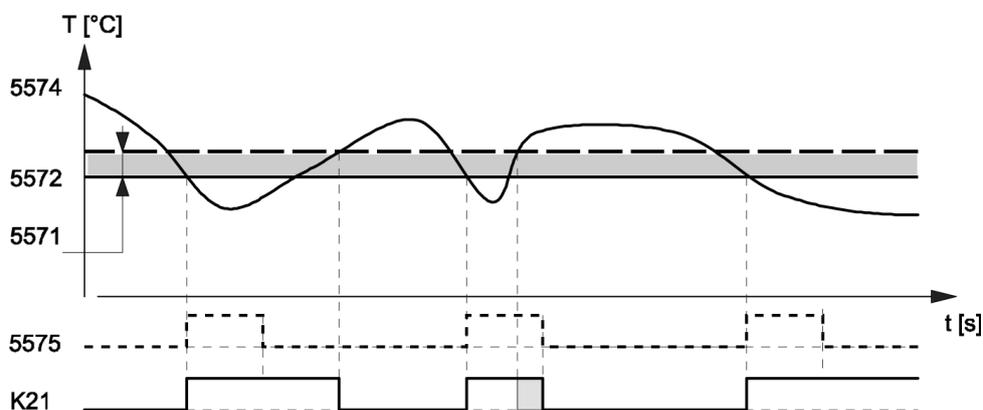


Under temperature

This function is used to compare freely chosen temperature value with an adjustable limit value.

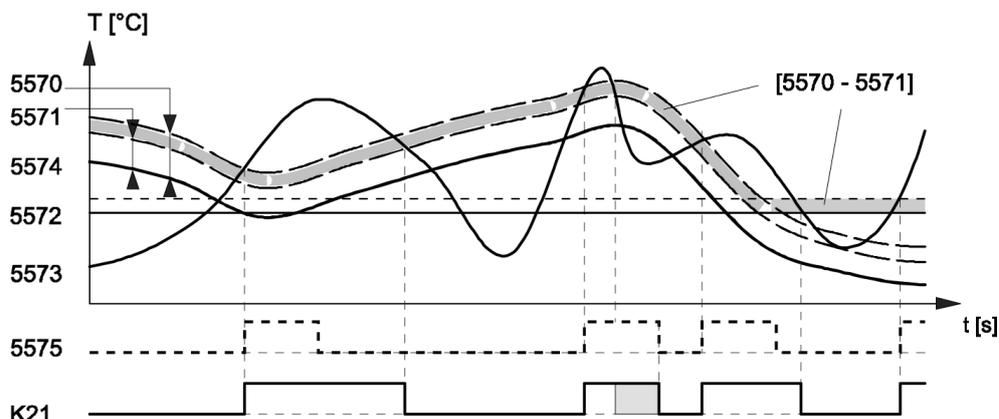
The relay trips if the temperature falls below the limit value. Example for regulator 1:

Line no.	Programming	Values
5573	Sensor 1 regulator dT 1	none



Temperature difference regulator

This function is used to compare two freely chosen temperature values. An absolute minimum is monitored at the same time.



Assignment or not of the pump/valve kick-start cycle for outputs K21 and K22(see parameter 6127):

Line no.		Programming	Possible values
Regul 1	Regul 2		
5577	5587	Pump/valve kick-start K21	stop start

3.14. "Configuration" settings

The DHW preparation unit controller must be correctly configured to adapt to boiler room demands.

It has 2 configurable 230V outputs (QX1 and QX2), 1 configurable sensor input (BX2 and BX3), an on-off input (H1)

Output QX1 is factory-set as an alarm output. The QX2 pump is configured as DHW Q3 pump.

Boiler controller inputs / outputs	Factory configuration	Possible configuration example:
QX1	Alarm relay K10	
QX2	DHW pump Q3	
BX2	-	Special sensor 1
BX3	-	Special sensor 2
H1	-	Generator blockage.

Be sure to correctly configure the inputs/outputs.

EXPANSION MODULE

The extension modules provide additional inputs/outputs for the boiler controller. This expansion module is needed for the 0-10V outputs

It must be mechanically configured by switches (when powered down) to define the module number (1 to 3) and by software (using the HMI) to define the functions they will perform.

3.14.1. *Configuring Dorchester DR-SG controller inputs / outputs*

3.14.1.1. Relay output Qx

Line no.		Programming	Possible values
QX1	QX2		
5890	5891	Relay output QX1, 2	None Consumption circuit pump 1 Q15 boiler pump Q1 alarm output K10 CC3 Q20 pump consum. circuit pump 2 Q18 Q25 cascade pump pump CC1 Q2 pump CC2 Q6 DHW pump/valve Q3 K36 status message Destrat. pump. ECS Q35 Regulator dT 1 K21 Regulator dT 1 K22

The output settings assign the corresponding functions based on the selection. By default, relay QX1 is configured for remote fault reporting.

None

No function on the relay output.

Consumption circuit pump 1 Q15

Not usable on this product.

Boiler pump Q1

Pump control which remains active as long as the Dorchester DR-SG is in comfort or reduced mode.

Alarm output K10

If a fault occurs it is reported by the alarm relay. Once the error is eliminated, i.e. the error message is no longer present, the contact opens immediately.

Note: If the fault cannot be eliminated for now, the relay can still be reset. This is done from the *Faults* page.

Pump CC3 Q20

Not usable on this product.

Consumption circuit pump 2 Q18

Not usable on this product.

Cascade pump Q25

Not usable on this product.

Pump CC1 Q2

Not usable on this product.

Pump CC2 Q6

Not usable on this product.

DHW pump/valve Q3

Setting device for the DHW tank.

Status message K36

The output is activated when the burner is operating (presence of flames).

Destratification pump DHW Q35

A separate pump for continuously circulating water in the hot water tank when the anti-legionella function is on.

Temp. change regulator 1 K21 / Temp. change regulator 1 K22

Relays K21 and K22 are used by the temperature change regulator.

3.14.1.2. Sensor input BX

Line no.		Programming	Possible values
BX2	BX3		
5931	5932	Sensor input BX2, 3	without DHW sensor B31 Special T° sensor 1 Special T° sensor 2

The output settings assign the corresponding functions based on the selection.

Special T° sensor 1 or 2

These sensors do not influence the behaviour of the generator or DHW production.

3.14.1.3. Inputs H1 / H5

Line no.		Programming	Possible values
H1	H5		
5950		Function input Hx	without CC+DHW switching mode CC switching mode CC1 switching mode CC2 switching mode CC3 switching mode generator blocked waiting error / alarm message request consumption circuit 1 consumption circuit 2 request Boiler pressure switch excessive heat evacuation consumption circuit 1 request 10V consumption circuit 2 request 10V 10V pressure measurement

None

No function on the input.

Operating mode changeover

of domestic hot water

Domestic hot water loading can only be blocked with the setting *CC+DHW operation changeover* or *DHW operation changeover*.

Blocked generator, waiting

The generator is locked via the Hx connection terminals. Any temperature requests from the heating circuits and the DHW are ignored. The boiler's frost protection is active during this time.

Error/alarm message

Input H1 causes a regulator error message. If the alarm output is configured accordingly (relay outputs 1...3, lines 5891...5893), then the error is forwarded or displayed by an additional contact (e.g. an outside indicator or buzzer). The use of this function does not affect the generator's operation.

Consumption circuit 1 request

Not usable on this product.

Excess heat evacuation

Not usable on this product.

Boiler pressure switch

A blocking fault appears when the pressure switch is open. The burner is cut out and the pumps stop. The pressure switch must be closed and the fault cleared to allow the pumps to start and to authorise the burner to operate.

Consumption circuit 1 request 10V

Not usable on this product.

Measurement of pressure 10V

Not usable on this product.

Line no.		Programming	Possible values
H1			
5951		Contact action direction	Normally-closed contact (NC) Working contact

Normally-closed contact (NC)

The contact is normally closed and must be opened to enable the chosen function.

Working contact

The contact is normally open and must be closed to enable the chosen function.

Parameter	Contact status on terminal Hx	Function state / action
<i>Hx contact action direction</i>		
Working contact	open	inactive
	closed	active
Normally-closed contact (NC)	open	active
	closed	inactive

Line no.	Programming	Possible values
5953	H1 voltage 1 value (U1)	0 ... 10 V
5954	H1 function 1 value (F1)	-1000 ... 5000
5955	H2 voltage 2 value (U2)	0 ... 10 V
5956	H1 function 2 value (F2)	-1000 ... 5000

3.14.2. Expansion module configuration

Line no.			Programming	Possible values
Mod. 1	Mod. 2	Mod. 3		
6020	6021	6022	Functions extension modules 1, 2, 3	Without multifunction heating circuit 1 heating circuit 2 heating circuit 3 return temp regulator primary regulator/pump

Simply assigning a function to the extension module automatically configures the inputs / outputs.

None

This function is non-operational.

Multifunction

The functions that can be assigned to the multifunction inputs/outputs can be viewed on lines 6030...6038 and 6040...6045.

3.14.2.1. Extension module QX 1 / 2 / 3

Line no.			Programming	Possible values
QX 21	QX 22	QX 23		
6030	6031	6032	Relay output module 1	None Consumption circuit pump 1 Q15 boiler pump Q1 alarm output K10 CC3 Q20 pump consum. circuit pump 2 Q18 Q25 cascade pump pump CC1 Q2 pump CC2 Q6 DHW pump/valve Q3 K36 status message Destrat. pump. ECS Q35 Regulator dT 1 K21 Regulator dT 1 K22
6033	6034	6035	Relay output module 2	
6036	6037	6038	Relay output module 3	

The output settings assign the corresponding functions based on the selection.

**INFORMATION:**

The extension module QX outputs have the same functions as those of the main controller.
See § 5.15.1.1 Relay output QX, page 58.

3.14.2.2. Extension output BX

Line no.		Programming	Possible values
BX 21	BX 22		
6040	6041	Module 1 sensor input	without DHW sensor B31 common outlet sensor B10 cascade return sensor B70 Special T° probe 1 Special T° probe 2
6042	6043	Module 2 sensor input	
6044	6045	Module 3 sensor input	

The output settings assign the corresponding functions based on the selection.

**INFORMATION:**

The BX sensor inputs on the extension module have the same functions as the ones on the main controller.
See § 5.15.1.2 Input sensor BX, page 59

3.14.2.3. Extension module H2 1 / 2 / 3

module 1	Line no.		Programming	Possible values
	module 2	module 3		
6046	6054	6062	Function input H2	without CC+DHW switching mode CC switching mode CC1 switching mode CC2 switching mode CC3 switching mode generator blocked waiting error / alarm message consumption circuit 1 request consumption circuit 2 request excessive heat evacuation Boiler pressure switch consumption circuit 1 request 10V consumption circuit 2 request 10V 10V pressure measurement
6047	6055	6063	Mod.2 H2 contact Contact	Normally-closed contact (NC) Working contact
6049	6057	6065	Voltage value 1 H2 (U1)	0 ... 10 V
6050	6058	6066	Function value 1 H2 (F1)	-1000 ... 5000
6051	6059	6067	H2 voltage 2 value (U2)	0 ... 10 V
6052	6060	6068	Function value 2 H2 (F2)	-1000 ... 5000



INFORMATION:

The H2 inputs on the extension module have the same functions as the ones on the main controller. See chapter 15.2.3, page 83.

3.14.2.4. Outputs 0-10V UX21 / UX22

Line no.		Programming	Possible values
UX21	UX22		
6240	6243	UXx output function	without Q3 gas heating pump DHW pump Q3 Intermediate circuit DHW pump Q33 CC1 pump Q2 CC2 pump Q6 CC3 pump Q20 burner modulation
6246	6249		
6252	6255		

None

No function on the UX output.

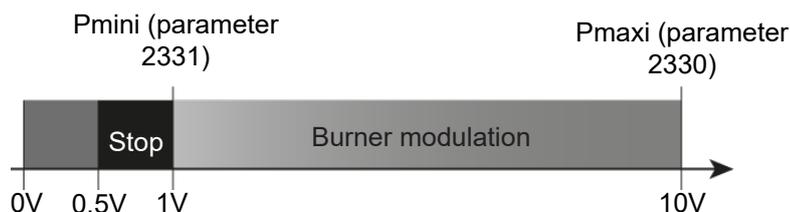
Q3 gas heating pump

The connected pump is used to circulate water between the Dorchester DR-SG and the additional tank.

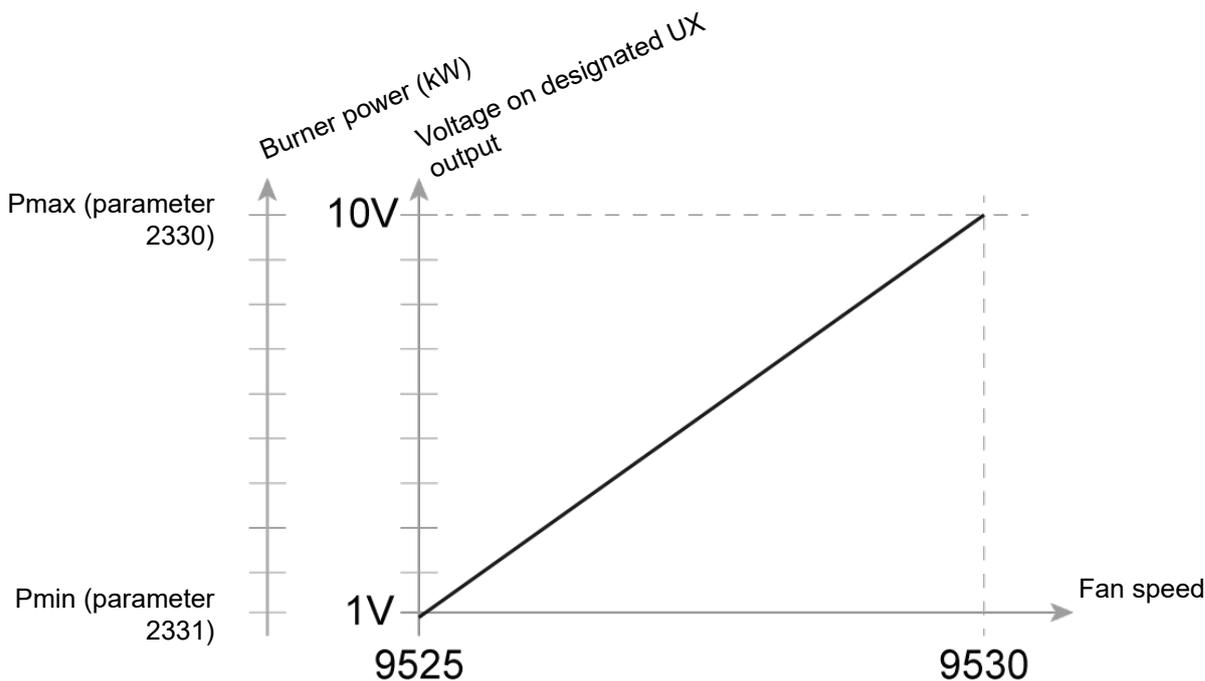
Burner modulation

This function is used to send an image of boiler power to a 0-10V output.

0...0,5 Vdc	The Dorchester DR-SG status inhibits starting or locking.
0.5...1 Vdc	The Dorchester DR-SG is waiting for start-up or either pre or post-ventilation.
1...10 Vcc	The Dorchester DR-SG is working with its flame lit between the min. and max. power levels.



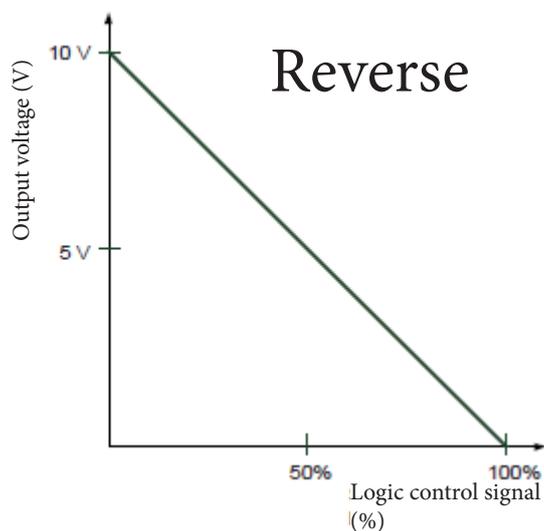
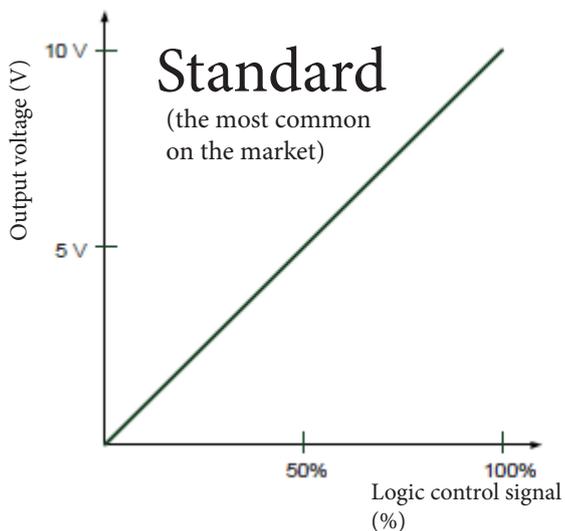
The burner modulation calculation generated is based on the fan's min. and max. OEM speeds (min. setting: parameter 9525 / max. setting: parameter 9530).



INFORMATION:

When mains power returns after a power break or when a fault is reset, the value that is generated is temporarily undefined.

Line no.		Programming	Possible values
UX21	UX22		
6241	6244	UXx signal logical output	Standard reverse
6247	6250		
6253	6256		



Line no.		Programming	Possible values
UX21	UX22		
6242	6245	UXx signal output	0-10 PWM
6248	6253		
6254	6257		

3.14.3. System configuration

3.14.3.1. Pump/valve kick-start

Line no.	Programming	Possible values
6127	Valve/pump kick-start duration	0 ... 51 s

The periodic activation of pumps and valves is a function that protects against seizing. Water circulates in the installation when the pumps are switched on. To avoid clogging, the pump mechanics and valve seat are rinsed and cleaned of particles in suspension.

Pumps directly connected to the standard device are switched on at 10:00 a.m. every Friday for the kick-start period set at 1-minute intervals.

The unclogging operation is only activated if there is no current heat request.



INFORMATION:

Valve unclogging only runs if the valve has not been activated by a regulator function since the last unclogging operation.

Pump unclogging only runs if the pump has not been activated by a regulator function since the last unclogging operation.

3.14.3.2. Save sensor

If faulty sensors are detected after installation and to avoid integrating them with correct status (which may occur if automatic detection is used), there is a Commissioning function.

This function learns to recognise the connected sensors and, if a fault occurs, generates an error message while inhibiting any installation diagram change.

Line no.	Programming	Possible values
6200	Register sensor	no yes

At midnight, the standard device records the status of the sensor terminals, so long as the regulator has already been running for at least two hours. If a sensor fails after recording, then the standard device generates an error message. This setting is used to immediately record the sensors. This may be necessary, e.g. when a sensor is removed and is no longer of any use.

Line no.	Programming	Possible values
6205	Reset parameters	no yes

All of the parameters can be reset to the factory settings except for the following pages:

- Time and date
- User interface
- Radio and all time programmes, and
- And the manual rate setpoint.

3.14.4. Information

This data is reserved for the manufacturer:

Line no.	Programming	Possible values
6230	Info 1 OEM	
6231	Info 2 OEM	

3.14.4.1. Appliance specifications

Line no.	Programming	Possible values
6220	Software version	

This information indicates the current version of the standard appliance.

3.15. "Error" setting

As soon as an error occurs, an error message can be seen at the Info level via the Info button. The display shows the cause of the error.

The boiler controller records the last 20 faults. The system stores the fault code, the operating phase and time during which the fault occurred.

3.15.1. Information message

A fault in the system is displayed with the Albatros code for the occurring error.

Line no.	Programming	Possible values
6705	Software diagnostic code	0 ... 65535

A fault in the system is displayed here with the internal software diagnostic code for the occurring error.

Line no.	Programming	Possible values
6706	Phase unit pos. fault	0 ... 255

A fault in the system is displayed with the fault phase of the occurring error.

3.15.2. Acknowledgement

Line no.	Programming	Possible values
6710	Alarm relay reset	no yes

When a fault occurs an alarm can be triggered on the QX.. relay. . This must therefore be configured. The alarm relay can be reset via this parameter.

3.15.3. History

Line no.	Programming	Possible values
6800, 6810, 6820, 6830, 6840.6850, 6860, 6870, 6880, 6890.6900, 6910, 6920, 6930, 6940.6950, 6960, 6970, 6990	History ...	00:00 ... 23:59 h:m

The device saves the latest 20 faults in a non-volatile memory. Any new entry clear the oldest entry from memory. For each error input, the system records the code, time, internal software diagnostic code and fault phase of the safety unit.

Example:

PROG No. 6800
18:23
Error History 1
15.01.2016
132:Safety shutdown

- ◀ Time when the fault appeared
- ◀ Date when the fault appeared
- ◀ History log number
- ◀ Error code and details of the fault

Line no.	Programming	Possible values
6805, 6815, 6825, 6835, 6845, 6855, 6865, 6875, 6885, 6895, 6905, 6915, 6925, 6935, 6945, 6955, 6965, 6975, 6995	Software diagnostic code...	0 ... 9999

Example:

PROG No. 6805
562
Error SW diagnostic code 1
Burner control phase 1

- Extended fault code No.
- History log No.
- Fault appearance phase No.

Line no.	Programming	Possible values
6999	Fault history reset	No / Yes

The complete history of the last 20 errors is deleted when this setting is changed. When finished, the setting automatically changes to “no”

3.16. "Maintenance / Special mode" settings

3.16.1. Maintenance function

Line no.	Programming	Possible values
7040	Burner op. hours interval	100 ... 10000 h

A maintenance message is displayed as soon as the interval set for the burner operating hours has elapsed.

Line no.	Programming	Possible values
7041	Op. h since maint.	0 ... 10000 h

Totalisation and display of the current value. The value can be reset to 0 on this line.

Line no.	Programming	Possible values
7042	Burner start interval	100 ... 65500

A maintenance message is displayed as soon as the interval set for the burner start-ups has elapsed.

Line no.	Programming	Possible values
7043	Burner start since Maint.	0 ... 65535

Totalisation and display of the current value. The value can be reset to 0 on this line.

Line no.	Programming	Possible values
7044	Maintenance interval	1 ... 240 months

A maintenance message is displayed as soon as the interval set for the burner operating hours has elapsed. The burner may or may not be on.

Line no.	Programming	Possible values
7045	Time since maintenance	1 ... 240 months

Totalisation and display of the current value. The value can be reset to 0 on this line.

Line no.	Programming	Possible values
7050	Ionis. current fan speed	0 ... 10000 rpm

The burner ionisation current maintenance alarm must be triggered above these speed limits, when the ionisation current monitoring commands a speed increase because an ionisation current is too low.

Line no.	Programming	Possible values
7051	Ionis. current message	no yes

Maintenance alarm display and reset indicator of burner ionisation current for boiler controller. The maintenance alarm can only be reset if the trigger event has been eliminated.

3.16.2. Chimney sweeping

Line no.	Programming	Possible values
7130	Sweeping function	stop start
7131	Burner power	partial load full load maximum heat load

The burner is on. To maintain burner operation as long as possible, the only active cut-off point is the maximum limitation of the Dorchester DR-SG temperature.

The burner power can be adjusted during the sweeping function:

Partial load:

Sweeping function with minimum storage tank power.

Full load:

Sweeping function with maximum storage tank power.

Maximum heat load:

Sweeping function with the maximum configured heating output.



INFORMATION:

This function is deactivated by setting -- on this line or happens automatically when the maximum storage tank temperature is reached.

3.16.3. Maintenance function

Line no.	Programming	Possible values
7140	Manual mode	stop start

Relay outputs are no longer controlled as per the regulation status if manual mode is active, but are set to a predefined manual mode status, depending on their function. The relay outputs are switched to a status that is likely to generate heat, depending on their hydraulic function.

**IMPORTANT:**

The outputs programmed as the K10 alarm report and K36 status message are deactivated.

Setpoint adjustment in manual mode:

Switch to the basic display when manual mode has been activated. This is where the maintenance/special mode symbol is displayed.

Press the Info button to switch to the "Manual mode" information display where the setpoint can be set.

If the sweeping function is activated in manual mode, the latter is interrupted to allow the function to run. Manual mode remains active as long as it is selected.

**IMPORTANT:**

This function is not monitored based on a time setting. The manual mode selection remains active even after a restart.

Line no.	Programming	Possible values
7143	Regulator stop function	stop start

If the controller stop is activated, the boiler is directly controlled at the burner output configured as the controller stop setpoint.

Line no.	Programming	Possible values
7145	Regulator stop setpoint	0 ... 100%

When a regulator stop is activated, the Dorchester DR-SG is regulated to the power that is entered here.

Line no.	Programming	Possible values
7146	Drain function	stop start

Setting for manually triggering the function via the command key, for example, or the *Maintenance/special regime* menu. When draining is completed, the parameter is reset to *Stop*. It can also be set to *Off* to pause draining at any time.

Line no.	Programming	Possible values
7147	Drain type	without continuous heating circuit cyclic heating circuit Permanent DHW Cyclic DHW

This parameter is used to pre-select the phases of the drain function, also refer to the previous paragraph on this subject **Drain function**.

If the function is launched, this value displays the current processing phase for information purposes.

None

Function as a parameter: By default, meaning that the drain function is active throughout phase 1 (continuous heating circuit); Phase 2 (Cyclic heating circuit); Phase 3 (permanent DHW) and Phase 4 (cyclical DHW).

Function as an information value: The function is paused.

Continuous heating circuit

Unusable.

Cyclic heating circuit

Unusable

Permanent DHW

Function as a parameter: The drain function is only active throughout phase 3 (permanent DHW) and phase 4 (cyclic DHW).

Function as an information value: The function is in phase 3 (permanent DHW).

Cyclical DHW

Function as a parameter: The purge function is only active throughout phase 4 (cyclical DHW).

Function as an information value: The function is in phase 4 (cyclical DHW).

3.16.4. Service

Line no.	Programming	Possible values
7170	After Sales Department telephone	0 ... 9

Setting the telephone number that is shown in the information display.

3.17. "INPUT/OUTPUT TEST" PARAMETERS

The inputs/outputs test is used to ensure that the connected components operate properly.



IMPORTANT:

The selected sensor values are updated with a maximum of 5 seconds. The display does not take into account any corrections to the measured values.



INFORMATION:

The relay test can be activated via diagnostics software and via the operating interface. It remains active for a maximum of eight minutes after which time it is forced to shut down.

3.17.1. Relay outputs test

Line no.	Programming	Possible values
7700	Relay test	No test All stopped Relay output QX1 Relay output QX2 Relay output QX3 Relay output QX4 Relay output QX21 module 1 Relay output QX22 module 1 Relay output QX23 module 1 Relay output QX21 module 2 Relay output QX22 module 2 Relay output QX23 module 2 Relay output QX21 module 3 Relay output QX22 module 3 Relay output QX23 module 3

The relay test allows enabling or disabling all of the relay outputs (burner, pumps, etc.) regardless of regulator status. This is used to quickly check the wiring.

A parameter dedicated to this purpose allows triggering each relay individually. The configured status remains active after exiting this parameter.

The test can be stopped explicitly, else it automatically disables itself after one hour.

No test

The output test is disabled

Everything is on STOP

All of the outputs are disabled.

Relay output QX...

Only QX... is set.

Relay output QX2... module n

Only QX2... on extension module n is enabled.



IMPORTANT:

The boiler's electronic temperature controller takes priority over the outputs test. It can therefore force the burner relay output test.

3.17.2. Test of the expansion modules UX21/UX22 outputs (0-10V)

Line no.			Programming	Possible values
Module 1	Module 2	Module 3		
7780	7784	7788	Outputs test UX21 modules 1,2, 3	0 ... 10 V
7782	7786	7790	Outputs test UX22 modules 1,2, 3	0 ... 10 V

3.17.3. Sensor inputs test

Line no.	Programming	Possible values
7750	DHW temperature B3/B8	0 ... 140 °C
7760	Boiler T° B2	0 ... 140 °C
7820	Sensor T° BX1	-28 ... 350 °C
7821	Sensor T° BX2	-28 ... 350 °C
7822	Sensor T° BX3	-28 ... 350 °C
7823	Sensor T° BX4	-28 ... 350 °C
7830	Module 1 BX21 sensor T°	-28 ... 350 °C
7831	Module 1 BX22 sensor T°	-28 ... 350 °C
7832	Module 2 BX21 sensor T°	-28 ... 350 °C
7833	Module 2 BX22 sensor T°	-28 ... 350 °C
7834	Module 3 BX21 sensor T°	-28 ... 350 °C
7835	Module 3 BX22 sensor T°	-28 ... 350 °C

The input test is used to read the current measurement values from the device input terminals. This is used to quickly check the wiring.

3.17.4. Test if inputs H1 / H2 / H3 / H4 / H5 / H6 / H7

Line no.	Programming	Possible values
7840	H1 voltage signal	0 ... 10 V
7841	H1 contact status	Open Closed
7845	Module 1 H2 voltage signal	0 ... 10 V
7846	Module 1 H2 contact status	Open Closed
7848	Module 2 H2 voltage signal	0 ... 10 V
7849	Module 2 H2 contact status	Open Closed
7851	Module 3 H2 voltage signal	0 ... 10 V
7852	Module 3 H2 contact status	Open Closed
7854	H3 voltage signal	0 ... 10 V
7855	H3 contact status	Open Closed
7860	H4 contact status	Open Closed
7862	H4 frequency	0 ... 2000
7865	H5 contact status	Open Closed
7872	H6 contact status	Open Closed
7874	H7 contact status	Open Closed

The input test is used to read the current measurement values from the device input terminals. This is used to quickly check the wiring.

3.17.5. Test of EX inputs (extension module)

Line no.	Programming	Possible values
7950	Module 1 EX21 input	0V 230V
7951	Module 2 EX21 input	0V 230V
7952	Module 3 EX21 input	0V 230V

The input test is used to read the current measurement values from the device input terminals. This is used to quickly check the wiring.

3.18. "Status" settings

The installation's current operating status is shown using status displays.

Line no.	Programming
8003	DHW status

Final user (info level)	Commissioning, specialist	Status No.
Thermostat response	Thermostat response	3
Active manual intervention.	Active manual intervention.	4
Fluid decanting regime	Fluid decanting regime	199
Heat maintenance mode EN	Heat maintenance mode active	222
	Heat maintenance mode EN	221
Adiabatic cooling active	Adiabatic cooling by collector	77
	Adiabatic cooling by generator / heating circuits	78
		53
Load locking active.	Discharge protection active	79
	Load duration limit active	80
	Load locked	81
		82
Forced load active	Forcing, maximum temperature of the tank	83
	Forcing, maximum temperature of load	84
	Forcing, anti-Legionella setpoint	85
	Forcing, comfort setpoint	86
		67
Electrical resistance load	Electrical resistance load, anti-legionella setpoint	87
	Electrical resistance load, Comfort setpoint	
	Electrical resistance load, reduced setpoint	88
	Electrical resistance load, anti-freeze setpoint	89
	Resistance electric released	90
		91
Accelerated load active		66
	Active start	92
	Accelerated load anti-legionella	93
Activated load		94
	Load, anti-legionella setpoint	95
	Load, Comfort setpoint	96
	Load, reduced setpoint	97
Frost protection enabled		69
	Frost protection enabled	24
	Instant storage tank frost protection	223
Delayed cut-off response active	Delayed cut-off response active	17
Load on standby	Load on standby	201

Under load	Under load, maximum temperature of the tank	70
	Under load, maximum temperature of load	71
	Load, anti-legionella temperature	98
	Under load, comfort temperature	99
	Under load, reduced temperature	100
Under load		75
Stop	Stop	25
Ready	Ready	200

Line no.	Programming
8005	Boiler status

Final user (info level)	Commissioning, specialist	Status No.
STB response	STB response	1
Safety limitation test active	Safety limitation test active	123
fault	fault	2
Excessive exhaust temperature	Exhaust temperature, exhaust temperature cut-off power limitation	232
		233
		234
Thermostat response	Thermostat response	3
Active manual intervention.	Man intervention active	4
Chimney function active	Sweeping function, sweeping function nominal load, partial load	5
		6
		7
Blocked	Manual locking	8
	Locked, solid fuel boiler Auto lock	172
	Locked, outside temperature Locked,	9
	ecological mode	176
		198
	10	
Minimum limitation active	Minimum limitation	20
	Minimum partial load limitation	21
	Minimum limitation active	22
In operation	Offloading at startup	11
	Partial load off-loading start-up.	12
	Limitation of reloading	13
	Limitation of reloading, partial load	14
		18
Storage tank load	Storage tank load	59
In operation for heating circuit, sanitary hot water	In operation for heating circuit, sanitary hot water	170
Under partial load for heating circuit, sanitary hot water	Under partial load for heating circuit, sanitary hot water	171
Released for heating circuit, sanitary hot water	Released for heating circuit, sanitary hot water	173
In operation for the DHW	In operation for the DHW	168
Under partial load for sanitary hot water Released	Under partial load for sanitary hot water Released	169
for sanitary hot water	for sanitary hot water	174
In operation for the heating circuit	In operation for the heating circuit	166
Under partial load for the heating circuit	Under partial load for the heating circuit	167
Released for heating circuit	Released for heating circuit	175
Delayed cut-off response active	Delayed cut-off response active	17
Released	Released	19
Frost protection enabled	Active installation antifreeze	23
		24
Stop	Stop	25

Line no.	Programming
8009	Burner status

Final user (info level)	Commissioning, specialist	Status No.
Fault position	Fault position	211
Start prevention	Start prevention	212
In operation	In operation	18
Start-up	safety time	214
	Pre-ventilation	218
	Start-up	215
	Post-ventilation	219
	Deactivation	213
	Reset to zero	217
Reduced	Reduced	216

3.19. "DIAGNOSTICS" PARAMETERS

Generator diagnostics

Various setpoints and true values, relay switching states and timer states may be displayed for diagnostics purposes.

Line no.	Programming	Possible values
8304	Boiler pump status (Q1)	stop start
8308	Boiler pump speed	0 ... 100%
8310	Boiler temperature	0 ... 140 °C
8311	Boiler setpoint	0 ... 140 °C
8312	Boiler switching point	0 ... 140 °C
8313	Regulation sensor	0 ... 140 °C
8314	Boiler return temperature	0 ... 140 °C
8316	Fume temperature	0 ... 350 °C
8318	Max burnt gas temperature	0 ... 350 °C
8323	Fan speed	0 ... 10000 rpm
8324	Burner fan setpoint	0 ... 10000 rpm
8325	Current fan command	0 ... 100%
8326	Boiler modulation	0 ... 100%
8327	Hydraulic pressure	0 ... 10

Line no.	Programming	Possible values
8329	Ionisation current	0 ... 100 μ A
8330	1st speed operating hours	00:00:00 ... 2730:15:00 h
8331	1st speed start counter	0 ... 2147483647
8339	DHW mode operating hours	00:00:00 ... 8333:07:00 h
8379	Global DHW energy	0 ... 214748364 kwh
8380	Global energy	0 ... 214748364 kwh
8382	DHW gas energy	0 ... 214748364 kwh
8383	Gas energy	0 ... 214748364 kwh
8390	Current phase No.	TNB TLO TNN STY STV THL1 THL1A TV TBRE TW1 TW2 TVZ TSA1 TSA2 TI MOD THL2 THL2A TN SAV STO

3.19.1. Consumer diagnostics

Various setpoints and true values, relay switching states and generator states may be displayed for diagnostics purposes.

Line no.	Programming	Possible values
8820	DHW pump	off on
8825	DHW pump speed	0 ... 100%
8826	Interm. circulator pump speed DHW	0 ... 100%
8830	DHW temperature 1 (B3)	0 ... 140 °C
	DHW setpoint	8 ... 80 °C
8832	DHW temperature 2 (B31)	0 ... 140 °C
8835	DHW circulation temperature	0 ... 140 °C
8836	DHW loading temperature	0 ... 140 °C
9016	Special temperature 1	0 ... 140 °C
9017	Special temperature 2	0 ... 140 °C

Line no.	Programming	Possible values
9031, 9032, 9033, 9034	Relay output QX1, 2, 3, 4	stop start
9050, 9053, 9056	Relay output QX21 module 1, 2,3	stop start
9051, 9054, 9057	Relay output QX22 module 1, 2,3	stop start
9052, 9055, 9058	Relay output QX23 module 1, 2,3	stop start

3.20. "Safety unit" settings

3.20.1. Operation

Line no.	Programming	Possible values
9504	Preventilat. speed setpoint	200 ... 10000 rpm
9505	Speed limit	200 ... 10000 rpm
9506	Nominal load tolerated speed	50 ... 1200 rpm

Configurable pre-ventilation speed setpoint on the operating interface. This value can only be higher than the setpoint entered in parameter 9505.

The speed is considered to be compliant if the speed reading > 9504 - 9506

Line no.	Programming	Possible values
9512	Ignition speed setpoint	200 ... 10000 rpm
9513	Speed limit	200 ... 10000 rpm
9514	Ignition rot. speed tolerance	50 ... 1200 rpm

Configurable ignition speed setpoint on the operating interface. This value can only be higher than the setpoint entered in parameter 9513.

The speed is considered to be compliant if $9512 - 9514 < \text{speed reading} < 9512 + 9514$

Line no.	Programming	Possible values
9524	Part charge rot. speed setpoint	0 ... 10000 rpm

Configurable partial load rotation speed setpoint on the operating interface. This value can only be higher than the *Minimum rot. speed setpoint partial load*.

Line no.	Programming	Possible values
9525	Part load min. speed setpoint	0 ... 10000 rpm

Part load min. speed setpoint (safety parameter). Limit for the *Part load min. speed setpoint*.

Line no.	Programming	Possible values
9529	Nom char. speed setpoint	0 ... 10000 rpm

Configurable nominal load rotation speed setpoint on the operating interface. This value can only be higher than the *Maximum rot. speed setpoint nominal load*.

Line no.	Programming	Possible values
9530	Nom charge max speed setpoint	0 ... 10000 rpm

Maximum speed setpoint at nominal load (safety parameter). Limit for the *Nominal load rot. speed setpoint*.

3.20.2. Chimney drying

Line no.	Programming	Possible values
9650	Chimney drying	stop temporary permanent

If chimney drying is activated, the function starts after the appliance has been turned off during a reduced phase. Chimney drying can be paused by any heating request and restarts when the phase returns to standby.

Stop

This function is non-operational.

Temporary

Duration of chimney drying set in *Chimney drying time* parameter, line (9652).

Permanent

Chimney drying is performed permanently in standby mode.

Line no.	Programming	Possible values
9651	Chimney drying speed setpoint	0 ... 10000 rpm

Speed for performing chimney drying.

Line no.	Programming	Possible values
9652	Chimney drying time	10 ... 1440 min

Duration of chimney drying when it can only be run in a limited time.

3.21. "Opentherm" settings

3.21.1. Operation

An external Opentherm device can be connected to remotely manage the DHW temperature set-point.

Line no.	Programming	Possible values	Values to set for operation with OT
6351	OT function channel 1	Room control ext1. Room control ext2. Room control ext3.	Room control ext1.
6355	Room control CC1	Internal external	External
6359	DHW external control	Room control ext1. Room control ext2	Room control ext1.

Parameter (6359) releases the use of the DHW operating mode (choice of DHW Comfort, DHW Eco, DHW frost protection modes) by means of an OpenTherm room controller connected to the Dorchester DR-SG.

If the DHW is controlled by OT, no operation mode will be displayed. The operating mode key is blocked. If the operating mode key is pressed the indication "Operating mode key blocked" is displayed.

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