

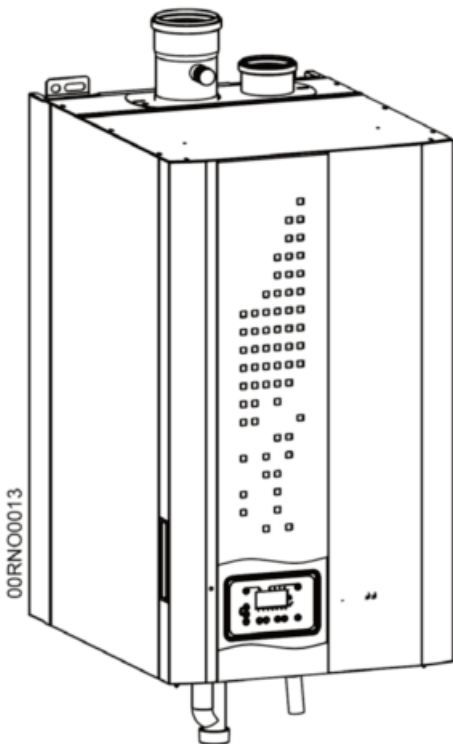


HIGH EFFICIENCY CONDENSING BOILER-PLANT

VF Model

USE & MAINTENANCE

WALL-MOUNTED GAS CONDENSING BOILER
60KW AND 100 KW OUTPUT MODULATING BURNERS



After sales service is guaranteed by Atlantic Boilers

The boilers conform to the following CE Directives
Directive 2006/95/CD - low voltage
Directive 2004/108/CEE - electromagnetic compatibility
Directive 92/42/CEE - efficiency
Directive 90/396/CEE - gas fired equipment

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ENVIRONMENTAL

1. General Characteristics

The V F boiler is set in the Factory to operate on Natural Gas Group H with a supply pressure of 20mBar.

For higher gas pressure up to 300mBar, a filter and a pressure regulator must precede the V F gas valve.

1.1. Acceptable gas pressure

	Gaz naturel H G20
Nominal (mbar)	20
Minimum (mbar)	17
Maximum (mbar)	25

1.2. Combustion conditions

		VF			
		40	60	80	100
Nominal output Pn (80/60°C)	kW		56,5		92,6
Nominal condensing output P (50/30°C)	kW		61,8		100
Nominal heat outflow Qn	kW		58		95,1
Minimum heat outflow Qmin	kW		14,5		25,5
G20 gas flow rate at Pn	m ³ /h		6,1		10,1
Recommended CO ₂ values	%	see chapter 6.2			
Mass flow of flue gases Qn / Qmin (80/60°C)	g/s		27 / 6,1		44 / 12
Mass flow of flue gases Qn / Qmin (50/30°C)	g/s		25,3 / 5,7		39,6 / 10,4
Temperature of flue gases Qn / Qmin (80/60°C)	°C		70 / 55		76 / 60
Temperature of flue gases Qn / Qmin (50/30°C)	°C		46 / 32		56 / 32
Pressure loss for flue gas circuit Qn	Pa		75		74
Diameter of flue gas outlet	mm		80		100
Maximum pressure at flue gas output (B23P) Qn / Qmin (80/60°C) *	Pa		150 / 8		110 / 6
Maximum pressure at flue gas outlet (B23P) Qn / Qmin (50/30°C) *	Pa		123 / 3		97 / 5
Combustion air at Qn	m ³ /h		76		124
NOx class to EN 483:2000			4 / 5		5 / 5
Types of flue gas and combustion air arrangements		B23, B23P, C13, C33, C53			

1.3. Operating conditions

		VF		
		60		100
Maximum flow water temperature	°C	80		
Temperature Limit thermostat	°C	100		
Maximum working pressure	hPa (bar)	4000 (4,0)		
Minimum working pressure	hPa (bar)	1000 (1,0)		
Minimum water flow rate : primary / secondary circuits (P/20)	l/s	0.67 / 0.67		1.11 / 1.11
Water content	l	6,1		9,4
Dry weight	kg	73		88

1.4. Electrical conditions

		VF		
		60		100
Electrical supply	V	230 V AC (+10% -15%), 50Hz		
Requirement at Qn	W	190		300
Requirement at standing load	W	7		
Maximum length for sensor cables	m	domestic hot watersensor : 10 external sensor : 40 room thermostat : 40 room sensor : 50		
Control panel requirement	V A	230V AC (+10%, -15%) 5 mA à 1 A		

Temperature °C	Ohm resistance flow/return sensor QAK36.095/109 flue gas sensor QAK36.670/109 NTC 10 KΩ at 25°C
0°C	32 555 Ω
10°C	19 873 Ω
20°C	12 488 Ω
25°C	10 000 Ω
30°C	8 059 Ω
40°C	5 330 Ω
50°C	3 605 Ω
60°C	2 490 Ω
70°C	1 753 Ω
80°C	1 256 Ω
90°C	915 Ω
100°C	677 Ω
110°C	508 Ω
120°C	387 Ω

2. Boiler installation

Installation and maintenance of the installation should be carried by a qualified engineer according to the recommendations of the relevant codes of practice and of the boiler manufacturer

The boiler must be installed in an appropriately ventilated compartment

.....

3. Running the boiler

The boiler must be supplied with G20 natural gas

to bring the boiler into service

1. switch on the electrical supply
2. use the controls to set up a heating demand

3. when the boiler fires, check the gas line for soundness and measure the combustion efficiency using a flue gas analyser

4. Set up the controls to the programme required by the Client

**breaking any Factory equipment seals
invalidates the Boiler guarantee**

4. Switching the boiler off

1. switch off the electricity supply
2. close the gas supply

5. Maintenance of the boiler

It is essential to service the boiler every year

Be ensure to employ a qualified engineer

6. Frost protection

If the boiler plant is not in use and there is a risk of freezing, then anti-freeze should be introduced to the system

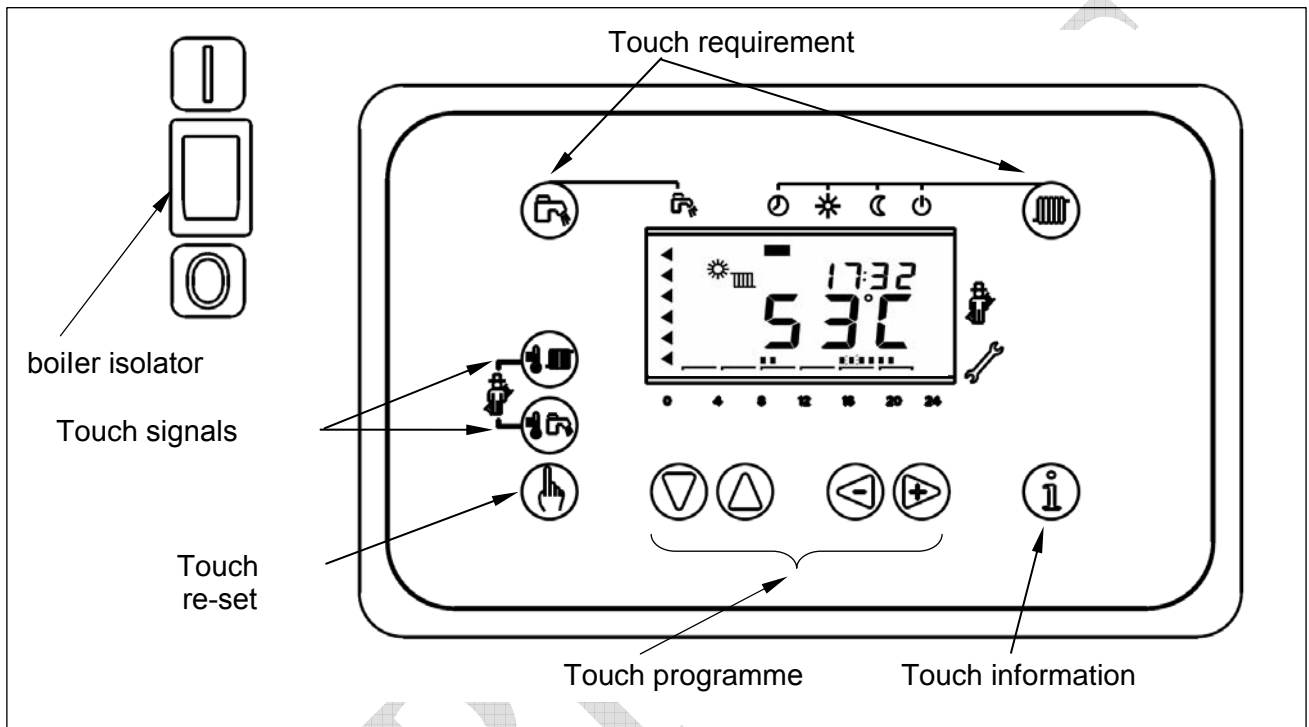
In addition the boiler can be drained as follows

- switch off the electricity supply
- close the gas supply valve
- close the heating system isolating valve
- use the safety valve to release water pressure in the boiler
- release the automatic air vent to allow air to enter the boiler

- open the boiler drain valve to release water from the boiler

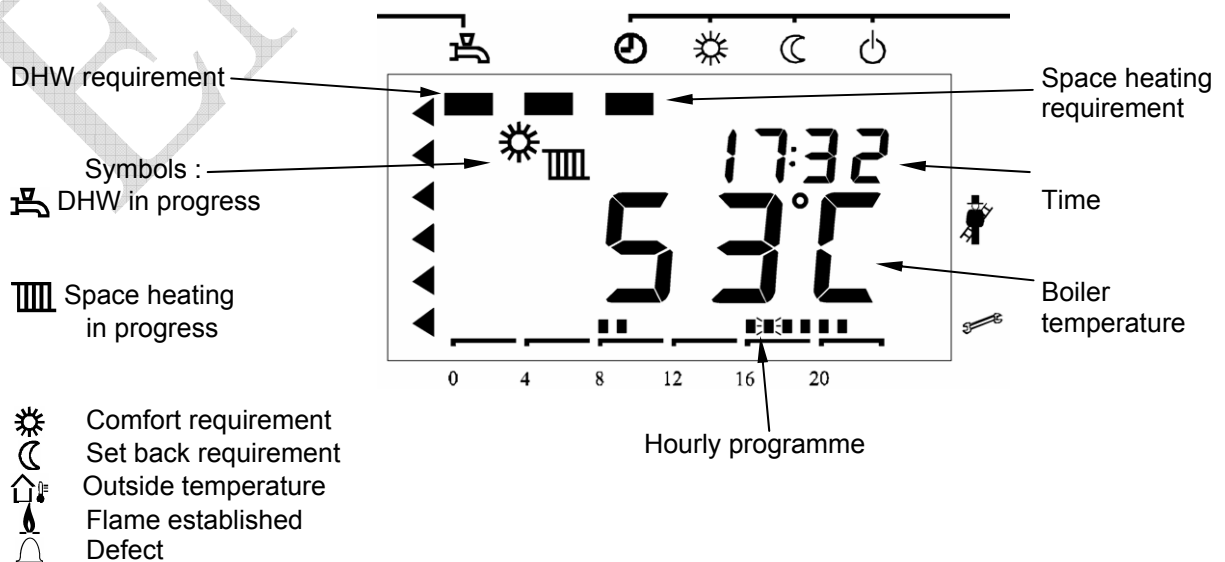
7. Boiler Control Panel

7.1. Control panel fascia

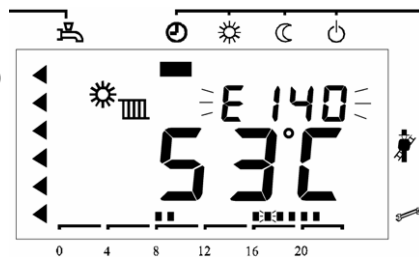


7.2. Display

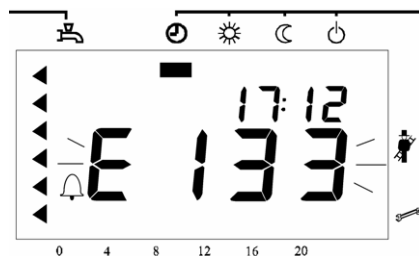
The screen supplies boiler function, time, hourly programme, temperature, burner, condition and defect



When a defect (not stopping the boiler) occurs, the defect code (as E140) is displayed.



When a defect causes the boiler to lockout, the lock out code as (E133) and a small bell is displayed. Check error list for explanation



7.3. Control panel functions

Touch

Selection of different heating requirements

Idle



No function of heating
cascade operation available

Comfort



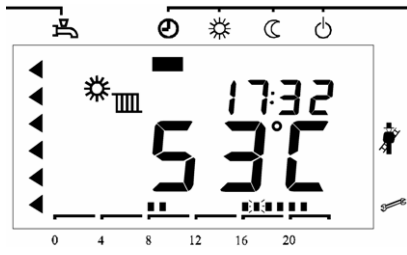
Continuous heating on.
Boiler operation matches space heating

Eco



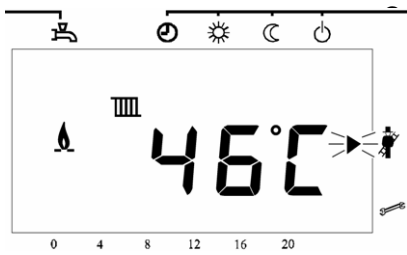
Continuous set-back heating

Auto



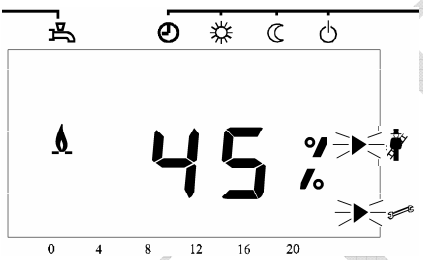
Boiler operation to time programme between Comfort and Eco

Power

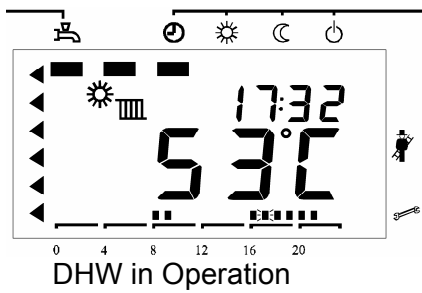


Boiler fires at full power for 3 seconds

Regulator



Allows manual adjustment of the burner






7.4. Adjustment of the settings

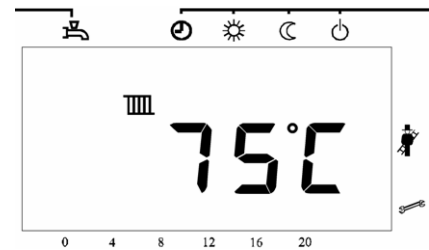
Adjustment of the boiler constant flow temperature

In mode - boiler constant flow temperature
 - regulation from 20degC to 80degC




In mode - external temperature
 - regulation from 10degC to 26degC

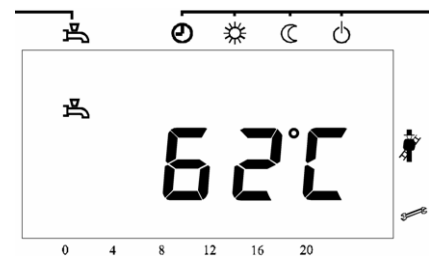
Touch the radiator symbol 

By touch  or 
 select the boiler constant flow temperature
 Touch the radiator symbol to fix the temperature



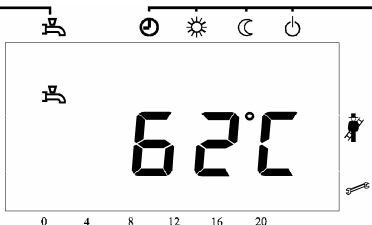
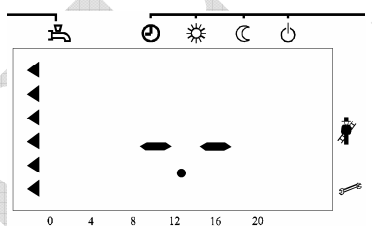
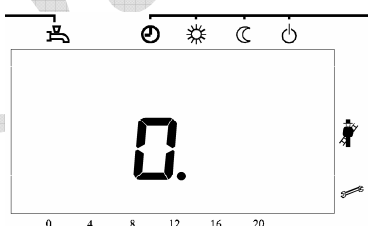



In mode - domestic hot water temperature
 - regulation from 50degC to 65degC

Touch the tap symbol 
 By touch on  or 
 select the domestic hot water temperature
 Touch the tap symbol to fix the temperature



4.5. Information on boiler condition

Touch Information  in order

1	DHW temperature	
2	Out of action	
3	Burner function	
4	Outside temperature	
5	Error code	
6	Boiler flow temperature	

To revert to standard display, press radiator or tap symbol

List of available information behind the Display

First touch - information

Press both vertical arrows simultaneously for 3 seconds
 The time information is replaced by a letter (b,C,d) and a number (0 to 7)
 By touching the vertical arrows, change the letter
 By touching the + or -, change the number



<i>Display</i>	<i>Information</i>
b0	Defect is present
b1	Boiler return temperature
b2	-
b3	Flue gas temperature
b4	Outside temperature
b5	
b6	
b7	Mixed flow temperature
C1	Ignition occuring (μ A)
C2	Burner fan speed
C3	Burner fan PWM signal
C4	Output read from PMW
C5	-
C6	Correct output
d1	Recorded average boiler circuits flow temperature
d2	Recorded boiler flow temperature
d3	Recorded outside temperature
d4	Recorded DHW temperature
d5	Burner fan PWM recorded output
d6	Maximum speed of burner fan

With a boiler defect leading to a lock-out on the LMU controller the alarm signal is displayed against the defect indicator.

To re-set the LMU controller, clear the defect then press the re-set button for 2 seconds



Defects Indicator	Explanation
0	
10	Faulty outside sensor
20	Faulty boiler flow sensor
28	Faulty flue gas sensor
32	Faulty clip-in sensor
40	Faulty boiler return sensor
50	Faulty DHW sensor
61	Weather compensation - incorrect setting
62	weather compensation or timeswitch error
81	Short - circuit on LPB or connection error of terminals
82	Cross connecting of terminals on LPB
91	Loss error in EEPROM
92	Error in electrical circuitry
100	Two clock addresses in the system
105	Boiler maintenance required
110	Lock-out of electrical settings
111	Lock-out of limit thermostat
113	Over-run of flue gas temperature
128	Failure of burner flame
129	Lack of combustion air
130	Restriction of boiler output due to excessive flue gas temperature
133	Flame failure
140	LPB in error or in connection
148	LPB and LMU not compatible
151	Defect in LMU
152	Setting error in LMU
153	Boiler in lock-out condition
154	error in general range of settings
160	Incorrect low minimum setting of boiler fan
161	Incorrect high maximum setting of boiler fan
162	Air pressure switch lock-out
164	Low water flow pressure differential switch
166	Air pressure switch not satisfied
180	Boiler requires a service
181	Boiler regulator requires adjustment
183	Boiler locked in parameter settings

Burner operating cycle

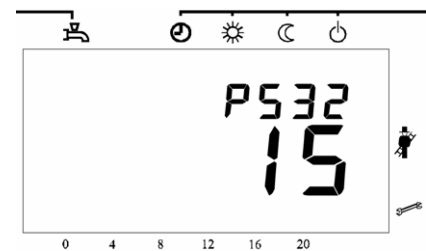
To view the burner cycle, press the information sign 3 times

Code	Explanation
0	Boiler at rest (no load)
1	Start up has failed
2	Burner fan starts up
3	Air purge
4	End of pre-ventilation period
5	Ignition
6	Flame established
10	Space heating established
11	Domestic hot water established
12	Both space heating & domestic hot water established
20	End of cycle
22	Position 0
99	Lock-out condition

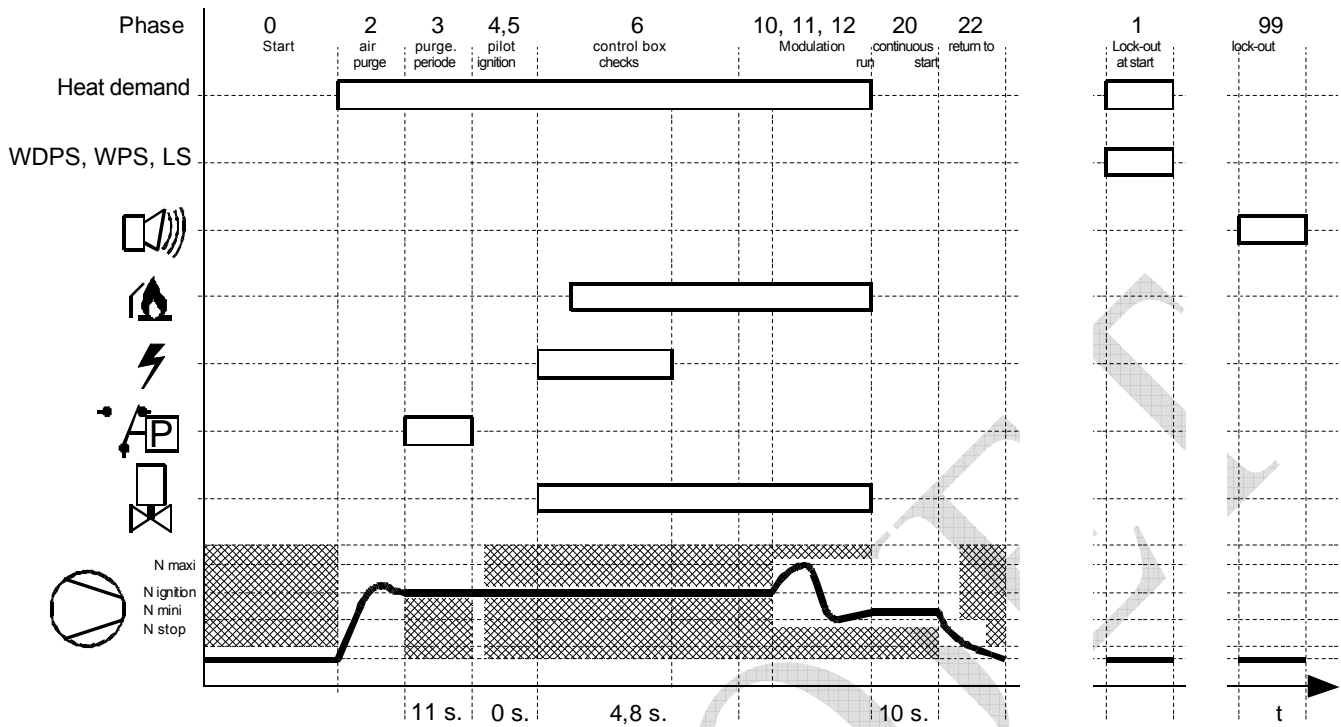
7.6. Adjust the Settings

To obtain the best operation of the boiler, the parameters must be adjusted by the commissioning engineer or the installer, but must not be available to the owner.

The boiler has a parameter - P plus three numbers - which is exhibited by touching one vertical arrow or the other, then saved by touching the vertical arrow once more



5. Function of the LMU64 060D168 Controller



Légende :

WDPS = water differential pressure switch, **WPS** = water pressure switch

LS = limit thermostat

[Speaker icon] = Alarm

[Flame icon] = Flame established

[Lightning bolt icon] = Ignition electrode

[Air pressure switch icon] = Air pressure switch

[Gas valve icon] = gas valve

[Burner fan icon] = Burner fan

N maxi = maximum speed allowed.

N ignition = speed at ignition.

N mini = minimum speed allowed during modulation

N stop = speed less than 200rpm

} speed of burner fan

NOTE : Should ignition fail at start up, the LMU will initiate 1 to 4 further attempts before going to lock-out

9. Table of boiler settings for the Client

Boiler : Location :
 Series No :

Please record all changes to settings !

Reading	Function	range	standard setting	Client setting
setting time				
P 1	actual Time	00 :00 ... 23 :59	00 :00	
P 2	actual Day	1:Monday ... 7:Sunday	1	
P 5	Adjust flow temperature / in relation to outside temperature	20...80 / 10...26 °C	40 / 15	
Hourly programme for the constant temperature heating circuit				
Selection of hourly programme				
P 10	1-7 full weekly programme 1...7 day of the week	1-5 Monday to Friday 6-7 Saturday and Sunday	1-7	
P 11	Switch on time 1st period	0 :00 ... 24 :00	06 :00	
P 12	Switch off time 1st period	0 :00 ... 24 :00	22 :00	
P 13	Switch on time 2nd period	0 :00 ... 24 :00	24 :00	
P 14	Switch off time 2nd period	0:00 ... 24:00	24 :00	
P 15	Switch on time 3rd period	0 :00 ... 24 :00	24 :00	
P 16	Switch off time 3rd period	0 :00 ... 24 :00	24 :00	
Hourly programme for the mixing valve space heating circuit				
Selection of hourly programme				
P 20	1-7 full weekly programme 1...7 Day of the week	1-5 Monday to Friday 6-7 Saturday and Sunday	1-7	
P 21	Switch on time 1st period	0 :00 ... 24 :00	06 :00	
P 22	Switch off time 1st period	0 :00 ... 24 :00	22 :00	
P 23	Switch on time 2nd period	0 :00 ... 24 :00	24 :00	
P 24	Switch off time 2nd period	0 :00 ... 24 :00	24 :00	
P 25	Switch on time 3rd period	0 :00 ... 24 :00	24 :00	
P 26	Switch off time 3rd period	0 :00 ... 24 :00	24 :00	
Hourly programme for the domestic hot water heating circuit				
Selection of hourly programme				
P 30	1-7 full weekly programme 1...7 day of the week	1-5 Montay to Friday 6-7 Saturday and Sunday	1-7	
P 31	Switch on time 1st period	0 :00 ... 24 :00	06 :00	
P 32	Switch off time 1st period	0 :00 ... 24 :00	22 :00	
P 33	Switch on time 2nd period	0 :00 ... 24 :00	24 :00	
P 34	Switch off time 2nd period	0 :00 ... 24 :00	24 :00	
P 35	Switch on time 3rd period	0 :00 ... 24 :00	24 :00	
P 36	Switch off time 3rd period	0 :00 ... 24 :00	24 :00	
P 45	Revert to standard programm for heating and domestic hot water (press simultaneously + and - for 3 seconds)		0	
H 90	Lowering the domestic hot water temperature	50...65 °C	60	
H 91	Adjusting the hours of DHW operation: 0 accepting the time programme 1 24h operation		0	
H 93	not in use		0	
H 94	not in use		0	
Adjusting the heating circuits				
H 503	Constant temperature setting	20...80 °C	20	
H 506	Mixing valve minimum setting	20...80 °C	20	
H 507	Mixing valve maximum setting	20...80 °C	80	
H 510	Raising the flow temperature of the DHW primary circuit	0 ... 30 K	15	
H 514	Raising the flow temperature to space heating circuits	0 ... 30 K	2	
P 516	No space heating temperature (30degC gives heating on)	8 ... 30 °C	19	
P 532	Minimal Slope of constant flow heating temperature	1 ... 40	15	
P 533	Slope of mixed flow heating temperature	1 ... 40	15	
H 534	Correction of constant flow heating temperature setting	31 ... 31 K	0	
H 535	Correction of mixed flow heating temperature setting	-31 ... 31 K	0	

Reading	Function	range	standard settings	Client setting
Adjusting the heating circuits				
H 536	boiler fan RPM when in heating mode (60 / 100)	0 ... 9950 tr/min	5650 / 6400	
H 542	minimum boiler output (60/ 100)	0 ... 9999 kW	14 / 25	
H 543	maximum boiler output (60/ 100)	0 ... 9999 kW	58 / 95	
H 544	Temporary stop on the pumps.	0 ... 255 min	5	
H 545	minimum time pause of the burner	0 ... 3600 sec	150	
H 551	factor lowering output, independent of external temperature	0 ... 20	0	
H 552	adjustment of the hydraulics : 66 Boiler alone 80 Boiler in cascade 85 Boiler in cascade dedicated to DHW generation		66	
H 553	Influence of external sensor on heating circuit : Several boilers on the mixing valve circuit, One boiler on the mixing valve circuit 0 circuit not influenced by QAA 73 0 main circuit not influenced by QAA 73 1 circuit influenced by 1st link of QAA 73 1 circuit influenced by 1st link of QAA 73 2 circuit influenced by 2nd link of QAA 73 2 circuit influenced by 2nd link of QAA 73 for example: selecting 12 results in QAA73 control of the constant temperature; circuit by connection 2, and QAA 73 control of the mixing valve circuit by connection 1		0	
H 555.b0	not in use		0	
H 555.b1	Type de priorité sanitaire : 0 full priority 1 no priority		0	
H 555.b2	not in use		0	
H 555.b3	not in use		0	
H 555.b4	Protection hors-gel de l'installation : 0 no frost protection 1 frost protection		1	
H 555.b5	not in use		0	
H 555.b6	not in use		0	
H 558.b0	not in use		0	
H 558.b1	Type of building : 0 lightweight building 1 heavyweight building		0	
H 558.b2	Type d'organe de commande ECS : 0 DHW sensor control 1 DHW thermostat control		0	
H 558.b3	not in use		0	
H 558.b4	not in use		0	
H 558.b5	not in use		0	
H 558.b6	not in use		0	
H 558.b7	not in use		0	
H 596	time to open/close the 3-way valve	30 ... 873 sec	150	
H 597	proportional band of the 3-way valve	1 ... 100 K	24	
Communication by LPB unit				
H 604.b0	setting up time clock : b1 b0 0 0 automatic clock		0	
H 604.b1	0 1 unregulated time on system clock 1 0 system master clock		0	
H 604.b2	Adjustment of supply to LPB : 0 centralised supply 1 automatic supply from regulators		1	
H 604.b3	Display position : 0 OFF 1 ON		0	
H 604.b4	not in use		1	
H 604.b5	DHW situation : b6 b5 0 0 local consumption		0	
H 604.b6	0 1 segment consumption 1 0 all consumers		0	
H 604.b7	Priority demand to LPB on 0 to 10V : 0 output demand by external system 1 LPB priority demand		0	
H 605	Address of the boiler	0 ... 16	1	
H 606	Address of component : 0 generator 1 ... 14 components	0 ... 14	0	
control of the fan assembly				
H 608	command signal to fan motor at flame ignition (60/ 100)	0...100 %	19 / 22,5	
H 609	command signal to fan motor at start ignition (60/ 100)	0...100 %	18,5 / 10,5	
H 611	fan speed at flame ignition (60 / 100)	tr/min	1750 / 3500	
H 612	fan speed at start ignition (60/ 100)	tr/min	1600 / 1750	
H 613	fan speed at full ignition (60/ 100)	tr/min	5650 / 5900	
Relay (AGU2.51x)				
H 618	Programmable entry function : 0 any function 3 warm air 1 modem 4 listed requirement		0	

Reading	Function	Range	standard settings	Client setting
	2 modem inverter Function of 1st outlet : 0 out of action 2 lock-out 3 burner on 5 2nd pump circuit on	5 listed output 6 DHW circulator on 7 air purge in action 8 shunt pump on 12 analogue circuit active	2	
H 619				
H 620	Function of 2nd outlet: 0 out of action 2 lock-out 3 burner on 5 2nd pump circuit on	6 DHW circulator on 7 air purge in action 8 shunt pump on 12 analogue circuit active	3	
H 622	maximum temperature setting to move into analogue circuit	5 ... 130 °C	100	
H 623	Valeur minimum du signal d'entrée analogique en % de la plage pour démarrer le brûleur en puissance minimale, en mode puissance prescrite	5 ... 95 %	20	
maintenance warning				
P 629	Acquittement temporaire de l'alerte de maintenance : 1 alert no lock-out		0	
H 630.b0	Enable/disable maintenance alerts : 0 alert de-activated 1 alert activated		0	
H 630.b6	Acquittement général de l'alerte maintenance : 1 maintenance alert de-activatd		0	
H 630.b7	not in use		0	
H 634	hours of burner operation since last maintenance		0	
H 635	number of burner starts since last maintenance		0	
H 636	months of months operation since last maintenance		0	
Record of faults				
H 700	Total number of faults 1			
H 701	Fault during burner cycle 1 *			
H 702	Code during burner cycle 1			
H 703	Total number of faults 2			
H 704	Fault during burner cycle 2 *			
H 705	Code during burner cycle 2			
H 706	Total number of faults 3			
H 707	Fault during burner cycle 3 *			
H 708	Code during burner cycle 3			
H 709	Total number of faults 4			
H 710	Fault during burner cycle 4 *			
H 711	Code during burner cycle 4			
H 712	Total number of faults 5			
H 713	Fault during burner cycle 5 *			
H 714	Code during burner cycle 5			
H 715	Number of repeat current faults			
H 716	Faults during burner cycle*			
H 717	Codes involved during fault period			
H 718	Operating times of the burner	0 ... 131070 h	0	
H 719	Operating times of space heating	0 ... 131070 h	0	
H 720	Operating times of domestic hot water	0 ... 131070 h	0	
H 721	Operating times of control zone	0 ... 131070 h	0	
H 722	stoppages count	0 ... 327675	0	
H 728	Albatros code for previous fault			
H 729	Albatros code for 2nd previous fault			
H 730	Albatros code for 3rd previous fault			
H 731	Albatros code for 4th previous fault			
H 732	Albatros code for 5th previous fault			
H 733	Albatros code for current fault			

* : Codes within burner cycle :

0, 1, 2 return to start
3 start
4 lock-out at start
5, 6 air purge
7 purge period
8, 9, 10 waiting time

11 pilot ignition
12, 13, 14, 15 control box checks
16 main ignition
17 burner modulation
18, 19, 20, 21 continuous run
22 lock-out