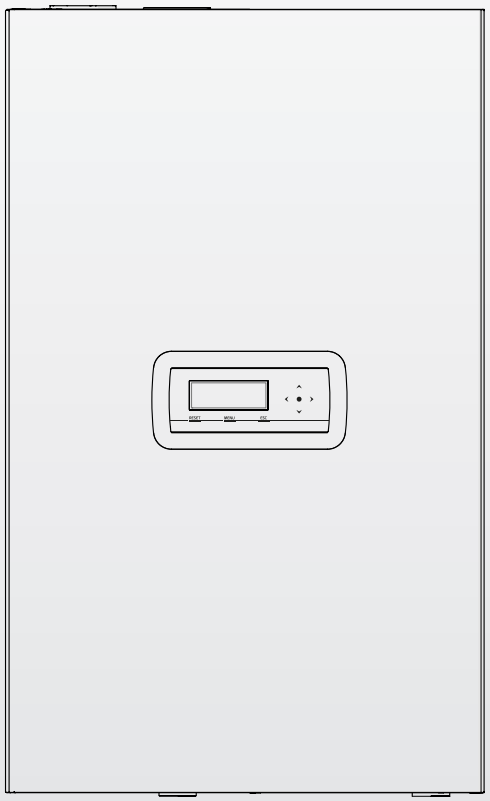
cod. 20132051 rev. 5 11/2018



Condexa PRO

EN INSTALLATION, TECHNICAL ASSISTANCE SERVICE AND SYSTEM MANAGEMENT MANUAL

RIELLO

RANGE

MODEL	CODE
Condexa PRO 35 P	20115221
Condexa PRO 50 P	20115222
Condexa PRO 57 P	20115223
Condexa PRO 70 P	20115224
Condexa PRO 90	20115225
Condexa PRO 100	20115226
Condexa PRO 115	20115228
Condexa PRO 135	20115229

ACCESSORIES
For a complete list of accessories and details of their compatibility, refer to the Catalogue.

Dear heating engineer,
congratulations on having chosen a thermal module **RIELLO**, a quality product that is designed to give dependable, efficient and safe service and to provide comfort in the home for many years to come.
This manual provides information that is essential to the installation of the appliance. Used in conjunction with your own knowledge and expertise it will enable you to install the appliance quickly, easily, and correctly.

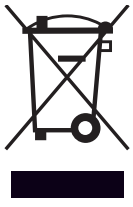
Please accept our thanks and our congratulations on your choice of product.
Riello S.p.A.

CONFORMITY

thermal modules **Condexa PRO** comply with:

- Regulation (EU) 2016/426
- Directive 92/42/EEC on efficiency requirements and Annex E and Pres. Republic Decree n. 412, 26 August 1993 (****)
- Electromagnetic Compatibility Directive 2014/30/EU
- Low Voltage Directive 2014/35/EU
- Ecodesign Directive 2009/125/CE for energy-related products
- Regulation (EU) 2017/1369 Energy labelling
- Delegated Regulation (EU) N. 811/2013
- Delegated Regulation (EU) N. 813/2013
- Standard for gas-fired heating boilers - General requirements and tests - EN 15502-1
- Specific standard for type C appliances and type B2, B3 and B5 appliances of nominal heat input not exceeding 1000 kW - EN 15502-2/1
- SSIGA Gas Appliance Directive G1
- AICAA Fire prevention requirements
- CFST LPG Directive Part 2
- VARIOUS cantonal and communal provisions on air quality and energy saving.

CE



At the end of its life, the product should be not be disposed of as solid urban waste, but rather it should be handed over to a differentiated waste collection centre.

CONTENTS

The following symbols are used in this manual:

⚠ **CAUTION! =** Identifies actions that require caution and adequate preparation.

⛔ **STOP! =** Identifies actions that you MUST NOT do.

This manual, Code 20132051 - Rev. 5 (11/2018) comprises 84 pages.

1 GENERAL INFORMATION

1.1 General Safety Information

⚠ After removing the packaging, check the condition and completeness of the supply. If there are any problems, contact the company **RIELLO** that sold the equipment.

⚠ This product must be installed by a legally qualified heating engineer. On completion of the installation, the installer must issue the owner with a declaration of conformity confirming that the installation has been completed to the highest standards in compliance with the instructions provided by **RIELLO** in this instruction manual, and that it conforms to all applicable laws and standards.

⚠ This product must only be used for the purpose for which it is designed and made, as specified by **RIELLO**. **RIELLO** declines all responsibility, contractual or other, for damage to property or injury to persons or animals caused by improper installation, adjustment, maintenance or use.

⚠ In the event of a water leak, disconnect the thermal module from the main power supply, shut off the water supply and promptly notify the Technical Assistance Service **RIELLO** or professionally qualified personnel.

⚠ Periodically check that operating pressure in the water circuit is over 1 bar but below the maximum limit specified for the boiler. If this is not the case, contact Technical Assistance Service **RIELLO** or a professionally qualified heating engineer.

⚠ The following operations shall be necessary if the thermal module is not used for a long period of time:
- Switch the boiler OFF at the control panel
- Turn the main system switch "off"
- Close the fuel cock and heating circuit water cock
- Drain the central heating circuit if there is any risk of freezing.

⚠ Maintenance must be performed on the thermal module at least once a year.

⚠ This manual is an integral part of the appliance and must therefore be kept with care and must ALWAYS accompany the thermal module, even when it is passed on to another owner or user or transferred to another installation. If it is lost or damaged, please contact your local Technical Assistance Service **RIELLO** for a new copy.

⚠ This manual must be read carefully so as to ensure the correct and safe installation, operation and maintenance of the appliance. The Owner must be adequately informed and trained on how to operate the appliance. Make sure that he/she is familiar with all the information required for safe system operation.

⚠ The thermal module, before being connected to the hydraulic system, the gas network, and the electrical system, may be exposed to temperatures ranging from 4°C to 40°C. After it can activate the Frost Protection function, it can be exposed to temperatures ranging from -20°C to 40° C

⚠ Regularly check that the condensate drain is free from obstruction.

⚠ We recommend cleaning inside the exchanger once a year, extracting jet and burner and removing any installation debris by suction. This operation should be done by personnel from the Technical Assistance Service only.

1.2 Precautions

The operation of any appliance that uses fuel, electrical power and water demands that a number of fundamental safety precautions be respected:

⛔ Do not allow children or infirm persons to operate the system unsupervised.

⛔ It is forbidden to use electrical devices or equipment, such as switches, appliances, etc. if there is a smell of gas or unburnt products. If so:
- Ventilate the room, opening doors and windows
- Close the fuel shut-off cock
- Report the fault immediately to the **RIELLO**'s Technical Assistance Service or a professionally qualified heating engineer.

⛔ Do not touch the boiler while barefoot or wet.

⛔ Any technical or cleaning activity is forbidden before disconnecting the appliance from the main power supply by switching the system's master switch and the appliance's main switch to the "OFF" position.

⛔ Do not tamper with or adjust the safety or control devices without prior authorisation and instructions from the manufacturer.

⛔ Do not plug or block the condensate drain outlet.

⛔ Never pull, disconnect, or twist the electrical cables coming from the appliance even if it is disconnected from the mains electricity supply.

⛔ Do not obstruct or restrict the vents in the room where the boiler is installed. Adequate ventilation is essential for correct combustion.

⛔ Do not expose the appliance to weather elements (without using the dedicated accessory). It has been designed for indoor use.

⛔ Do not switch off the appliance if the outdoor temperature may drop to below ZERO (frost hazard).

⛔ Do not leave flammable containers and substances in the room where the device is installed.

⛔ Do not dispose of packaging material into the environment, or leave it within the reach of children, since it can become a potential hazard. Dispose of packaging material in compliance with applicable legislation.

⛔ Do not activate the thermal module without water.

⛔ Individuals without specific qualifications and skills are not allowed not remove the thermal module's casing.

1.3 Description of the appliance

Condexa PRO it is a condensing, pre-mixed thermal module consisting in a modulating thermal element.
It is available in various models, ranging from 34,9kW to 131kW.
Optimal combustion management supports high yields (over 109%, calculated over NVC, in condensation regime) and low polluting emissions (Class 6 pursuant to EN 15502).
The thermal module is designed for open chamber operation, but can be converted to sealed chamber operation by fitting a dedicated accessory.
The appliance in standard configuration is envisaged for indoor installation to guarantee an IPX4D protection level. The appliance may also be installed outdoors by fitting a special accessory that increases its electric protection to IPX5D.

⚠ Appliances may be cascaded **Condexa PRO** to reach a maximum power of 1.12 MW.

The appliance's key technical features are
- pre-mix burner with constant air-gas ratio;
- helical type heat-exchanger, coil with smooth stainless steel tube (single coil for models Condexa PRO 35 P - Condexa PRO 50 P, double coil for models Condexa PRO 57 P ÷ Condexa PRO 135), to guarantee a good corrosion resistance and the possibility of working with high Δ t (up to 40°C) reducing the time of set-up;
- power from 34,9 to 131 kW;
- maximum flue gas output temperature 100°C;
- microprocessor management and control with self-diagnostics, shown by means of a display, and logging of main errors;
- Anti-Frost function;
- provision for room thermostat / heat request on high or low temperature zones;
- option to manage a CH circuit and a DHW circuit with storage tank;
- high-efficiency and high residual discharge head circulator (for models up to 68kW; a circulator is available as an accessory upon request for other models);
- climate control function (available only when using the outdoor temperature sensor accessory).

1.4 Safety devices

All appliance functions are electronically controlled by a dual processor technology board approved for safety functions.
Any malfunction results in the appliance being shut down and the automatic closure of the gas valve.

The following is installed on the water circuit:
- **Safety thermostat**.
- **Flow sensor** capable of monitoring the main circuit's flow on an ongoing basis and of stopping the appliance in the event of insufficient flow.
- **Temperature probes** on delivery and return lines that measure the temperature difference (Δt) between input and output fluid and enable activation of the control.
- **Minimum pressure switch**.

The following is installed on the combustion circuit:
- **Gas solenoid** in class B+C , with pneumatic gas flow compensation depending on the suction line's air flow rate.
- **Ignition/detection electrode**.
- **Flue gases temperature probe**.

⚠ The triggering of safety devices indicates the malfunction of a potentially hazardous thermal module. Therefore, contact Technical Assistance Service immediately. After a brief pause, it is possible to try and restart the appliance (see Paragraph "Initial startup").

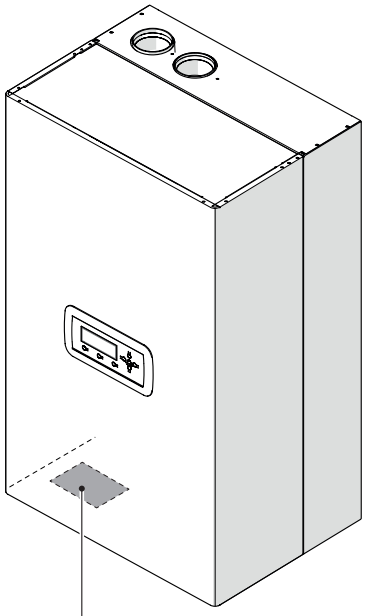
⚠ Safety devices must be replaced by Technical Assistance Service, using only original parts. Refer to the spare parts catalogue supplied with the appliance. After making the repair, check that the appliance is working properly.

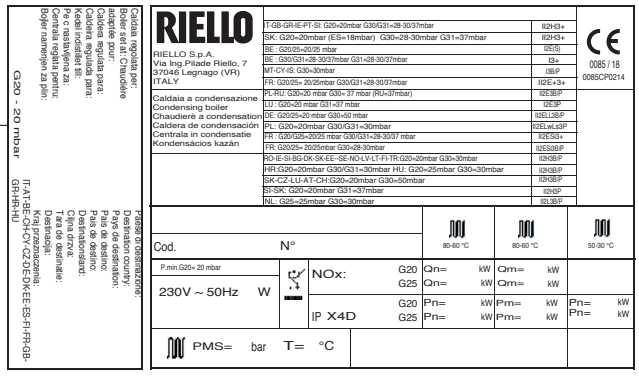
⛔ The appliance must not be put in service, even temporarily, when tampered safety devices are not in operation or have been tampered with.

1.5 Identification

The products are identified by:

Technical data plate
It indicates the technical and performance data.



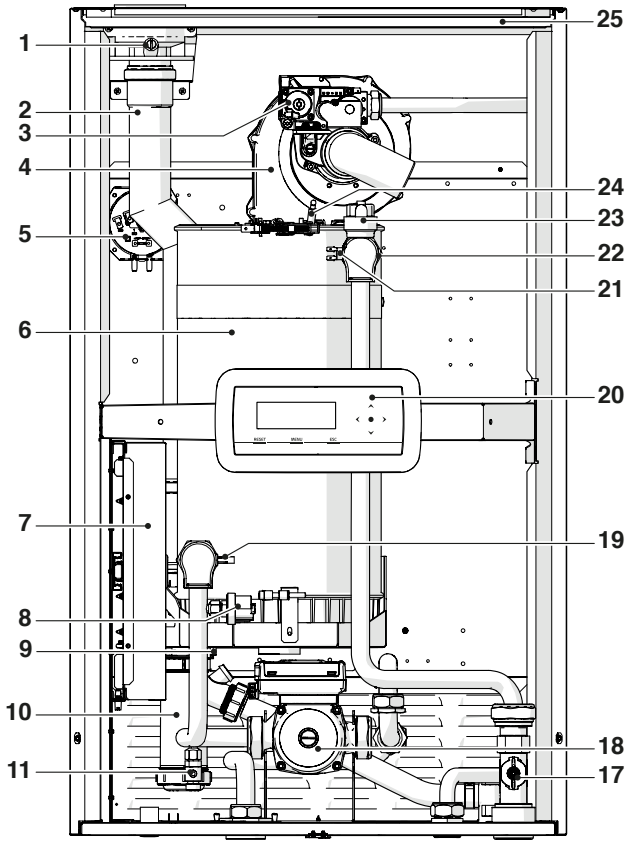


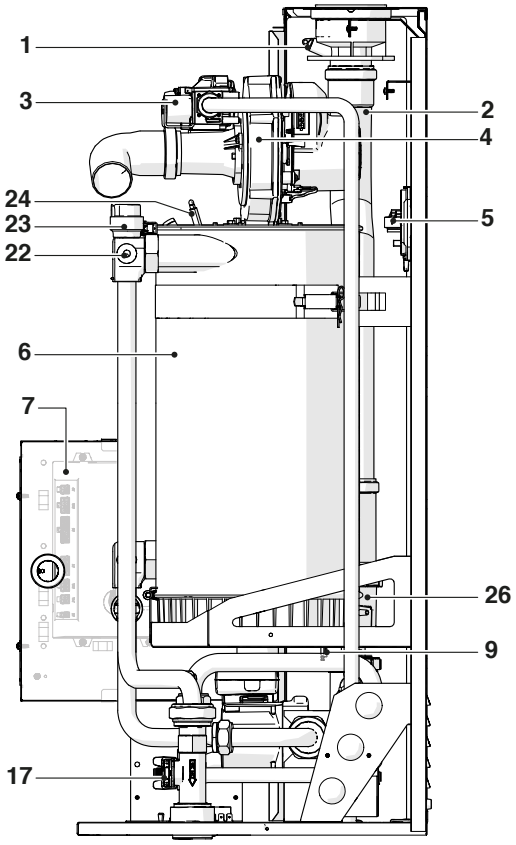
	Central heating section
Qn	Rated heat input
Pn	Rated useful heat output
IP	Electric degree of protection
PMS	Maximum operating pressure, CH circuit
T	Temperature
η	Efficiency
NOx	NOx class

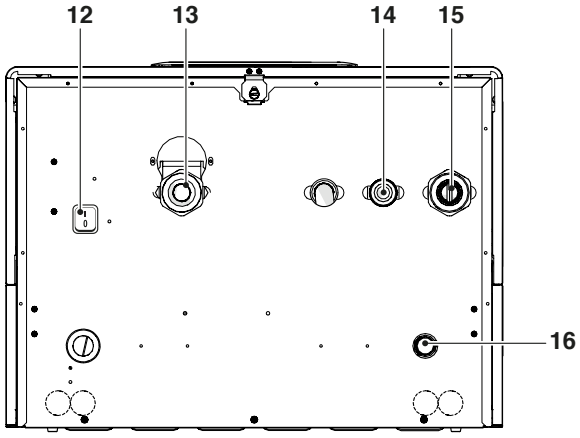
⚠ If these plates or any other means of clearly identifying the product are defaced, removed or lost, proper installation and servicing may be rendered difficult.

1.6 System layout

Condexa PRO 35 P – 50 P

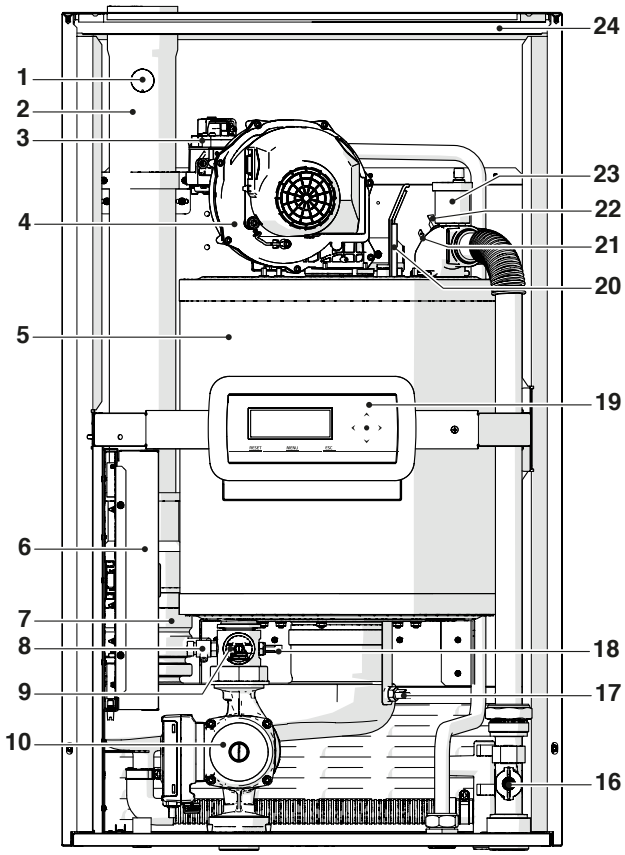


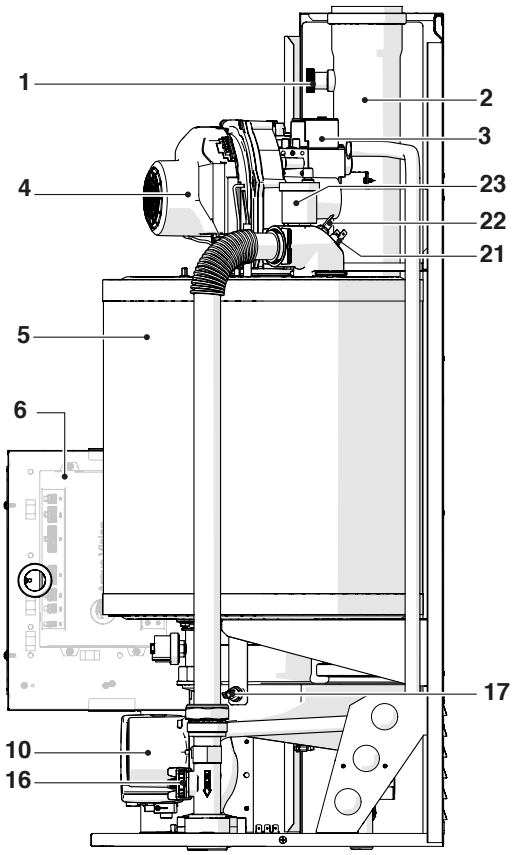




1 Flue gas analysis outlet
2 Flue gas exhaust connection
3 Gas valve
4 Fan
5 Flue gases pressure switch
6 Combustion chamber
7 Electrical panel
8 Minimum Pressure Switch set at 0,7 bar
9 Exhaust flue probe
10 Condensate drain siphon
11 Drain cock
12 Main switch
13 Central heating return
14 Gas supply
15 Central heating flow
16 Condensate drain connection
17 Flow-meter
18 Pump
19 Return probe
20 Control panel
21 Safety Thermostat with manual reset by PCB
22 Flow probe
23 Automatic bleed valve
24 Ignition/detection electrode
25 Casing
26 Smoke-exhaust flue non-return valve

Condexa PRO 57 P – 70 P





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5 Combustion chamber
6 Electrical panel
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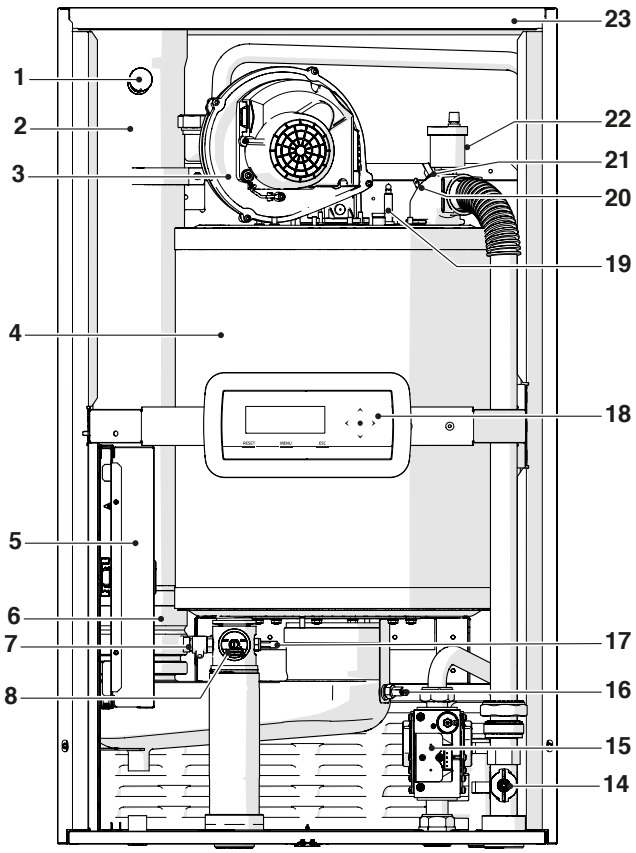
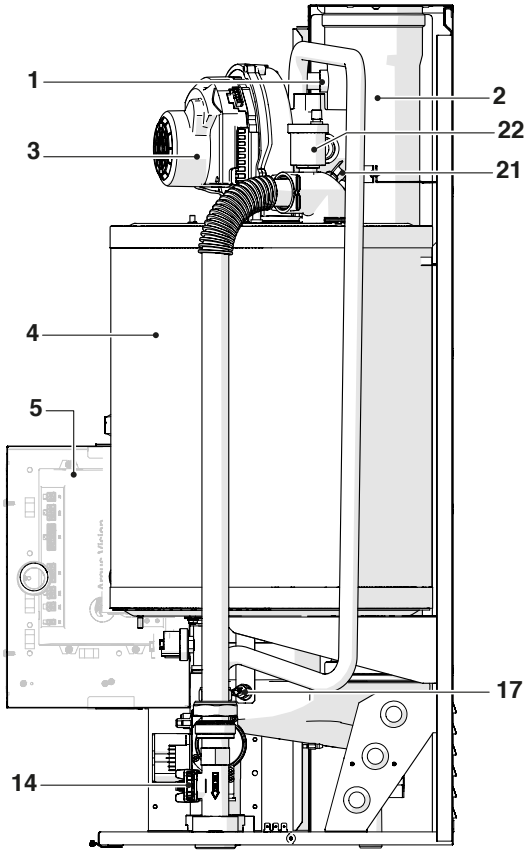
8 Drain cock
9 Minimum Pressure Switch set at 0,7 bar
10 Pump
11 Main switch
12 Central heating return
13 Gas supply
14 Central heating flow
15 Condensate drain connection
16 Flow-meter
17 Exhaust flue probe
18 Return probe
19 Control panel
20 Ignition/detection electrode
21 Safety Thermostat with manual reset by PCB
22 Flow probe
23 Automatic bleed valve
24 Casing

Condexa PRO 90 - 100 - 115 - 135





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18 Control panel
19 Ignition/detection electrode
20 Safety Thermostat with manual reset by PCB
21 Flow probe
22 Automatic bleed valve
23 Casing

1.7 Technical specifications

Description			Condexa PRO								U.M.
			35 P	50 P	57 P	70 P	90	100	115	135	
Appliance type			Condensing boiler heating system B23; B53; B53P; C13*; C33*; C53*; C63*								
Fuel - Device category			**IT-GB-GR-IE-PT-SI:** G20=20mbar G30/G31=28-30/37mbar; II2H3+ **SK:** G20=20mbar G30=28-30mbar G31=37mbar; II2H3+ **ES:** G20=18mbar G30=28-30mbar G31=37mbar; II2H3+ **BE:** G20/25=20/25mbar; I2E(S) **BE:** G30/G31=28-30 /37mbar G31=28-30/37mbar; I3+ **MT-CY-IS:** G30=30mbar; I3B/P **FR:** G20/G25= 20/25mbar G30/G31=28-30/37mbar; II2E+3+ **PL-RU:** G20=20 mbar G30= 37 mbar (RU=37mbar); II2E3B/P **LU:** G20=20 mbar G31=37 mbar; I2E3P **DE:** G20/G25=20 mbar G30=50 mbar; II2ELL3B/P **PL:** G20=20mbar G30/G31=30mbar; II2ELwLs3P **FR:** G20/G25=20/25 mbar G30/G31=28-30/37mbar; II2ESi3+ **FR:** G20/G25= 20/25mbar G30=28-30mbar; II2ESi3B/P **RO-IE-SI-BG-DK-SK-EE:** G20=20mbar G30=30mbar; II2H3B/P **SE-NO-LV-LT-FI-TR:** G20=20mbar G30=30mbar; II2H3B/P **HR:** G20=20mbar G30/G31=30mbar; II2H3B/P **HU:** G20=25mbar G30=30mbar; II2H3B/P **SK-CZ-LU-AT-CH:** G20=20mbar G30=50mbar; II2H3B/P **SI-SK:** G20=20mbar G31=37mbar; II2H3P **NL:** G25=25mbar G30=30mbar; II2L3B/P								
Combustion chamber			vertical								
Maximum rated heat input at furnace referred to HVC (LCV)			38,7 (34,9)	50 (45)	63 (57)	76 (68)	100 (90)	108 (97)	124 (112)	146 (131)	kW
Minimum rated heat input at furnace referred to HVC (LCV)			10 (9)	10 (9)	15 (14)	15 (14)	21,6 (19,4)	21,6 (19,4)	24,9 (22,4)	29,2 (26,2)	kW
Useful (rated) heat output			34,4	44,2	56	68	88	95	110	129	kW
Maximum rated heat output (80-60°C)	P4	G20	34,4	44,2	55,7	67,0	88,3	95,3	109,8	129,0	kW
Maximum rated heat output (50-30°C)	-	G20	38,0	48,8	61,9	73,9	97,4	105,1	121,1	142,1	kW
Maximum nominal heat output (60-40°C)	-	G20	36,6	47,0	59,6	71,4	93,8	101,1	116,2	137,3	kW
30% heat output with return at 30°C	P1	G20	11,5	14,7	18,7	22,3	29,4	31,7	36,6	43,0	kW
Minimum rated heat output (80-60°C)	-	G20	8,9	8,9	13,5	13,5	19,2	19,2	22,1	26	kW
Efficiency class in central heating mode			A	A	A	A	-	-	-	-	
Seasonal energy efficiency in central heating mode	ηs		94	94	94	94	94	94	94	94	%
Efficiency at rated heat input and High temperature GCV (NCV) regime	η4	useful Pn (60-80°C)	88,5 (98,4)	88,4 (98,3)	88,4 (98,3)	88,2 (97,9)	88,3 (98,0)	88,2 (97,9)	88,6 (98,3)	88,2 (97,9)	%
Efficiency at 30% of the nominal thermal flow and on low PCS temperature regime	η1	useful 30% of Pn	98,4 (109,5)	98,2 (109,2)	98,2 (109,2)	98 (108,8)	98,1 (108,9)	98 (108,8)	98 (108,8)	98,1 (108,9)	%
Chimney losses with burner on at max. Pn (80-60°C)			2,3	2,3	2,3	2,3	2,5	2,6	2,5	2,6	%
Chimney losses with burner on at max. 30% Pn (50-30°C)			0,5	0,5	0,5	0,5	0,6	0,6	0,5	0,6	%
Heat loss in standby mode	Pstby		45	57	72	87	115	124	143	168	W
			0,1								%
Annual energy consumption	QHE		71	91	117	141	-	-	-	-	GJ
Noise level (sound power)	LWA	at P max	51	52	53	54	55	56	57	57	dB(A)

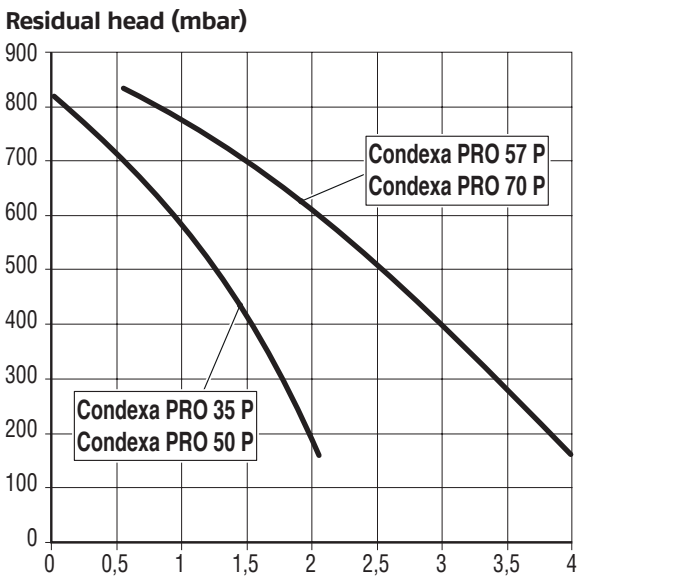
(*) Accessory.

Description			Condexa PRO								U.M.
			35 P	50 P	57 P	70 P	90	100	115	135	
Emissions (**)	NOx	(referred to HCV)	42,0	43,9	34,2	36,4	38,1	38,7	39,3	46,1	mg/kWh
Emissions at max./min. heat input, G20		CO_2	9 - 9								%
		CO	63/2,3	73/2,3	79/6,5	90/6,5	81/7,5	91,5/7,5	89/4,6	91,5/5,6	ppm
Maximum rated heat input (LCV)		G25	34,9	45	53	65	85	93	107	127	kW
Minimum rated heat input (LCV)		G25	9	9	13	13	18,1	18,5	21,4	24,5	kW
Emissions at max./min. heat input, G25		CO_2	9 - 9								%
		CO	72/3,2	80/3,2	92/7	93,5/7	84/8	94/8	92/6	95/7	ppm
Emissions at max./min. power G30		CO_2	10,4-9,9		10,4-10,4						%
		CO	132/6	137/6	138/10	142/10	148/11	159/11	172/13	180/15	ppm
Emissions at max./min. power G31		CO_2	10,4-9,9		10,4-10,4						%
		CO	136/8	141/8	142/11	147/11	153/12	163/12	177/14	185/16	ppm
Flue gas temperature at max. power and min. power 80-60°C			66,5/61	67,5/61	71/61	72/61	76/62	78/62	75/61	77/61	°C
Flue gas temperature at max. power and min. power 50-30°C			44/32	45/32	45/33	46/33	47/35	49/35	45/33	48/35	°C
Flue gas mass flow rate (***)			0,015	0,02	0,025	0,03	0,04	0,046	0,05	0,06	Kg/s
Water-side resistance (ΔT 20°C)			-	-	-	-	160	210	350	510	mbar
Available useful discharge head (ΔT 20°C)			420	250	490	390	-	-	-	-	mbar
Maximum working pressure			6								bar
Minimum supply pressure			0,7								bar
Maximum permitted temperature			100								°C
Lockout thermostat activation temperature			95								°C
Adjustment temperature (min / max)			30 / 80 (****)								°C
Thermal module water content			5	5	15	15	17	17	23	25	l
Maximum condensation at 100% rated heat output (50-30°C)			5,4	7,0	8,9	10,1	13,6	15,0	17,5	19,8	l/h
Power supply			230-50								V-Hz
Index of protection			IPX4D								IP
Consumption at full load		Elmax	75	105	63	77	150	203	205	302	W
Consumption at part load		Elmin	31	34	30	30	36	31	44	45	W
Electrical consumption in standby mode		Psb	9	9	13	13	6	6	6	8	W

(**) Weights calculated according to EN 15502.
(***) Values referred to atmospheric pressure at sea level.
(****) Up to 85°C if combined with the plate heat exchanger accessory.

1.8 Pumps

The thermal modulesCondexa PRO 35 P, Condexa PRO 50 P, Condexa PRO 57 P and Condexa PRO 70 P are fitted with a circulator.



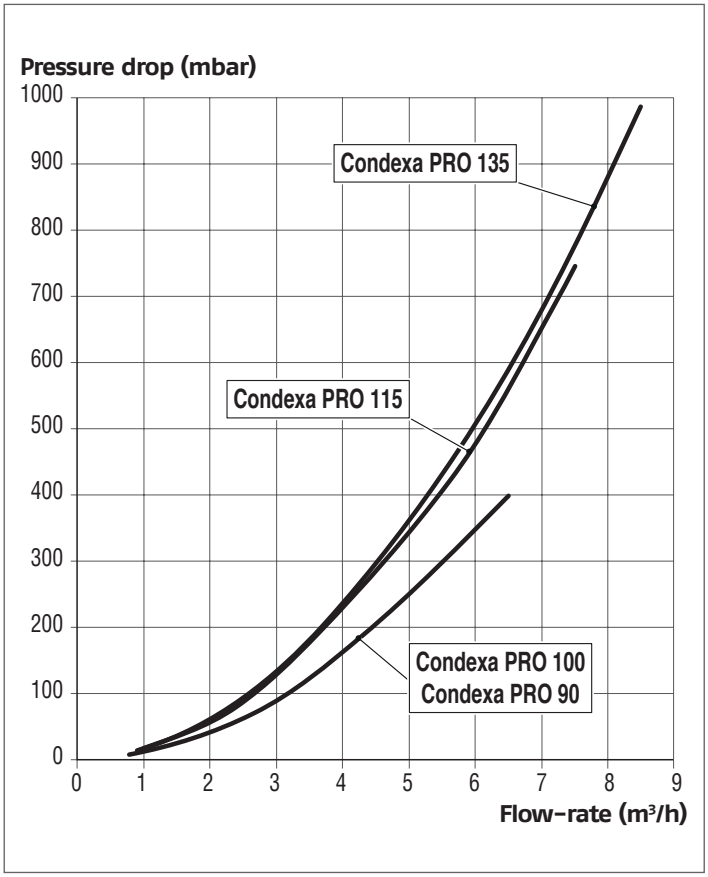
⚠ At the first start-up, and at least once a year, the rotation of the circulator shaft should be checked as, especially after long periods of not being operated, deposits and/or residuals could impede its free rotation.

⚠ Before loosening or removing the circulator cap, protect the electric devices located underneath from any water that exits.

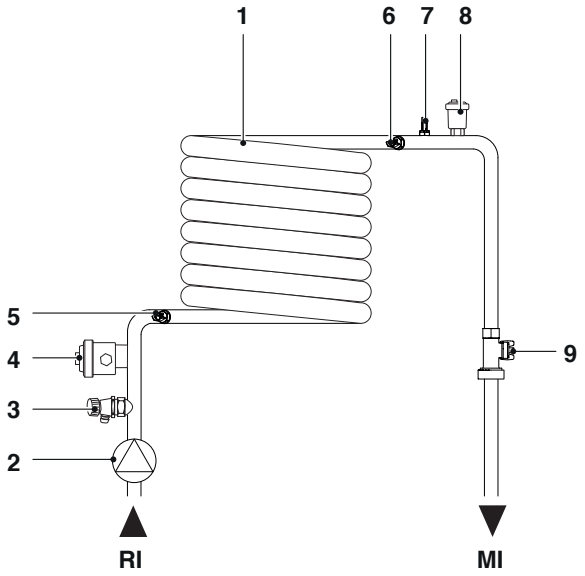
⛔ It is prohibited to operate the circulators without water.

Thermal modules Condexa PRO 90, Condexa PRO 100, Condexa PRO 115 and Condexa PRO 135 are not equipped with a circulator, which must be inside or outside the appliance (see accessories). For its sizing, consider the thermal module's water-side pressure drops, which are shown in the chart below.

Water-side pressure drop



1.9 Water circuit



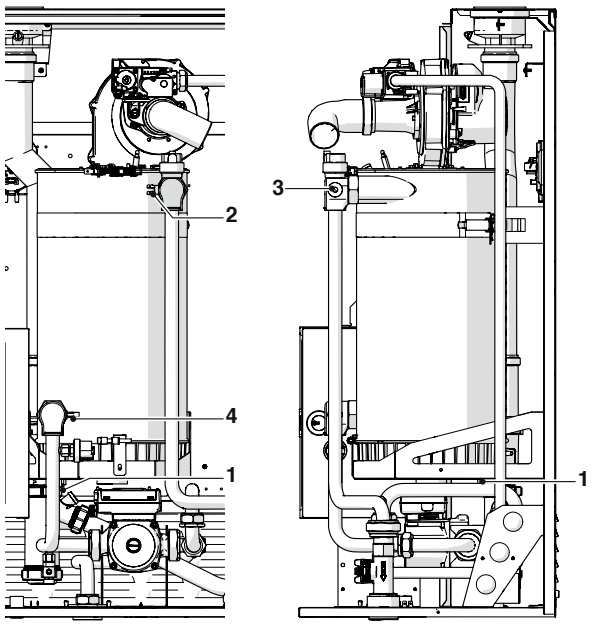
1 Heat exchanger
2 Circulator (only for models Condexa PRO 35 P - Condexa PRO 70 P)
3 Drain cock
4 Minimum pressure switch
5 NTC return probe
6 NTC delivery probe
7 Safety thermostat temperature sensor
8 Automatic bleed valve
9 Flow-meter
MI Central heating flow
RI Central heating return

Values of NTC probes' resistors with changing temperatures.

Temperature °C Tolerance test ±10%	Resistor Ω	Temperature °C Tolerance test ±10%	Resistor Ω
-40	191908	45	4904
-35	146593	50	4151
-30	112877	55	3529
-25	87588	60	3012
-20	68471	65	2582
-15	53910	70	2221
-10	42739	75	1918
-5	34109	80	1663
0	27396	85	1446
5	22140	90	1262
10	17999	95	1105
15	14716	100	970
20	12099	105	855
25	10000	110	755
30	8308	115	669
35	6936	120	594
40	5819	125	529

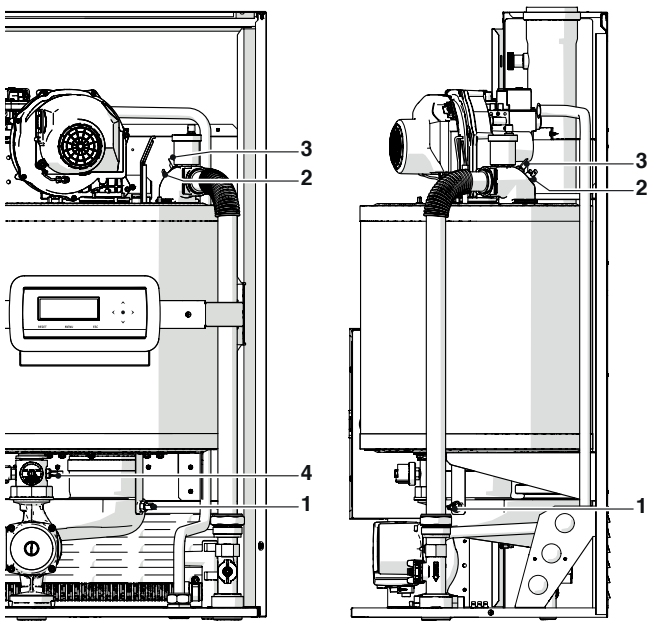
1.10 Positioning the temperature sensors

Probes placed on the related sockets of the thermal module (Condexa PRO 35 P - Condexa PRO 50 P):
1 Exhaust flue probe
2 Safety thermostat
3 CH flow temperature sensor
4 Return probe



Front view **Side view**

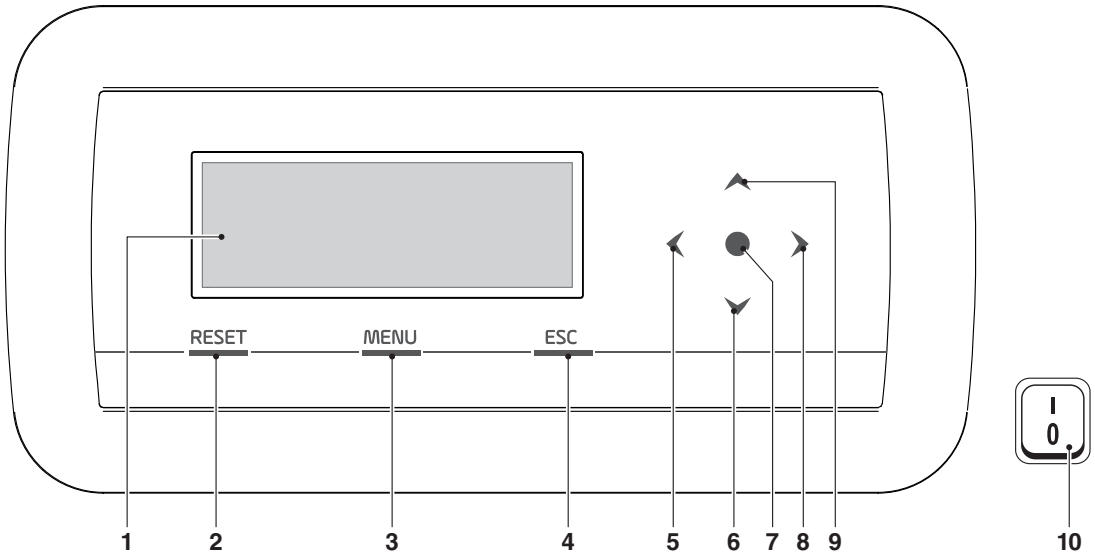
Probes placed on the related sockets of the thermal module (Condexa PRO 57 P ÷ Condexa PRO 135):
1 Exhaust flue probe
2 Safety thermostat
3 CH flow temperature sensor
4 Return probe



Front view **Side view**

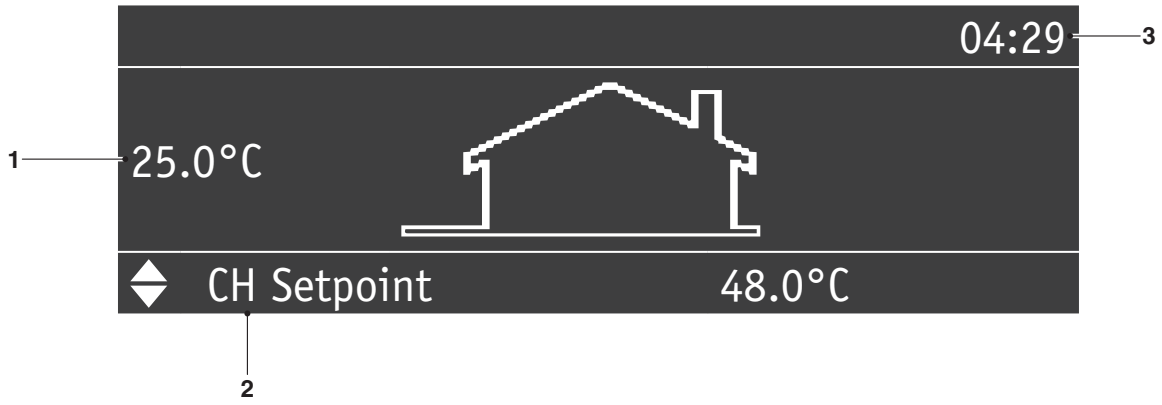
1.11 Control panel

CONTROL PANEL AND SYMBOLS



1 255x80 point backlit display (106,4x39,0mm)
2 RESET key: restores normal operations after a safety shut-down
3 MENU key: switches on the main menu
4 ESC key: in menu navigation, it enables you to exit a menu item and go back to the previous one
5 ÷ 9 Navigation keys ◄, ▼, ●, ►, ▲
10 Main switch (located on the lower part of the appliance)

SECONDARY INFORMATION/DISPLAY VISUALISATION



1 Outdoor temperature
2 Setpoint
3 Clockwise

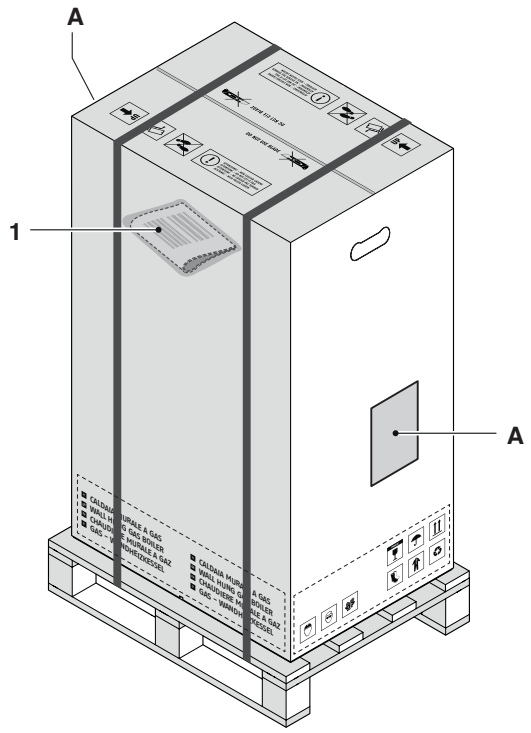
2 INSTALLATION

2.1 Unpacking the product

The thermal module **Condexa PRO** is shipped palletised, packaged and with cardboard protections.
The following material is supplied in a plastic envelope inside the package (1):

- Instruction manual
- Warranty information leaflet RIELLO
- LPG conversion kit
- Wall-mounting bracket with plugs (no.4 plugs s=10 mm suitable for concrete, brick, compact stone and concrete hollow brick walls)
- Hydraulic test certificate
- Energy Efficiency Label (for models <68kW)

2.1.1 Positioning of labels

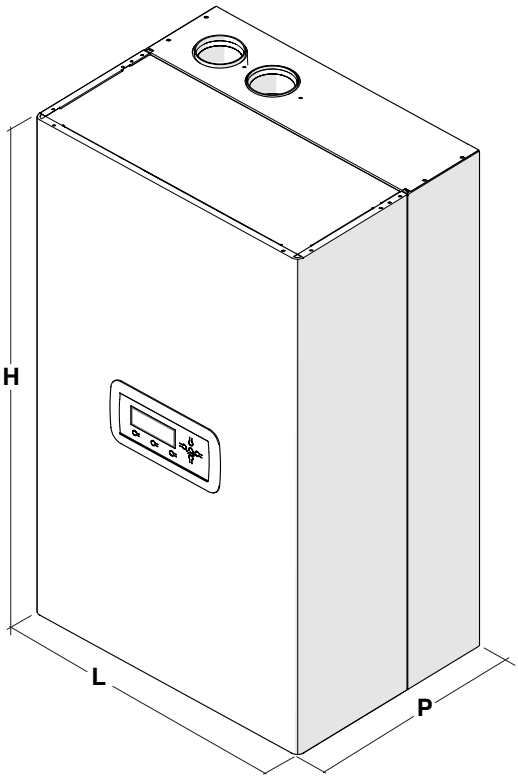


A Packing label

⚠ The instruction manual is an integral part of the appliance; therefore, it should be read and stored carefully.

⚠ Keep the documentation envelope in a safe place. Any replacement documents must be ordered from Riello S.p.A. who reserve the right to charge for the cost of the replacement.

2.2 Overall dimensions and weights



Description	Condexa PRO				
	35 P	50 P	57 P	70 P	
L	600	600	600	600	mm
P	435	435	435	435	mm
H	1000	1000	1000	1000	mm
Net weight	66	66	78	78	kg

Description	Condexa PRO				
	90	100	115	135	
L	600	600	600	600	mm
P	435	435	435	435	mm
H	1000	1000	1165	1165	mm
Net weight	81	81	93	97	kg

2.3 Installation premises

The thermal module **Condexa PRO** can be installed in rooms that are permanently ventilated and equipped with suitably sized ventilation openings in line with Technical Standards and Regulations applicable to the installation site.

⚠ When installing the boiler, allow sufficient space around it to access all safety and control devices and to permit easy maintenance.

⚠ Check that the electric protection level of the appliance is suitable for features of the room where it is installed.

⚠ Make sure that comburent air is not contaminated by substances containing chlorine or fluorine (elements found in sprays, paints, detergents etc.).

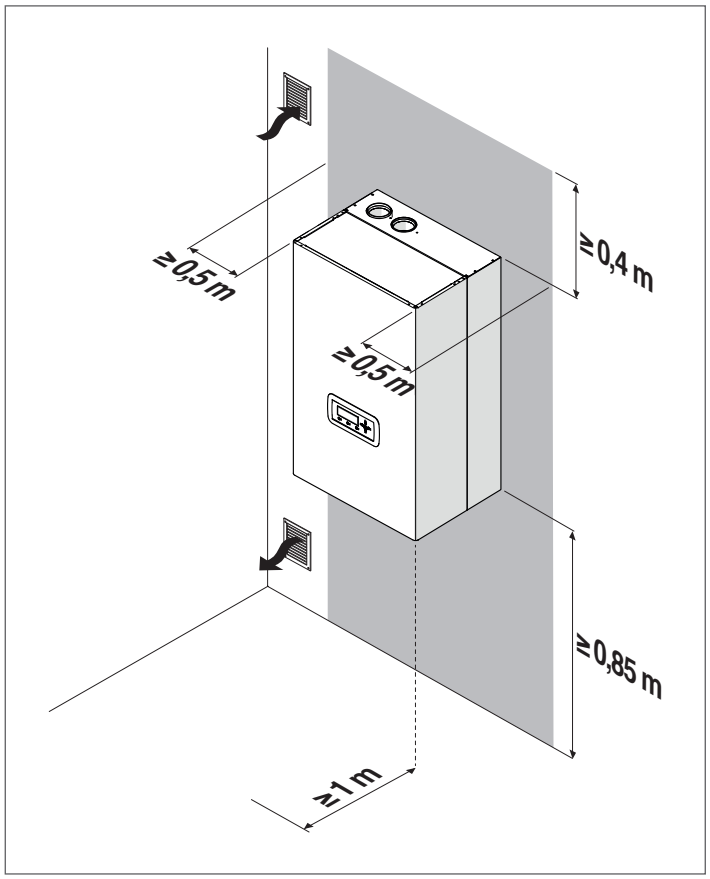
⚠ Thermal modules may be installed outdoors only if the special accessory is fitted.

⛔ Do not obstruct or restrict the air vents in the room where the boiler is installed. A free air supply is essential for correct combustion.

⛔ It is forbidden to leave flammable containers and substances in the room where the thermal module is installed.

2.3.1 Recommended minimum distances

Clearances for the assembly and the maintenance of the appliance are shown in the figure.



The minimum surface of ventilation openings is 3,000 cm^2 for gas fuel heating systems.

2.4 Installation in older systems and systems requiring modernisation

When installing these boilers in older systems or systems requiring modernisation, always perform the following checks:

- Make sure that the flue is able to withstand the temperature of the combustion gases and that it has been designed and made in compliance with applicable standards. The flue must also be as straight as possible, sealed, insulated and not blocked or choked. See Paragraph " Discharge of combustion products" for any additional information.
- Make sure that the electrical supply system has been installed by a qualified electrician in compliance with applicable standards
- Make sure that the fuel feed line and any storage tank are made and installed in compliance with applicable standards
- Make sure that expansion vessels are big enough to contain the additional volume generated by thermal expansion
- Make sure that the flow rate, head and direction of flow of the pumps are suitable and correct
- The system has been washed, cleaned of mud and grime and water seals have been checked
- A treatment system is fitted when the supply/refill water has values other than those indicated in Paragraph "Water quality requirements"

⚠ The manufacturer declines all responsibility for damage caused by incorrectly constructed flue systems.

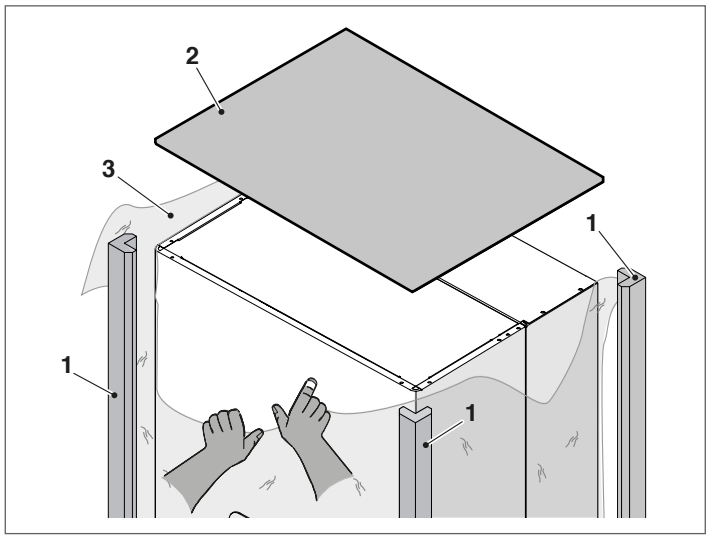
2.5 Moving and removing the packing

⚠ Do not remove the cardboard packaging until your reach the installation location.

⚠ Before handling the appliance and removing the packaging, wear PPE and use tools suitable for the appliance's size and weight.

⚠ This step must be carried out by several individuals equipped with suitable means with respect to the appliance's size. Make sure that the load is not unbalanced during handling.

Proceed as follows to remove the packing:
- Remove the strapping that secures the cardboard packaging to the pallet
- Remove the cardboard
- Remove edge protectors (1)
- Remove the Styrofoam protection (2)
- Remove the protective bag (3)

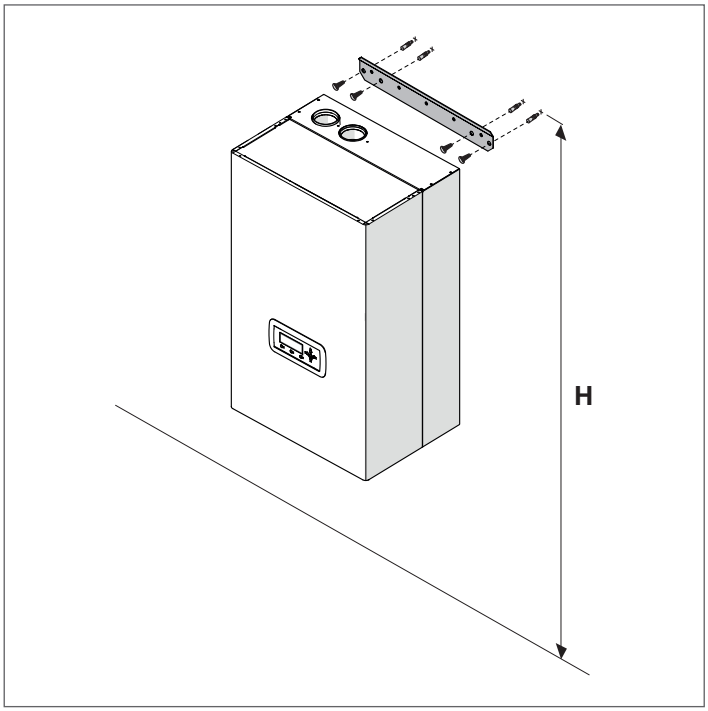


2.6 Thermal module assembly

Thermal modules **Condexa PRO** are supplied complete with a wall-mounting bracket.

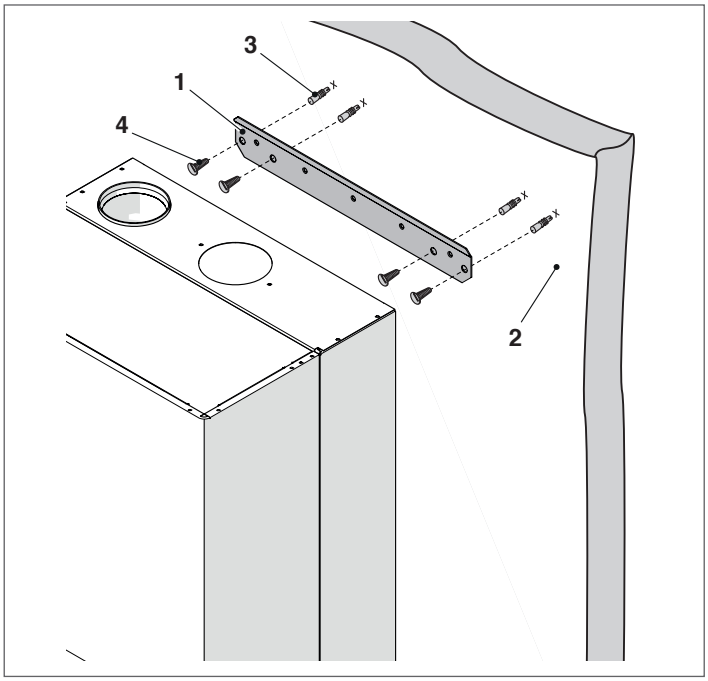
⚠ Check that the wall on which the appliance is to be fitted is sufficiently solid and supports safe screw fixing points.

⚠ The appliance's height must be selected so as to facilitate dismantling it and maintaining it.

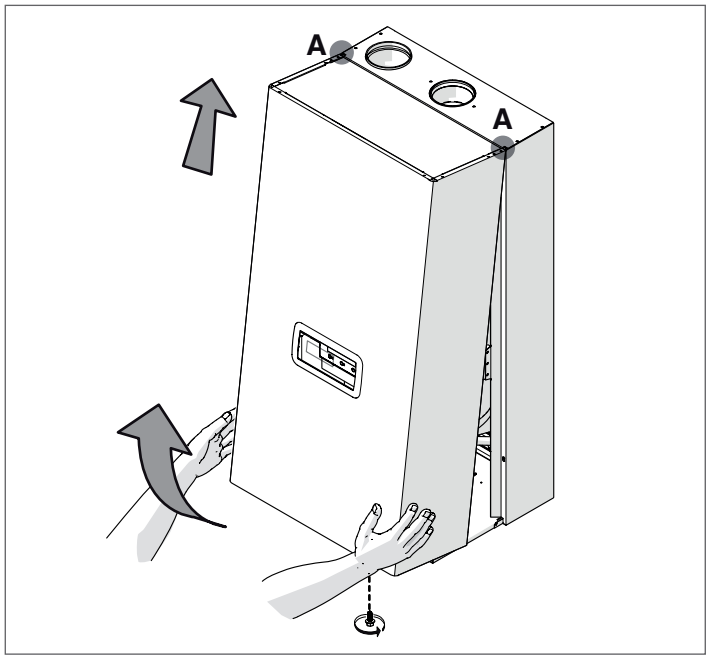


Model	Height (H) mm
Condexa PRO 35 P	1850<H<2000
Condexa PRO 50 P	1850<H<2000
Condexa PRO 57 P	1850<H<2000
Condexa PRO 70 P	1850<H<2000
Condexa PRO 90	1850<H<2000
Condexa PRO 100	1850<H<2000
Condexa PRO 115	2000<H<2150
Condexa PRO 135	2000<H<2150

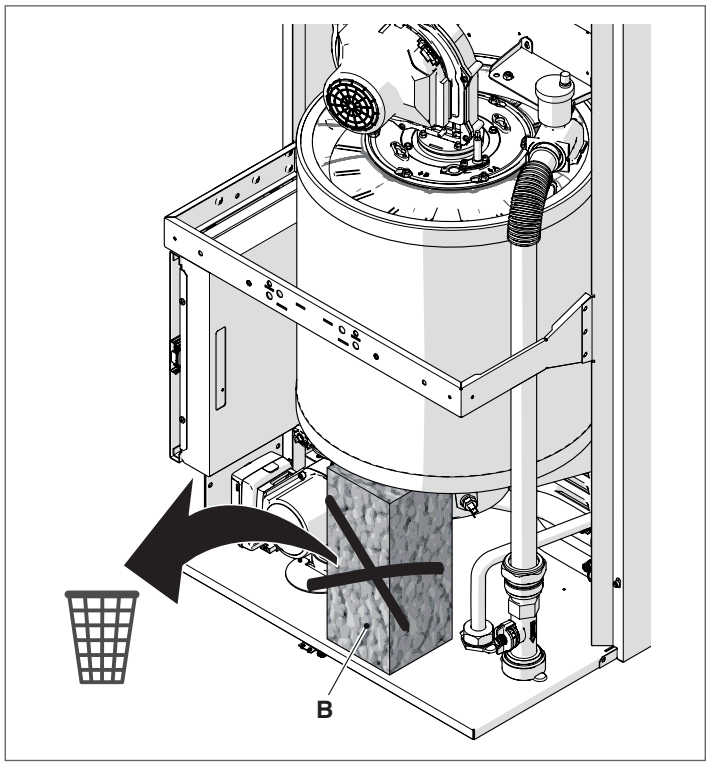
For installation:
- Position the bracket (1) onto the wall (2), at the point where you wish to install the appliance
- Ensure that the bracket is horizontal and mark the points where the holes for fixing plugs must be drilled
- Drill the holes and insert expansion plugs (3)
- Fix the bracket to the wall using the screws (4)
- Secure the appliance onto the bracket



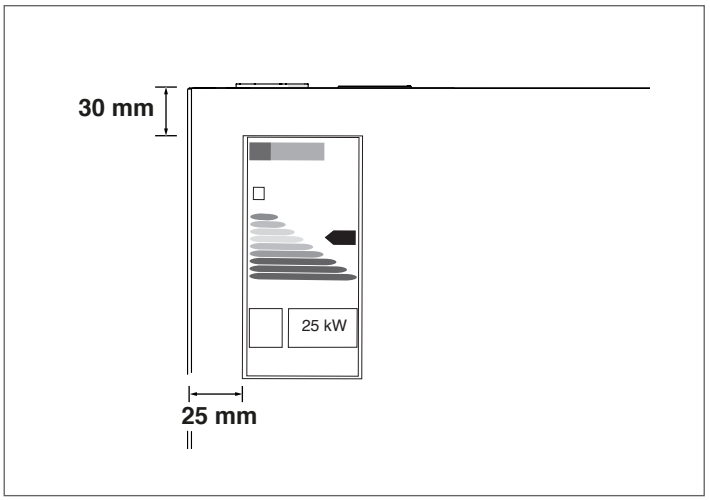
After installing the thermal module:
- remove the locking screw.
- pull the front panel outwards and then to the top to decouple it from points A.



- remove the polystyrene block (B) under heat exchanger (only for models Condexa PRO 90 - Condexa PRO 100 - |e|null - Condexa PRO 135).



Locate the envelope containing the product documentation and stick the Energy Efficiency Label (if any) contained in the envelope onto the panel.

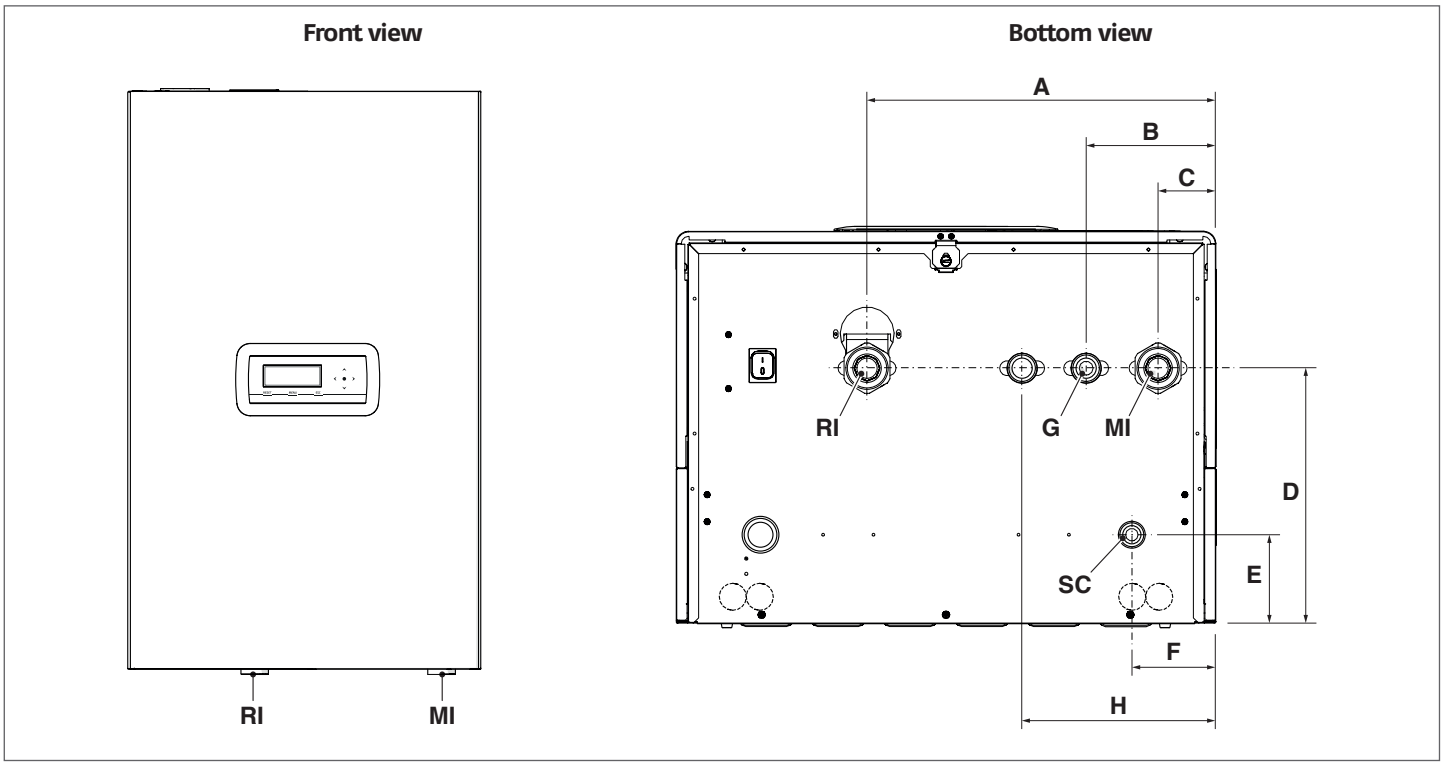


Close the panelling in reverse order to the one described above.

⚠ Before proceeding with the hydraulic connections the protection plugs must be removed from the delivery, return and condensate drain piping.

2.7 Water connections

The dimensions and position of thermal module's hydraulic connections are shown in the table below.



DESCRIPTION		Condexa PRO								
		35 P	50 P	57 P	70 P	90	100	115	135	
A		387	387	387	387	387	387	387	387	mm
B		143,5	143,5	143,5	143,5	143,5	143,5	143,5	143,5	mm
C		63,5	63,5	63,5	63,5	63,5	63,5	63,5	63,5	mm
D		283,5	283,5	283,5	283,5	283,5	283,5	283,5	283,5	mm
E		98,5	98,5	98,5	98,5	98,5	98,5	98,5	98,5	mm
F		92,5	92,5	92,5	92,5	92,5	92,5	92,5	92,5	mm
H	(optional 3-way valve attachment)	202,5	202,5	-	-	-	-	-	-	mm
MI	(system flow)	G 1" 1/2 M	G 1" 1/2 M	G 1" 1/2 M	G 1" 1/2 M	G 1" 1/2 M	G 1" 1/2 M	G 1" 1/2 M	G 1" 1/2 M	Ø
RI	(system return)	G 1" 1/2 M	G 1" 1/2 M	G 1" 1/2 M	G 1" 1/2 M	G 1" 1/2 M	G 1" 1/2 M	G 1" 1/2 M	G 1" 1/2 M	Ø
SC	(condensate drain)	25	25	25	25	25	25	25	25	Ø mm
G	(gas inlet)	G 1" M	G 1" M	G 1" M	G 1" M	G 1" M	G 1" M	G 1" M	G 1" M	Ø

⚠ Before connecting the thermal module the protection plugs must be removed from the delivery, return and condensate drain pipes.

⚠ Before connecting the thermal module, it is necessary to clean the system. This step is absolutely required when the appliance replaces another one on pre-existing systems.

In order to carry out this cleaning activity, if the old generator is still installed on the system, it is advisable to:
- add a de-scaling additive.
- Operate the system with the generator on for around 7 days.
- Discharge dirty system water and flush the system one or more times with clean water.

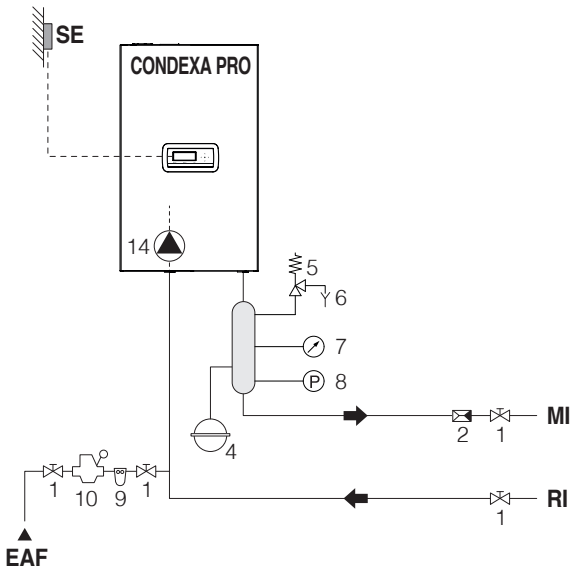
If the system is very dirty, repeat the last procedure one more time.
If the old generator is not present or available, use a pump to circulate the water + additive through the system for about 10 days and perform a final washing as described in the previous paragraph.
Once the cleaning has been completed, it is recommended to add a suitable protective fluid to the system's water before installing the thermal module.
In order to clean the heat exchanger's built-in water system, please contact Technical Assistance Service **RIELLO**.

⊖ Do not use incompatible liquid detergents, including acids (for instance, chloridric acid and similar) in any concentration.

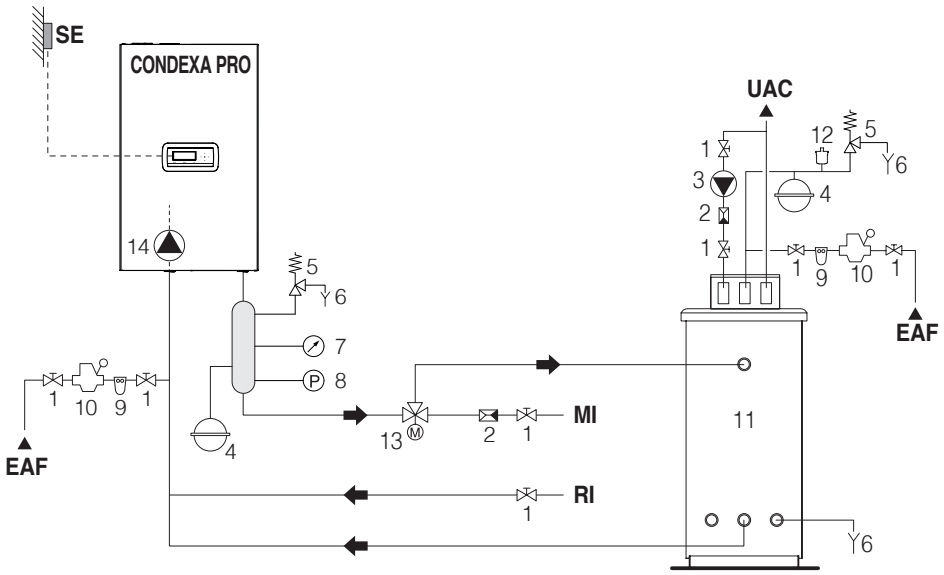
⊖ Do not subject the heat exchanger to cyclical pressure changes because fatigue stress is very dangerous for the integrity of system components.

2.8 Typical water system schematics

Layout 1: circuit with thermal module directly linked to heating system (check that the pump's discharge head is sufficient to ensure adequate circulation)



Layout 2: circuit with thermal module directly linked to heating system and DHW tank. (check that the pump's discharge head is sufficient to ensure adequate circulation)



1	Isolating valve	**9**	Water softener filter	**SE**	Outdoor sensor
2	Non-return valve	**10**	Pressure reducer	**MI**	High temperature system flow
3	DHW circulation pump	**11**	Storage cylinder	**RI**	High temperature system return
4	Expansion tank	**12**	Automatic bleed valve	**EAF**	Domestic cold water inlet
5	Safety valve	**13**	Diverter valve	**UAC**	Domestic hot water outlet
6	Drain	**14**	Pump (fitted as standard for models Condexa PRO 35 P and Condexa PRO 70 P)		
7	Pressure gauge				
8	Pressure switch				

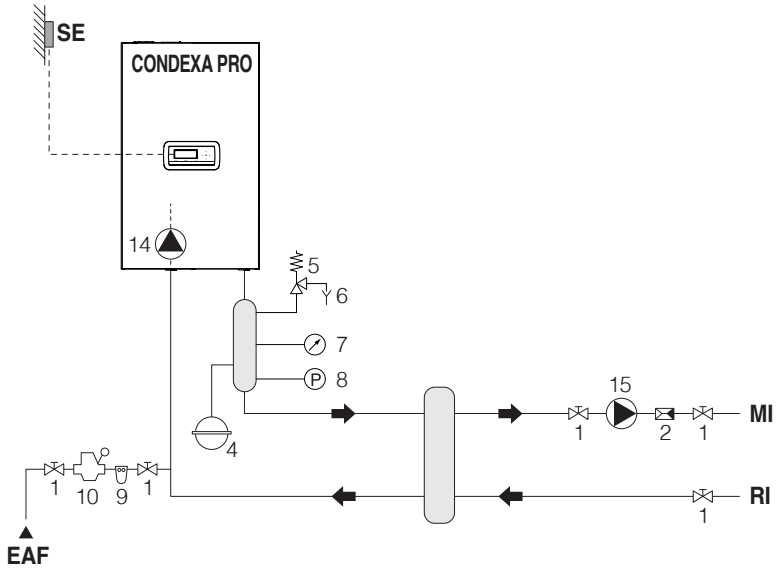
⚠ Domestic hot water and central heating circuits must be completed with expansion vessels of adequate capacity and suitable, correctly-sized safety valves. The discharge of safety valves and appliances must be connected to a suitable collection and disposal system (see Catalogue for compatible accessories).

⚠ The choice of system components and the method of their installation are left up to the heating engineer installing the system. Installers must use their expertise to ensure proper installation and functioning in conformity to all applicable legislation.

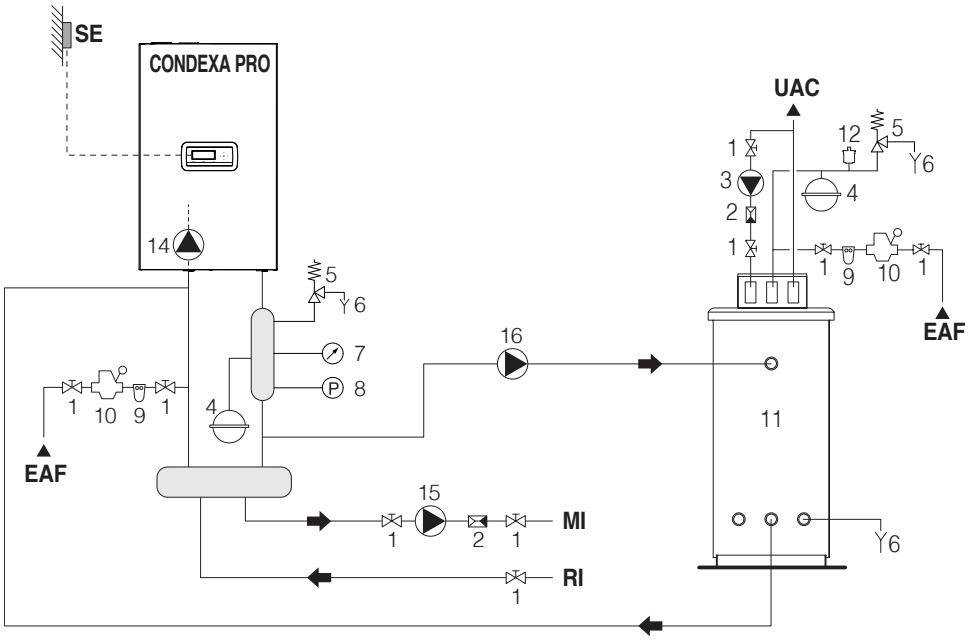
⚠ Special supply/refill water must be conditioned using suitable treatment systems.

⊖ It is prohibited to operate the thermal module without water.

Layout 3: circuit with thermal module connected to a heating system via a separator



Layout 4: circuit with thermal module linked to DHW tank and heating system via a separator



1	Isolating valve	**10**	Pressure reducer	**SE**	Outdoor sensor
2	Non-return valve	**11**	Storage cylinder	**MI**	High temperature system flow
3	DHW circulation pump	**12**	Automatic bleed valve		
4	Expansion tank	**13**	Diverter valve	**RI**	High temperature system return
5	Safety valve	**14**	Pump (fitted as standard for models Condexa PRO 35 P and Condexa PRO 70 P)	**EAF**	Domestic cold water inlet
6	Drain	**15**	High-temperature system circulator	**UAC**	Domestic hot water outlet
7	Pressure gauge	**16**	Storage cylinder circulator		
8	Pressure switch				
9	Water softener filter				

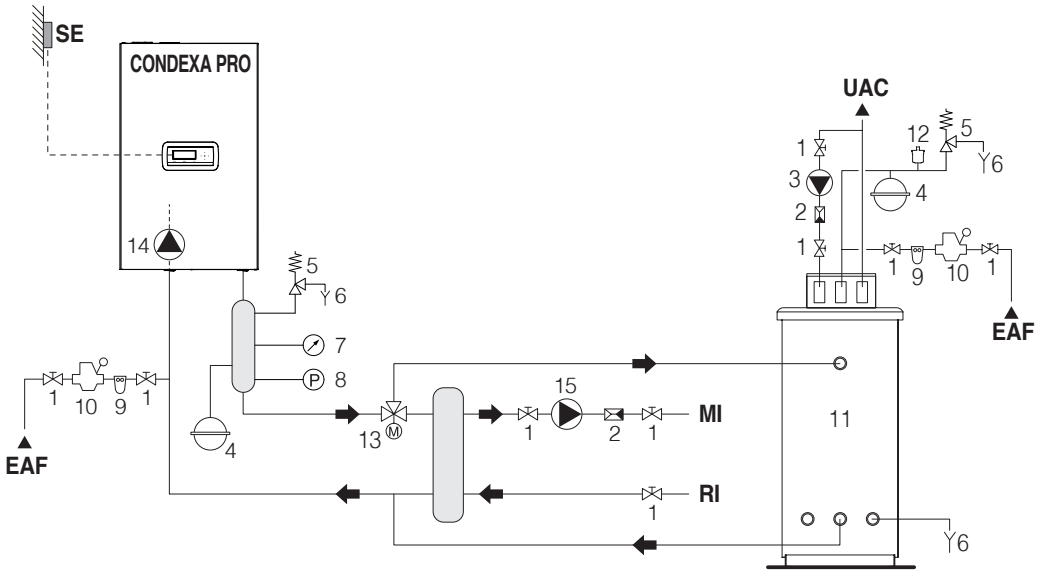
⚠ Domestic hot water and central heating circuits must be completed with expansion vessels of adequate capacity and suitable, correctly-sized safety valves. The discharge of safety valves and appliances must be connected to a suitable collection and disposal system (see Catalogue for compatible accessories).

⚠ The choice of system components and the method of their installation are left up to the heating engineer installing the system. Installers must use their expertise to ensure proper installation and functioning in conformity to all applicable legislation.

⚠ Special supply/refill water must be conditioned using suitable treatment systems.

⊖ It is prohibited to operate the thermal module without water.

Layout 5: circuit with thermal module linked to heating system and DHW. tank via a separator



1	Isolating valve	**10**	Pressure reducer	**SE**	Outdoor sensor
2	Non-return valve	**11**	Storage cylinder	**MI**	High temperature system flow
3	DHW circulation pump	**12**	Automatic bleed valve	**RI**	High temperature system return
4	Expansion tank	**13**	Diverter valve	**EAF**	Domestic cold water inlet
5	Safety valve	**14**	Pump (fitted as standard for models Condexa PRO 35 P and Condexa PRO 70 P)	**UAC**	Domestic hot water outlet
6	Drain	**15**	High-temperature system circulator		
7	Pressure gauge	**16**	Storage cylinder circulator		
8	Pressure switch				
9	Water softener filter				

⚠ Domestic hot water and central heating circuits must be completed with expansion vessels of adequate capacity and suitable, correctly-sized safety valves. The discharge of safety valves and appliances must be connected to a suitable collection and disposal system (see Catalogue for compatible accessories).

⚠ The choice of system components and the method of their installation are left up to the heating engineer installing the system. Installers must use their expertise to ensure proper installation and functioning in conformity to all applicable legislation.

⚠ Special supply/refill water must be conditioned using suitable treatment systems.

⛔ It is prohibited to operate the thermal module without water.

2.9 Gas connections

The gas connection must be made respecting the installation regulations in force, and sized to ensure the correct gas delivery to the burner.
Before making the connection, check that:

⚠ The gas type is suitable for the appliance

⚠ If the appliance needs to be adapted for use with another gas fuel, contact your local Technical Assistance Service to have the necessary modifications made. These operations may not be performed by the installer under any circumstances.

⚠ The piping is thoroughly clean

⚠ The gas meter's flow rate is capable of ensuring the simultaneous use of all the appliances connected to it. The appliance's connection to the gas supply line must be carried out in accordance with the current regulations.

⚠ Intake pressure with the appliance in the off position has the following reference values:
- powered by methane gas: optimal pressure 20 mbar
- powered by L.P.G.: optimal pressure 37 mbar

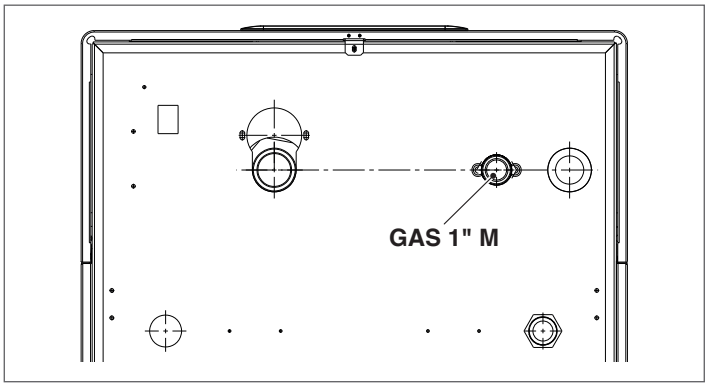
⛔ Do not use any fuels other than those provided under any circumstances.

While it is normal for the intake pressure to decrease while the appliance is in operation, it is advisable to verify that no excessive pressure fluctuations take place. In order to limit the extent of these types of variations, the diameter of the gas supply line to be used must be assessed based on the length and the pressure drops of the line itself, from the meter to the thermal module.

⚠ If fluctuations in the gas distribution pressure are encountered, it is recommended to install an appropriate pressure stabiliser upstream of the appliance's gas intake. For G30 and G31 gas supply, all the necessary precautions must be taken in order to prevent the gas from freezing in the case of extremely low outdoor temperatures.

If the gas distribution network contains solid particles, install a filter on the fuel supply line. When selecting it, consider that pressure drops due to the filter should be as low as possible.

⚠ On completion of the installation, check that all joints are sealed.



2.10 Discharge of combustion products

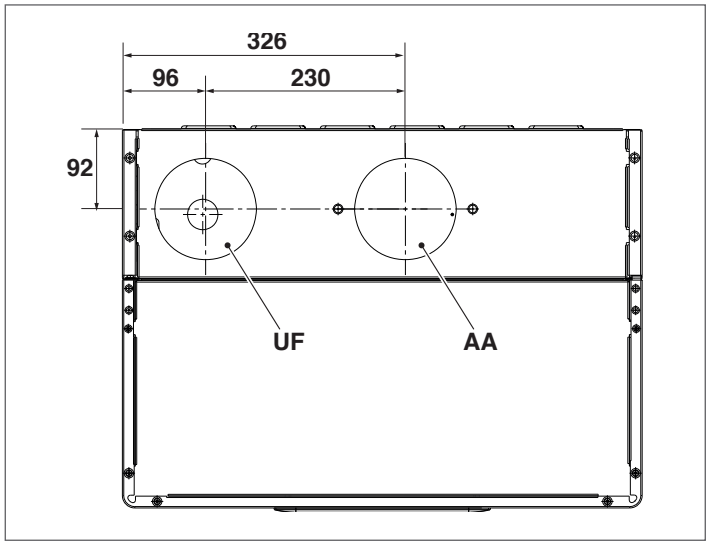
The appliance is supplied as standard in B-type configuration (B23-B23P-B53P), i.e. pre-fitted to suction air directly into the installation room and may be converted into a C-type appliance with the use of specific accessories. In this configuration, the appliance will suction the air directly from outdoors, with the possibility of coaxial or dual piping.
For flue gas extraction and the intake of combustion air, it is essential to use only specific pipes for condensing boilers and ensure that they are correctly connected, as shown in the instructions supplied with the flue gas accessories.

⚠ Do not connect this appliance's flue gas extraction pipes with those of other appliances, unless this is specifically authorised by the manufacturer. Non-compliance with this precaution may cause a build-up of carbon monoxide in the room where the appliance is installed. This could jeopardise people's health and safety.

⚠ For further information on flue gas extraction pipes for thermal modules connected in a cascaded system, see Catalogue and the instructions provided for the relevant accessories.

⚠ Ensure that combustion air (suction line air) is not contaminated by:
- waxes/chlorinated detergents
- chemical products based on swimming pool chlorine
- calcium chloride
- sodium chloride use to soften tap water
- refrigerant leaks
- paint or varnish removers
- chloridric acid/muriatic acid
- cements and glues
- anti-static softeners used in dryers
- chloride used for domestic or industrial applications as detergent, whitener or solvent
- adhesives used to glue construction and other similar products.

⚠ To prevent contamination of the thermal module, do not install suction line air intakes and gas flue extraction pipes near:
- dry-cleaners/laundry rooms and factories
- swimming pools
- metal processing plants
- beauty parlours
- fridge repair shops
- photo-processing facilities
- body-shops
- plastics manufacturing plants
- furniture workshops and manufacturing plants.



The AA outlet is supplied capped in B23 configuration.

DESCRIPTION	Condexa PRO				
	35 P	50 P	57 P	70 P	
FO (flue gas outlet)	DN80	DN80	DN80	DN80	Ø
AS (air suction)	DN80	DN80	DN80	DN80	Ø

DESCRIPTION	Condexa PRO				
	90	100	115	135	
FO (flue gas outlet)	DN110	DN110	DN110	DN110	Ø
AS (air suction)	DN110	DN110	DN110	DN110	Ø

⚠ For B-type installation, combustion air is taken from the environment and goes through the openings (shutters) on the rear panel of the device that must be located in a suitable and ventilated technical room.

⚠ Read the requirements, instructions and prohibitions detailed below carefully, since non-compliance with them may be result in a safety hazard or the appliance's malfunction.

⚠ Condensation appliances described in this handbook must be installed with flue gas pipes compliant with applicable legislation and expressly manufactured for this specific use.

⚠ Check that pipes and joints are not damaged.

⚠ Joint seals must be executed with materials that withstand the condensate's acidity and the temperatures of the appliance's flue gases.

⚠ When installing flue pipes, always bear in mind the direction of the flue gases and of possible condensate flows.

⚠ Inadequate or incorrectly sized flue gas pipes may increase combustion noise, create condensate extraction issues and negatively impact on combustion parameters.

⚠ Check that pipes are suitably far (min. 500 mm) from flammable or heat-sensitive construction elements.

⚠ Make sure that condensation is not built up along the duct. For this purpose, provide a sloping duct of at least 3 degrees towards the appliance in case there is an a horizontal section. If the horizontal or vertical section is longer than 4 meters, a condensate siphon drainage must be provided at the base of the pipe. The useful height of the siphon must be at least equal to the value "H" (see figure below). The siphon discharge must then be connected to the sewerage system (see paragraph "Preparation for the condensate drain" on page 26).

⛔ It is prohibited to block or section the flue gas extraction pipe or the combustion air suction pipe, if any.

⛔ It is prohibited to use pipes that not designed for this application, because the condensate's action would damage them quickly.

Maximum equivalent lengths are provided below.

"B" TYPE INSTALLATION
Exhaust Ø 80 mm

Model	Maximum length Ø 80 mm	Pressure drop	
		45° bend	90° bend
Condexa PRO 35 P	30 m	1,5 m	3 m
Condexa PRO 50 P	30 m	1,5 m	3 m
Condexa PRO 57 P	30 m	1,5 m	3 m
Condexa PRO 70 P	30 m	1,5 m	3 m

Exhaust Ø 110 mm

Model	Maximum length Ø 110 mm	Pressure drop	
		45° bend	90° bend
Condexa PRO 90	30 m	1,5 m	3 m
Condexa PRO 100	30 m	1,5 m	3 m
Condexa PRO 115	30 m	1,5 m	3 m
Condexa PRO 135	30 m	2 m	4 m

"C" TYPE INSTALLATION

Double pipes Ø 80–125 mm

Model	Maximum length Ø 80–125 mm	Pressure drop	
		45° bend	90° bend
Condexa PRO 35 P	15 m	2 m	6 m
Condexa PRO 50 P	15 m	2 m	6 m
Condexa PRO 57 P	15 m	2 m	6 m
Condexa PRO 70 P	15 m	2 m	6 m

Double pipes Ø 110–160 mm

Model	Maximum length Ø 110–160 mm	Pressure drop	
		45° bend	90° bend
Condexa PRO 90	15 m	2 m	6 m
Condexa PRO 100	15 m	2 m	6 m
Condexa PRO 115	15 m	2 m	6 m
Condexa PRO 135	15 m	4 m	8 m

Double pipes Ø 60–100 mm

Model	Maximum length Ø 60–100 mm
Condexa PRO 35 P	15 m
Condexa PRO 50 P	10 m
Condexa PRO 57 P	10 m
Condexa PRO 70 P	10 m

Separate pipes Ø 80 mm + Ø 80 mm

Model	Maximum length Ø 80 + Ø 80 mm	Pressure drop	
		45° bend	90° bend
Condexa PRO 35 P	15 m + 15 m	1,5 m	3 m
Condexa PRO 50 P	15 m + 15 m	1,5 m	3 m
Condexa PRO 57 P	15 m + 15 m	1,5 m	3 m
Condexa PRO 70 P	15 m + 15 m	1,5 m	3 m

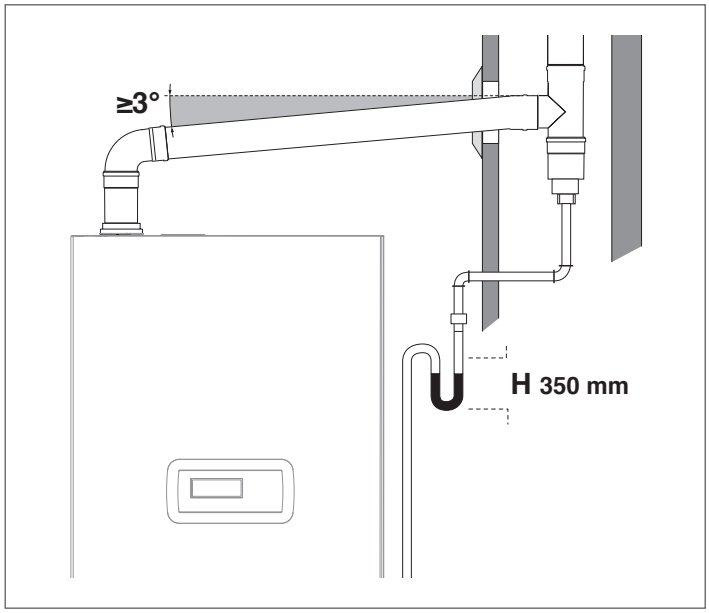
Separate pipes Ø 110 mm + Ø 110 mm

Model	Maximum length Ø110 + Ø110 mm	Pressure drop	
		45° bend	90° bend
Condexa PRO 90	15 m + 15 m	1,5 m	3 m
Condexa PRO 100	15 m + 15 m	1,5 m	3 m
Condexa PRO 115	15 m + 15 m	1,5 m	3 m
Condexa PRO 135	15 m + 15 m	2 m	4 m

The table with available residual discharge heads is shown below.

Description	Discharge head	
	Max	Min
Condexa PRO 35 P	300	45
Condexa PRO 50 P	480	45
Condexa PRO 57 P	510	35
Condexa PRO 70 P	630	35
Condexa PRO 90	560	32
Condexa PRO 100	610	32
Condexa PRO 115	500	30
Condexa PRO 135	353	28

The residual discharge head values are shown in Pascal.



To change direction, use a T section with an inspection cap to permit easy access for cleaning inside the pipe. After cleaning, always make sure that inspection caps are replaced tightly and that their seals are undamaged and efficient.

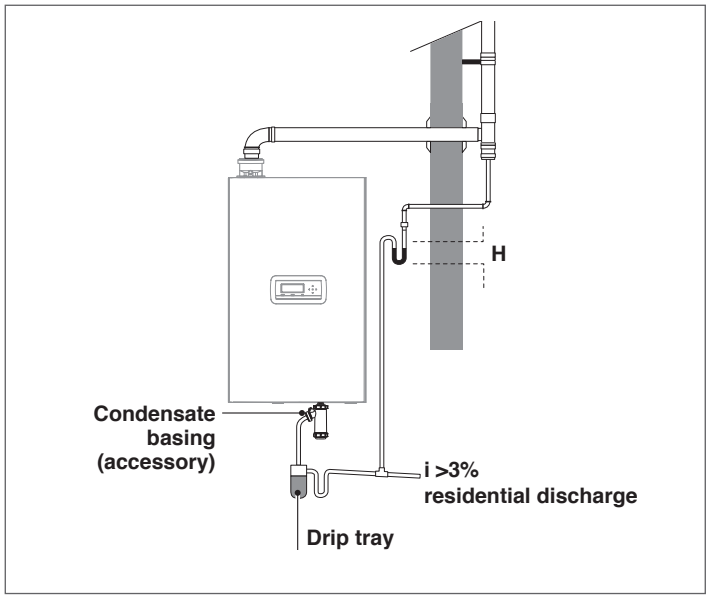
2.10.1 Preparation for the condensate drain

The evacuation of the condensate produced by the appliance **Condexa PRO** during its normal operationmust be carried out through a siphoned condensate collector, placed under the thermal module itself. This collector is installed as standard in models Condexa PRO 35 P - Condexa PRO 50 P, while it is available as an accessory for models Condexa PRO 57 P ÷ Condexa PRO 135.
The condensate coming out of the drainer must be collected for dripping into a taped vessel connected to the sewer system, if necessary by interposing a neutralizer (for more information see paragraph "Neutralising the condensate"), according to the following procedure:

- Fit a drip tray near the condensate discharge outlet, adding a condensate neutraliser if necessary
- Connect the drip collection receptacle to the local drain or sewer system using a siphon.

The drip tray can be created by fitting a cup or simply a polypropylene bend, suitable for collecting the condensate that comes out of the appliance and any liquid leaking from the safety valve.
The connection to the local drain or sewer system must be executed using a siphon in order to prevent unpleasant odours from being released back into the room from the sewer.
We advise using plastic (PP) piping for building the condensate drainage.

⛔ Never use copper pipes under any circumstances, as the condensate itself will cause them to rapidly deteriorate.



⚠ Execute the condensate drain outlet so as to prevent combustion gases leaking into the environment or the drain or sewage system by sizing the siphon (height H) as described in Paragraph "Discharge of combustion products".

⚠ Always maintain a slope angle "s" of over 3° and ensure that the diameter of any condensate drain pipe is greater than that of the connection fitted at the drain outlet

⚠ Connect the condensate drain hose to a domestic water drain in accordance with national and local legislation and standards.

⚠ Fill the siphon with water before activating on the thermal module in order not to release any combustion products into the environment when the thermal module is first switched on.

⚠ The condensate drain must be suitably siphoned. Fill the siphon with drain in order to prevent the release of combustion products when the appliance is first switched on.

⚠ It is recommended that condensate from the thermal module and from the flue should be channelled to the same drain pipe.

⚠ The connection pipes used must be as short and as straight as possible. Any curves or sharp bends can lead to hoses becoming clogged and, therefore, can prevent proper condensate discharge

⚠ Size the condensate drain outlet so as to ensure the proper drainage of waste liquids without leaks

⚠ The condensate drain must be connected to the drain and sewage network in such a ways so that the condensate may not freeze under any circumstances

2.11 Neutralising the condensate

The UNI 11528 Standard provides for mandatory neutralisation of condensate for systems with total power of over 200 kW. For systems with total power from 35 to 200 kW, neutralisation may or may not be mandatory depending on the number of flats (for residential applications) or the number of occupants (for non-residential applications) served by the aforementioned system.

2.11.1 Water quality requirements

It is ABSOLUTELY NECESSARY to treat the water system in order for the heat generator to work properly and to guarantee its service life, as well as that of all its components. This not only applies to jobs carried out on existing installations but also on new installations.
Sludge, lime-scale and pollutants contained in the water can cause permanent damage to the heat generator, also within a short time and notwithstanding the quality standards of the materials used.
Contact the Technical Assistance Service for any further information on type and use of additives.
The heat transfer fluid (water) for the central heating circuit must conform to the quality parameters given in the following table:

Parameters	Value	Unit
General characteristic	Colourless, without sediment	
PH value	Min. 6.5; Max. 8	PH
Dissolved oxygen	< 0,05	mg/l
Total iron (Fe)	< 0,3	mg/l
Total copper (Cu)	< 0,1	mg/l
Na2S03	< 10	mg/l
N2H4	< 3	mg/l
P04	< 15	mg/l
CaC03	Min. 50 ; Max.150	ppm
Trisodium phosphate	None	ppm
Chlorine	< 100	ppm
Electrical conductivity	<200	microsiemens/cm
Pressure	Min. 0.6; Max. 6	bar
Glycol	Max. 40% (only propylene glycol)	%

⚠ All data in the table refer to water contained in the system after 8 weeks' operation.

⚠ Do not use excessively softened water. Excessive water softening (total hardness < 5° f) results in corrosion due to contact with metal elements (pipes or thermal module components)

⚠ Immediately repair any leaks or drips that could result in air entering the system

⚠ Excessive pressure fluctuations can cause stress and fatigue to the heat exchanger. Keep the operating pressure constant.

⚠ Water used to fill a system for the first time and water used to top it up must always be filtered (using synthetic or metal mesh filters with a filtration rating of no less than 50 microns) to prevent sludge from forming and triggering deposit corrosion.

⚠ If oxygen enters a circuit continuously or even intermittently (e.g. in under-floor heating systems whose pipes are not protected by impermeable synthetic sheaths, in circuits with open expansion vessels, or in circuits that require frequent top-ups) always separate the boiler's water circuit from the central heating circuit.

⛔ It is prohibited to top up the heating system constantly or frequently, since this can damage the thermal module's heat exchanger. The use of automatic topping up systems should be avoided for this reason.

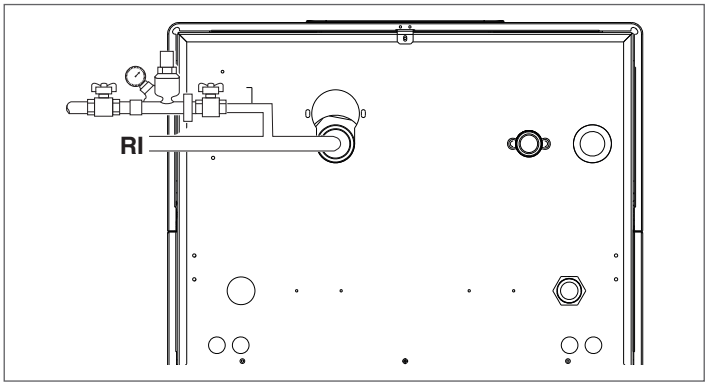
To sum up, in order to eliminate contact between air and water (and to prevent the latter from becoming oxidized), it is necessary:

- that the expansion system be a closed vessel, correctly sized and with the correct pre-loading pressure (to be regularly checked);
- that the system be always at a pressure higher than the atmospheric one at any point (including the pump suction side) and under any operating conditions (all seals and hydraulic couplings in a system are designed to withstand pressure towards the outside, but not under-pressure);
- the installation be not made with gas-permeable materials (e.g. plastic pipes without oxygen barrier for under-floor heating systems)

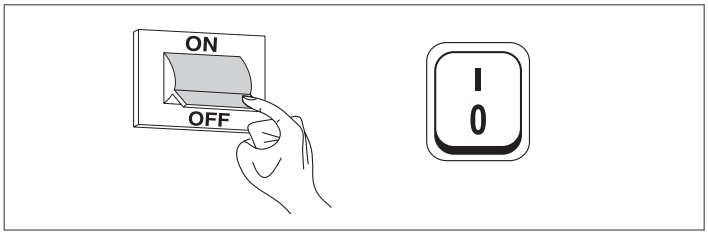
⚠ Damages suffered by the thermal module, caused by encrustations and corrosion, are not covered by warranty. In addition, the non compliance of the water requirements listed in this chapter will void the appliance warranty itself.

2.12 System filling and emptying

The thermal module **Condexa PRO** must be provided with a charging system to be connected to the appliance's return line.



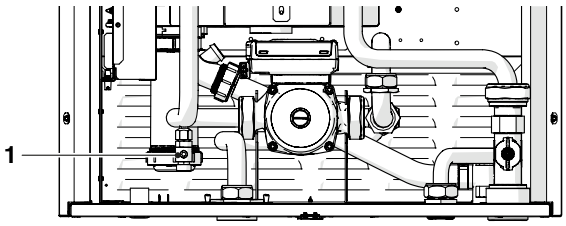
Before filling or emptying the system, switch the system's master switch to the OFF position and the thermal module's master switch to (**0**).



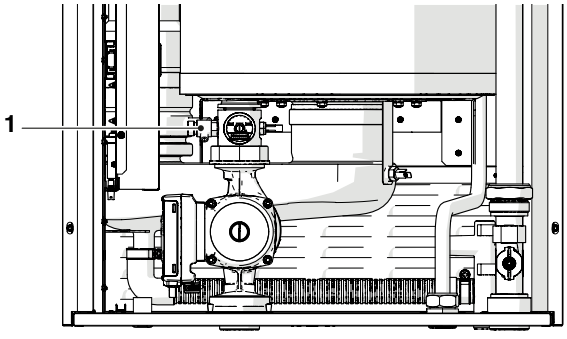
2.12.1 Filling

- Make sure that drain cocks (1) are closed before you start loading the system

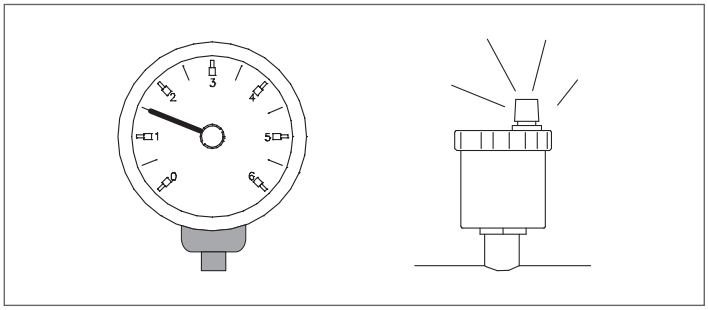
Condexa PRO 35 P - Condexa PRO 50 P



Condexa PRO 57 P ÷ Condexa PRO 135



- Unscrew the vent valve's release cap
- Open the shut-off cocks in order to slowly fill the system
- Use the pressure gauge to check that the pressure is rising and the water is exiting through the vent valves
- Close the shut-off cocks after the pressure reaches 1.5 bar
- Start the system pumps and the thermal module's pump as shown in Paragraph "Commissioning and maintenance"
- During this stage, check that the air is correctly eliminated
- Restore the pressure if necessary
- Switch the pumps off and on again
- Repeat the last three steps until the pressure is stabilised



⚠ The system must be filled up slowly the first time; once it is filled and the air expelled it should never need to be topped up again.

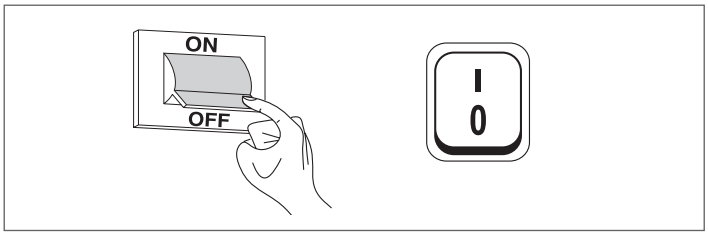
⚠ Systems should also be operated at maximum working temperature the first time they are started up, in order to facilitate de-aeration. (Gas is not released from the water at low temperatures).

⚠ An automatic spurge can be performed during the first ignition. The parameter that set the cycle is Par. 139. See parameter table for more information.

2.12.2 Emptying

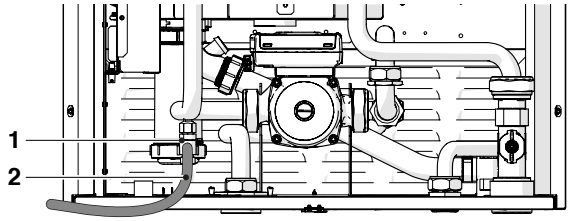
Before starting to empty the appliance and the storage cylinder:

- Switch the system's master switch to the OFF position and the thermal module's master switch to (**0**).

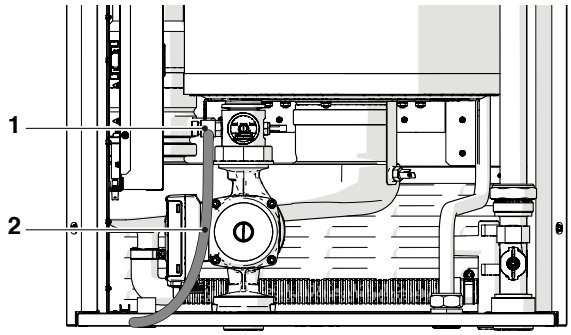


- Close the water supply shut-off cocks;
- In order to empty the appliance, fit a rubber hose (2) (inner diameter int. Ø = 12 mm) to the thermal module's discharge valve (1).

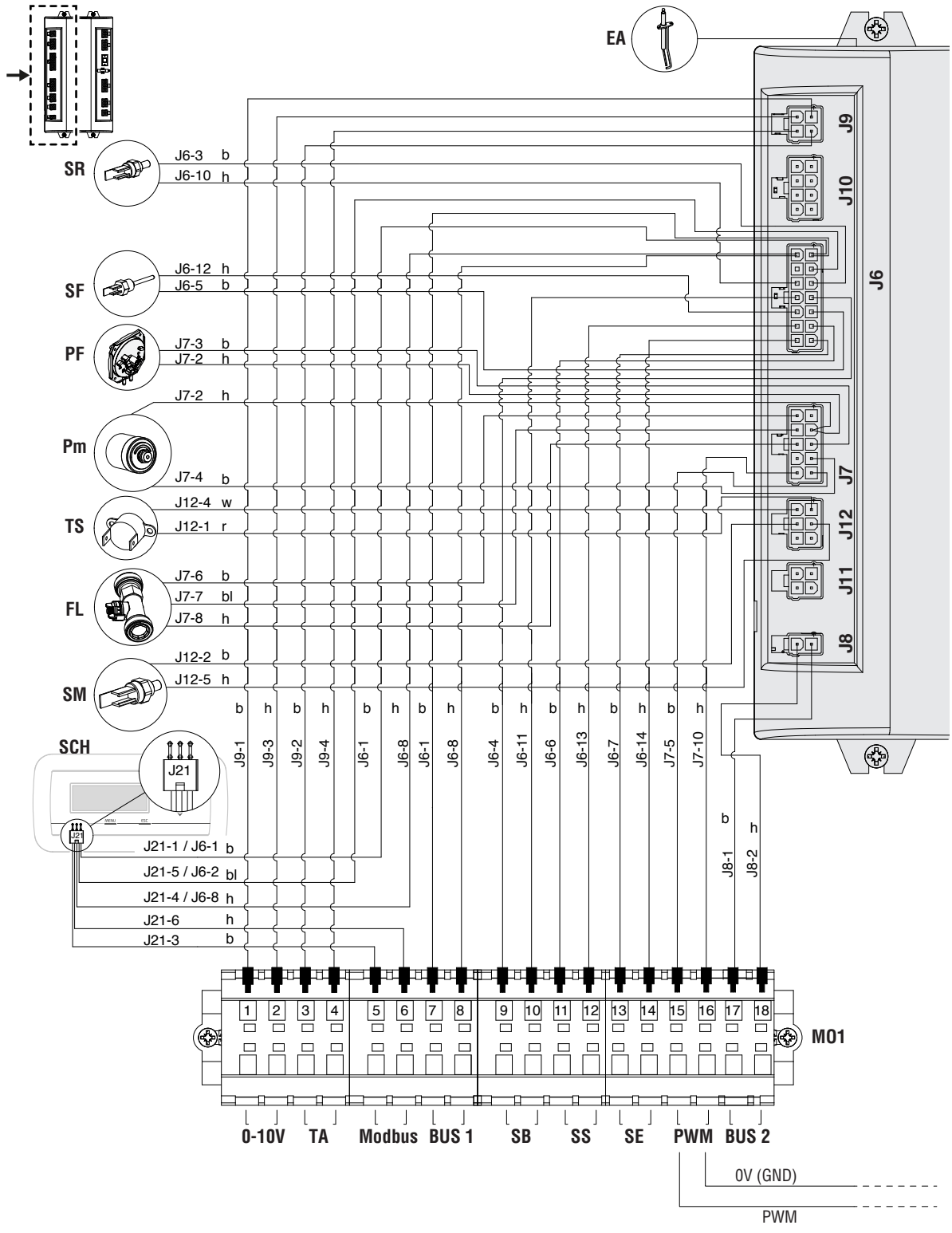
Condexa PRO 35 P - Condexa PRO 50 P



Condexa PRO 57 P ÷ Condexa PRO 135

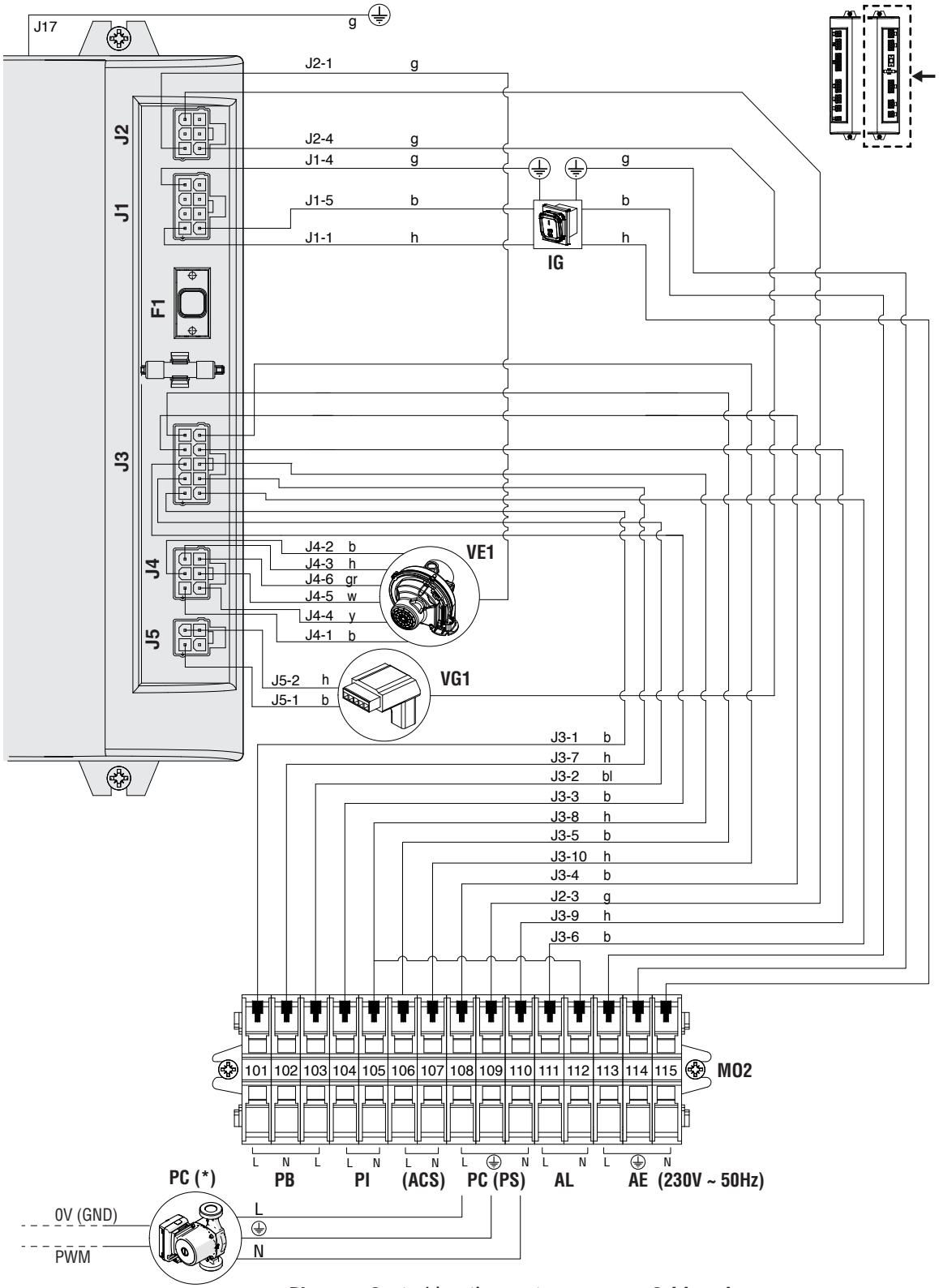


2.13 Wiring diagram



Key		**M01**	Low-voltage terminal board	**Cable colour**	
EA	Ignition/detection electrode	**0-10V**	0-10V input	**b**	brown
SF	Exhaust flue probe	**TA**	Room/heat demand thermostat	**h**	blue
SM	Flow probe	**Modbus**	Modbus outlet	**r**	red
SR	Return probe	**SB**	Boiler sensor (accessory)	**w**	white
TS	Safety thermostat	**SS**	System probe (accessory)	**bl**	black
PF	Flue gases pressure switch (**)	**SE**	Outdoor sensor (accessory)	**g**	yellow/green
Pm	Minimum pressure switch	**PWM**	PWM connection (*)	**y**	yellow
FL	Flow-meter			**gr**	green
SCH	Display and control card				

(*) Factory connections for models Condexa PRO 35 P ÷ Condexa PRO 70 P
(**) Only for models Condexa PRO 35 P ÷ Condexa PRO 50 P



Key		**PI**	Central heating system pump	**Cable colour**		**y**	yellow
IG	Main switch	**(ACS)**	DHW circulator (**)	**b**	brown	**gr**	green
VG1	Gas valve	**PC**	Thermal module circulator (*)	**h**	blue		
VE1	Variable speed fan	**PS**	System circulator (**)	**r**	red		
MO2	High-voltage terminal board	**AL**	Alarm output	**w**	white		
PB	Storage cylinder circulator/ 3-way valve/2-way valve (**)	**AE**	Power supply	**bl**	black		
				g	yellow/green		

(*) For models Condexa PRO 35 P ÷ Condexa PRO 70 P circulator fitted as standard; for other models, the circulator is provided as an accessory with connections to be executed by the installer.

(**) Valid configuration for thermal modules without heat pump c having their own two-way valve, connected in cascade and equipped with primary system circulator. For more information, see cascade installation manual.

2.14 Electrical connections

The thermal module **Condexa PRO** is manufactured fully wired and only needs to be connected to the mains, the room/heat demand thermostat and any other system components.

⚠ The following is mandatory:
- The use of an omnipolar magnetothermic switch, line disconnecting switch in compliance with CEI-EN standards (contact opening of at least 3 mm)
- Respect the connection L (line) - N (neutral). Keep the earth conductor 2 cm longer than the power supply conductors
- Use cables with a section greater than or equal to 1.5 mm^2, complete with cable terminal caps
- Refer to the wiring diagrams in this manual for all electric operations.

⚠ The use of adaptors, multiple sockets and extensions to power the appliance is not allowed

⚠ to connect external electric components, it is necessary to use auxiliary relays and/or contactors to be fitted in a dedicated external electrical panel

⚠ Any work on the electrical system must be carried out only by qualified personnel in compliance with all legal provision and safety regulations in particular

⚠ Secure the cables into the dedicated cable ties in order to always guarantee their correct positioning within the appliance.

⚠ Electrical supply cables and control cables (room/heat demand thermostat, external temperature probes, etc.) must be strictly separate the one from the other and fitting inside independent ribbed PVC sheaths up to the electrical panel.

⚠ The connection to the electrical power supply must be performed using type 1 sheathed cables (3 x 1,5) N1WK or equivalent, while simple N07VK type or equivalent conductors can be used for the thermoregulation and low voltage circuits.

⚠ If the electrical power provided by the electrical company is of "**PHASE-PHASE**" connection type, preventively contact the nearest Technical Assistance Service.

⚠ Never shut the appliance off during normal operation (with the burner on) by shutting off the electrical power supply using the On-Off key or an external switch. This could cause the primary heat exchanger to overheat.

⚠ To switch it off (during the heating stage) use a room/heat demand thermostat. The On-Off key can only be actioned whist the appliance is in stand-by or emergency mode.

⚠ Before connecting any external electrical components to the appliance (regulators, electric valves, climate control probes, etc.), check to make sure that their electrical characteristics are compatible with the available inputs and outputs (voltage, absorption, acceleration current).

⚠ Temperature probes must be NTC like. For resistance value, refer to table pag 13

⚠ Always check the proper operation of the "grounding conductor" for the electrical system to which the appliance will be connected.

⚠ **RIELLO** shall bear no responsibility for any personal injuries or property damage caused by non-compliance with wiring diagrams or the electrical system's incorrect/lacking connection to the grounding system, or by non-compliance with applicable CEI Standards.

⛔ It is strictly forbidden to use pipes of any kind to ground the appliance.

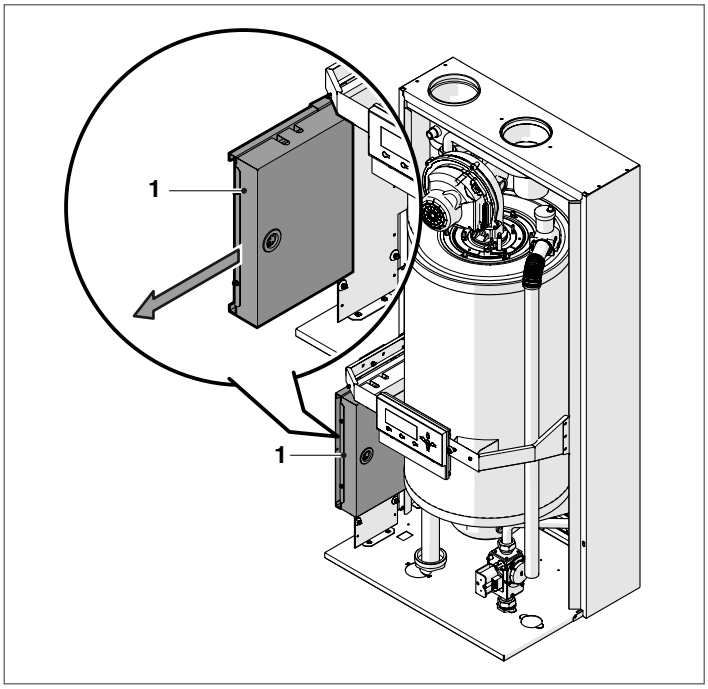
⛔ It is prohibited to lay power supply and room/heat demand thermostat cables near hot surfaces (delivery pipes). If they may come into contact with parts that have a temperature of over 50°C, use a suitable type of cable.

⛔ It is prohibited to touch electric appliances with damp/wet body parts or when your feet are wet.

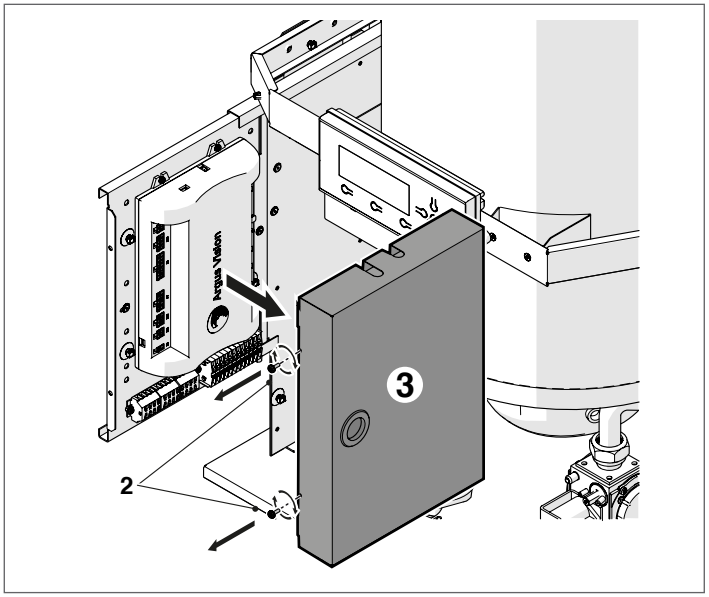
⛔ It is prohibited to leave the appliance exposed to weather elements (rain, sun, wind, etc.) unless it is equipped with the relevant weatherproof kit.

⛔ It is prohibited to pull, detach, or twist any electric cables coming from the thermal module even when the latter is disconnected from the mains power supply.

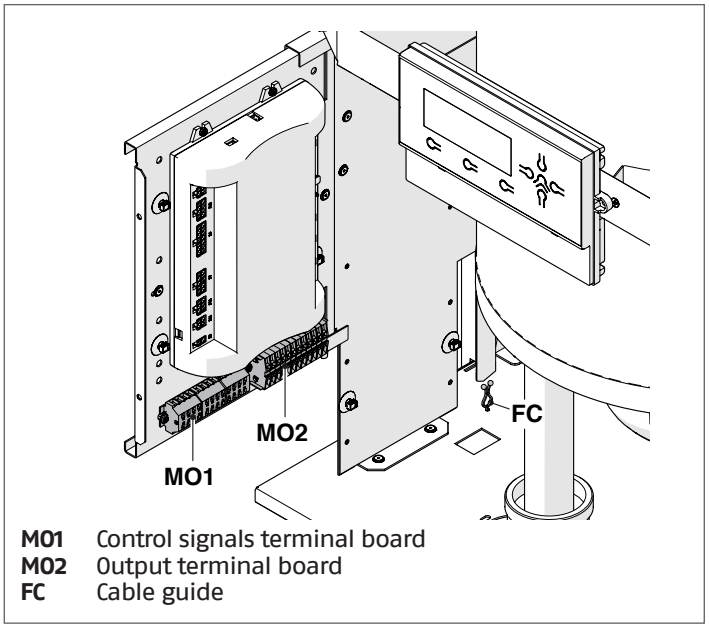
Proceed as follows to access the control panel terminals:
- Remove the locking screws and the panel's front side
- Pull and slide the electrical panel's box towards the outside (1)



Loosen the fixing screws (2) and remove the protection (3)



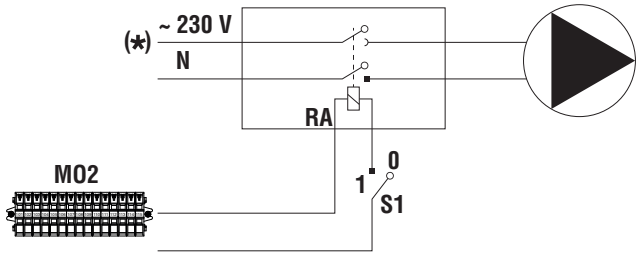
- Identify the low-tension terminal board (M01) and the high-tension terminal board (M02)



M01 Control signals terminal board
M02 Output terminal board
FC Cable guide

⚠ For the connection of the devices connected to the jig (pumps, circulators and diverting / mixing valves) use interposed relays unless the maximum absorption of all components connected to the board (including the module circulator) is less than or equal to 1.5 A. Relays sizing lays on the installer depending on the type of connected device.

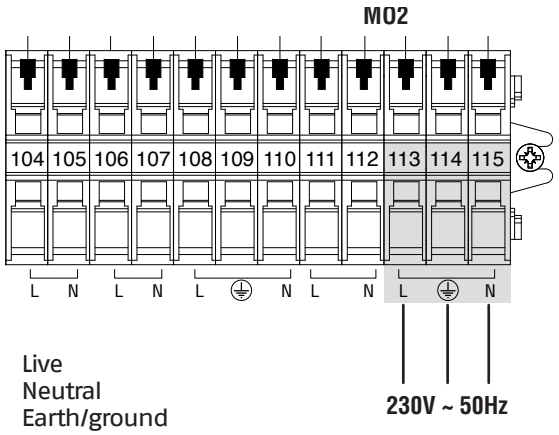
For connection, see the following figure:



S1 Circuit breaker
RA Relay / Switch (230V AC)
(*) Refer to the device type for the supply tension.

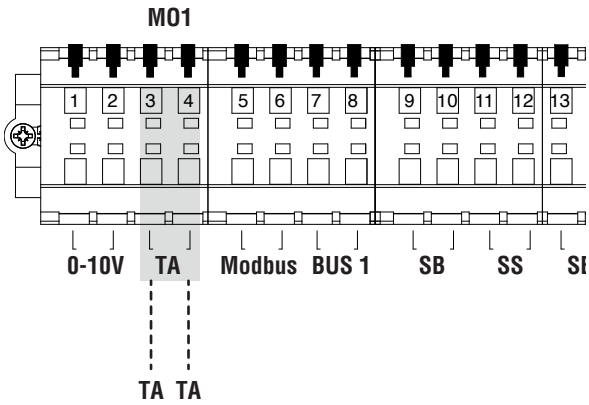
- Execute electrical wiring in compliance with the diagrams shown below

Power supply



L Live
N Neutral
PE Earth/ground

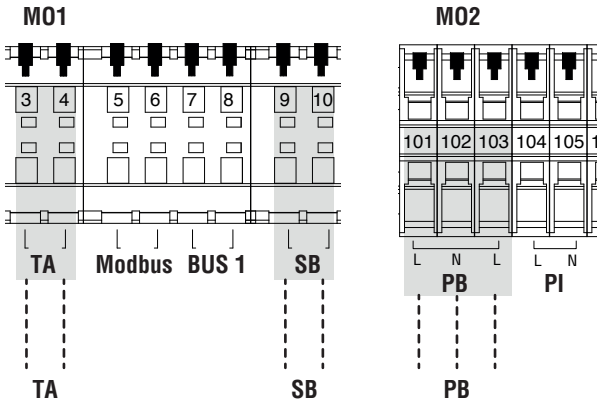
Electrical wiring referred to layout 1 at page "20".



TA Room/heat demand thermostat

NOTE The room thermostat connection must be dry (no voltage).

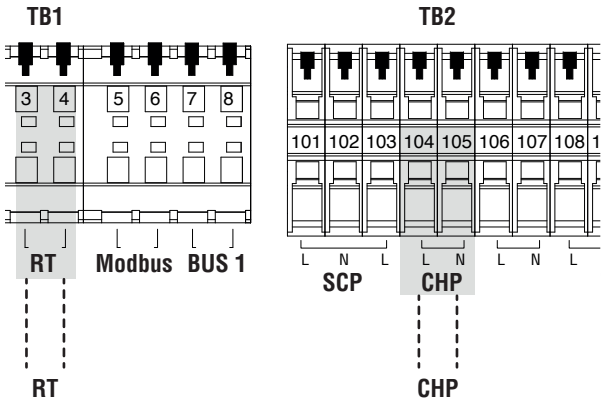
Electrical wiring referred to layout 2 at page "20".



TA Room/heat demand thermostat
SB Connect to the storage cylinder probe (Mod. San. 1) or to the storage cylinder thermostat (Mod. San. 2)
PB Connect to the deviating valve (13). Contacts 101-102 control the deviation on heating, contacts 102-103 control the deviation on domestic hot water

NOTE The room thermostat connection must be dry (no voltage).

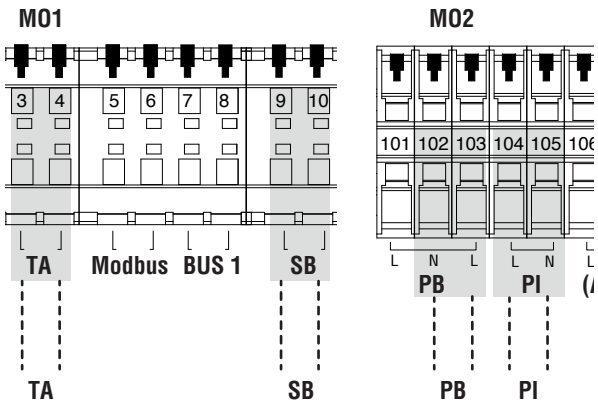
Electrical wiring referred to layout 3 at page "21".



TA Room/heat demand thermostat
PI Connect to the high temperature system pump

NOTE The room thermostat connection must be dry (no voltage).

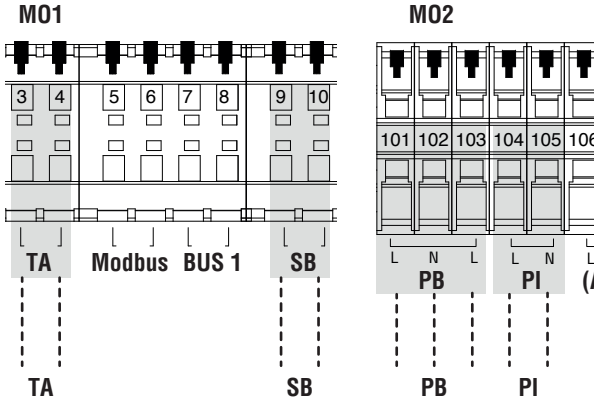
Electrical wiring referred to layout 4 at page "21".



TA Room/heat demand thermostat
SB Connect to the storage cylinder probe (Mod. San. 1) or to the storage cylinder thermostat (Mod. San. 2)
PB Connect to the water pump
PI Connect to the high temperature system pump

NOTE The room thermostat connection must be dry (no voltage).

Electrical wiring referred to layout 5 at page "22".



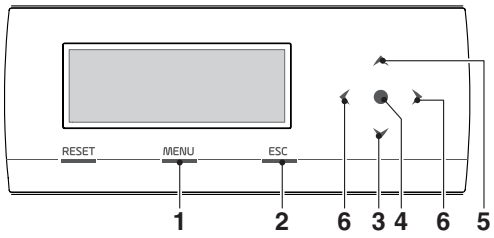
TA Room/heat demand thermostat
SB Connect to the storage cylinder probe (Mod. San. 1) or to the storage cylinder thermostat (Mod. San. 2)
PB Connect to the deviating valve (13). Contacts 101-102 control the deviation on heating, contacts 102-103 control the deviation on domestic hot water
PI Connect to the high temperature system pump

NOTE The room thermostat connection must be dry (no voltage).

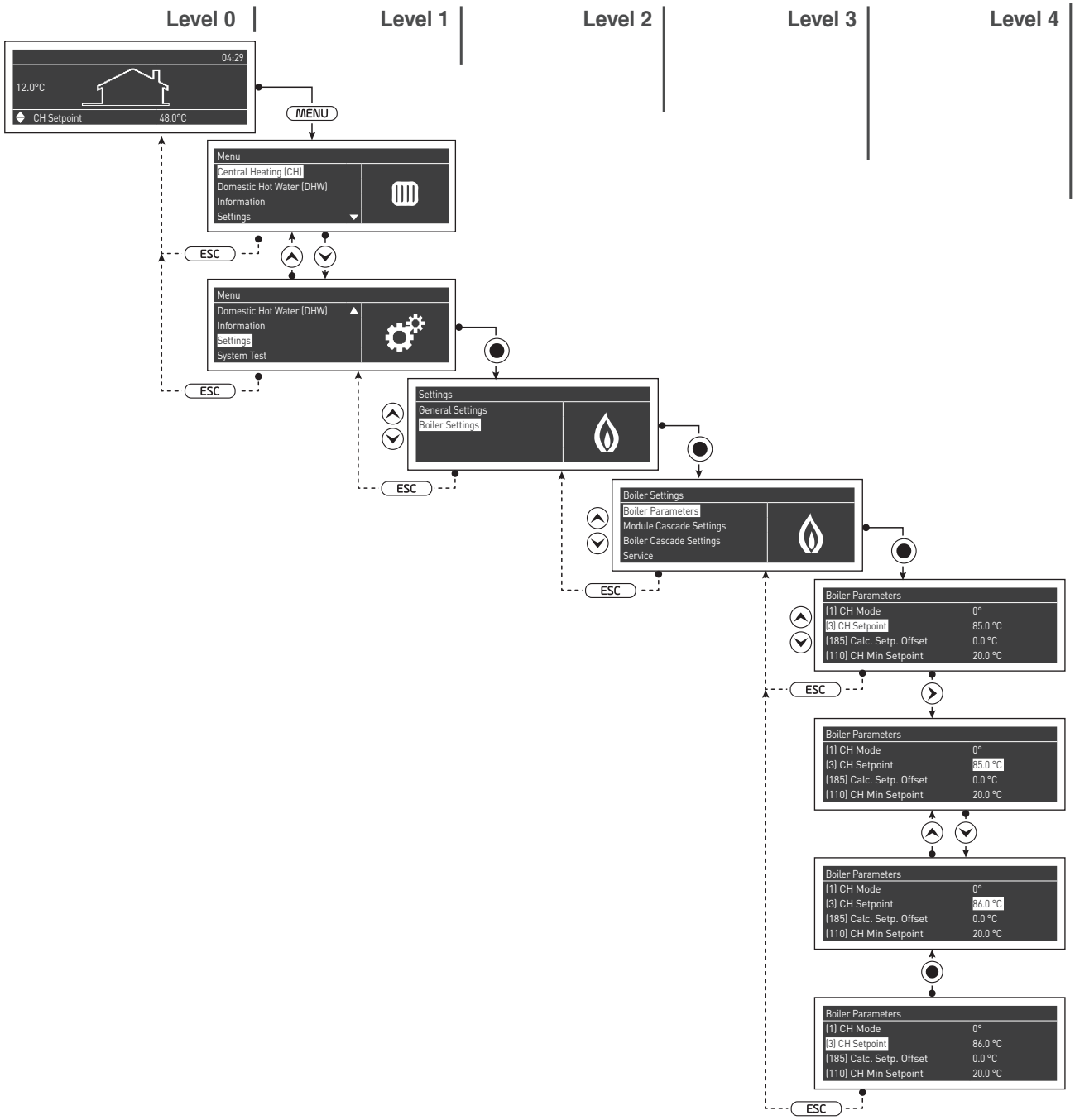
⚠ Some electric connections of the power jig have a double function. With special reference to the principle schemes 2 and 5 where no tank pump is foreseen, the two-way valve of each module must be connected to the abovementioned connections 101-102-103.

2.15 Electronic control

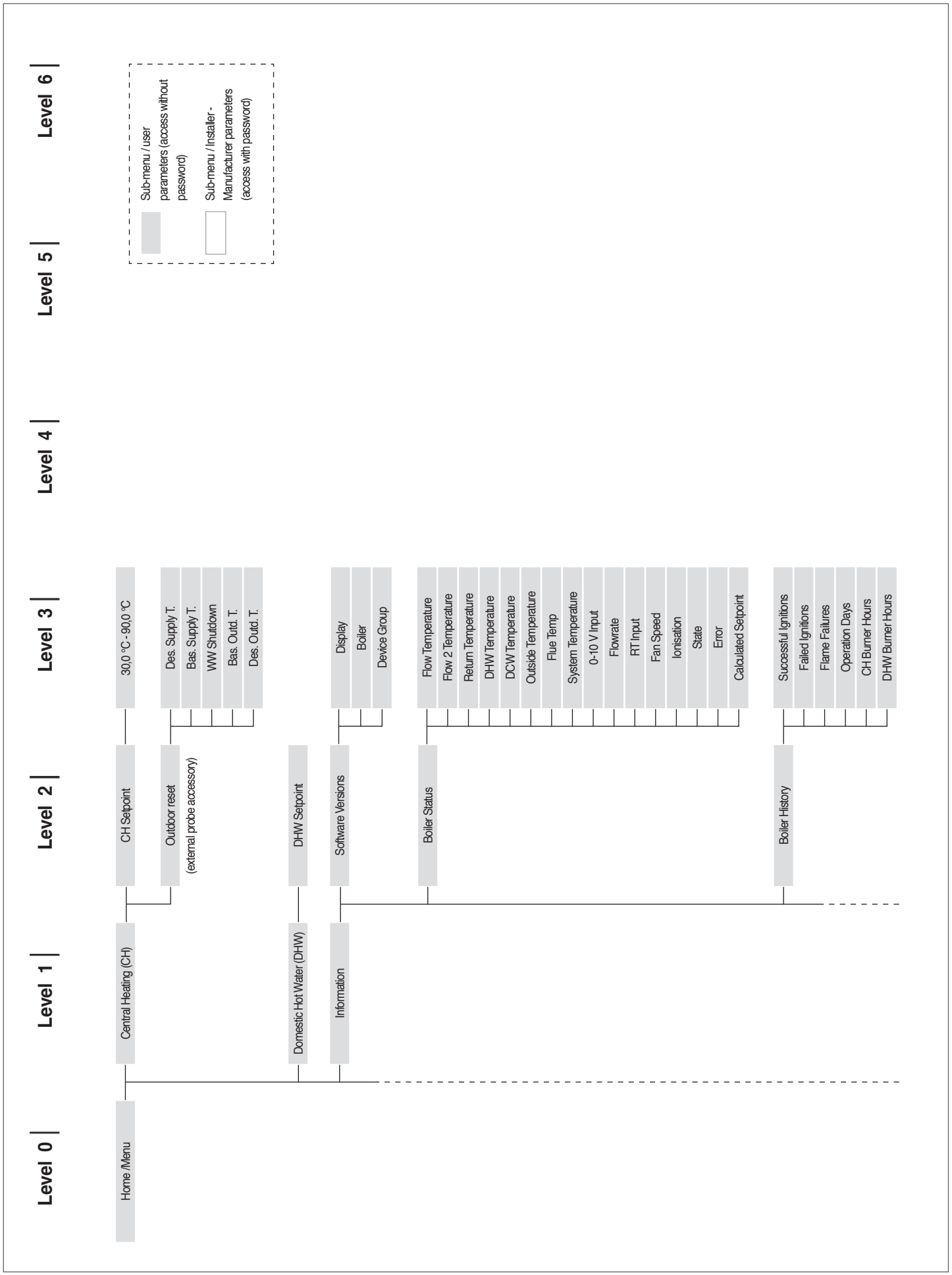
The electronic control operator interface menu is a multi-level one.
Navigation between the various levels is shown in the figures below.
Level 0 displays the Home Screen (Home). Level 1 displays the Main Menu screen. The subsequent levels are activated depending on available sub-menus. For the full layout, see Paragraph "Control panel". For how to access and change the parameters, see the picture on the next page. The parameters for the installer are accessible only after entering the security password (see paragraph " Control panel").
Please note that the thermal module's operating parameters are identified with a number, whist other additional functions are simply descriptive.

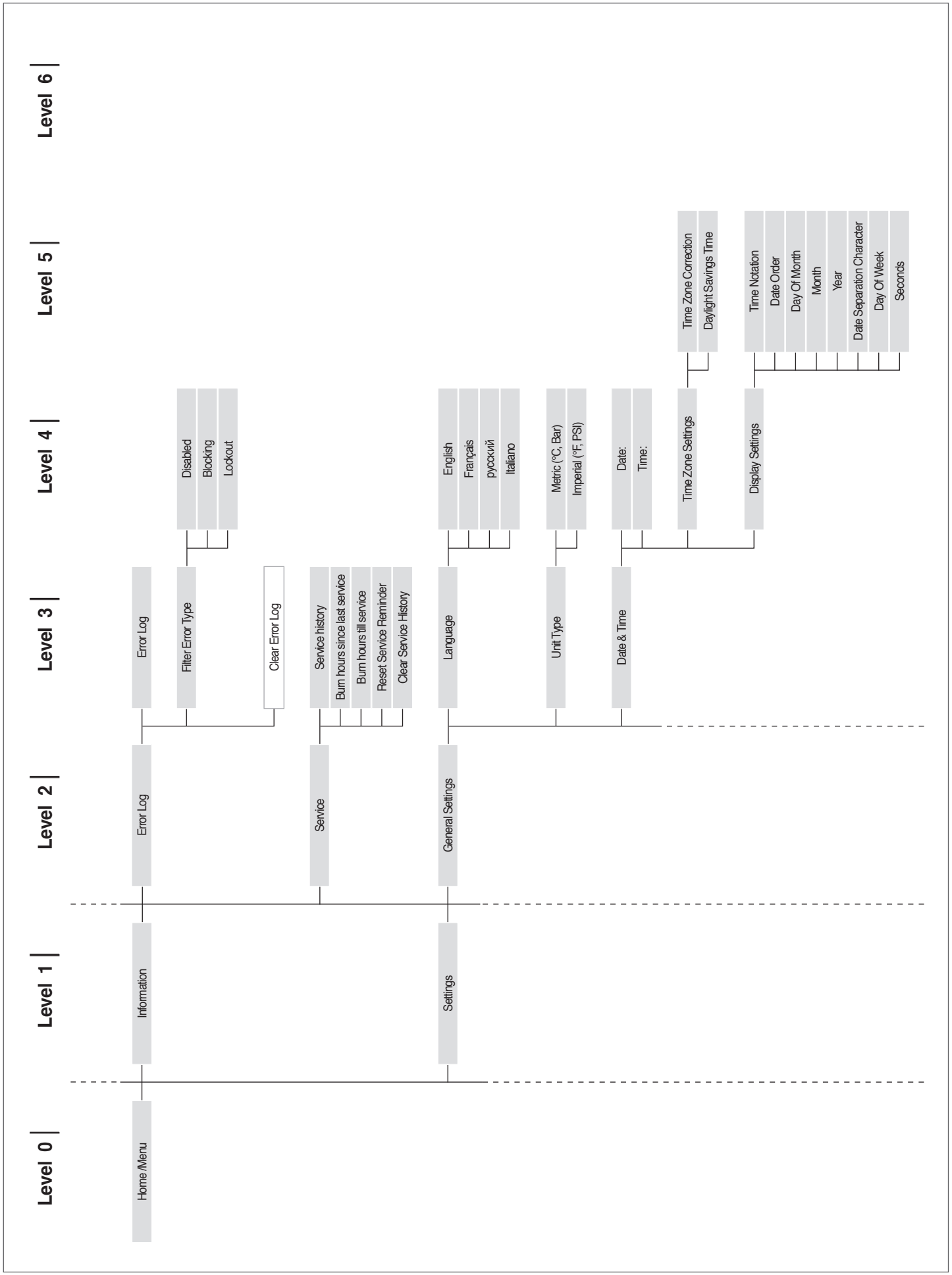


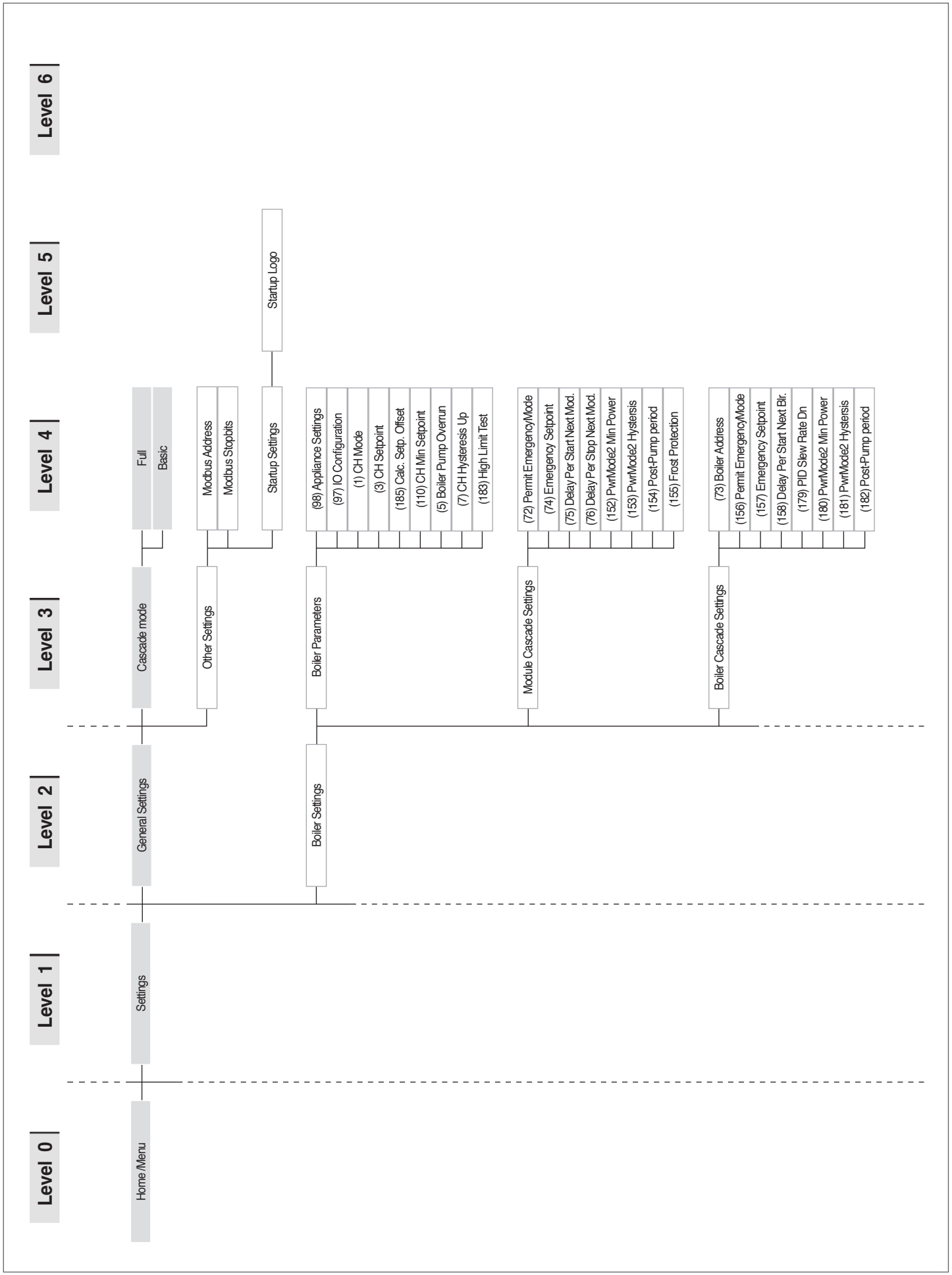
1 switches on the main menu
2 in menu navigation, it enables you to exit a menu item and go back to the previous one
3 supports selecting menus or parameters or decreasing numeric values
4 enter
5 supports selecting menus or parameters or increasing numeric values
6 supports moving to the RH/LH area of the display

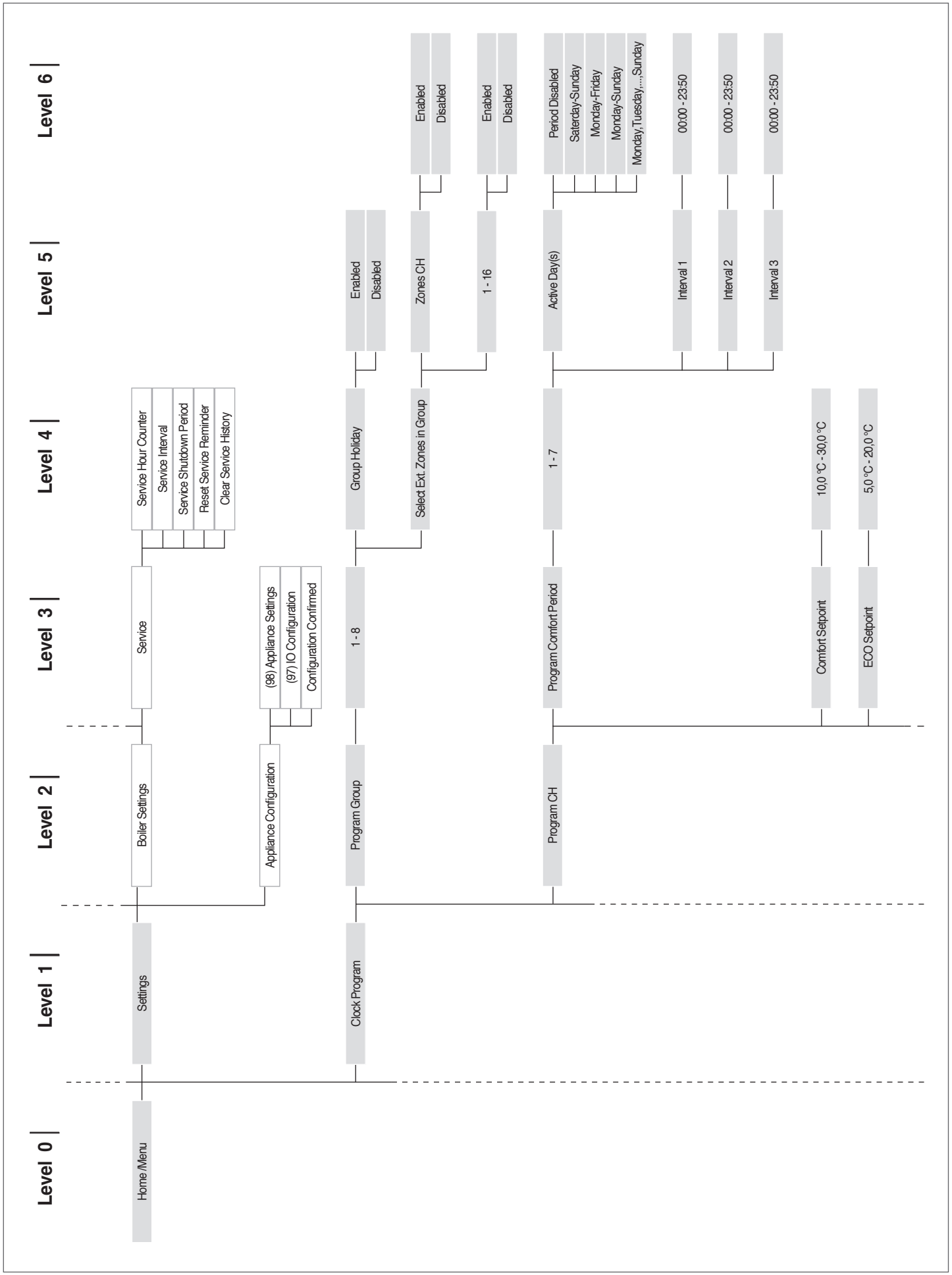


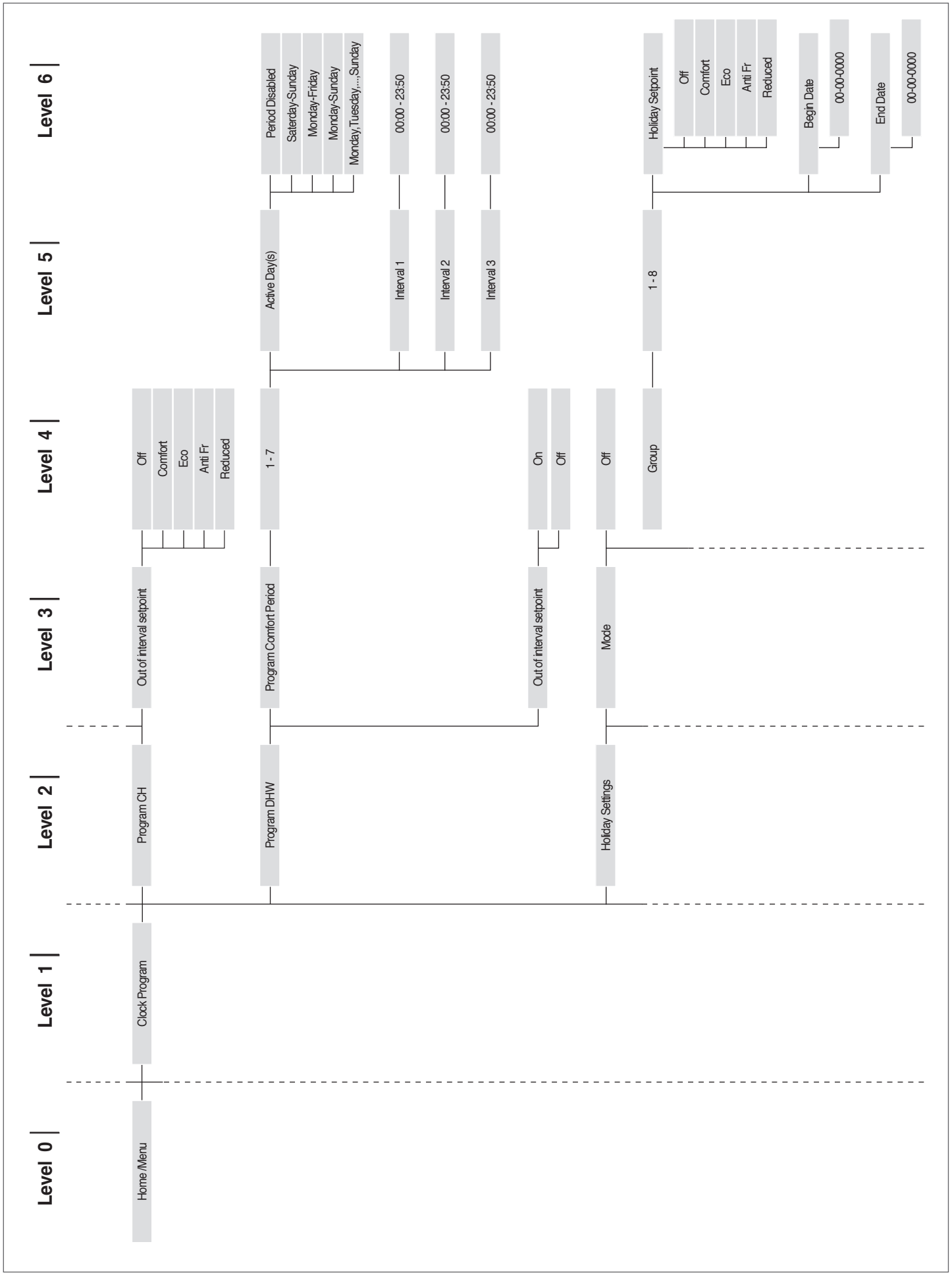
2.15.1 Menu structure

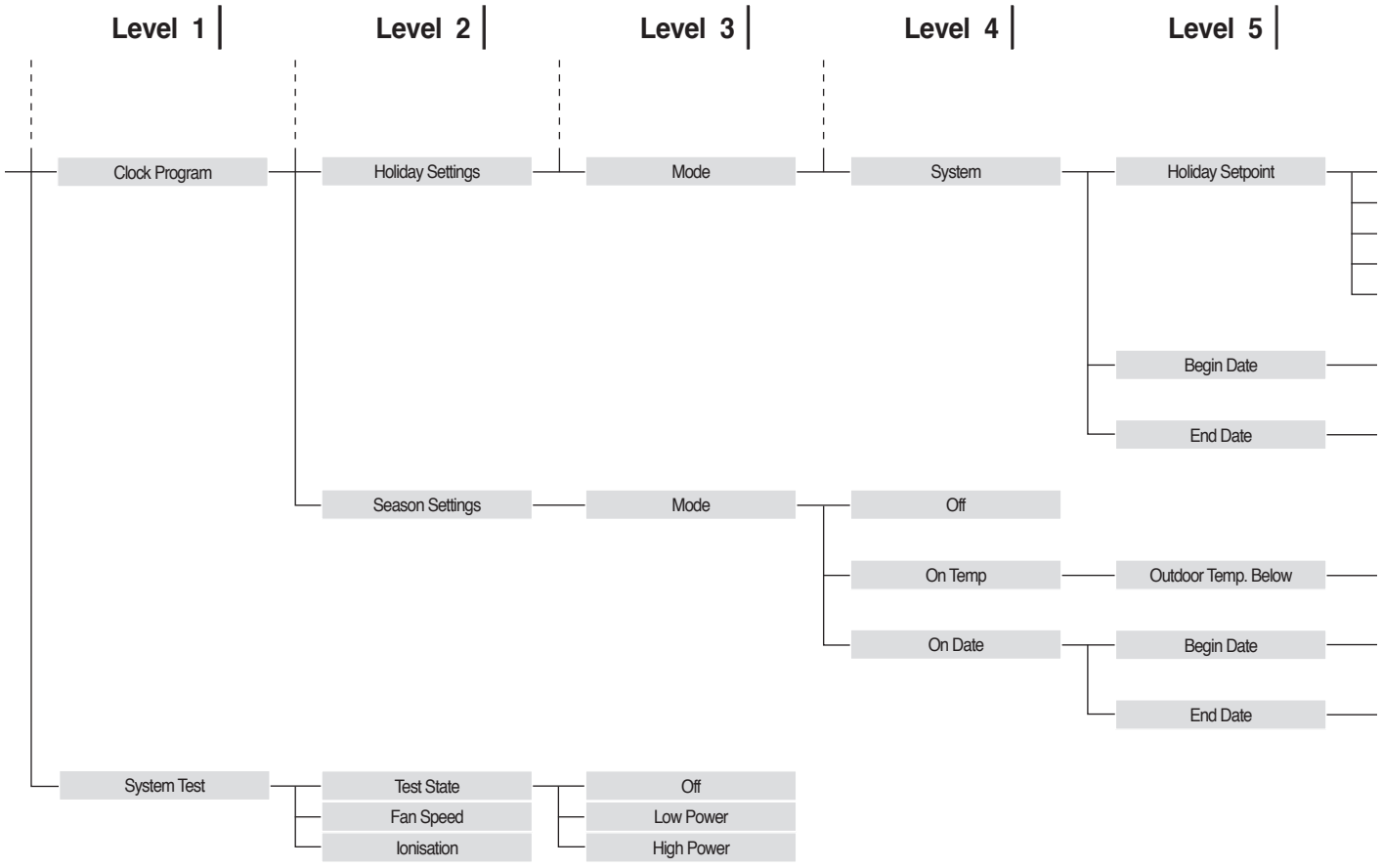



Level 0
Level 1
Level 2
Level 3
Level 4
Level 5
Level 6
Home /Menu
Infomation
Settings
Error Log
Service
General Settings
Error Log
Filter Error Type
Clear Error Log
Service history
Burn hours since last service
Burn hours till service
Reset Service Reminder
Clear Service History
Language
Unit Type
Date & Time
Disabled
Blocking
Lockout
English
Français
русский
Italiano
Metric (°C, Bar)
Imperial (°F, PSI)
Date:
Time:
Time Zone Settings
Display Settings
Time Zone Correction
Daylight Savings Time
Time Notation
Date Order
Day Of Month
Month
Year
Date Separation Character
Day Of Week
Seconds


Level 0
Level 1
Level 2
Level 3
Level 4
Level 5
Level 6
Home /Menu
Settings
General Settings
Cascade mode
Full
Basic
Other Settings
Modbus Address
Modbus Stopbits
Startup Settings
Startup Logo
Boiler Settings
Boiler Parameters
(98) Appliance Settings
(97) IO Configuration
(1) CH Mode
(3) CH Setpoint
(185) Calc. Setp. Offset
(110) CH Min Setpoint
(5) Boiler Pump Overrun
(7) CH Hysteresis Up
(183) High Limit Test
Module Cascade Settings
(72) Permit EmergencyMode
(74) Emergency Setpoint
(75) Delay Per Start Next Mod.
(76) Delay Per Stop Next Mod.
(152) PwrMode2 Min Power
(153) PwrMode2 Hystersis
(154) Post-Pump period
(155) Frost Protection
Boiler Cascade Settings
(73) Boiler Address
(156) Permit EmergencyMode
(157) Emergency Setpoint
(158) Delay Per Start Next Blr.
(179) PID Slew Rate Dn
(180) PwrMode2 Min Power
(181) PwrMode2 Hystersis
(182) Post-Pump period


Level 0
Level 1
Level 2
Level 3
Level 4
Level 5
Level 6
Home /Menu
Settings
Clock Program
Boiler Settings
Service
Service Hour Counter
Service Interval
Service Shutdown Period
Reset Service Reminder
Clear Service History
Appliance Configuration
(98) Appliance Settings
(97) IO Configuration
Configuration Confirmed
Program Group
1 - 8
Group Holiday
Enabled
Disabled
Select Ext. Zones in Group
Zones CH
Enabled
Disabled
1 - 16
Enabled
Disabled
Program CH
1 - 7
Active Day(s)
Period Disabled
Saterday-Sunday
Monday-Friday
Monday-Sunday
Monday,Tuesday,...,Sunday
Program Comfort Period
Interval 1
00:00 - 23:50
Interval 2
00:00 - 23:50
Interval 3
00:00 - 23:50
Comfort Setpoint
10,0 °C - 30,0 °C
ECO Setpoint
5,0 °C - 20,0 °C


Level 0
Level 1
Level 2
Level 3
Level 4
Level 5
Level 6
Home /Menu
Clock Program
Program CH
Program DHW
Holiday Settings
Out of interval setpoint
Program Comfort Period
Out of interval setpoint
Mode
Off
Comfort
Eco
Anti Fr
Reduced
1 - 7
On
Off
Off
Group
Active Day(s)
Interval 1
Interval 2
Interval 3
1 - 8
Period Disabled
Saterday-Sunday
Monday-Friday
Monday-Sunday
Monday,Tuesday,...,Sunday
00:00 - 23:50
00:00 - 23:50
00:00 - 23:50
Holiday Setpoint
Begin Date
End Date
Off
Comfort
Eco
Anti Fr
Reduced
00-00-0000
00-00-0000


Level 1
Level 2
Level 3
Level 4
Level 5
Clock Program
Holiday Settings
Mode
System
Holiday Setpoint
Begin Date
End Date
Season Settings
Mode
Off
On Temp
Outdoor Temp. Below
On Date
Begin Date
End Date
System Test
Test State
Fan Speed
Ionisation
Off
Low Power
High Power

2.15.2 Parameters' list

Parameters are listed base on the reference menu.

Reference Menu
M1 Parameters Menu
M2 Cascaded module configuration menu
M3 Cascaded boiler configuration menu
M4 Appliance configuration menu

Access type
U End user
I Installer
0 Manufacturer

Menu	Par. No.	Nr. displayed Display	Description	Range	Default setting	UM	Access type	Category
M1	1	CH mode	Defines the thermal module's various heating operation modes.	0...5	0		I	Heating
M1	3	CH set-point	Defines the desired delivery temperature in heating mode (Par. 1) = 0.	Par. 23...Par. 24	70	°C	U	Heating
M1	109	Calc. set-point off-set	Establishes the set-point offset value calculated in climatic mode (Par. 1= 1). Offsets the climatic curve in presence of mild outdoor temperatures.	Off, -10...10	0		I	Heating
M1	110	CH Min. Set-point	Sets the minimum delivery temperature value in heating mode (Par. 1) = 4.	20...50	30	°C	I	Heating
M1	111	CH Min. Set-point	Sets the maximum delivery temperature value in heating mode (Par. 1) = 4.	50...90	80	°C	I	Heating
M1	5	Boiler Pump Overrun	Sets the overrun time in seconds of the boiler's circulator during stand-alone operation; cascaded operation determines the module's overrun after switch-off due to temperature control.	0...900	60	Sec.	I	Heating
M1	6	Flue Temp. Limit	Sets the activation temperature when the maximum flue gas temperature is exceeded. When the flue gas temperature is higher than a set value, the module switches off and an error message is generated. When the flue gas temperature is in the interval between (Par. 6) -5°C and Par. 6, the module reduces its power in a linear way until it reaches minimum power when the temperature measured is equal to Par. 6.	10...120	100	°C	0	General
M1	7	CH Hysteresis	Sets the value in degrees beyond the set-point at which the burner switches off for thermoregulation.	0...20	5	°C	I	Heating
M1	112	CH Hysteresis Down	Sets the value in degrees below the set-point at which the burner switches on again for thermoregulation.	0...20	5	°C	I	Heating
M1	9	Anti-cycle Period	Sets the stand-by time before the appliance is switched on again after it switches off due to thermoregulation, independently from the delivery temperature dropping below the value indicated in Par. 10. Parameter valid only in stand-alone mode.	10...900	120	Sec.	I	Heating
M1	10	Anti-cycle Temp. Diff.	Sets the value in degrees below which the burner switches on again notwithstanding from the time spent at Par. 9.	0...20	16	°C	I	Heating
M1	12	Hx diff. Minimum	Sets the value of the temperature difference (Delta T) between the module's delivery and return temperature. For a Delta T value ranging between Par. 12 and (Par. 12) +8°C, the module reduces its power in a linear fashion until it reaches the minimum power. The minimum power is maintained until reaching (Par. 12) +8°C+5°C, after which the module switches off for a period of time equal to the value attributed to Par. 13; at the end of this time interval, the module switches on again.	10...60	40	°C	0	General
M1	13	Hx Diff. Max. Wait Time	Defines the restart time after reaching the Delta T limit between delivery and return.	10...250	30	Sec.	0	General
M1	14	Max. Power CH	Sets the heating's % max. power.	50...100	100	%	I	Heating

Menu	Par. No.	Nr. displayed Display	Description	Range	Default setting	UM	Access type	Category
M1	15	Min. Power CH/DHW	Sets the heating's % min. power.	1...30	1	%	I	Heating
M1	16	CH PID P	Defines the proportional parameter for modulation during heating operation.	0...1275	100		0	Heating
M1	17	CH PID I	Defines the modulation integral term during heating operation.	0...1275	250		0	Heating
M1	18	CH PID D	Defines the modulation derivative term during heating operation.	0...1275	0		0	Heating
M1	19	Design Supply Temp.	Defines the max. set-point at the minimum outdoor temperature for climatic regulation.	30...90	80	°C	U	Heating
M1	20	Design Outdoor Temp.	Defines the minimum outdoor temperature to which the maximum set-point can be associated for climatic regulation.	-25...25	0	°C	U	Heating
M1	21	Baseline Supply Temp.	Defines the minimum set-point at the maximum outdoor temperature for climatic regulation.	30...90	40	°C	I	Heating
M1	22	Baseline Outdoor Temp.	Defines the maximum minimum outdoor temperature to which the minimum set-point can be associated for climatic regulation.	0...30	20	°C	I	Heating
M1	23	Design Supply Min. Limit	Limits the minimum value that can be assigned to the set-point in heating mode (does not apply to heating mode 4).	4...82	30	°C	I	Heating
M1	24	Design Supply Max. Limit	Limits the maximum value that can be assigned to the set-point in heating mode (does not apply to heating mode 4).	27...90	80	°C	I	Heating
M1	25	Warm Weather Shutdn	Defines the temperature at which climatic regulation is switched off.	0...35	22	°C	I	Heating
M1	26	Boost Temp Increment	Establishes the set-point temperature increase delta T, if the heat demand in heating mode is not satisfied after the time interval specified in Par. 27 (applies only to stand-alone mode).	0...30	0	°C	I	Heating
M1	27	Boost Time Delay	Defines the time interval after which the set-point is increased as defined in Par. 26 (applies only to stand-alone mode).	1...120	20	Min.	I	Heating
M1	28	Night Setback Temp.	Used in heating mode Par. 1= 2 or 3. Establishes by how many degrees the delivery set-point is reduced when the RT (room thermostat/heat demand) contact is closed.	0...30	10	°C	I	Heating
M1	35	DHW mode	Establishes the domestic hot water circuit's operation mode.	0 Disabled 1 Tank + sensor 2 Tank + thermostat	0		I	DHW
M1	113	Max. Power DHW	Defines the domestic hot water circuit's % max. power.	50...100	100	%	I	DHW
M1	114	Min. Power DHW	Defines the domestic hot water circuit's % minimum power.	1...30	1	%	I	DHW
M1	36	DHW Tank Hyst. Down	Defines the hysteresis to initiate the domestic hot water demand.	0...20	5	°C	I	DHW
M1	37	DHW Tank Hyst. Up	Defines the hysteresis to stop the domestic hot water demand.	0...20	5	°C	I	DHW
M1	38	DHW Tank Supply Extra	Defines the primary circuit's set-point increase in degrees compared to the temperature set for the domestic hot water tank.	0...30	15	°C	I	DHW

Menu	Par. No.	Nr. displayed Display	Description	Range	Default setting	UM	Access type	Category
M1	39	DHW Tank Supp Hyst Dn	Defines the primary circuit's restart hysteresis in modes 1 and 2 of domestic hot water (valid both for cascade and stand-alone applications).	0...20	5	°C	0	DHW
M1	40	DHW Tank Supp Hyst Up	Defines the primary circuit's shut-off hysteresis in modes 1 and 2 of domestic hot water (valid both for cascade and stand-alone applications).	0...20	5	°C	0	DHW
M1	41	DHW Tank Hold Warm	Defines the value of a storage cylinder's delta T required for temperature maintenance. For instance, if set at 3 degrees, when the storage cylinder is at a set-point value minus 3 degrees, the thermal module is switched on at minimum power to maintain the temperature to the set-point plus hysteresis. If this parameter is kept the same as Par. 36, this function is inactive and the thermal module is switched on to the maximum power envisaged for the DHW circuit.	0...10	5	°C	0	DHW
M1	42	DHW Priority	Defines the priority type: 0 = Time: time priority between the two circuits defined by Par. 43; 1 = Off: priority for CH; 2 = On: priority for DHW; 3 = Parallel: parallel priority managed on the basis of the primary circuit's temperature compared to the heating circuit's set-point.	0...3	2 = On		I	DHW
M1	43	DHW Max. Priority Time	Establishes the time in minutes during which priority is alternatively allocated to the DHW and CH circuits when Par. 43 is set to "time" mode.	1...255	30	Min.	I	DHW
M1	44	DHW Pump Overrun	Establishes the overrun time in seconds for the domestic hot water mode with the boiler in stand-alone operation; cascaded operation defines the module's overrun after switch-off due to thermoregulation.	0...900	60	Sec.	I	DHW
M1	45	DHW Tank PID P	Defines the proportional term for modulation during operation of the DHW storage tank.	0...1255	100		0	DHW
M1	46	DHW Tank PID I	Defines the integral term for modulation during operation of the DHW storage tank.	0...1255	500		0	DHW
M1	47	DHW Tank PID D	Defines the derivative term for modulation during operation of the DHW storage tank.	0...1255	0		0	DHW
M1	48	DHW tank set-point	Establishes the DHW storage tank set-point.	40...71	50	°C	U	DHW
M1	92	Fan Speed Maximum	Defines the number of fan rpm at max. power (it depends on the model and is defined at Par. 98).	0...12750	Defined by Par. 98	RPM	I	General
M1	93	Fan Speed Minimum	Defines the number of fan rpm at minimum power (it depends on the model and is defined at Par. 98).	0...12750	Defined by Par. 98	RPM	I	General
M1	94	Fan Speed Ignition	Defines the number of fan rpm when the boiler is switched on (it depends on the model and is defined at Par. 98).	0...12750	Defined by Par. 98	RPM	I	General
M1	116	Prog. Input 1.	The value of this parameter is defined by Par. 97.	0 Disabled 1 Water pressure sensor 2 CH flow switch 3 Flue pressure switch	Defined by Par. 97		I	General
M1	117	Prog Input 2.	The value of this parameter is defined by Par. 97.	0 Disabled 1 DHW flow sensor 2 DHW flow switch 3 CH flow sensor	Defined by Par. 97		I	General

Menu	Par. No.	Nr. displayed Display	Description	Range	Default setting	UM	Access type	Category
M1	118	Prog Input 3.	The value of this parameter is defined by Par. 97.	0 Disabled 1 Drain switch 2 Gas pressure switch	Defined by Par. 97		I	General
M1	120	Prog Input 5.	The value of this parameter is defined by Par. 97.	0 Disabled 1 T_Return sensor 2 Extern switch	Defined by Par. 97		I	General
M1	121	Prog Input 6.	The value of this parameter is defined by Par. 97.	0 Disabled 1 T_Flue sensor 2 Flue switch 3 APS switch	Defined by Par. 97		I	General
M1	122	Prog Input 7.	The value of this parameter is defined by Par. 97.	0 Disabled 1 T_Flue_2 sensor 2 T_Flue_2 + Bl. Flue 3 T_System sensor 4 Blocked Flue switch 5 Cascade Sensor	Defined by Par. 97		I	General
M1	123	Prog Input 8.	The value of this parameter is defined by Par. 97.	0 Disabled 1 T_DCW sensor 2 Water pressure switch	Defined by Par. 97		I	General
M1	124	Prog. Input RT.	The value of this parameter is defined by Par. 97.	0 Disabled 1 Enabled	Defined by Par. 97		I	General
M1	125	Prog. Output 1.	The value of this parameter is defined by Par. 97.	0 Disabled 1 General Pump 2 CH Pump 3 DHW Pump 4 System Pump 5 Cascade Pump 6 Alarm Relay 7 Filling Valve 8 LPG Tank 9 External Igniter 10 Air Damper 14 Alarm Burner CC 15 Status Burner CC 17 Antile-gionella pump	Defined by Par. 97		I	General
M1	126	Prog. Output 2.	The value of this parameter is defined by Par. 97.	0 Disabled 1 General Pump 2 CH Pump 3 DHW Pump 4 System Pump 5 Cascade Pump 6 Alarm Relay 7 Filling Valve 8 LPG Tank 9 External Igniter 10 Air Damper 14 Alarm Burner CC 15 Status Burner CC 17 Antile-gionella pump	Defined by Par. 97		I	General
M1	127	Prog. Output 3.	The value of this parameter is defined by Par. 97.	0 Disabled 1 General Pump 10 Air Damper 11 External Igniter 12 Modulating Pump	Defined by Par. 97		I	General
M1	128	Prog. Output 4.	The value of this parameter is defined by Par. 97.	0 Disabled 1 General Pump 2 CH Pump 3 DHW Pump 4 System Pump 5 Cascade Pump 6 Alarm Relay 7 Filling Valve 8 LPG Tank	Defined by Par. 97		I	General

Menu	Par. No.	Nr. displayed Display	Description	Range	Default setting	UM	Access type	Category
M1	129	Flow sensor	Defines the type of flow sensor used.	Bitron, Huba: DN8, DN10, DN15, DN15, DN20, DN25	Huba DN25		I	General
M1	133	Mod. Pump dT	Defines the delta T set for the operation of the modulating circulator.	5...40	15	°C	I	General
M1	134	Mod. Pump Start Time	Defines the time in seconds from the moment the burner is switched on to start the modulation of the circulator and obtain the delta T specified in Par. 133.	0...255	120	Sec.	I	General
M1	135	Mod. Pump Type	Defines the PWM circulator model installed.	0 = Wilo 1 = Salmson 2 = Grundfos	2 = Grundfos		I	General
M1	136	Mod. Pump Mode	Defines whether the boiler's circulator operates in modulating mode or at a set speed (as a percentage of maximum speed).	On/Off Modulating Fixed 20... 100%	Modulating		I	General
M1	137	Mod. Pump Min Pwr	Defines the percentage of speed that sets the minimum speed that the circulator can reach during modulation.	0...100	30	%	I	General
M1	138	Appliance type	Value can vary depending on appliance configuration based on Par. 97 and 98. This value is calculated by the board, which, based on an internal logic, defines as a single number the settings of Par. 97 and 98.	0...255	Depends on boiler model		I	General
M1	139	Dair active	Activates bleeding the system's air. To activate air bleeding, it is necessary to switch on the boiler and change the parameter from "No" to "Yes". Wait for one minute. Switch off and restart. At this stage, when it is restarted the boiler will initiate the automatic bleeding procedure (lasting around 20 minutes). With the parameter set to "Yes", the procedure is carried out each time the boiler is switched off and restarted using its master switch. The value must be set to "No" if you do not wish to initiate the bleeding procedure when the thermal module is switched on.	Yes, No	No		I	General
M1	140	Minimum Flow	Defines the flow rate below which the boiler is switched off. The value varies depending on the model.	0.0...100	Depends on boiler model	l/min	I	General
M1	107	Anti-Legionella day	Sets the weekday on which the anti-Legionella procedure is carried out.	Sun...Sat.	Sun	Day	I	DHW
M1	108	Anti-Legionella Hour	Sets the time of the day during which the anti-Legionella procedure is carried out.	0...23	0	Hour	I	DHW
M2	72	Permit Emergency Mode	Activates the emergency mode. This mode comes on when communication between Managing and the primary circuit's probe is lost. In this event, if Par. 72 is set to "Yes", the cascade is initiated, working to the fixed set-point determined by Par. 74.	Yes/No	Yes		U	Cascade
M2	74	Emergency Set-point	Set-point active in emergency mode.	20...65	70	°C	I	Cascade
M2	75	Delay Per Start Next Mod.	Defines the stand-by time in seconds to restart the subsequent cascade module in normal start mode.	5...255	120	Sec.	I	Cascade
M2	76	Delay Per Stop Next Mod.	Defines the stand-by time in seconds to switch off the last cascade module on in normal Off mode.	5...255	30	Sec.	I	Cascade
M2	142	Delay Quick Start Next	Defines the stand-by time in seconds to restart the next cascade module in quick start mode.	5...255	60	Sec.	I	Cascade

Menu	Par. No.	Nr. displayed Display	Description	Range	Default setting	UM	Access type	Category
M2	143	Delay Quick Stop Next	Defines the stand-by time in seconds to switch off the last cascade module on in Quick Stop mode.	5...255	15	Sec.	I	Cascade
M2	77	Hyst. Down Start Module	Defines by how many degrees the temperature measured by the primary circuit's probe must fall below the set-point in order for the subsequent module to be started after the time interval set by Par. 75.	0...40	5	°C	I	Cascade
M2	78	Hyst. Up Stop Module	Defines by how many degrees the temperature measured by the primary circuit's probe must go above the set-point in order for the subsequent module to be switched off after the time interval set by Par. 76.	0...40	4	°C	I	Cascade
M2	144	Hyst. Down Quick Start	Defines by how many degrees the temperature measured by the primary circuit's probe must go below the set-point in order for the subsequent module to be started after the time interval set by Par. 142 (quick-start mode).	0...40	20	°C	I	Cascade
M2	145	Hyst. Up Quick Stop	Defines by how many degrees the temperature measured by the primary circuit's probe must go above the set-point in order for the subsequent module to be switched off after the time interval set by Par. 143 (quick stop mode).	0...40	6	°C	I	Cascade
M2	146	Hyst. Up Stop All	Defines by how many degrees the temperature measured by the primary circuit's probe must go above the set-point in order for all "On" modules to be switched off at the same time.	0...40	8	°C	I	Cascade
M2	147	Number of Units	Defines the number of modules of which the cascade consists.	1...8	8		I	Cascade
M2	148	Power Mode	Defines the cascade operation mode.	0 Disabled 1 Min burners 2 Max burners	2		I	Cascade
M2	79	Max. Setp. Offset Down	Defines the maximum decrease in the primary circuit's cascade set-point. Is based on the primary circuit's probe reading.	0...40	2	°C	I	Cascade
M2	80	Max. Setp. Offset Up	Defines the maximum increase in the primary circuit's cascade set-point. Is based on the primary circuit's probe reading.	0...40	5	°C	I	Cascade
M2	81	Start Mod. Delay Fact.	Defines the time in minutes from the moment the demand is triggered until the activation of the set-point increases or decreases provided for by Par. 79 e 80.	0...60	60	Min.	I	Cascade
M2	82	Next Module Start Rate	It defines the minimum power for at least one of the modules in the cascade in order for the next module to be switched on (if the other conditions linked to Par. 75 and 77 are met).	10...100	80	%	I	Cascade
M2	83	Next Module Stop Rate	It defines the maximum power for all the modules in the cascade in order for the last module on to be switched off (if the other conditions linked to Par. 76 and 78 are met).	10...100	25	%	I	Cascade
M2	84	Module Rotation Interval	It defines the time interval (in days) after which modules are rotated.	0...30	1	Days	I	Cascade
M2	149	First Module to Start	Establishes the number of the next module to be rotated (this value is automatically updated at each rotation).	1..16	1		I	Cascade
M2	86	PID P	Defines the proportional term to change the set-point of the cascade module.	0...1275	50		0	Cascade
M2	87	PID I	Defines the integral term to change the setpoint of the cascade module.	0...1275	500		0	Cascade
M2	150	PID Slew Rate Up	Defines the speed (in °C/100 ms) with which the set-point of individual modules is increased in the event the primary circuit's set-point is not achieved (if the value is set to zero, the change is controlled by the PI of Par. 86 and87 without restrictions).	0...25.5	1		0	Cascade

Menu	Par. No.	Nr. displayed Display	Description	Range	Default setting	UM	Access type	Category
M2	151	PID Slew Rate Dn	Defines the speed (in °C/100 ms) with which the set-point of individual modules is decreased in the event the primary circuit's set-point is exceeded (if the value is set to zero, the change is controlled by the PI of Par. 86 and87 without restrictions).	0...25.5	1		0	Cascade
M2	152	Pwr-Mode2 Min Power	Defines the power value (in percentage terms) against which the average power of all on modules in cascade operation mode must be compared (Par. 148 = 2).	0...100	20	%	I	Cascade
M2	153	Pwr-Mode2 Hysteresis	Defines the extra power value (in percentage terms) compared to the average power of all on modules in cascade operation mode (Par. 148 = 2).	0...100	40	%	I	Cascade
M2	154	Post-Pump Period	Defines overrun time in seconds at the end of the cascade heat demand.	0...255	60	Sec.	I	Cascade
M2	155	Frost Protection	Defines the temperature (detected by the primary sensor) below which the thermal module circulator and the system circulator (with cascade configuration) activate. If the temperature of the primary sensor falls another 5 degrees below the value set by Par. 155, then a request to activate the cascade is generated. When the temperature of the primary sensor reaches the value defined by Par. 155 increased by 5 degrees, then the request ceases and the cascade returns to stand-by mode.	10...30	15	°C	I	Cascade
M3	73	Boiler Address	Defines the way in which the boiler is managed.	Managing, Stand-alone, Dependent	Stand-alone		I	Cascade
M3	169	Max. Setp. Offset Down	Defines the maximum decrease in the primary circuit's cascade set-point. Is based on the secondary circuit's probe reading.	0...40	2	°C	I	Cascade
M3	170	Max. Setp. Offset Up	Defines the maximum increase in the primary circuit's cascade set-point. Is based on the secondary circuit's probe reading.	0...40	5	°C	I	Cascade
M3	171	Start Mod. Delay Fact.	Defines the time in minutes from the moment the request is triggered until the activation of the set-point increases or decreases provided for by Par.169 e 170.	0...60	40	Min.	I	Cascade
M3	176	PID P	Defines the proportional term to change the set-point of the cascade module based on the secondary circuit's temperature.	0...1275	25		0	Cascade
M3	177	PID I	Defines the integral term to change the set-point of the cascade module based on the secondary circuit's temperature.	0...1275	1000		0	Cascade
M3	178	PID Slew Rate Up	Defines the speed (in °C/100 ms) with which the set-point of individual modules is increased in the event the secondary circuit's set-point not reached (if the value is set to zero, the change is controlled by the PI of Par. 176 and 177 without restrictions).	0...25.5	1		0	Cascade
M3	179	PID Slew Rate Dn	Defines the speed (in °C/100 ms) with which the set-point of individual modules is decreased in the event the primary circuit's set-point is exceeded (if the value is set to zero, the change is controlled by the PI of Par. 176 and 177 without restrictions).	0...25.5	1		0	Cascade
M4	98	Appliance Settings	Supports uploading the values of Par. 92, 93 and 94 from a set of pre-defined rpm values that identifies the boiler type.	1...12 19...22			I	General
M4	97	IO Configuration	Supports uploading the values of Par. from 116 to 128 from a set of pre-defined rpm values that defines the configuration of the boiler's inputs and outputs.	1...37			I	General

3 COMMISSIONING AND MAINTENANCE

3.1 Initial startup

- Switch the system's master switch to the ON position and the thermal module's master switch to (I).

3.1.1 Switching the appliance on and off

After switching the appliance on, the display shall look as shown in the figure below:

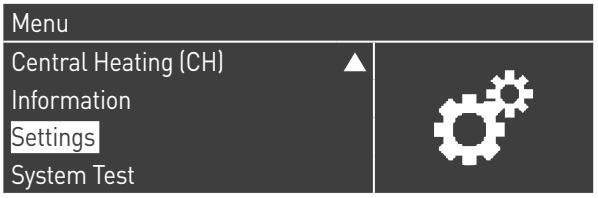
External temperature is shown on the display on the left. This value is displayed only if the outdoor temperature sensor (accessory) is installed.
Main setpoint values are shown in the lower side of the display while the time is shown on the top right side.
To turn the equipment off set the main switch "0/I" that is placed on the back side to "0".

⚠ Never power off the appliance before switching the master switch to the "0" position.

⚠ Never switch off the appliance with the master switch if a request is active. Always make sure that the appliance is in stand-by before switching the main switch.

3.1.2 Date and time setting

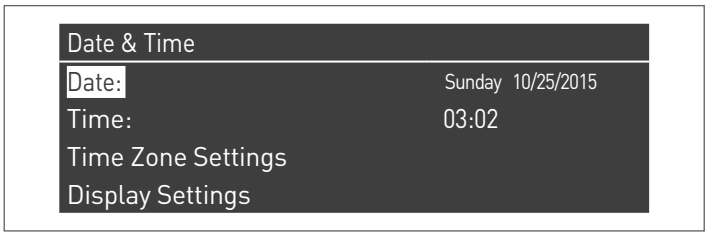
Press the MENU key and select "Settings" with the ▲ / ▼ keys



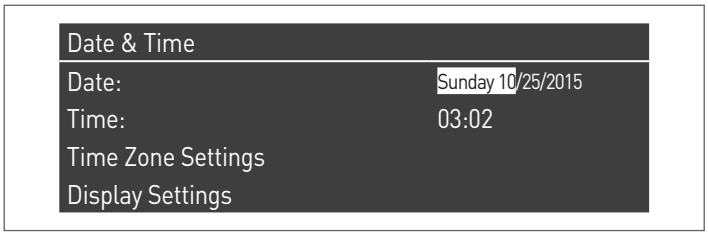
Confirm with the ● key and select "General settings" with the ▲ / ▼ keys

Confirm with the ● key and select "Date and Time " with the ▲ / ▼ keys

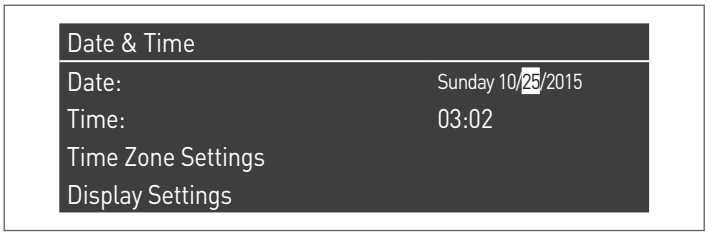
Press the ● key, the display will be shown as follows:



Press the ● key to highlight the values.

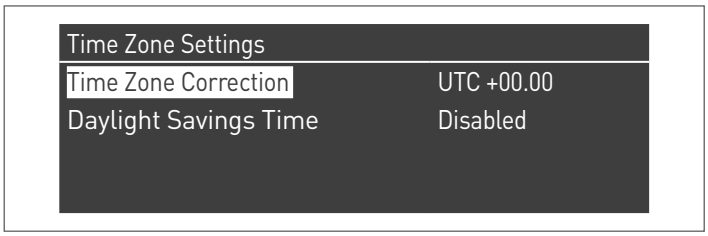


Values can be changed with the ▲ / ▼ keys.
Confirm the value entered pressing the ● key and move to the next value.

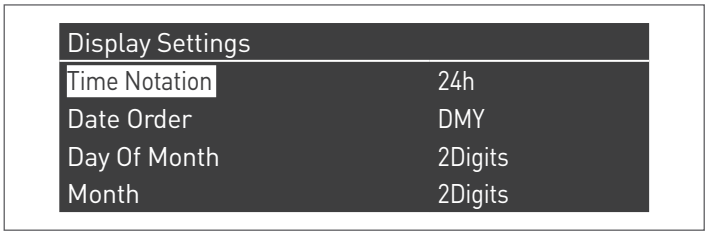


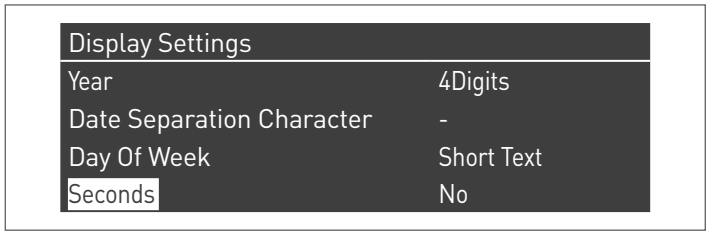
To set the time, follow the same procedure.

By accessing the "Time Zone Set." menu, it is possible to set the time zone parameter as shown in the figure below:



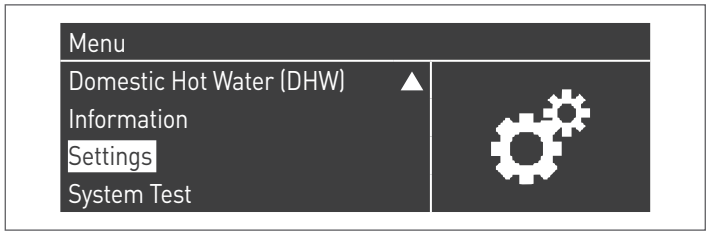
To change the way in which date and time are displayed, it is possible to change the following characteristics by accessing the "Display Parameters" menu:





3.1.3 Password access

To access the parameters, press the MENU key and select "Settings" with the ▲ / ▼ keys.



Confirm with the ● key and select "Boiler settings" with the ▲ / ▼ keys

Press the ● key to confirm.

- The system will now ask you to enter a password (the password is required for thermal module settings only):

Enter one digit at a time using the ▲ / ▼ keys to increase/decrease the numeric value. When you have set the right value, confirm by pressing the ● key.

The system provides for three types of access:
USER (password not required, e.g. password No. 0000)
INSTALLER (password No. 0300)
MANUFACTURER

⚠ After it is entered, the password is active during display and/or parametrisation. If the display is inactive for a few minutes, it needs to be re-entered.

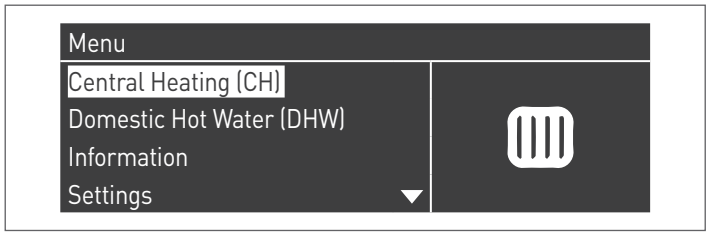
3.1.4 Setting the heating parameters

The parameter 1establishes the thermal module's various heating operation modes.

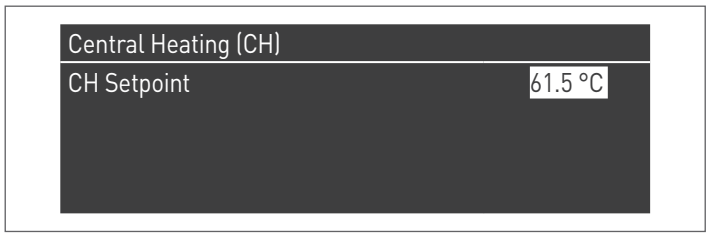
Mode 0
(Operation with room thermostat/heat demand and fixed heating setpoint)

In this mode, the thermal module operates with a fixed setpoint (controlled by the parameter3) based on whether the room/heat demand thermostat's contact is closed or not.
The set-point value can be entered directly, without entering in the parameter list, by accessing the "CH" menu in the following way:

Press MENU and select "Central heating" using the ▲ / ▼ keys. Press the ● key to confirm.



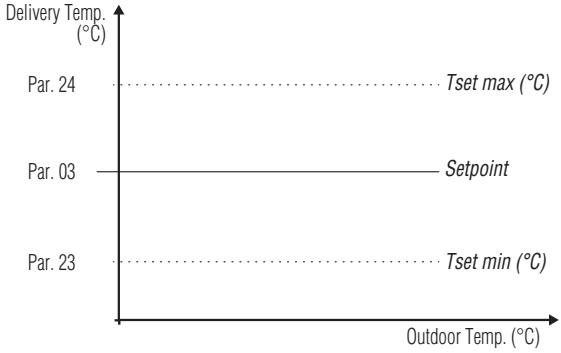
After the selection, use the ► key to highlight the value and use the ▲ / ▼ keys to change the selected value. Press the ● key to confirm/save the new settings..



the set point can be set within a minimum and maximum value as indicated respectively on Par. 23 and 24 as shown in the figure.
The outdoor temperature sensor (accessory) is not required and if connected the outdoor temperature that is measured does not influence the setpoint that has been set.

The parameters regulating such temperature are:

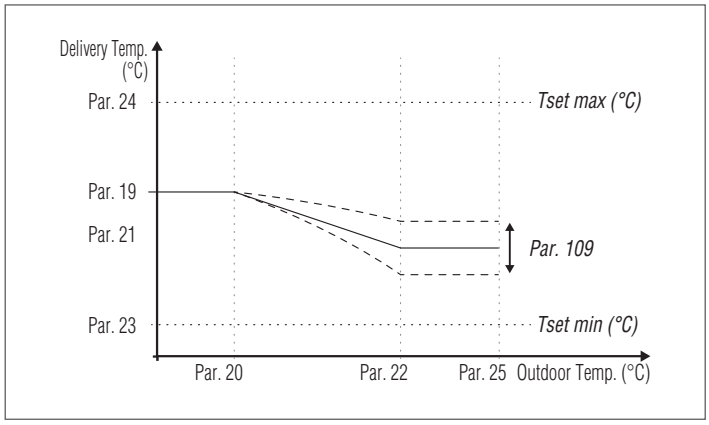
Par. No.	Description
3	Sets the desired flow temperature with heating mode. Active for the heating mode Par. 1 = 0 o 3
23	Limits the minimum value that can be assigned to the set-point in heating mode (does not apply to heating mode 4).
24	Limits the maximum value that can be assigned to the set-point in heating mode (does not apply to heating mode 4).



Mode 1
(Climatic functioning with room/heat demand thermostat, variable set point according to the outdoor temperature)

In this case the thermal module operates with a variable set-point depending on outdoor temperature based on a climatic curve defined by the following parameters:

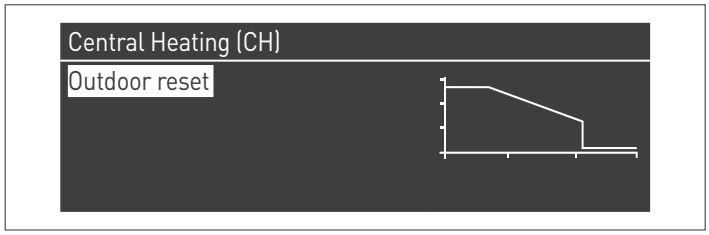
Par. No.	Description
109	Defines the value of the set point calculated on climatic mode (Par. 1 = 1).
19	Establishes the max. set-point at the minimum outdoor temperature for climatic regulation
20	Establishes the minimum outdoor temperature to which the maximum set-point can be associated for climatic regulation
21	Establishes the minimum set-point at the maximum outdoor temperature for climatic regulation
22	Establishes the maximum minimum outdoor temperature to which the minimum set-point can be associated for climatic regulation
23	Limits the minimum value that can be assigned to the set-point in heating mode (does not apply to heating mode 4).
24	Limits the maximum value that can be assigned to the set-point in heating mode (does not apply to heating mode 4).
25	Defines the temperature at which climatic regulation is switched off



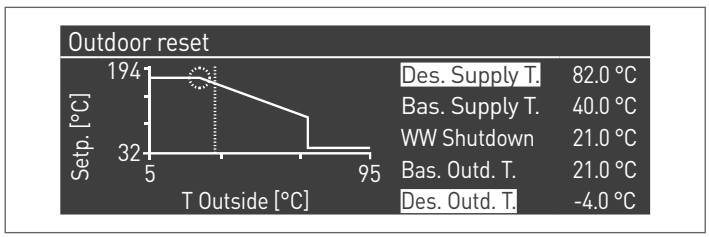
The demand is activated when the room/heat demand thermostat's contact is closed provided that outdoor temperature does not exceed the value set by the parameter 25.

if the outdoor temperature is higher than the one set on parameter 25 , the burner is stopped even if there is a heat demand.
The climatic curve can also be adjusted in a simpler, more user-friendly way.

Enter the "CH" menu. The following display will appear:



Press the ● key to confirm and enter the climatic curve screen.



"Design Supply Temp." and "Design Outdoor Temp." will be displayed. To change their value, press the ● key.

1 Use the ▲ / ▼ keys to modify Design Supply Temp and the ◄ / ► keys to change Design Outdoor Temp.
2 Press ● to save changes
3 Use the ◄ / ► keys to select other values.

Repeat steps 1 from 3 to make other changes.
After setting the parameters, press the ESC key to exit the menu.

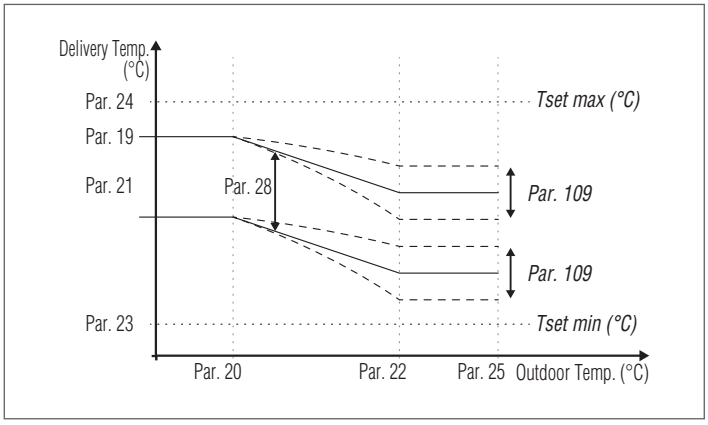
⚠ If the outdoor temperature sensor (accessory) is not detected (not installed or damaged) the system provides a warning: no. 202
The presence of the warning does not stop the thermal module allowing a heat request to be carried out at the maximum setpoint set on the climatic regulation.

Mode 2
(Working on climatic mode with attenuation controlled by a room/heat demand thermostat, variable set point according to the outdoor temperature)

In this case the thermal module operates with a set-point defined by the climatic curve (which can be set in the same way as described in Mode 1) depending on outdoor temperature. Heat demand is actioned independently from whether the room/ heat demand thermostat's contact is closed and stops only when the outdoor temperature is greater than the one defined by the parameter 25.

In this mode the parameter 28 defines by how many degrees the set-point is decreased (attenuation) when the room/ heat demand thermostat's contact is opened.

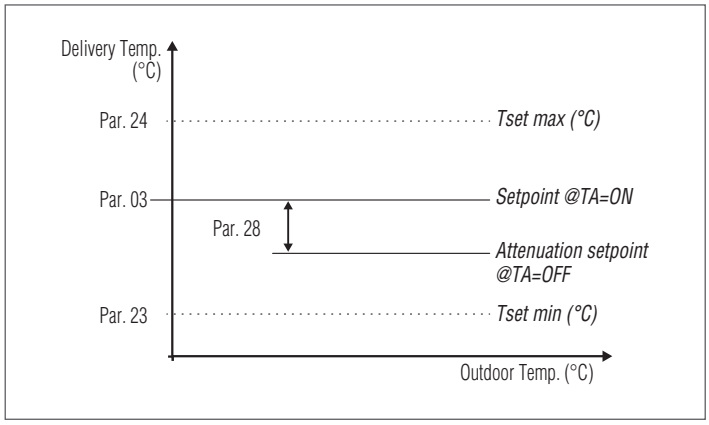
Par. No.	Description
109	Defines the value of the set point calculated on climatic mode (Par. 1 = 1).
19	Establishes the max. set-point at the minimum outdoor temperature for climatic regulation
20	Establishes the minimum outdoor temperature to which the maximum set-point can be associated for climatic regulation
21	Establishes the minimum set-point at the maximum outdoor temperature for climatic regulation
22	Establishes the maximum minimum outdoor temperature to which the minimum set-point can be associated for climatic regulation
23	Limits the minimum value that can be assigned to the set-point in heating mode (does not apply to heating mode 4).
24	Limits the maximum value that can be assigned to the set-point in heating mode (does not apply to heating mode 4).
25	Defines the temperature at which climatic regulation is switched off
28	Use the heating mode Par. 1= 2 or 3. Defines how many degrees the flow set point is lowered.



Mode 3
(Continuous fixed set-point operation with attenuation controlled by room/heat demand thermostat)

In this mode the fixed set-point is adjusted in the same way as described for Mode 0. The difference consists in the fact that the demand is always active and the set-point is decreased (attenuation) by the value defined by the parameter 28 when the room/heat demand thermostat's contact is opened.

Par. No.	Description
3	Sets the desired flow temperature with heating mode. Active for the heating mode Par. 1 = 0 o 3
23	Limits the minimum value that can be assigned to the set-point in heating mode (does not apply to heating mode 4).
24	Limits the maximum value that can be assigned to the set-point in heating mode (does not apply to heating mode 4).
28	Use the heating mode Par. 1= 2 or 3. Defines how many degrees the flow set point is lowered.



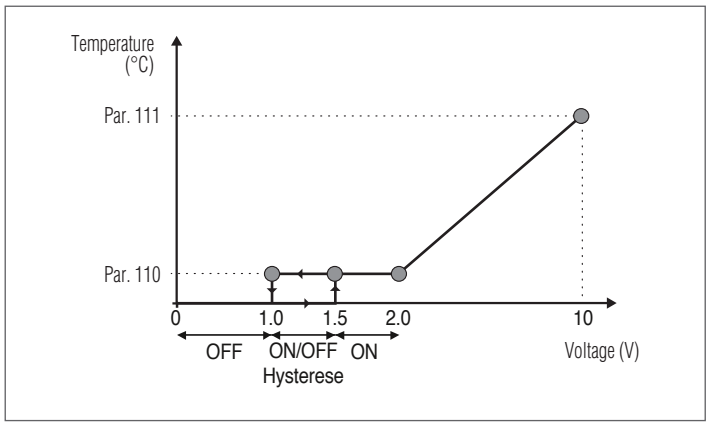
⚠ The outdoor temperature sensor (accessory) is not required and if connected the outdoor temperature that is measured does not influence the setpoint that has been set.

Mode 4
(Set-point adjustment based on a 0-10V analogical input)

The parameters that control this mode are the following:

Par. No.	Description
110	Sets the minimum delivery temperature value in heating mode (Par. 1) = 4.
111	Sets the maximum delivery temperature value in heating mode (Par. 1) = 4.

The operation set-point is adjusted on the basis of the following curve:



3.1.5 Setting the domestic hot water parameters

The parameter 35 defines the various operation modes of the thermal module for DHW production

Mode 0
(No production of domestic hot water)

In this mode the thermal module will work only for the heating circuit (see paragraph "Setting the heating parameters")

Mode 1
(DHW production with storage tank and storage cylinder probe)

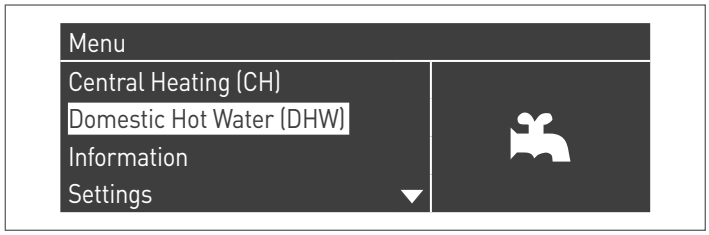
In this mode, the thermal module is activated when the temperature recorded by the storage cylinder probe falls below the DHW setpoint by an amount equal to the hysteresis value and is deactivated when the temperature rises above the DHW setpoint by the value of the hysteresis.

The parameters that control DHW production are the following:

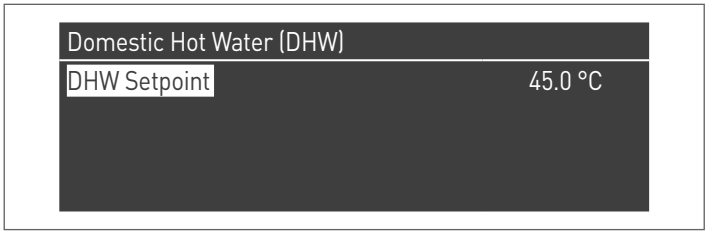
Par. No.	Description
36	Defines the hysteresis to initiate the domestic hot water demand.
37	Defines the hysteresis to stop the domestic hot water demand.
38	Defines the primary circuit's set-point increase in degrees compared to the temperature set for the domestic hot water tank.
39	Defines the primary circuit's restart hysteresis in modes 1 and 2 of DHW (valid both for cascade and stand-alone applications).
40	Defines the primary circuit's shut-off hysteresis in modes 1 and 2 of DHW (valid both for cascade and stand-alone applications).
41	Defines the value referred to the Delta T of the tank for maintenance purposes. E.g.: if it is set on 3, when the tank has a set point lowered of 3 degrees, the module turns on at the minimum to allow maintenance till the set point plus hysteresis. If this parameter is equal to 36, this function is inactivated and the thermal module starts at the maximum sanitary power.
48	Establishes the DHW storage tank set-point.

The setpoint value can be set directly, without entering the list of the parameters:

- Press MENU and select "Domestic Hot Water" using the ▲ / ▼ keys.



- Press the ● key to confirm.



- Use the ► key to highlight the value, and use the ▲ / ▼ keys to change the selected value. Press the ● key to confirm/save the new settings..

the DHW value can be changed only when the "domestic hot water" function is enabled. See paragraph "Password access" for instructions about outdoor recovery.

Mode 2
(DHW production with storage tank controlled by a thermostat)

In this case the thermal module is activated when the contact in boiler's thermostat is closed and is deactivated when the latter is opened.

The parameters that control DHW production are the following:

Par. No.	Description
38*	Defines the primary circuit's set-point increase in degrees compared to the temperature set for the domestic hot water tank.
39	Defines the primary circuit's restart hysteresis in modes 1 and 2 of DHW (valid both for cascade and stand-alone applications).
40	Defines the primary circuit's shut-off hysteresis in modes 1 and 2 of DHW (valid both for cascade and stand-alone applications).
48	Establishes the DHW storage tank set-point.

(*) Parameter 38 is active on such mode even if the tank probe is not installed and it influences the flow temperature of the module.
It can be used to limit the difference between the flow and set temperature on the tank thermostat so that the system efficiency is maximized.

Also in this case,the setpoint value can be set directly, without entering the parameters list, by accessing the ''Domestic Hot Water'' menu, as already earlier for mode 1.

Priority setting

The parameter 42 sets the priorities between the DHW and CH circuit.
Four modes are envisaged:

0 **Time**: timed priority between the two circuits. In the event of a simultaneous demand, initially the domestic hot water circuit is made to operate for a number of minutes equal to the value assigned to the parameter 43. At the end of this time period, the CH circuit is operated (also for the same amount of time) and so on until demand for one or the other circuit stops
1 **Off**: priority given to the heating circuit
2 **On**: priority allocated to the DHW circuit
3 **Parallel**: simultaneous operation of both circuits provided that the delivery temperature requested by the DHW circuit is lower than or equal to the setpoint requested by the heating circuit. When the temperature requested by the DHW circuit exceeds the heating setpoint, the circulation pump of the heating is turned off and priority is switched to the DHW.

Anti-Legionella function

When the production of domestic hot water is activated (Par. 35= 1), using the parameters 107 and 108 it is possible to carry out a weekly scheduling of the "Anti-legionella" function.
Parameter 107 sets the day of the week on which the activity is performed, whilst parameter 108 sets the time.
At the planned time, the thermal module generates a heat demand for DHW storage tank with a pre-set set-point of 60°C (not adjustable). After reaching 60°C, the temperature is maintained for 30 minutes, during which the system checks that the probe's temperature does not fall below 57°C. At the end of this time interval, the Anti-Legionella function stops and standard operation of the thermal module is resumed.

Operation in "Anti-Legionella" mode has priority over other demands independently from the setting of the parameter42.

Par. No.	Description
107	Sets the weekday on which the anti-Legionella procedure is carried out.
108	Sets the time of the day during which the anti-Legionella procedure is carried out.

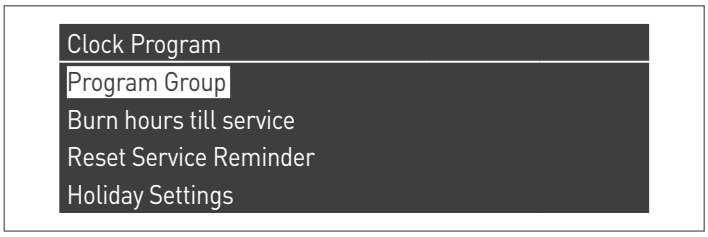
3.1.6 Scheduled programme

The Scheduled Programme is designed to program the operation of the various circuits managed by the thermal module, (CH, DHW and additional mixed zones).

Seasonal Programme
The Seasonal Programme is use to exclude additional mixed zones during the summer season.
It does not control any DHW parameter.

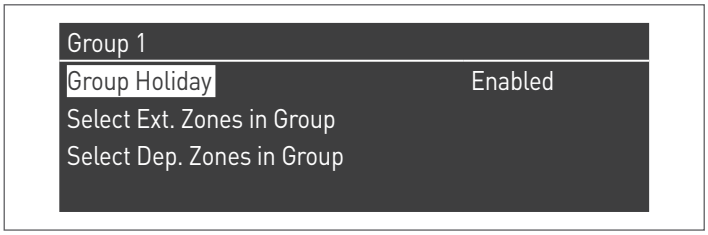
Holiday Programme
The Holiday Programme is used to exclude part of or all the circuits at a certain time of the year.
A holiday can be set both on the full system and on various groups of circuits.
The group system enables the user to add various circuits to the group to set a holiday period for several circuits at the same time. (For instance, to manage a semi-detached house with a centralised heating system when one of the two families is on holiday and the other is not).
The set-point type can be adjusted so as to correspond to the desired setting.

The system can control up to a total of 16 "Mixed" zones. The programming of mixed areas is only allowed with an accessory.
At the same time as these 16 areas, it is also possible to enable the CH zone (direct zone for central heating only).

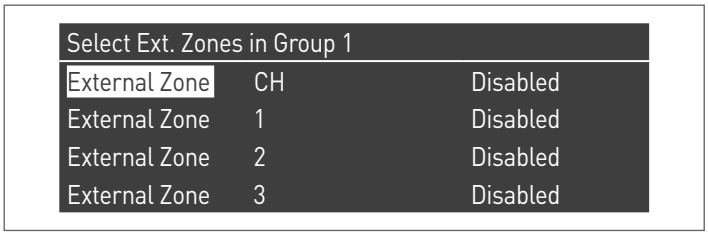


The time programme includes the following parameters:

Group Programming



It enables the user to select a group to add zones to the selected group. It also enables the user to enable/disable the group in question.
Group settings are used to add zones to the groups.
The "Group programming" menu enables the use to chose among 8 groups. Each of them can be enabled or disabled.
Within it, it is possible to select zones to be added to the group (direct zone (CH) - mixed zones from 1 to 16)



N.B. The programming of mixed areas is only allowed with an accessory.

Heating programming

Group 1	
Program Comfort Period	1
Comfort Setpoint	28.0 °C
ECO Setpoint	20.0 °C
Out of interval setpoint	Reduced

It supports adjusting the time programme for the CH zones with the following parameters:

Period setting
Enables the user to select a period from 1 to 7. Period settings enable the user to adjust the active periods for this zone.

- **Active days**: Selection of the day (s) on which the period is active. Enables the user to disable the period set for one or more days. When this parameter is set as inactive, the other items on this menu are no longer used and hidden from the view. The choice of active days is between the following macro-groups: Sat-Sun, Mon-Fri, Mon-Sun, or individual days: Mon, Tue, Wed,...
- **Interval 1 (hidden if Active Days is disabled)**: This parameter allows the user to regulate the starting and end time of the period. The starting time must always be before the finishing time.
- **Interval 2 (hidden if Active Days is disabled)**: Same as interval 1. Interval added for the activated period.
- **Interval 3 (hidden if Active Days is disabled)**: Same as interval 1. Interval added for the activated period.

External Zone CH - Period 1		
Active Day(s)	Sunday	
Interval 1	00:00	00:00
Interval 2	00:00	00:00
Interval 3	00:00	00:00

Comfort Set-point
Comfort temperature to be used when the zone is in a certain period. (10 -30 °C)

ECO set-point
ECO temperature. Adjustable temperature that can be used outside set periods (5 – 20 °C).

Set-points outside the interval
Selection of the type of set-point to be used when a zone is not on a set period by selecting between:

- Off
- Comfort
- Eco
- Anti-Freeze (is activated below 5°C NON-ADJUSTABLE)
- Reduced (Calculated as -10°C Comfort Set-point value)

DHW setting

Group 1	
Program Comfort Period	1
Out of interval setpoint	On

It supports adjusting the time programme for the DHW zone.

Period setting
Enables the user to select a period from 1 to 7. Period settings enable the user to adjust the active periods for this zone.

- **Active days**: Selection of the day (s) on which the period is active. Enables the user to disable the period set for one or more days. When this parameter is set as inactive, the other items on this menu are no longer used and hidden from the view. The choice of active days is between the following macro-groups: Sat-Sun, Mon-Fri, Mon-Sun, or individual days: Mon, Tue, Wed,...
- **Interval 1 (hidden if Active Days is disabled)**: This parameter allows the user to regulate the starting and end time of the period. The starting time must always be before the finishing time.
- **Interval 2 (hidden if Active Days is disabled)**: Same as interval 1. Interval added for the activated period.
- **Interval 3 (hidden if Active Days is disabled)**: Same as interval 1. Interval added for the activated period.

External Zone DHW - Period 1		
Active Day(s)	Sunday	
Interval 1	00:00	00:00
Interval 2	00:00	00:00
Interval 3	00:00	00:00

Set-points outside the interval
Selection of the type of set-point to be used when a zone is not on a set period by selecting between:

- Off
- On

Holiday setting

Enables the user to change parameters for the Holiday Programme.

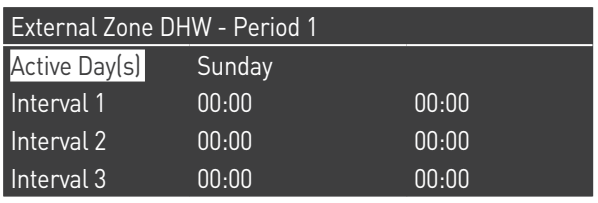
Mode
Select the Holiday programme mode. It can be set to Off, System or group.

Off
Disabled programme

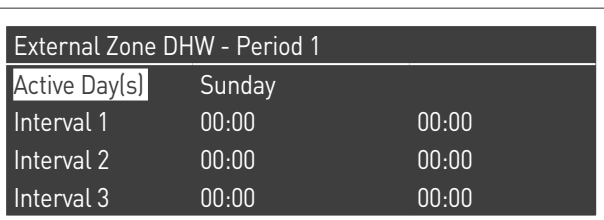
Group
it enables the selection of the group (1 – 8).

As part of group selection, the Holiday Group is displayed with the following parameters:

- **Holiday set-point**: Set-point type to be used for the selected group. All zones in this group shall use this set-point if the current date is between the start and end date of the holiday period, but only if the group is enabled in the group settings menu, and can be selected from: Off, Comfort, Eco, Anti-freeze and Reduced.
- **Start date / End date (Day DD-MM-YEAR)**:



- **System**: It enables the user to select the holiday programme for the entire system. In this mode, the set-point is common to all system groups.



- **Holiday set-point (hidden if the Mode is set to "Off")**: Type of reference to be used when system mode is selected. This set-point is used for all areas. Only used for the holiday system.

Seasonal setting
Enables the user to change parameters for the Seasonal Programme.
The seasonal programme is used to define a period of inactivity for the heating system. This menu includes the following elements:
Activates heating basis
Selects how the seasonal programme must verify whether heating can be allowed or not. It can be set on:

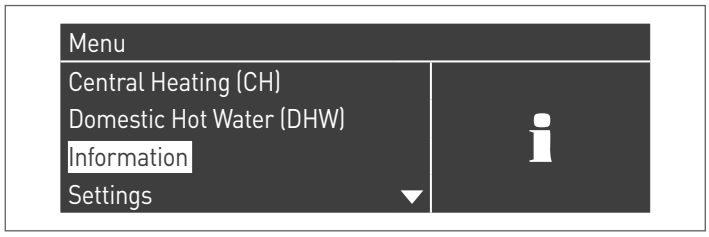
- **Always**: it means that the seasonal programme is ignored and (CH) heat demand is always allowed throughout the year.

- **At date**: excludes heating (CH+zone) when the current date is included between the start and the end dates.

- **At Temp**: excludes heating (CH+zone) when the outdoor temperature is higher than the selected temperature. (Ext. deactivation T: 0.0 °C/50 °C)

3.1.7 Thermal module information

In order to display key information on the screen, press the menu key and select "Information" with the ▲ / ▼ keys.

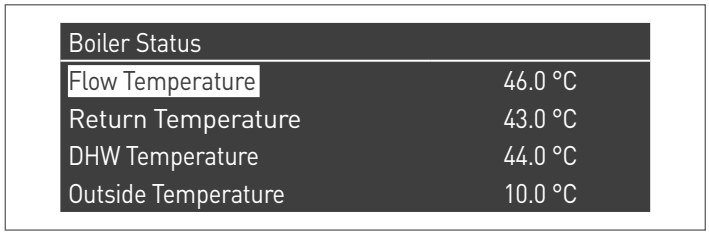


Press the ● key to confirm.

The following screen will be displayed:

By selecting "Boiler status" and pressing the ● key, the following values are displayed:
- Delivery temperature
- Return temperature
- DHW temperature (the sensor must be connected in order to display a value; if it is not present, the default value is displayed)
- Outdoor temperature
- Flue gas temperature
- System temperature (the sensor must be connected in order to display a value; if it is not present, the default value is displayed)
- Fan speed
- Ionization
- State
- Error

⚠ The display shows four lines at a time. You can scroll the list by using the ▲ / ▼ keys.



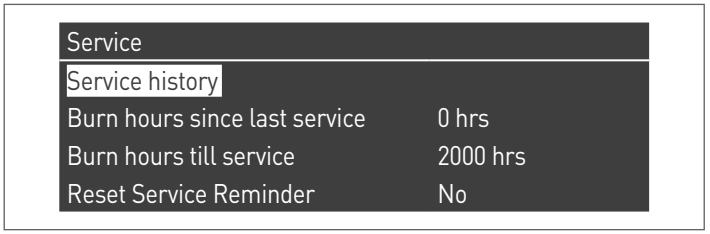
By selecting "Boiler log" and pressing the ● key, the following values are displayed:
- Firing OK
- No firing
- No flame det.
- Oper. days
- Heat. burner hours
- DHW burner hours

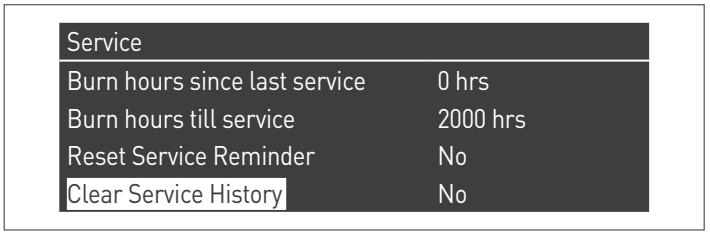
You can scroll the list by using the ▲ / ▼ keys.

By selecting "Error log" and pressing the ● key, the following values are displayed:
- Error log (the errors listed in paragraph "Manual error list" are displayed)
- Error filter (in the "Error filter" item, it is possible to select: Disabled – Vol. Err. – Block)
- Erase Error Log (allowed only with Installer password)

You can scroll the list by using the ▲ / ▼ keys.

By selecting "Maintenance" and pressing the ● key, the following values are displayed:
- Maintenance log (each time a "Maintenance reminder reset" is performed, the event is logged)
- Oper. hours since last Maint.
- Oper. hours until next Maint
- Maintenance reminder reset (accessible only with installer password)
- Delete Maint. history (accessible only with OEM password)



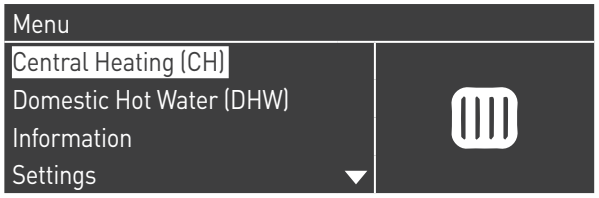


You can scroll the list by using the ▲ / ▼ keys.

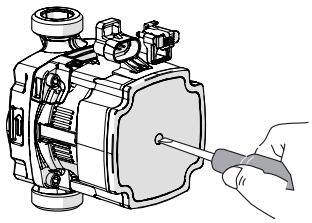
3.2 Checks during and after initial start-up

When the appliance it started, it must be checked by stopping and then restarting the thermal module in the following way:

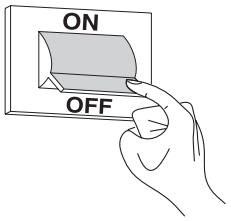
- Set the operating mode of the thermal module in heating to 0 (Par. 1) e and close the RT input to generate a heat request
- If required, increase the set-point value (CH → Heating Set-point)



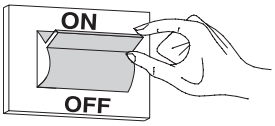
- Make sure that all the pumps in the system are free and rotate in the right direction



- Check the full stop of the thermal module and the heat demand by opening the "RT" contact (OFF).
- Check that the thermal module has come to a complete stop by setting the main switch of the equipment and the main switch of the system to "off".

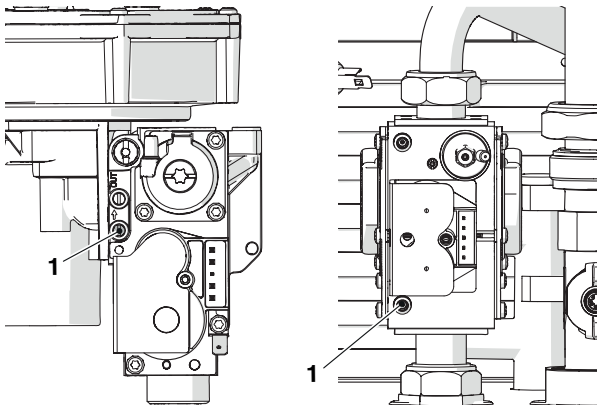


If all conditions are met, power the thermal module by setting the system's and the appliance's master switches to "On" and test combustion products (see Paragraph "Adjustments").

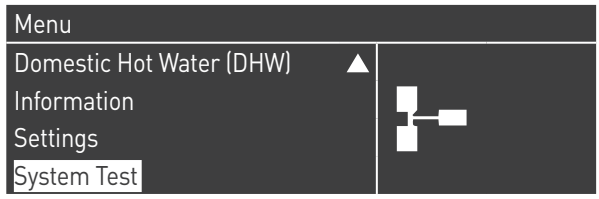


SUPPLY GAS PRESSURE CHECK

- Turn the main system switch "off"
- Remove the locking screws and the panel's front side
- Loosen by about two turns the pressure inlet screw (1) upstream of the gas valve and connect the pressure gauge



- Power the thermal module by setting the system's and the appliance's master switches to "On".



- select "Max. power" with the ▲ / ▼ keys and press ● to confirm. The fan starts turning at its maximum speed (which can vary based on the model).

DESCRIPTION	G20	G30	G31	
Wobbe index	45,7	80,6	70,7	MJ/m³
Nominal supply pressure	20	28-30	37	mbar

After the checks:

- select "OFF" with the ▲ / ▼ keys and press ● to confirm.
- Disconnect the pressure gauge and tighten again the pressure test point screw (1) upstream from the gas valve.

- Fulfil the operations, place back the front panel and lock the locking screws.

3.3 Error List

When a display has a technical fault, a numeric error code appears that will enable the maintenance operator to identify the possible cause.

There are 3 categories of errors:
1 Permanent: errors that require a manual reset
2 Temporary: errors that are automatically reset once the cause that generated them is removed or stopped
3 Notices: simple warnings that do not block the appliance's operation

3.3.1 Permanent Errors

Nr.	Error	Description
0	E2PROM_READ_ERROR	Internal software error
1	IGNIT_ERROR	Three unsuccessful ignition attempts in a row
2	GV_RELAY_ERROR	Failure detected in the GV relay
3	SAFETY_RELAY_ERROR	Failure detected in safety relay
4	BLOCKING_TOO_LONG	Control had a blocking error for more than 20 hours
5	FAN_ERROR_NOT_RUNNING	Fan is not running for more than 60 seconds
6	FAN_ERROR_TOO_SLOW	Fan runs too slow for more than 60 seconds
7	FAN_ERROR_TOO_FAST	Fan runs too fast for more than 60 seconds
8	RAM_ERROR	Internal software error
9	WRONG_EEPROM_SIGNATURE	Contents of Eeprom is not up to date
10	E2PROM_ERROR	Wrong safety parameters in Eeprom
11	STATE_ERROR	Internal software error
12	ROM_ERROR	Internal software error
15	MAX_TEMP_ERROR	The external overheat protection is enabled or the T_Supply sensor measures a temperature of over 100°C (212°F)
16	FLUE_GAS_ERROR	Flue temperature exceeded the maximum flue temperature
17	STACK_ERROR	Internal software error
18	INSTRUCTION_ERROR	Internal software error
19	ION_CHECK_FAILED	Internal software error
20	FLAME_OUT_TOO_LATE	Flame still present 10 seconds after closing the gas valve
21	FLAME_BEFORE_IGNIT	Flame is detected before ignition
23	CORRUPTED_ERROR_NR	Error code RAM byte was corrupted to an unknown error code
29	PSM_ERROR	Internal software error
30	REGISTER_ERROR	Internal software error

3.3.2 Temporary Errors

Nr.	Error	Description
100	WD_ERROR_RAM	Internal software error
101	WD_ERROR_ROM	Internal software error
102	WD_ERROR_STACK	Internal software error
103	WD_ERROR_REGISTER	Internal software error
106	REFHI_TOO_HIGH / REFHI_TOO_LOW	Internal software error
107	REFHI_TOO_HIGH / REFHI_TOO_LOW	Internal software error
108	REFHI_TOO_HIGH / REFHI_TOO_LOW	Internal software error
109	REFHI_TOO_HIGH / REFHI_TOO_LOW	Internal software error
110	REFHI_TOO_HIGH / REFHI_TOO_LOW	Internal software error
111	REFHI_TOO_HIGH / REFHI_TOO_LOW	Internal software error
112	REFHI_TOO_HIGH / REFHI_TOO_LOW	Internal software error
113	REFHI_TOO_HIGH / REFHI_TOO_LOW	Internal software error
114	FALSE_FLAME	Flame is detected in a state in which no flame is allowed to be seen.
115	LOW_WATER_PRESSURE_ERROR	Low water pressure error
118	WD_COMM_ERROR	Watchdog communication error
119	RETURN_OPEN	Return sensor open
120	SUPPLY_OPEN	Supply sensor open
122	DHW_OPEN	DHW sensor open
123	FLUE_OPEN	Flue sensor open
126	RETURN_SHORTED	Return sensor shorted
127	SUPPLY_SHORTED	Supply sensor shorted
129	DHW_SHORTED	DHW sensor shorted
130	FLUE_SHORTED	Flue sensor shorted
133	Net Freq Error	Net. freq. error detected by the watchdog
134	RESET_BUTTON_ERROR	Too many resets in a short time period
163	T_SELECTION1_OPEN	Heat exchanger's flow rate too low

3.3.3 Warnings

Nr.	Error	Description
200	CC_LOSS_COMMUNICATION	Cascade system: the burner of the managing module has lost the signal of one of the depending thermal module burner
201	CC_LOSS_COMMUNICATION	Cascade system: the managing module has lost the signal of one of the depending thermal module
202	OUTDOOR_WRONG	Outdoor sensor is open of shorted
203	T_SYSTEM_WRONG	T_System sensor is open of shorted
204	T_CASCADE_WRONG	T_Cascade sensor is open of shorted

3.4 Transformation from one gas type to another

The thermal module **Condexa PRO** is supplied for operation with G20 (natural gas). However, it can be converted to operation with G30-G31 (LPG) using the dedicated accessory supplied as standard.

⚠ Conversion can only be executed by Technical Assistance Service or staff authorised by **RIELLO**.

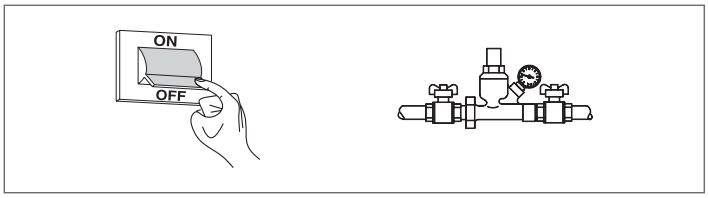
⚠ In order to execute the conversion, only follow the instructions in this manual and the provisions of safety standards.

⚠ If the information contained in these instructions is not properly performed or performed by personnel not properly trained, there is a potential risk of fuel leakage and/or carbon monoxide production resulting in personal injury and/or injury.

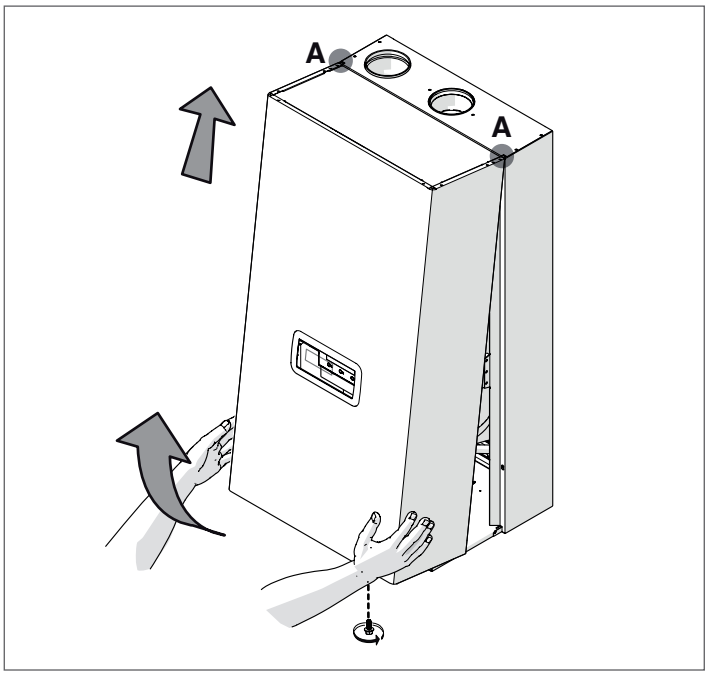
⚠ Conversion is not complete until all the control steps described in these instructions have been carried out.

⚠ After conversion, calibrate the CO2 as shown in the "Adjustment" Paragraph.

Before making the transformation:
- make sure that the master switch and the thermal module's switch are in the "Off" position
- check that the fuel interception system valve is closed.



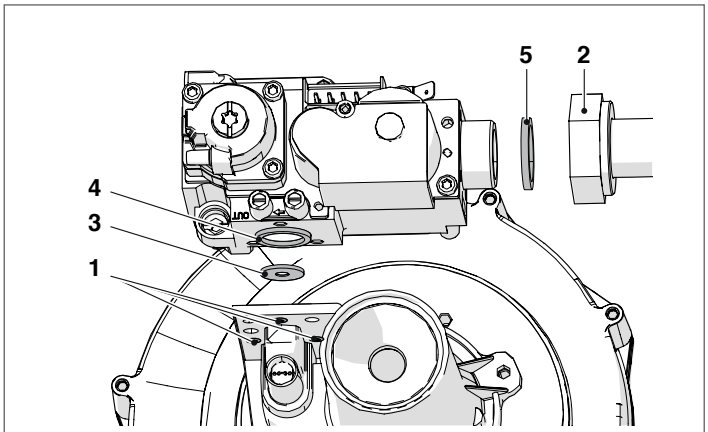
To install the accessory:
- remove the locking screw
- pull the front panel outwards and then to the top to decouple it from points A.



Versions Condexa PRO 35 P - Condexa PRO 70 P
- unscrew the three screws (1) and the swivel nut (2) of the gas pipe in order to remove the valve from the fan
- insert the related diaphragm (3) onto the gasket (4) without removing the gasket itself

Model	int. Ø (mm)
Condexa PRO 35 P	6.5
Condexa PRO 50 P	6.5
Condexa PRO 57 P	6.25
Condexa PRO 70 P	6.25

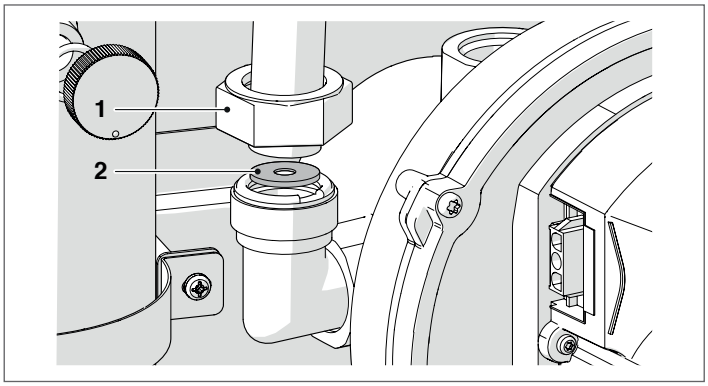
- check the integrity of the gasket (5); replace it if necessary
- refit the swivel nut (2)
- refit the three screws (1)



Versions Condexa PRO 90 - Condexa PRO 135
- unscrew the swivel nut (1) to remove the gas pipe from the fan
- insert the related diaphragm (2) inside the brass curve

Model	int. Ø (mm)
Condexa PRO 90	9 mm
Condexa PRO 100	9 mm
Condexa PRO 115	9,25 mm
Condexa PRO 135	8.75 mm

- refit the swivel nut (1)



For all models

- Fulfil the operations, place back the front panel and lock the locking screws.
- Open the gas detection valve.
- Switch the electricity supply ON at the system's main switch and at the control panel.
- Make sure that there is no heat or DHW demand.

It is now necessary to change the setting of the parameter 98. Proceed as follows:

- On the home screen of the control panel, press the ● key
- Select "Settings" with the ▲ / ▼ keys and press the ● key
- Select "Device configuration" with the ▲ / ▼ keys and press the ● key

Settings	
General Settings	
Boiler Settings	
Appliance Configuration	

- Enter the password as described in paragraph "Password access"
- Press the ▼ key, select "(98) Type of Gas" and press the ● key

Appliance Configuration	
(97) IO Configuration	1
(98) Appliance Settings	2
Configuration Confirmed	No

- With the ▲ / ▼ keys change the value following what is in the following table and press the ● key:

Model	Parameter 98
Condexa PRO 35 P	22
Condexa PRO 50 P	20
Condexa PRO 57 P	12
Condexa PRO 70 P	10
Condexa PRO 90	8
Condexa PRO 100	6
Condexa PRO 115	4
Condexa PRO 135	2

- Press the ▼ key, select "Config. Confirmed" and press the ● key
- With the ▲ / ▼ keys change the value to "Yes" and press the ● key

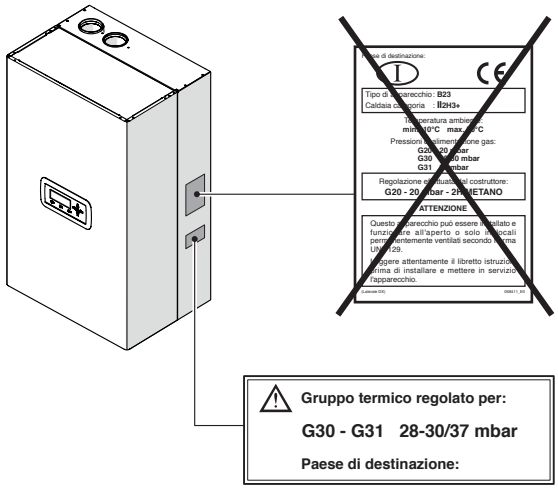
Appliance Configuration	
(97) IO Configuration	1
(98) Appliance Settings	4
Configuration Confirmed	Yes

At this point the systems starts an application update process. Once this is finished, the menu "Settings" appears on the menu.

- Press ◄ until you return to the home screen

An error message is displayed for a few seconds and then the display returns to its normal state.

Remove the adhesive (valid for G20 supply) and use the one for G30-G31.



After installing the accessory, check all gaskets tightness.
Carry out all calibration activities described in Paragraph "Adjustments".

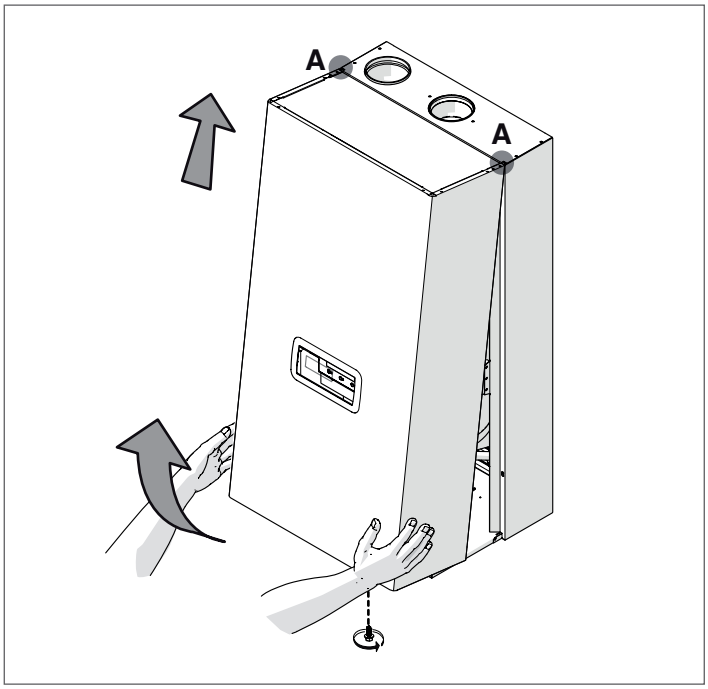
Restore the desired set points.

3.5 Adjustments

The thermal module **Condexa PRO** is supplied for operation with G20 (methane gas), as indicated by the type plate, and has already been factory-calibrated by the manufacturer.
However, if it is necessary to repeat the adjustments, for example after non-scheduled maintenance, replacing the gas valve or after transformation from G20 gas to G30-G31 gas, or vice versa, proceed as described below.

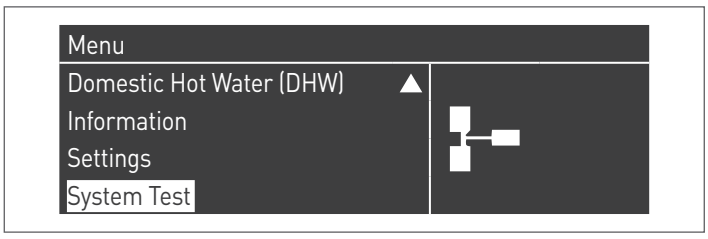
⚠ Adjustments to maximum and minimum power must be performed in the indicated sequence and only by Technical Assistance Service.

Before making the regulation:
- remove the locking screw
- pull the front panel outwards and then to the top to decouple it from points A.



CO2 ADJUSTMENT AT MAXIMUM POWER

- Press the MENU key, select "System test" and press • to confirm.



- select "Max. power" with the ▲ / ▼ keys and press • to confirm. The fan starts turning at its maximum speed (which can vary based on the model).

- the appliance will operate at maximum power.
- unscrew the cap (1) and insert the combustion analyser sensor
- set the CO2 with a screwdriver on the regulation screw (2) placed on the gas valve, thus reaching the value reported on the table.

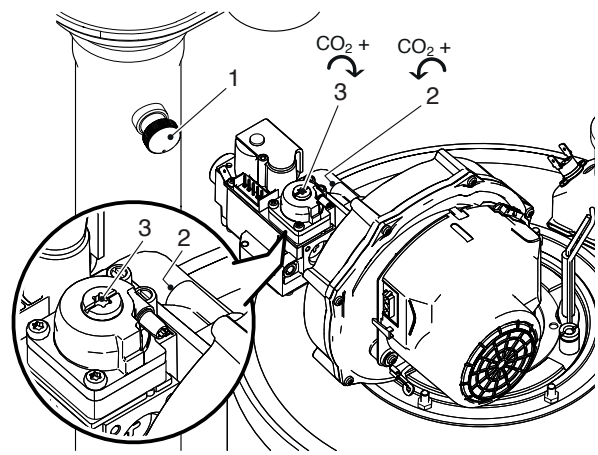
CO2% maximum power	Gas type	
	G20 – G25	G30 – G31
Condexa PRO 35 P	9 – 9	10,4 – 9,9
Condexa PRO 50 P	9 – 9	10,4 – 9,9
Condexa PRO 57 P	9 – 9	10,4 – 10,4
Condexa PRO 70 P	9 – 9	10,4 – 10,4
Condexa PRO 90	9 – 9	10,4 – 10,4
Condexa PRO 100	9 – 9	10,4 – 10,4
Condexa PRO 115	9 – 9	10,4 – 10,4
Condexa PRO 135	9 – 9	10,4 – 10,4

CO2 ADJUSTMENT AT MINIMUM POWER

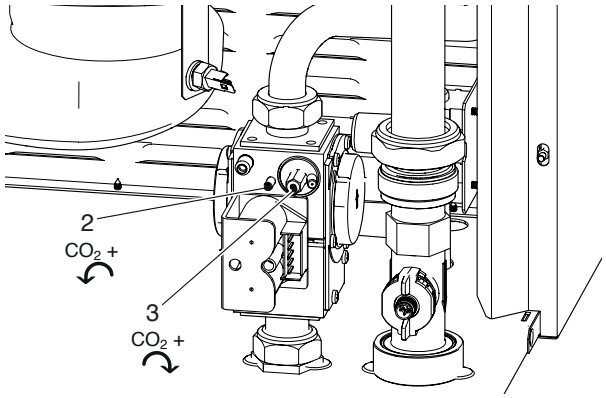
- the appliance will operate at minimum power.
- Adjust the CO2 using a screwdriver on the adjustment screw (3) on the fan unit, so as to obtain a value listed in the table.

CO2% minimum power	Gas type	
	G20 – G25	G30 – G31
Condexa PRO 35 P	9 – 9	10,4 – 9,9
Condexa PRO 50 P	9 – 9	10,4 – 9,9
Condexa PRO 57 P	9 – 9	10,4 – 10,4
Condexa PRO 70 P	9 – 9	10,4 – 10,4
Condexa PRO 90	9 – 9	10,4 – 10,4
Condexa PRO 100	9 – 9	10,4 – 10,4
Condexa PRO 115	9 – 9	10,4 – 10,4
Condexa PRO 135	9 – 9	10,4 – 10,4

Versions Condexa PRO 35 P – Condexa PRO 70 P



Versions Condexa PRO 90 – Condexa PRO 135



CHECKING THE CALIBRATION
Select the "Max. power" value, wait until speed stabilises and check that CO^2 correspond to required ones.
After the checks:

- select "OFF" with the ▲ / ▼ keys and press ● to confirm.
- remove the analyser sensor and carefully retighten the cap (1)
- place back the front panel and lock the locking screw.

System Test	
Test State	Off
Fan Speed	0 rpm
Ionisation	0.0 µA

3.6 Temporary or short-term shut-down

In the event of temporary or short-term shut-down (e.g. due to holidays), proceed as follows:

- Press the MENU key and select with keys ▲ / ▼ "Time schedule", confirm with key ●.
- Select with keys ▲ / ▼ "Holiday Schedule" and confirm with key ●.

Clock Program
Program Group
Burn hours till service
Reset Service Reminder
Holiday Settings

- Select with keys ▲ / ▼ "Mode" and confirm with key ●. Select "System" mode and confirm.

Holiday Settings	
Mode	System
Holiday Setpoint	Comfort
Begin Date	Saturday 01-08-2015
End Date	Saturday 01-08-2015

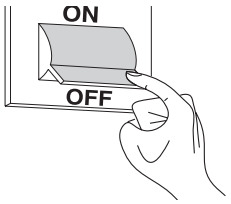
- Select with keys ▲ / ▼ "Holiday Setpoint" and confirm with key ●.
- Select "Antifreeze" holiday setpoint and confirm.

Holiday Settings	
Mode	System
Holiday Setpoint	Anti Fr
Begin Date	Saturday 01-08-2015
End Date	Saturday 01-08-2015

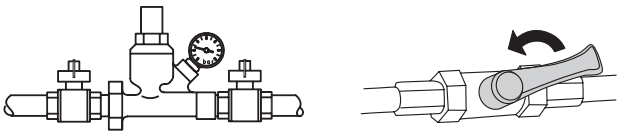
3.7 Preparing for extended periods of disuse

The following operations shall be necessary if the **Condexa PRO** modular system is not used for a long period of time:

- turn the main switch of the thermal modules and the main system switch to "off"



- Close the fuel and water valves for the heating and domestic hot water system.



⚠ Empty the thermal and sanitary system if there is a danger of frost.

3.8 Maintenance

It is mandatory to perform maintenance and cleaning of the device at least once a year.

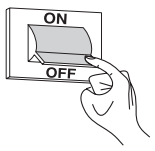
⚠ The non-performance of the annual maintenance will invalidate the warranty.

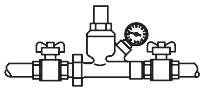
This operation, carried out by Technical Assistance Service or by professionally qualified personnel, is necessary to monitor and ensure that the flue pipes inside and outside of the device, the fan, the safety valves, the condensate removal devices, the water drainage tubes and all the measurement and control devices are in perfect working order.

Table of the compulsory maintenance activities (to be performed every 2000 working hours or at least once a year)
Make the combustion test
Check the conditions of the inlet pipes (if present) and the flue pipes by making sure that no leakage is present
Check the ignition electrode
Clean the combustion chamber and check the conditions of the gaskets you have dismantled during such operation
Clean the condensate discharge pipe
Check the parameters settings
Check if there is any gas leakage
Check if there is any leakage on the hydraulic connections
Check the integrity of the cabling system and its related connections
Make sure the ignition takes place regularly
Make sure that there is the flame after ignition
Check the safety devices down the equipment
Check the system pressure

⚠ Before carrying out any maintenance or cleaning, disconnect the power from the device by turning off the bipolar main switch and closing the main gas valve. In addition, for all maintenance (to be carried out at least once a year, as noted above) always replace all the flue and gas seals, in particular the burner seals.

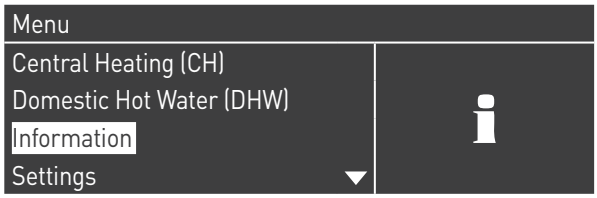
Before performing any operation:
- disconnect the electric power supply by turning the main system switch to "off"
- close the gas shut-off valve.





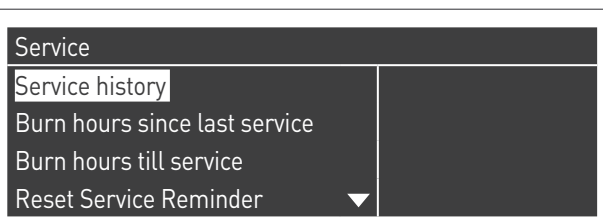
3.8.1 "Service reminder" function

The thermal module is fitted with a function that reminds the user of the need to carry out planned maintenance on the appliance after a number of hours defined in the maintenance plan.
When this maintenance activity is required, the following text appears on the normal display: **"Maintenance required!"**
This text will remain active until the technical support service resets the internal meter after maintaining the appliance.
The user can check at any time how many hours miss from the next planned maintenance activity by accessing the "Information" menu



and selecting "Maintenance" using the ▲ / ▼ arrows

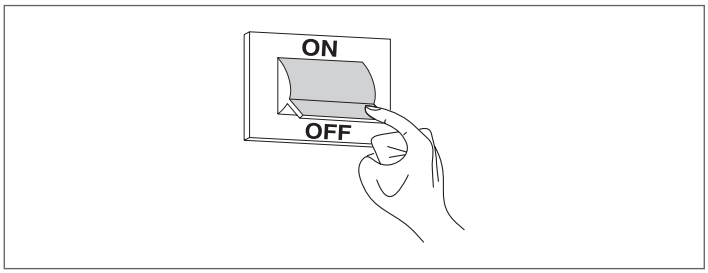
The menu also shows the hours from the last maintenance activity performed and access to a log that lists the dates of the last 15 maintenance activities.



The "Settings" → "Boiler set." → "Maintenance" menu contains the advanced controls for this function, which, in any case, are only available if you access it with the manufacturer password. If it is necessary to use this access level, contact the Technical Assistance Service.

3.9 Cleaning and removing internal components

Before any cleaning operation, disconnect the electric power supply by switching the main system switch to "off".



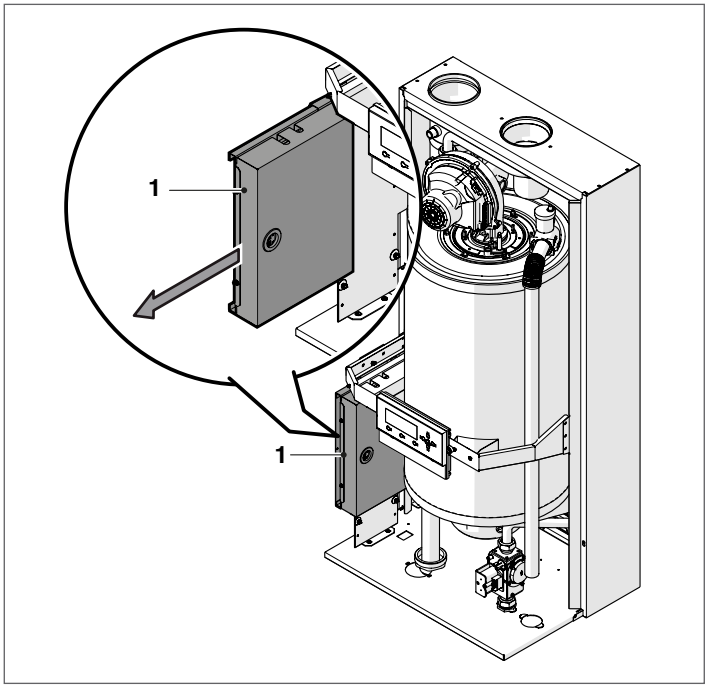
OUTSIDE
Clean the casing, the control panel, the painted parts and plastic parts with cloths moistened with soap and water. In the case of stubborn stains, moisten the cloth with a 50% water and alcohol mixture or specific products.

⊖ Do not use fuels, sponges impregnated with abrasive solutions or powder detergents.

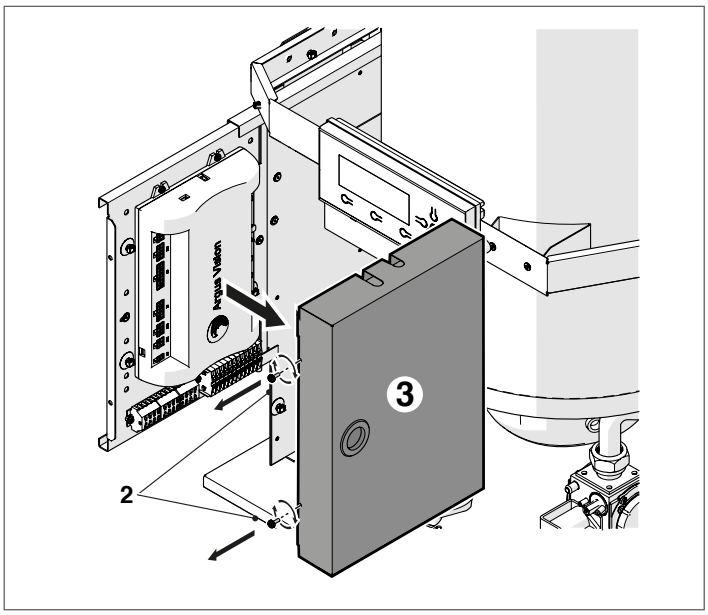
INSIDE
Before starting internal cleaning operations:
- close the gas shut-off valves
- close the system taps.

⚠ From time to time, check that the condensate drain is not blocked.

Access to the control panel and the internal parts of the thermal module
- Remove the locking screws and the panel's front side
- Pull and slide the electrical panel's box towards the outside (1)



Loosen the fixing screws (2) and remove the protection (3)

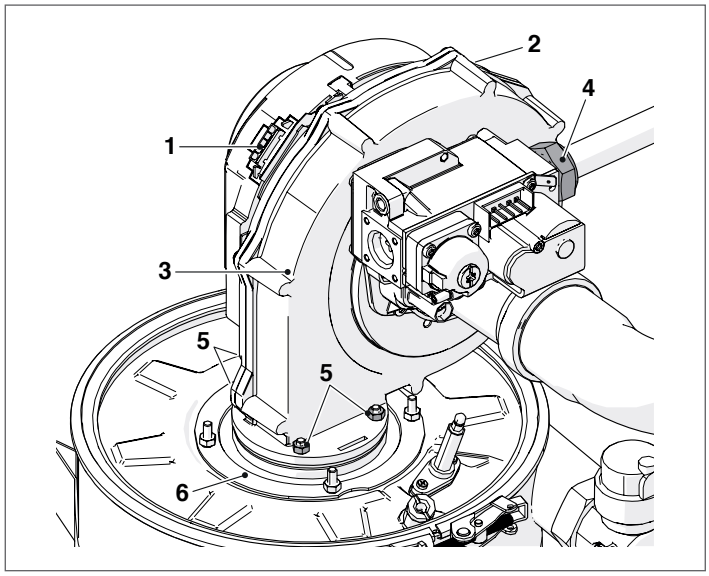


At this point, it will be possible to access terminal boards.
Once the maintenance operations are complete, refit the components working in the opposite direction of what was described.

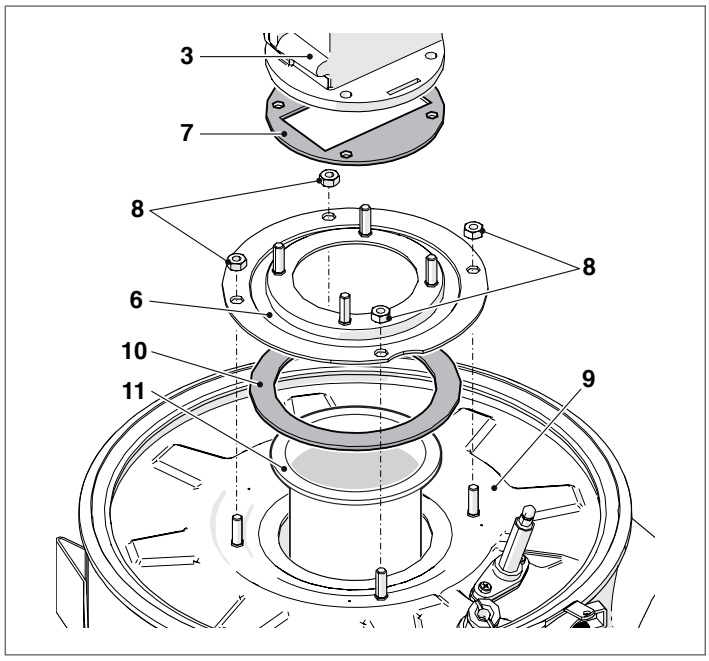
⚠ If the electronic control box is replaced, see the electrical wiring diagram in order to reset the connections.

Removing the fan and the burner models Condexa PRO 35 P – Condexa PRO 50 P

- Remove the locking screws and the panel's front side
- Remove cables (1) and (2) for the fan (3)
- Remove the air pipe from the fan if the thermal module is type C (C type configuration non standard but obtained with specific accessory)
- Unscrew the swivel nut (4) and disconnect the gas pipe
- Use a socket wrench to unscrew the four nuts (5) fixing the fan (3) to the flange (6)



- Take the fan (3) and the gasket (7) out
- Unscrew the four nuts (8) fixing the flange (6) to the top closing (9)
- Remove the gasket (10) and the burner (11).



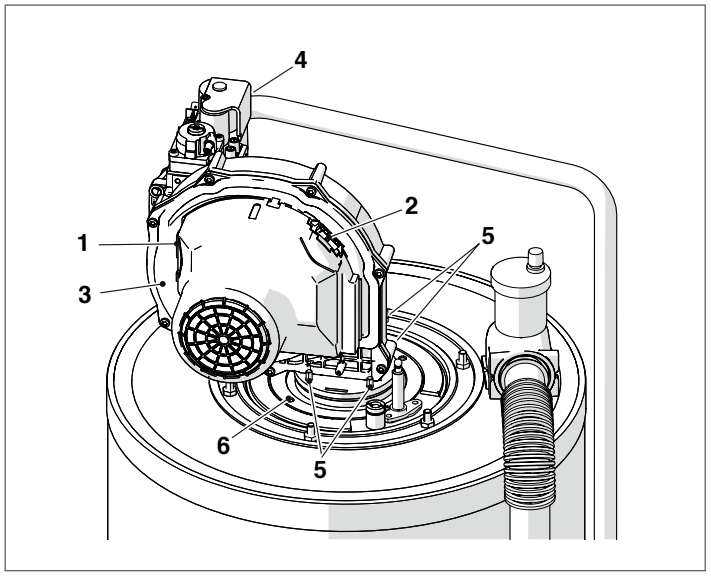
- Replace the gaskets (7-10) with the new ones.

Once the maintenance operations are complete, refit the components working in the opposite direction of what was described.

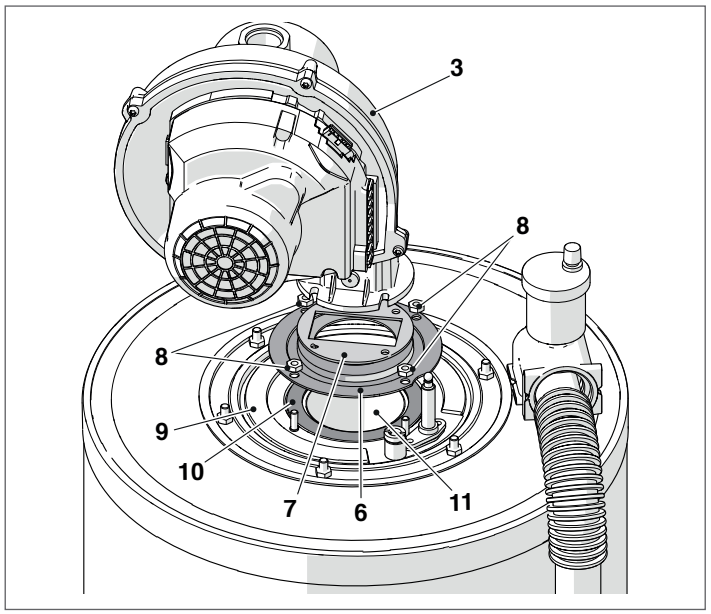
⚠ Check that the gas connection is leak proof.

Disassembling of the fan and burners models Condexa PRO 57 P – Condexa PRO 70 P

- Remove the locking screws and the panel's front side
- Remove cables (1) and (2) for the fan (3)
- Remove the air pipe from the fan if the thermal module is type C (C type configuration non standard but obtained with specific accessory)
- Unscrew the swivel nut (4) and disconnect the gas pipe
- Unscrew the four screws with a pipe wrench (5) fixing the fan (3) to the flange (6)



- Take the fan (3) and the gasket (7) out
- Unscrew the 4 screws (8) that fix the flange (6) to the lower flange (9)
- Remove the gasket (10) and the burner (11).



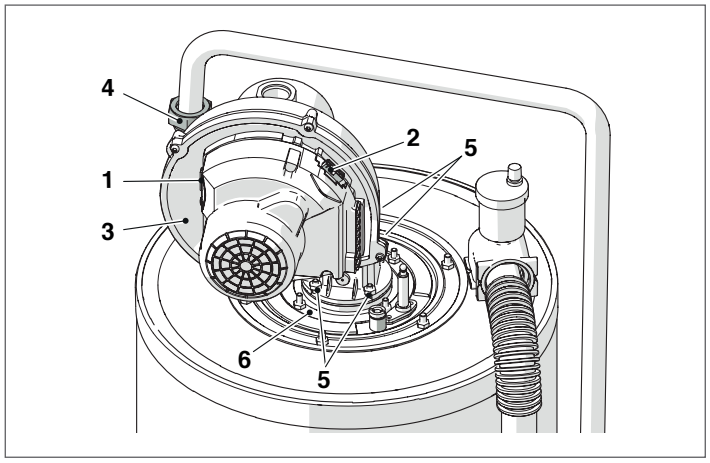
- Replace the gaskets (7-10) with the new ones.

Once the maintenance operations are complete, refit the components working in the opposite direction of what was described.

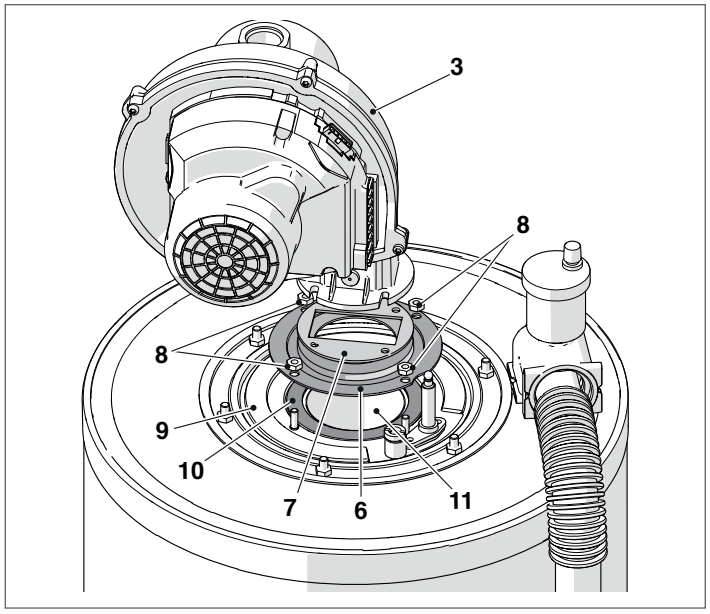
⚠ Check that the gas connection is leak proof.

Disassembling of the fan and burners models Condexa PRO 90 – Condexa PRO 100 – Condexa PRO 115 – Condexa PRO 135

- Remove the locking screws and the panel's front side
- Remove cables (1) and (2) for the fan (3)
- Remove the air pipe from the fan if the thermal module is type C (C type configuration non standard but obtained with specific accessory)
- Unscrew the swivel nut (4) and disconnect the gas pipe
- Unscrew the four screws with a pipe wrench (5) fixing the fan (3) to the flange (6)



- Take the fan (3) and the gasket (7) out
- Unscrew the 4 screws (8) that fix the flange (6) to the lower flange (9)
- Remove the gasket (10) and the burner (11).



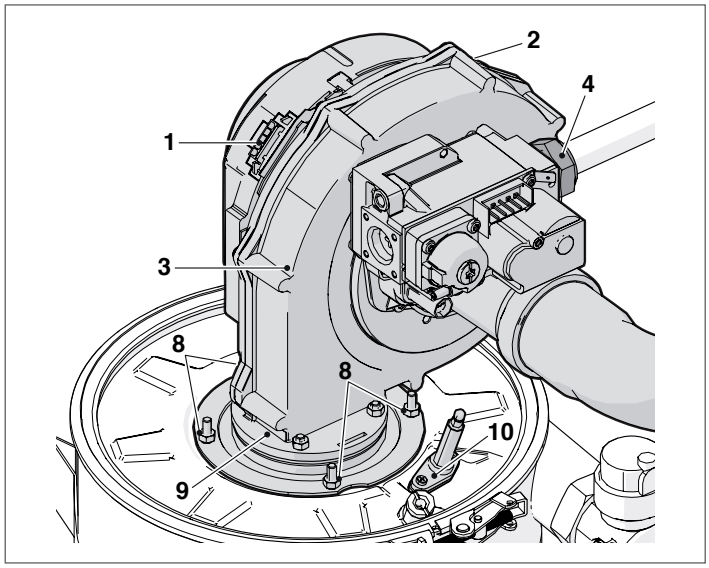
- Replace the gaskets (7-10) with the new ones.

Once the maintenance operations are complete, refit the components working in the opposite direction of what was described.

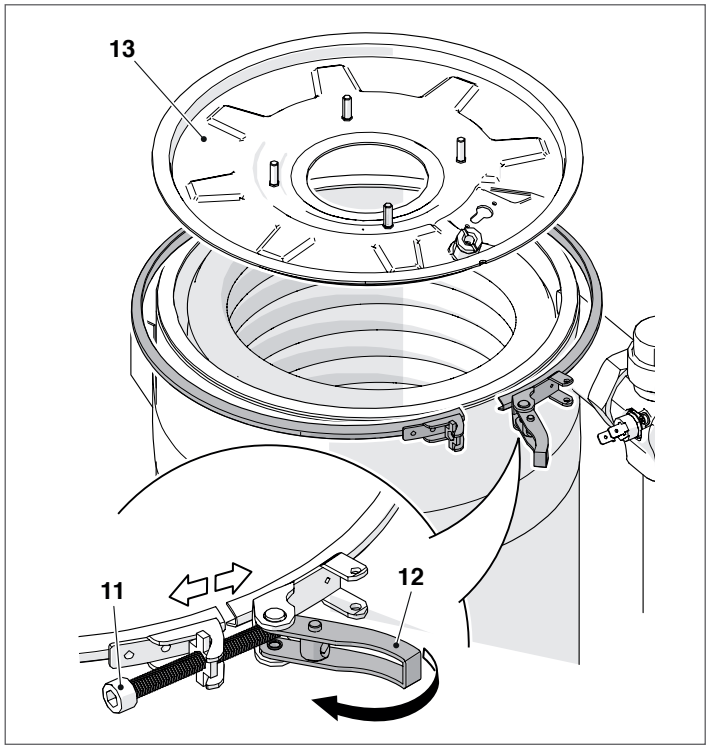
⚠ Check that the gas connection is leak proof.

Removing the top closing for cleaning the heat exchangers models Condexa PRO 35 P – Condexa PRO 50 P

- Remove the locking screws and the panel's front side
- Remove cables (1) and (2) for the fan (3)
- Remove the air hose from the fan if the thermal module is of type C (type C configuration not standard but obtained with a special accessory)
- Unscrew the swivel nut (4) and disconnect the gas pipe
- Use a socket wrench to unscrew the nuts (8) fixing the burner assembly (9) to the heat exchanger
- Remove the fan and the entire burner body (9)
- Remove the electrode plate (10), check the electrode's condition and replace it if necessary



- Unscrew screw (11)
- Open the lever catch (12)
- Lift and remove the top closure (13) with the relative insulating pad and gasket.

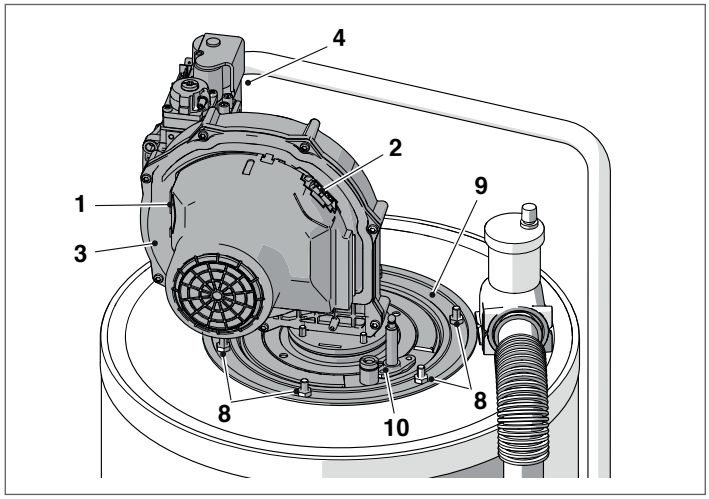


Once the maintenance operations are complete, refit the components working in the opposite direction of what was described.

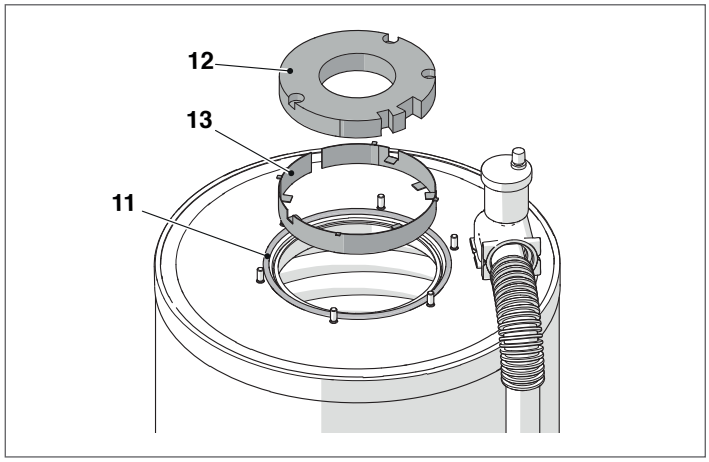
⚠ Check that the gas connection is leak proof.

disassembling of the flange for cleaning up the heatexchanger models Condexa PRO 57 P - Condexa PRO 70 P

- Remove the locking screws and the panel's front side
- Remove cables (1) and (2) for the fan (3)
- Remove the air hose from the fan if the thermal module is of type C (type C configuration not standard but obtained with a special accessory)
- Unscrew the swivel nut (4) and disconnect the gas pipe
- Unscrew the six screws (8) that secure the burner unit (9) to the heat exchanger with a socket wrench
- Remove the fan and the entire burner body (9)
- Remove the electrode plate (10), check the electrode's condition and replace it if necessary



Remove the seal (11), the insulation mat (12) and the bracket (13).

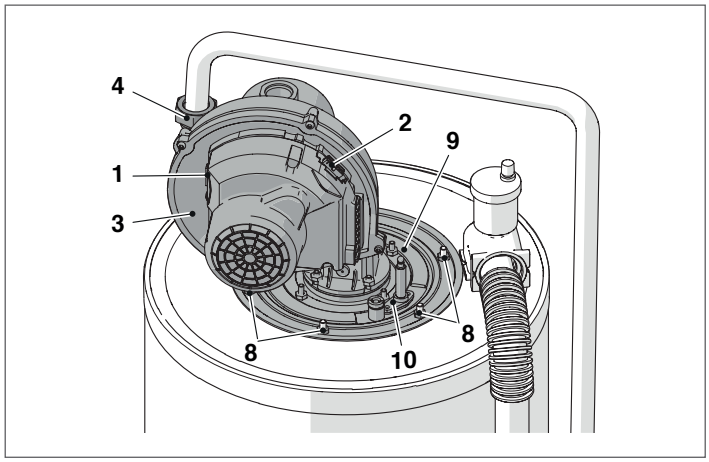


Once the maintenance operations are complete, refit the components working in the opposite direction of what was described.

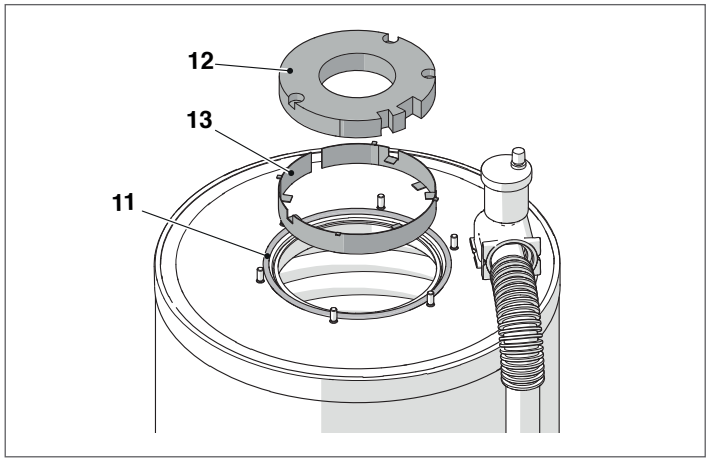
⚠ Check that the gas connection is leak proof.

Disassembling the flange for cleaning the exchanger models Condexa PRO 90 - Condexa PRO 100 - Condexa PRO 115 - Condexa PRO 135

- Remove the locking screws and the panel's front side
- Remove cables (1) and (2) for the fan (3)
- Remove the air hose from the fan if the thermal module is of type C (type C configuration not standard but obtained with a special accessory)
- Unscrew the swivel nut (4) and disconnect the gas pipe
- Unscrew the six screws (8) that secure the burner unit (9) to the heat exchanger with a socket wrench
- Remove the fan and the entire burner body (9)
- Remove the electrode plate (10), check the electrode's condition and replace it if necessary



Remove the seal (11), the insulation mat (12) and the bracket (13).



Once the maintenance operations are complete, refit the components working in the opposite direction of what was described.

⚠ Check that the gas connection is leak proof.

3.10 Troubleshooting

FAULT	CAUSE	SOLUTION
There is a smell of gas	Gas supply circuit	– Check the seal of the gaskets and the closure of the pressure tapping points
Odour of unburnt gas	Flue gas circuit	– Check the gasket seals – Make sure there are no obstructions – Check the combustion quality
Irregular combustion	Burner gas pressure	– Check the setting
	Diaphragm installed	– Check the diameter
	Clean the burner and exchanger	– Check the conditions
	Exchanger passages obstructed	– Check passage cleaning
	Faulty fan	– Check operation
Ignition delays with pulsations to the burner	Burner gas pressure	– Check the setting
	Ignition electrode	– Check the positioning and conditions
The modular system becomes dirty very quickly	Combustion	– Check the combustion controls
The burner does not start upon consent of the modular system control	Gas valve	– Check for the presence of 230Vac voltage on the gas valve terminals, check wiring and connections
The modular system does not start	No electric power supply (no message on the display)	– Check the electric connections – Check the condition of the fuse
The modular system does not arrive at temperature	Boiler dirty	– Clean the combustion chamber
	Burner capacity insufficient	– Check and adjust the burner
	Modular system adjustment	– Check correct functioning – Check the temperature setting
The generator triggers a thermal safety block	No water	– Check correct functioning – Check the temperature setting – Check the electrical wiring – Check the position of the sensor bulbs
	Modular system adjustment	– Check the bleed valve – Check the heating circuit pressure
The generator is at temperature but the heating system is cold	Presence of air in the system	– Bleed the system
	Pump malfunctioning	– Check/unseize the pump – Replace the circulator – Check the electrical connection of the circulator
The circulator does not start	Pump malfunctioning	– Check/unseize the pump – Replace the circulator – Check the electrical connection of the circulator
Frequent tripping of the system safety valve	System safety valve	– Check calibration or efficiency
Frequent tripping of the system safety valve	Incorrect circuit pressure	– Check the circuit pressure – Check pressure reducer functioning
Frequent tripping of the system safety valve	CH expansion vessel	– Check the efficiency of the expansion vessel

4 MANAGING ADDITIONAL ZONE

4.1 Controlling zone with additional zone accessory

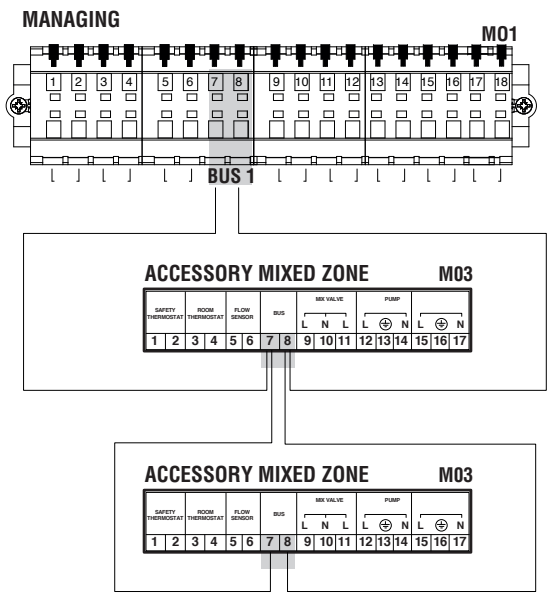
When using on a system with just one thermal module or cascade systems, where the number of heating zones to be controlled exceeds the number of DEPENDING thermal modules, the additional Zone accessory module must be installed.
After connecting the Zone module as indicated below, wait for the module to be detected.

At the end of the detection, the following new functions will be available:

- in the "Information" menu "Ext. Zone Status." will be displayed, from where it is possible to display information regarding the selected zone;
- in the "Settings menu" two new lines will be displayed:
  - "Zone Config."
  - "Zone Clim. Curve"

⚠ See the additional Zone accessory booklet for further details.

Single module connection



The electronic control of the thermal module will automatically check which zones are connected to the bus.

The menu items of the zone in the electronic control of the thermal module will be available when one or more zone management devices are detected.

The electronic control of the thermal module remembers the zone number detected when a device is connected.

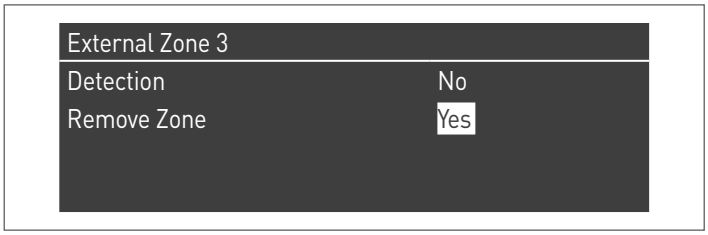
The zone number detected is not automatically removed when the corresponding accessory is no longer connected.

The zone number needs to be removed manually.

Removing the zone number

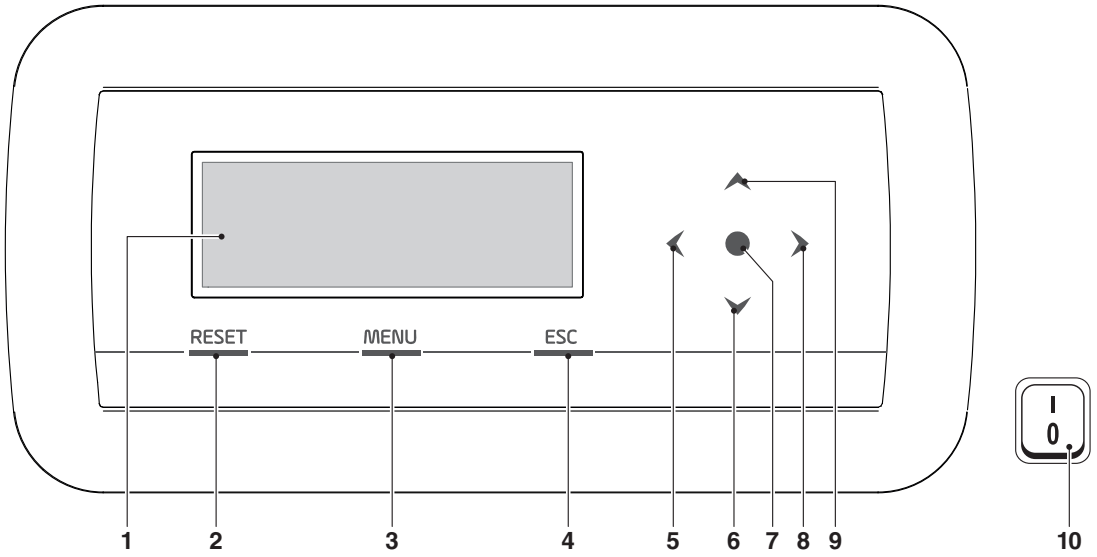
- remove the bus connection of the zone to be deleted;
- access the Settings/Zone Config./Zone;
- select the disconnected zone;
- go to Remove Zone;
- press the ► key to highlight the values, change them to "Yes" with the ▲ / ▼ keys, press the ● key to confirm and remove the zone from the display menus.

Example:



4.2 Setting parameters of the additional zone

Controls interface



1 255x80 point backlit display (106,4x39,0mm)
2 RESET key: restores normal operations after a safety shut-down
3 MENU key: switches on the main menu
4 ESC key: in menu navigation, it enables you to exit a menu item and go back to the previous one
5 ÷ 9 Navigation keys ◄, ▼, ●, ►, ▲
10 Main switch (located on the lower part of the appliance)

4.3 Setting zone parameters (accessible only with installer password)

Menu → "Settings" → "Zone Config."

This menu allows you to separately set the parameters of all the connected zones with the exception of the "Extra setpoint zone" which is the same for all zones.

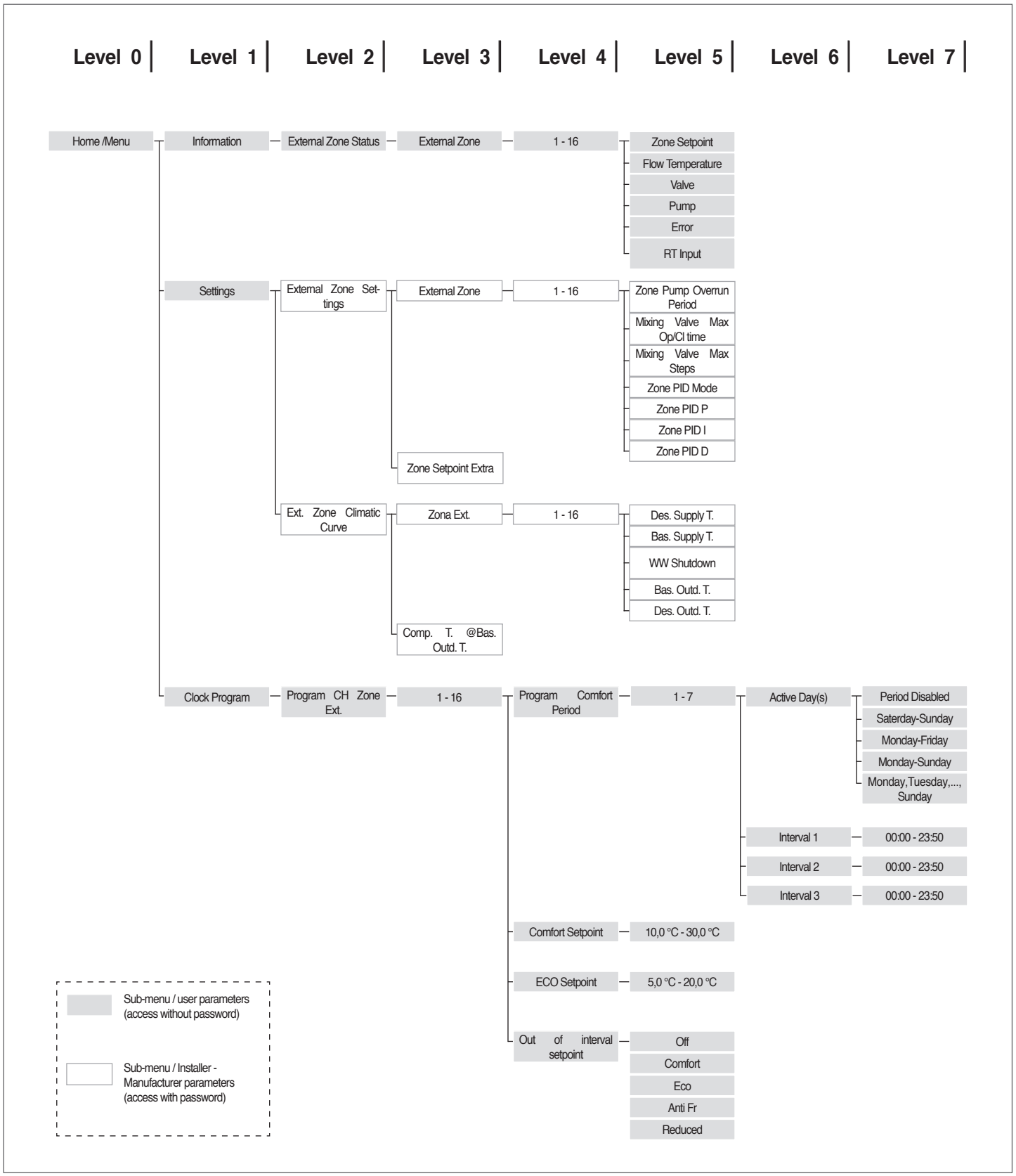
To select the zone for controlling/changing the parameters, proceed as follows:
- press the ► key so that the number to the right of "zone" is highlighted;
- once the number is highlighted use the ▲ and ▼ keys to change the number of the zone;
- once the zone is selected, confirm with the ● key.

The zone parameters are the following:

Description	Standard value that is set	Range	Explanation	UM
Post-circ. Zone Pump	120	0-255	Establishes the time in seconds of the post-circulation	Secs
Mix Valve Max Op/Cl Time	25	0-255	Fixes the time in second of the total opening/closing of the mix valve (valid for three point mix valve)	Secs
Mix Valve Max steps	700	0-65535	Fixes the number of steps for the total opening of the mix valve (valid for step-by-step mix valve)	
PID zone mode	Symmetrical	Symmetrical/Asymmetrical	Fixes the PID control mode	
PID P Zone	10	0-255	Proportional parameter for the valve control	
PID I Zone	150	0-255	integrativee parameter for the valve control	
PID D Zone	0	0-255	Derivative parameter for the valve control	
Extra zone setpoint	10	0-30	Establishes the increase for the primary setpoint with respect to the zone setpoint	°C

⚠ For more information regarding navigating the commands interface (thermal module display) see the paragraph "Electronic control".

4.3.1 Menu structure

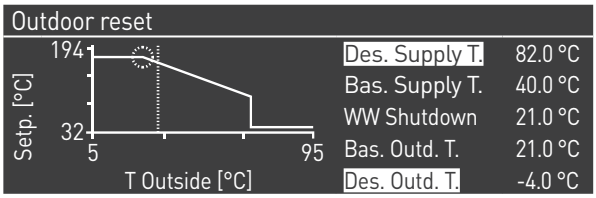


4.4 Setting zone's climatic curve parameters (accessible only with installer password)

Menu → "Settings" → "Zone Clim. Curve"

- press the ► key so that the number is highlighted on the right of the word "Zone";
- use the ▲ and ▼ keys to change the zone number;
- press the ● key.

The following is displayed:

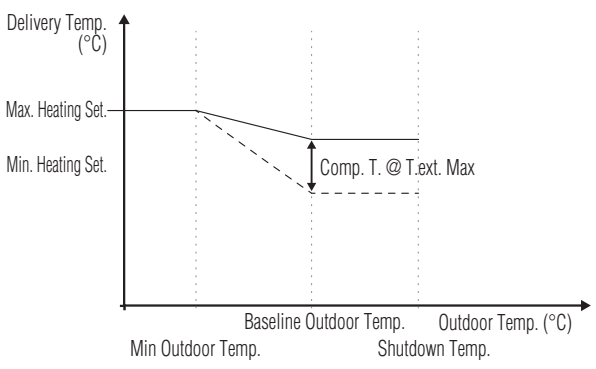


The "Comp. T. @ T.ext. Max" parameter, if other than 0, transforms the climatic curve from linear to quadratic allowing you to best adapt the variation of the setpoint to the variation of the outdoor temperature.

The resulting quadratic climatic curve will have three parameters:

- Heat. Set. Max
- Baseline Outdoor Temp.
- Text. Min

of the basic linear climatic curve and a value of the Heat. Set. Min. diminished by the value of the parameter "Comp. T. @ T.ext. Max", as can be seen in the example in the figure.

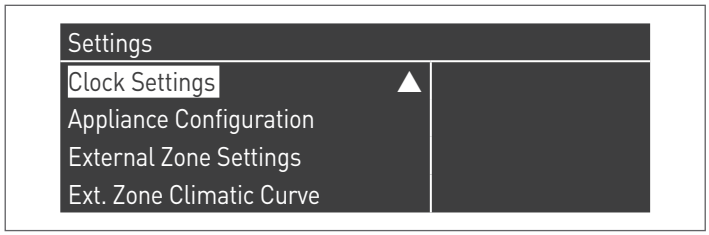


4.5 Programming the zone

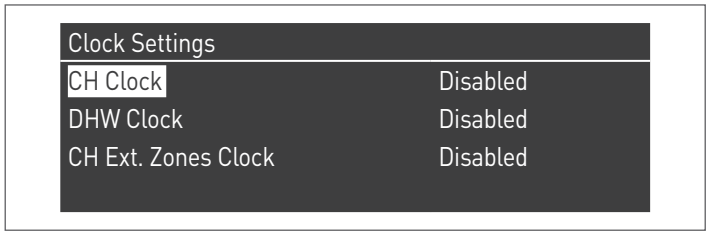
By default the schedule timer is disabled.

In fact, to start a request from the zone just close the contact of the zone request. In this case the thermal module (or the cascade of thermal modules) will start with a setpoint equal to the value calculated on the zone climatic curve increased by the "Zone Extra Setpoint" value and the mix valve will modulate to maintain the delivery temperature of the zone at the calculated setpoint.

To activate zone programming:
Menu → "Settings" → "Time Config."



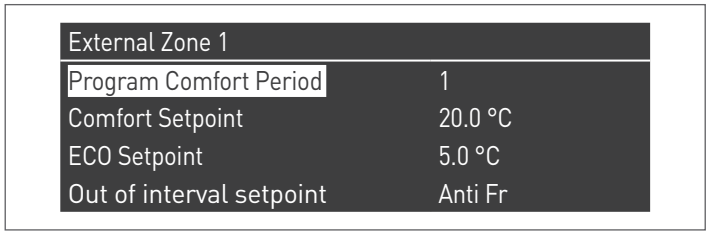
Confirming with ● the following screen is displayed:



- with the ▲ / ▼ keys select "CH Zones time"
- with the ► key move to "Disabled", change it to "Enabled" with the ▲ / ▼ keys
- confirm with the ● key

Go to:
Menu → "Schedule timer"
Confirming with the ● key:

At this point select the number of the zone to be programmed and confirm with the ● key.



The programmable periods for each zone are 7 and they can be selected by changing the number that appears beside "programming period".

The "Comfort Setpoint" is the setpoint that is set for the area served by the zone in the active time band established within the period and can be set between ten and forty degrees.
Setting the "Comfort Setpoint" at a default of 20°C, the climatic curve that regulates the setpoint of the zone is exactly that which was set in paragraph Setting zone's climatic curve parameters (accessible only with installer password) on page 72.

By changing the "Comfort Setpoint" the climatic curve is moved upwards or downwards depending on whether the setpoint is higher or lower than 20°C. The curve will shift by two degrees for each degree of difference between the value of the setpoint and the value 20.

The "ECO Setpoint " is a setpoint that can be set between 5 and 20 degrees and can be selected as a setpoint for the area served by the zone outside the active time band.

The "outside the interval Setpoint" defines how the zone outside the active time bands are managed (within which the setpoint of the area is always set on "comfort").

The selections for the "outside the interval Setpoint" are the following:

- **Eco:** the ambient setpoint is set to ECO. The zone setpoint is changed by two degrees less for each degree of difference between the ECO setpoint and the value 20 (for example, if at 20° I have a setpoint of 50, at 18 degrees I have a setpoint of 50+2*(18-20)=46.
- **Night-time:** the zone setpoint is lowered by 10 degrees with respect to the value of the zone setpoint set for a Tcomfort = 20°.
- **Antifreeze:** the ambient setpoint is set at 5°C, thereby obtaining a reduction with respect to the comfort setpoint of 30 degrees.
- **Off:** in this case the delivery of heat is interrupted.
- **Comfort:** the setpoint remains the same as that for the active time bands. This choice clearly makes no sense when scheduling is desired, but it can be useful if you want to provide heat continuously without changing the programming itself.

⚠ So that the zone programming works the "heat request" contact should be closed. Otherwise the zone will ignore any request from the schedule timer.

4.6 Scheduling the time bands

By going to:
Menu → "Schedule timer" → "Zones CH Program "

External Zone 1	
Program Comfort Period	1
Comfort Setpoint	20.0 °C
ECO Setpoint	5.0 °C
Out of interval setpoint	Anti Fr

Entering in "Programming Period":

External Zone 1 - Period 1		
Active Day(s)	Monday-Sunday	
Interval 1	07:10	11:00
Interval 2	00:00	00:00
Interval 3	00:00	00:00

Using the option "Active Days" it is possible to select the scheduling period. You can select a day of the week or else one of these three groups of days:

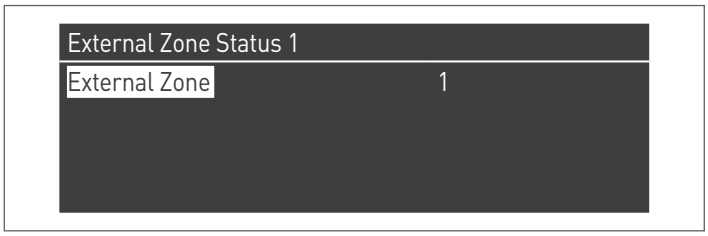
- Mon-Sun
- Mon-Fri
- Sat-Sun

This facilitates weekly scheduling or else scheduling that is different during the work week and the week-end.

There are three active time bands for each period. The time resolution is 10 minutes.

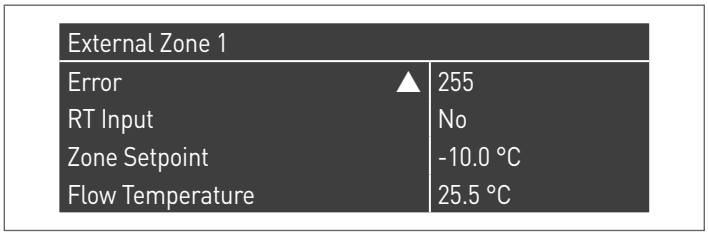
4.7 Information on the operation of the zone

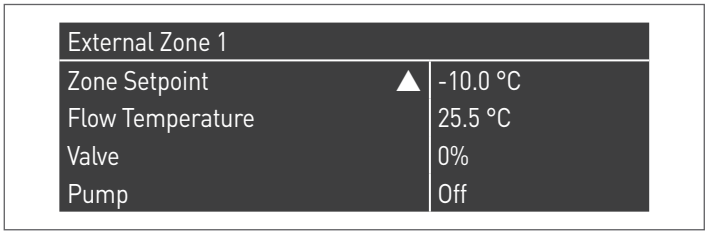
By going to:
Menu → "Information" → "Zone Status"



To choose the zone whose information will be displayed, proceed in the same way as in the previous paragraph.

Once the ● key is selected the following display appears:





The information displayed is the following:

Error code	Description
Err	Indicates the error code of the board (255 = no error)
Input Heat	Indicates whether there is a request (namely, if the contact for the heat request is open (NO, no request) or closed (Yes, request present)
Zone set-point	Indicates the zone setpoint
Delivery temperature	Indicates the temperature measured by the zone probe
Valve	Indicates the opening percentage of the valve (100% = fully open)
Pump	Indicates if the pump is stopped (off) or active (on)

Zone board errors table:

Error code	Description	Solution
22	Zone probe disconnected	Check probe
23	Zone probe short-circuit	Check probe
24	Overtemperature detected (opening of safety thermostat)	Check parameters Check operation of mixer

5 SYSTEM MANAGER

5.1 Putting into service

⚠ The appliance must be maintained and adjusted at least once a year by Technical Assistance Service or by professionally qualified staff in compliance with all applicable National and Local provisions.

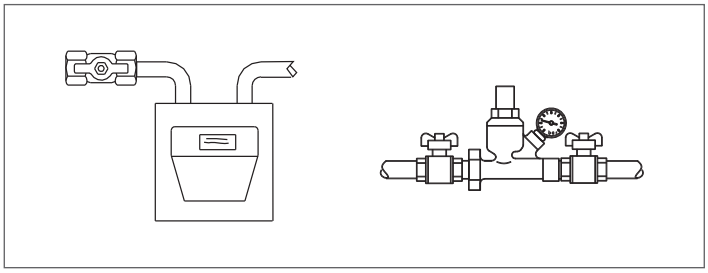
⚠ Incorrect maintenance or adjustment may damage the appliance and cause damage to people or create a hazard.

⚠ The system manager is forbidden from opening and removing the appliance's casing. These activities must be carried out only by Technical Assistance Service or by professionally qualified personnel.

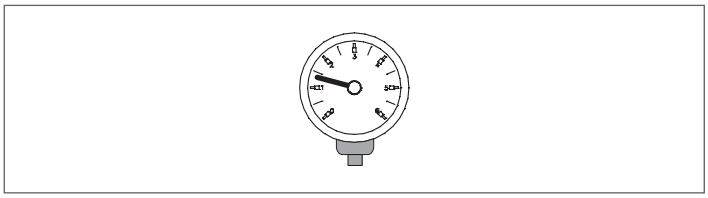
The thermal module **Condexa PRO RIELLO** must be commissioned by Technical Assistance Service **RIELLO**, after which step the appliance may operate automatically.

However, the system manager may be required to restart the appliance independently, without involving Technical Assistance Service; for example after a long period of absence.
To do so, perform the following checks and operations:

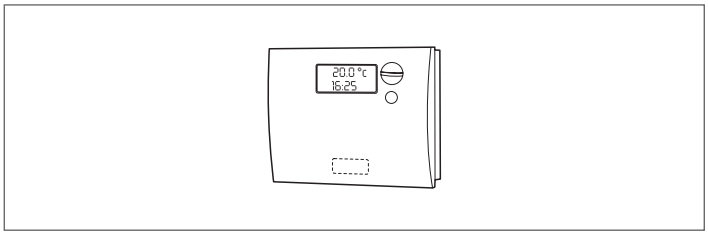
- Check that the gas cock and heating water cock are open



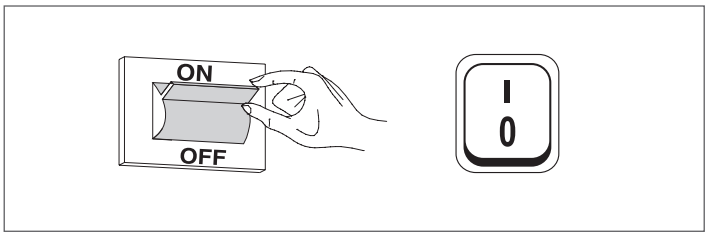
- While the system is still cold, check that working pressure in the central heating circuit is over 1 bar but below the maximum limit specified for the boiler



- Adjust the room thermostats for the high and low temperature zones to the required temperature (~20°C) or, if the systems are equipped with timer thermostats or a time programming unit, make sure it is on and adjusted (~20°C)



- Switch the system's master switch to the ON position and the thermal module's master switch to **(I)**.



The appliance will go through the switch-on stage and, after starting, it will continue to operate until set temperatures are achieved.
The burner will then switch off and on automatically to maintain the set temperature without further operator action.

In the event of ignition or operation faults, the display will show a numeric error code that will enable the user to interpret the possible cause as detailed in Paragraph "Error List".

⚠ In the event of a permanent error, to reset starting conditions press the "RESET" key and wait for the thermal module to restart.

Repeat this operation 2-3 times at the most. If the problem persists after that, call **RIELLO**'s Technical Assistance Service.

5.2 Temporary or short-term shut-down

In the event of temporary or short-term shut-down (e.g. due to holidays), proceed as follows:

- Press the MENU key and select with keys ▲ / ▼ "Time schedule", confirm with key ●.
- Select with keys ▲ / ▼ "Holiday Schedule" and confirm with key ●.

Clock Program
Program Group
Burn hours till service
Reset Service Reminder
Holiday Settings

- Select with keys ▲ / ▼ "Mode" and confirm with key ●. Select "System" mode and confirm.

Holiday Settings	
Mode	System
Holiday Setpoint	Comfort
Begin Date	Saturday 01-08-2015
End Date	Saturday 01-08-2015

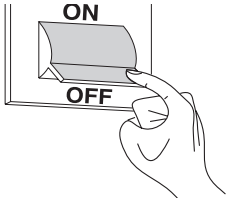
- Select with keys ▲ / ▼ "Holiday Setpoint" and confirm with key ●.
- Select "Antifreeze" holiday setpoint and confirm.

Holiday Settings	
Mode	System
Holiday Setpoint	Anti Fr
Begin Date	Saturday 01-08-2015
End Date	Saturday 01-08-2015

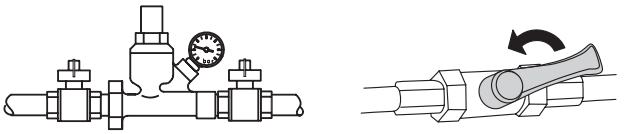
5.3 Preparing for extended periods of disuse

The following operations shall be necessary if the **Condexa PRO** modular system is not used for a long period of time:

- turn the main switch of the thermal modules and the main system switch to "off"



- Close the fuel and water valves for the heating and domestic hot water system.



⚠ Empty the thermal and sanitary system if there is a danger of frost.

5.4 Cleaning

Use a cloth damped in soapy water to clean the boiler's external casing.
To remove stubborn marks, use a cloth damped in a 50% mix of water and denatured alcohol or a suitable cleaning product.
Carefully dry after cleaning.

⛔ Do not use abrasive cleaning pads or powder detergents.

⛔ Never clean the boiler without first disconnecting it from the mains electricity supply by turning the mains power switch and the control panel switch OFF.

⚠ The combustion chamber and flue pipes must be cleaned periodically by the manufacturer's Technical Assistance Service or by a qualified heating engineer.

5.5 Maintenance

Please remember that THE PERSON RESPONSIBLE FOR SYSTEM MANAGEMENT MUST ENSURE THAT PROFESSIONALLY QUALIFIED HEATING ENGINEERS UNDERTAKE PERIODIC MAINTENANCE AND COMBUSTION EFFICIENCY MEASUREMENTS.

RIELLO's Technical Assistance Service is qualified to satisfy these legal requirements and can also provide useful information on MAINTENANCE PROGRAMMES designed to guarantee:

- Greater safety
- Compliance with applicable legislation
- Freedom from the risk of fines in the event of spot checks.

Regular maintenance is essential for the safety, efficiency and durability of the boiler.
Servicing is a legal requirement and must be performed at least once a year by a professionally qualified heating engineer.

5.6 Useful information

Seller:.....
Mr.: .....
Address: .....
Tel.:.....

Installer:.....
Mr.: .....
Address: .....
Tel.:.....

Technical Assistance Service: .....
Mr.: .....
Address: .....
Tel.:.....

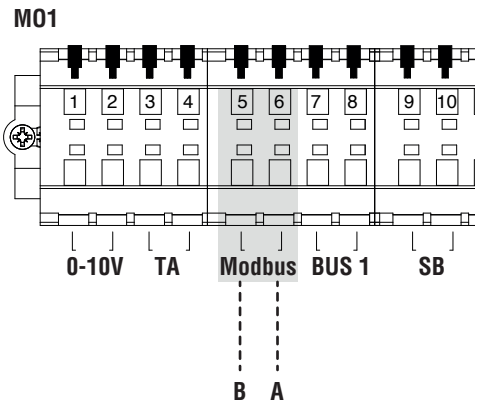
Date	Work done

Fuel oil supplier: .....
Mr.: .....
Address: .....
Tel.:.....

Date	Quantity supplied	Date	Quantity supplied	Date	Quantity supplied	Date	Quantity supplied

6 MODBUS CONNECTION

The thermal mode is equipped with a Modbus connection (based on the RS485 communication standard) that supports the remote management and adjustment of the aforementioned thermal module.
The Modbus connection is available in the low-voltage terminal board.

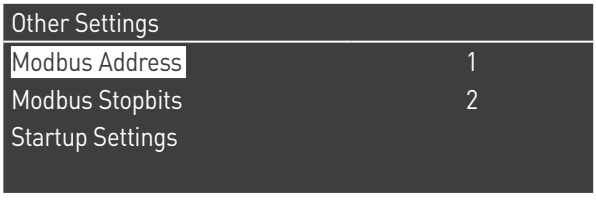


Configuration
The following table shows the connection details.

Protocol	Modbus RTU
Slave address	Adjustable from the display. Default: 1
Supported Modbus controls	Read Holding registers (03) Write single holding register (06) Write multiple holding registers (10)
Baud rate	9600 bps.
Length	8
Parity	No
Stop Bits	1 or 2 (adjustable from PB or PC software)
Connection	RS485 (2 wires + optional earthing)

As shown in the table above, the thermal module's address (meant as the address of the slave device in the Modbus system) and the number of "Stop Bits" are two adjustable values.
To modify one or the other, from the home screen, access the "Settings" menu, select "General settings" and confirm.

Access the "0ther settings" menu and select "Ind. Modbus"



Registers
Depending on the type of Modbus device used to connect to the thermal module, the registers' addressing may start from 0x0000 or 0x0001.
If addressing starts from 0x0000, the numbers of the registers listed in the table below may be used directly for reading/writing operations; if addressing starts from 0x0001, the numbers of registers shown in the table, plus one, must be used for reading/writing operations.

Control register
The control register is used for special functions.
The first one is that of enabling writing on registers. All accessible registers, including write ones, must be first enabled to receive data. To prevent undesired entries, it is possible to change the value in a register only during the first four seconds after the status change of the 0 bit in the control register.
Therefore, before changing the value of a register, it is necessary to change the status of 0 bit of the control register (register No. 99), sending the string 1 to it.

The control register also supports the remote resetting of the board, by changing the status of the 14 bit. Therefore, by sending the value 16384 to register No. 99, it is possible to reset the board.

⚠ By sending a value other than 1 and from 16384 to register No. 99, the latter will return to the write-protected status (bit 0=0).

The table that summarises the control register's operation is provided below:

Register number		Access		Description	Value range
		L	S		
99	0063	X	X	Control register	Bit 0: enables writing Bit 14: controller reset

Measurement unit selection register
Register 98 is used to change the format of the data stored in registers (those containing temperature or pressure values).
Before changing the value of the selection register, it is necessary to enable it for writing by forwarding the enabling command to the 99 control register.
The table for measurement unit selection register is the following:

Register number		Access		Description	Value range
		L	S		
98	0062	X	X	Measurement unit selection register	Bit 0: °C/°F Bit 1: bar/psi

Types of data

Type of data	Unit
Temperature	°C/°F
Voltage	Volt
Pressure	bar/psi
Ionisation current	µA
Percentage	%
Connection	RS485 (2 wires + optional earthing)

Status parameters

Register number	Access		Description	Automatic conversion	Value range
	L	S			
100	X		State		See "State" table
101	X		Status		See "Status" table
102	X		Error code		See "Error" tables
103	X		Alarm code		See "Warning" table
110	X		Heating pump	Yes	0/100 or 0..100%
111	X		DHW pump	Yes	0/100 or 0..100%
112	X		Module pump	Yes	0/100 or 0..100%

Temperatures/Information

Register number	Access		Description	Automatic conversion	Value range
	L	S			
120	X		Delivery temperature	Yes	Depends on °C/°F units
121	X		Return temperature	Yes	Depends on °C/°F units
122	X		DHW temperature	Yes	Depends on °C/°F units
123	X		Flue gas temperature	Yes	Depends on °C/°F units
124	X		System temperatures (where available)	Yes	Depends on °C/°F units
125	X		Outdoor temperature (where available)	Yes	Depends on °C/°F units
140	X		Power	Yes	0..100%
141	X		Minimum output	Yes	0..100%
142	X		Ionisation current	Yes	0..x µA

Dependent information

Register number	Access		Description	Automatic conversion	Value range
	L	S			
Dependent 01					
300	X		State		See "State" table
302	X		Error code		See "Error" tables
303	X		Power	Yes	0..100%
Dependent 02					
306	X		State		See "State" table
308	X		Error code		See "Error" tables
309	X		Power	Yes	0..100%
Dependent 03					
312	X		State		See "State" table
314	X		Error code		See "Error" tables
315	X		Power	Yes	0..100%
Dependent 04					
318	X		State		See "State" table
320	X		Error code		See "Error" tables
321	X		Power	Yes	0..100%
Dependent 05					
324	X		State		See "State" table
326	X		Error code		See "Error" tables
327	X		Power	Yes	0..100%
Dependent 06					
330	X		State		See "State" table
332	X		Error code		See "Error" tables
333	X		Power	Yes	0..100%
Dependent 07					
336	X		State		See "State" table
338	X		Error code		See "Error" tables
339	X		Power	Yes	0..100%
Dependent 08					
342	X		State		See "State" table
344	X		Error code		See "Error" tables
345	X		Power	Yes	0..100%

Register number	Access		Description	Automatic conversion	Value range
	L	S			
Dependent 09					
348	X		State		See "State" table
350	X		Error code		See "Error" tables
351	X		Power	Yes	0..100%
Dependent 10					
354	X		State		See "State" table
356	X		Error code		See "Error" tables
357	X		Power	Yes	0..100%
Dependent 11					
360	X		State		See "State" table
362	X		Error code		See "Error" tables
363	X		Power	Yes	0..100%
Dependent 12					
366	X		State		See "State" table
368	X		Error code		See "Error" tables
369	X		Power	Yes	0..100%
Dependent 13					
372	X		State		See "State" table
374	X		Error code		See "Error" tables
375	X		Power	Yes	0..100%
Dependent 14					
378	X		State		See "State" table
380	X		Error code		See "Error" tables
381	X		Power	Yes	0..100%
Dependent 15					
384	X		State		See "State" table
386	X		Error code		See "Error" tables
387	X		Power	Yes	0..100%

Parameters registers

Register number	Access		Description	Note	Automatic conversion	Value range
	L	S				
500	X	X	Heating mode (Par. 1)	NV		0..x
501	X	X	DHW mode (Par. 35)	NV		0..x
502	X	X	Heating set-point (Par. 3)	V	Yes	Depends on °C/°F units
503	X	X	DHW set-point (Par. 48)	V	Yes	Depends on °C/°F units
504	X	X	Set-point at min. climatic T (Par. 19)	NV	Yes	Depends on °C/°F units
505	X	X	Set-point at max. climatic T (Par. 21)	NV	Yes	Depends on °C/°F units
506	X	X	Out. temperature for climatic minimum (Par. 22)	NV	Yes	Depends on °C/°F units
507	X	X	Out. temperature for climatic maximum (Par. 20)	NV	Yes	Depends on °C/°F units
508	X	X	Climatic shut-off (Par. 25)	NV	Yes	Depends on °C/°F units
509	X	X	Maximum value that can be assigned to the heating set-point (Par. 24)	NV	Yes	Depends on °C/°F units

Register number	Access		Description	Note	Automatic conversion	Value range
510	X	X	Minimum value that can be assigned to the heating set-point (Par. 23)	NV	Yes	Depends on °C/°F units
511	X	X	Night-time attenuation (Par. 28)	NV	Yes	Depends on °C/°F units

In the "Note" column, the registers marked with "V" can be written on an ongoing basis (and be used for dynamic size control). Registers marked with "NV", on the other hand, can be overwritten only for a limited number of times (around 10,000 times with an average of twice a day).

Service reminder

Register number	Access		Description	Automatic conversion	Value range
	L	S			
1500	X		Hours elapsed from the last maintenance activity		0...65534 hours
1501	X		Hours from the next maintenance activity		.. 0...2000

STATUS table

Nr.	Name	Description
0	STANDBY	Standby
10	ALARM	Non-volatile lockout error
14	BLOCK	Volatile lockout error
15	FROST_PROTECT	Frost protection on
16	CH_DEMAND	Heat demand
17	RESET_STATE	Reset
18	STORAGE_DEMAND	DHW demand
19	DHW_TAP_DEMAND	Imm. DHW demand.
20	DHW_PRE_HEAT	Pre-heating demand
21	STORE_HOLD_WARM	Holding desired storage temperature
22	GENERAL_PUMPING	General pump ON

STATE table

Nr.	Name	Description
0	RESET_0	Initialisation of reset variables
1	RESET_1	Reset
2	STANDBY_0	Standby
3	PRE_PURGE	Initialisation of pre-purging variables
4	PRE_PURGE_1	Pre-purging
5	SAFETY_ON	ON safety relay test
6	SAFETY_OFF	OFF safety relay test
7	IGNIT_0	Initialisation of ignition variables
8	IGNIT_1	Start-up
9	BURN_0	The module is ON
10	SHUT_DOWN_RELAY_TEST_0	Initialisation of variables to check safety devices and gas valve
11	SHUT_DOWN_RELAY_TEST_1	Safety and gas valve test relay
12	POST_PURGE_0	Initialisation of post-purging variables
13	POST_PURGE_1	Post-purging
14	PUMP_CH_0	Initialisation of heating pump variables
15	PUMP_CH_1	Heating pump
16	PUMP_HW_0	Initialisation of DHW pump variables
17	PUMP_HW_1	DHW pump
18	ALARM_1	Non-volatile lockout error
19	ERROR_CHECK	Volatile lockout error
20	BURNER_BOOT	Restart of board
21	CLEAR_E2PROM_ERROR	Cancel error E2PROM
22	STORE_BLOCK_ERROR	Save error
23	WAIT_A_SECOND	Waiting before entering another state

7 RECYCLING AND DISPOSAL

The appliance is manufactured using various materials, such as metal, plastics, and electric and electronic components. At the end of the life cycle, safely remove the components and dispose of them in a responsible manner, in compliance with the installation country's applicable environmental legislation.

⚠ Adequate sorted waste collection, processing and environmentally-friendly disposal contribute to preventing possible negative impacts on the environment and health and promote the reuse and/or recycling of the materials of which the appliance consists.

⚠ Illegal disposal of the product by the owner shall be subject to administrative fines provided for by applicable laws.

RIELLO

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