Installation and user manual

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1 Introduction

1.1 Introduction and referenced European laws

Dear Customer,

Congratulations for your choice and thank you for the trust you place in our products. With your purchase you have chosen a technology which is the best combination of energy saving and functionality, compliant with the strictest European safety standards.

We kindly ask you to read the content of this manual carefully, as you will find useful advice and directions which will help you operate the boiler effectively and efficiently, increasing its lifespan and your comfort. We also ask you to preserve these instructions and make them available, when required, to the technician or installer, to ensure easier and correct boiler installation, operation and maintenance.

For the realization of this product Fontecal SpA follows these European and Italian laws and standards:

COUNCIL DIRECTIVE 92/42/EEC of 21 May 1992 on efficiency requirements for new hot-water boilers fired with liquid or gaseous fuels.
PROJECT CIG E.01.08.929.0 – Gas fired condensing heating appliances with nominal heat input more than 35 kW.
D.P.R. 412 of 26 August 1993 and D.P.R. 551 of 21 December 1999 – These Italian laws specify the requirements for the projecting, working and maintenance for rational use of energy.
R COLLECTION (ISPESL) – Italian safety standard for hot-water boilers plants with temperature not exceeding 110° C.
UNI 10845 – Italian standard for flue gas venting system for hot-water boilers fired with gaseous fuels.


COROLLA 381-382 has:

the higher energetic efficiency class (from the directive 92/42/CEE) shown with the symbol ★★★★;
the better class for NOx emissions (the fifth for the EN 297).

1.2 Warnings

INSTALLATION In order to ensure safety and correct operation, the installation shall always take place in full compliance with the applicable Law and with the instructions provided by the Manufacturer, and will always be carried out by professionally qualified technical personnel only. The equipment shall be installed in a suitable area, and connected to the heating system in accordance with the applicable Law.

WARRANTY Full warranty assistance will be ensured only if the appliance is commissioned by Fontecal Spa commissioning engineers, please see Terms and Conditions for full details. The Manufacturer disclaims any and all responsibility resulting from damage due to tampering, improper use or mistakes made during equipment installation, operation and maintenance. In the event of failure or breakdown, isolate the equipment and do not try to repair it.

START UP The boiler shall be switched on for the first time by approved Corgy registered only. During start-up, the engineer shall complete the commissioning certificate and leave you a copy, thus starting the warranty period, whose conditions are specified in the Terms and Conditions available on request.

INSTALLATION AND USER MANUAL This manual shall be read carefully, in order to use the boiler correctly and safely, and shall always be kept safely.
2 Technical features

2.1 Dimensions

COROLLA 381/382 is a wall-mounted, modular, condensing, pre-mixed and blown thermal assembly, consisting of one (Corolla 381) or two (Corolla 382) thermal element installed in series. The useful power of each thermal element reaches 36.5 kW (100%, 50°C-30°C) and is modulating from 30% to 100%.

![Figure 1](image)

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>L – Width</td>
<td>600 mm</td>
</tr>
<tr>
<td>H – Height</td>
<td>1000 mm</td>
</tr>
<tr>
<td>P – Depth</td>
<td>380 mm</td>
</tr>
<tr>
<td>Water pipe (in)</td>
<td>1”</td>
</tr>
<tr>
<td>Water pipe (out)</td>
<td>1”</td>
</tr>
<tr>
<td>Gas pipe</td>
<td>3/4”</td>
</tr>
<tr>
<td>Condensate pipe</td>
<td>18 mm</td>
</tr>
</tbody>
</table>

The efficiency of each generator reaches 108.7% in relation to the lower heating power of methane gas (Hi); thanks to the low temperatures of flue gas, an integrated flue gas collector entirely in plastic can be used, having a 50mm diameter and a glass-shaped connection, which can reach a height of 30 metres.

Corolla thermal assembly series 380 is a great achievement as regards management, cost-effectiveness, reliability, and flexibility. Indeed, thanks to the last-generation electronic management, modularity and versatility that for more than ten years have characterised Corolla products, this assembly can be rapidly connected to any type of heating system and system for the production of sanitary hot water with accumulation, simultaneously managing three different systems operating at three different temperatures.

Corolla 381/382 is fitted with an electronic management system, making it possible to combine several thermal assemblies in cascade, to create thermal stations which can reach an installed power exceeding 2000 kW.

Individual thermal units can be installed in cascade, besides applying the traditional ignition rotation, by means of a variable load factor, so that when the first unit reaches a certain power percentage (e.g. 30%), the following units start already, all with the same load factor.
This makes it possible to divide supplied power onto several heat exchangers with a power/exchange surface which is particularly useful to exploit latent condensation heat.

2.2 Main advantages

Total pre-mixing blown air burner
Condensing exchanger with efficiency until 108.7%
Power from 11 to 75 kW (single Corolla 382)
Possibility to manage 60 thermal units (burners) in series
Flue gas maximum temperature 80°C
Plastic flue gas collector (self-extinguishing PPS) (see par. 3.5)
Ø 50mm flue gas exhaust for each thermal unit (see Figure 2)
Flue pipe until 30 meters
Standard condensate discharge system in the boiler
Fast connection of water, condensate and gas (optional) collectors, with right and left outlet
Various thermal modules and the Master control station
Standard outside temperature regulation
Modulating and modular regulation of the power of individual thermal units;
Automatic inversion (adjustable time interval) of the burners’ ignition order
Selection of the burner’s cascade ignition criterion (power %)
Management of sanitary function and circuits at different temperatures, with or without operation priority;
Important safety devices, like a water differential pressure switch to control flux minimum flux for each unit

2.3 Construction details

Pre-mixing unit consisting of a modulating gas valve integrated with a high-head fan. The system ensures a constant mixing ratio in all operating conditions, and flue gas discharge through a plastic (PP) exhaust pipe, up to 30 linear metres long.

High-efficiency burnt 37.5 kW heat exchanger fitted with bi-metal corrugated internal coil:
water side: copper
flue gas side: stainless steel
The micro-flame burner is located high, at the centre of the exchanger, and is a grid-type, with one single ignition electrode

Digital control panel. The panel includes several adjustment functions and is equipped with a double display, which, depending on the circumstances, shows either the operation status or the error codes related to the most common failures

The Master/Slaves adjustment system is located behind the front panel. It consists of a master control unit that manages one (Corolla 381) or two (Corolla 382) Slave-type control units. Each slave card controls the operation and of the individual unit to which it is connected. The Master card can manage up to 60 Slave cards and is set for tele-management, temperature regulation, and

Corolla 381 and Corolla 382 thermal assemblies have one or two thermal units inside the metal cabinet, respectively.
Each thermal unit is connected to the hydraulic system and the gas supply in parallel to the others and consists of the following main components:
Heat exchanger
Pre-mixing assembly
Control and management slave card
Safety kit
50 mm polypropylene flue gas pipe
Each Corolla series 380 may be combined, in series, with other similar generators, to create modular thermal station where the various thermal units are managed by one single Master card, which can be installed on any of the thermal assemblies making up the station.

3 Installer instruction

3.1 Packing and product identification

Corolla series 380 heat generators are supplied on pallets, packed and protected with strapped cardboard.

It is important immediately to check for product integrity and correspondence with the order. Product features are specified on the outer part of the packing: model, power, version, and fuel type. Should the product not match with the order, immediately contact the point of sale where the product was purchased.

<table>
<thead>
<tr>
<th>NUM.</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Packing</td>
</tr>
<tr>
<td>2</td>
<td>Product plate</td>
</tr>
<tr>
<td>3</td>
<td>Information about model/gas type</td>
</tr>
<tr>
<td>4</td>
<td>Information about EC mark/symbols</td>
</tr>
<tr>
<td>5</td>
<td>Lower support structure in polystyrene</td>
</tr>
<tr>
<td>6</td>
<td>Boiler</td>
</tr>
<tr>
<td>7</td>
<td>Upper support structure in polystyrene</td>
</tr>
<tr>
<td>8</td>
<td>Polystyrene angulars</td>
</tr>
<tr>
<td>9</td>
<td>Wall fixing plate</td>
</tr>
<tr>
<td>10</td>
<td>Envelope with warranty and manual</td>
</tr>
<tr>
<td>11</td>
<td>Envelope with dowels</td>
</tr>
<tr>
<td>12</td>
<td>Box with external probe (only in the models 381/382 Master)</td>
</tr>
</tbody>
</table>

Figure 4
The product rating plate includes the following data:
Product name
Registration number
Product identification code
Efficiency as per Directive EEC92/42
Gas type and feed pressures
CE certificate No.
Data on power supply
Primary circuit maximum pressure and temperature
Thermal power
Efficiency values
Hourly condensate production

Figure 5

3.2 Mounting

3.2.1 Installation room
Corolla Pack series 500 thermal assemblies shall be installed in accordance with the most recent applicable standards and technical regulations on thermal stations and condensing boilers, as with any other applicable provision.

3.2.2 Wall mounting
The boiler must be installed on a solid masonry wall by means of hooks supplied together with the boiler, inside the packing (see Figure 4). In particular, use the 4 expansion fixings (2 for each side) to fix the boiler plate to the wall (see Figure 6).
The boiler should be installed at a height ensuring that its upper part cannot be reached with your hands.

WARNING: Thermal assemblies Corolla series 380 should not be installed outdoor

Figure 6
3.3 System cleaning

This preventive measure is absolutely required whenever a heat generator needs to be replaced in existing systems, but it is in any case recommended also on new systems, in order to remove any waste, dirt, working residues, etc.

To clean the system, if the old generator is still present in the system, it is advisable to:
- Add a descaling additive, such as FERNOX Superfloc 2%, to the system water;
- Have the system operate with the operating generator for approximately 7 days;
- Discharge the system's dirty water and wash once or several times using 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.

At the end of cleaning operations, before installing boiler Corolla 381/2, it is advisable to add protection fluid FERNOX MB-1 AT 4% to the system water.

3.4 Gas system

The boiler is prepared for the gas type shown on the data plate that is inside the shell. It's important to verify the real match between available gas type and the type required by the boiler.

If your gas is a LPG it's important to verify the regulation of the pressure on the gas line.

The gas change procedure is shown in par. 7

3.5 Flue gas system

Each heat generator (unit) inside thermal assemblies Corolla 381/382 has been validated equipped with a self-extinguishing polypropylene flue gas exhaust system (letter A in Figure 7) with glass-shaped connections.

As for the air supply system, since thermal assemblies Corolla 381/382 have been validated as type B or type C assemblies, air can be taken directly from the boiler room through specific vacuum pipes (letter B in Figure 7).

In any case the air supply system has to be made in compliance with the applicable standards.

3.5.1 Pipe maximum length

Each 50 mm exhaust pipe maximum equivalent length is 30 metres with a maximum 4-metre flow resistance for each 90° bend.

3.5.2 Installation of one single thermal assembly with flue gas exhaust pipe running inside a cavity for pipe routing (open chamber operation)

For this type of operation, it should be checked that the cavity's size complies with the applicable standards (see par. 3.6)...

Figure 8 and Figure 9 show the cavity's minimum size for the routing of one (Corolla 381) or two (Corolla 382) flue gas exhaust pipes.
Should it be necessary to extend the vertical or the horizontal section of the discharge piping to over 4 metres, create a siphon for condensate drainage at the foot of the pipe. The siphon's useful length must be at least 30 cm. (see par. 3.6).
3.5.3 Connection to a flue gas manifold

The flue gas venting system for two or more Corollas installed in series can be realized with the installation of a polypropylene manifold (it's optional) with a diameter of 125 mm, with male/female connections. The collector was conceived to collect the flue gas from the two 50mm pipes of a Corolla 382, each of which contains a flue gas non-return device.

If you want to use the collector when several thermal assemblies are installed in series, the minimum distance required between the assemblies (150 mm) (see Figure 10) must be complied with. In this way, the male end of one of the two collectors will connect more easily to the female connection of the nearby collector.

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DN125 manifold</td>
</tr>
<tr>
<td>2</td>
<td>Non-return device (Clapet)</td>
</tr>
<tr>
<td>3</td>
<td>45° bend</td>
</tr>
<tr>
<td>4</td>
<td>DN125 Tap</td>
</tr>
<tr>
<td>5</td>
<td>DN125 joint</td>
</tr>
</tbody>
</table>

COROLLA 381/382 allow the condensate discharge using the two little pipes shown in Figure 11. In the packing these pipes are in the shell (as indicated in Figure 11) so, first of all, it's necessary to extract them by using the two holes and then fix them with the two screwed rings.

3.6 Condensate discharge
The condensate water produced by thermal assembly Corolla 381/2 during its normal operation shall be discharged at atmospheric pressure, i.e. by dripping into a siphon-shaped container connected as described in the following procedure:

- Create a drip pan under the condensate discharge system (see position on the installation template);
- Connect the drip pan to the sewage system by means of a siphon.
- Insert a neutraliser if required by the applicable law.

The drip pan shall be created and installed in accordance with the applicable technical standards (see par. 1.1).

It is advisable to use plastic pipes (PP) to create the condensate discharge system. Never use copper pipes, as the condensate would rapidly damage them.

3.6.1 Siphon along the discharge piping

Should it be necessary to extend the vertical or the horizontal section of the discharge piping to over 4 metres, create a siphon for condensate drainage at the foot of the pipe. The siphon's useful length must be at least 30 cm (see Figure 13). The siphon discharge shall then be connected to the sewage system.

Condensate maximum production (50°C-30°C)
100%
Corolla 381 ............... 4.9 Kg / h
Corolla 382 ............... 9.8 Kg / h

3.7 Hydraulic connection

In Figure 6 at page 7 there are the hydraulic connections for Corolla 382. The connection sizes are:

- Gas 3/4” (G in Figure 6)
- System delivery 1” (M in Figure 6)
- System return 1” (R in Figure 6)

To create the hydraulic connection, two kits are available:
the first one can be used for the installation of one Corolla 382;
the second one is designed for the battery installation of maximum six Corolla 382 (in this case the system has a power of 450 kW)
In Figure 14 is shown the kit for a Corolla 382 composed by the following items:

N°1 gas collector Ø45 mm
N°1 delivery collector Ø45 mm
N°1 Return collector Ø45 mm

Each collector is fitted with 2 branch pipe, at whose ends are two 1’ taps for delivery and return collectors, and two ¾’ taps for the gas collector.

In Figure 15 is shown the kit for two Corolla 382 composed by the following items:

N°1 gas collector Ø3”
N°1 delivery collector Ø3”
N°1 return collector Ø3”

The collectors arrive until 450kW in an installation of six Corolla 382. Each collector is fitted with 2 branch pipe, at whose ends are two 1’ taps for delivery and return collectors, and two ¾’ taps for the gas collector.

3.7.1 Operating pressure
The maximum operating pressure is 6 bar, its minimum operating pressure is 0.5 bar.

3.7.2 Filling and emptying
The boiler should be filled connecting the water network to any system point.
The boiler should be emptied using the relevant valves in the relevant system points.

4 Installation drawings
A plant scheme must be fit for the technical boiler features: so it’s possible to utilize in the better way boiler’s efficiency and to keep the plant in good conditions for a long time. The figures below show some possible solutions for Corollas installations schemes.

In Figure 16 is shown an installation of 150 kW without header. In Figure 17 is shown the same installation with header.
5 Power supply system

5.1 Power supply

The electrical drawing of the Corolla series 380 thermal assembly is shown in detail in chapter 11. Some important electrical features of the thermal assembly are specified on the appliance's rating plate. (Figure 5)

Boiler installation requires the connection to a 230 v - 50 Hz mains. The connection should be made in full compliance with the applicable electrical standards.
However, it is always advisable to install a magneto thermal differential switch along the boiler's power supply line. In Figure 18 is shown the terminal block of the master board. In Figure 19 is shown an example of an electrical connection of some external device.

5.2 Warnings

Always check the effectiveness of the earthing of the electrical system to which the thermal assembly is going to be connected. Indeed, should the earthing be inefficient, the correct operation of the ignition/detection electrode might be affected.

⚠️ Warnings

- 230 V voltage cables must be separated from the 24 V ones using independent PVC conduits.
- Before connecting external electrical components (regulators, electrical valves, outside temperature probes, etc.) to the thermal assembly, make sure that their electrical features (voltage, absorption, pickup voltage) are compatible with the available inputs and outputs.
- Never switch off the boiler during its normal operation (when the burner is on), suddenly cutting off the power supply by means of the on-off button. This may cause an anomalous overheating of the primary exchanger. To switch off the boiler (during the heating stage) use an environment thermostat or a remote control.
- To connect external devices, use the adequate relays (see the electrical schema at pag. 31). In this way it is possible to use the external devices also in emergency mode (see par 5.3.9)
- Do not touch electrical appliances with wet or humid body parts.
- Do not expose the appliance to the elements (rain, sun, wind, etc.).
- Do not pull the electrical cables.
- Do not let the appliance be operated by non-expert people. Should the power supply cable break, switch off the thermal assembly. To replace it, contact qualified personnel.

5.3 Electrical connections

5.3.1 Connection to temperature regulation devices

Corolla series 500 thermal assemblies are fitted with a very versatile control and management system, which can manage up to three independent circuits operating at different temperatures.

5.3.2 Antifreeze protection

The thermal assembly's management electronics includes an antifreeze function. When the delivery temperature drops below a minimum limit (programmable), the burners switch on at minimum power, as set in the operation parameters. The antifreeze function is activate also when the external probe is not connected. The parameter 14 (high temperature zone Ch1) and the parameter 22 (low temperature zone Ch2) are by default in climatic mode. If you want to disconnect the external probe, it is necessary to change the value of the parameters 14 and 22. Only a Fontecal authorized Technical Support Service can operate this parameter variation.

5.3.3 Pump connection

Corolla series 500 regulation system includes the simultaneous management of up to three circulators. Therefore, if it is necessary to use a general pump to assure the circulation (P3 in Figure 19) and there is a low temperature circuit, the pump of this circuit (P4 in Figure 19) will be managed directly by a room thermostat. This operation is carried out by setting the parameter n° 34.

The pumps shall be installed using an adequate relay/commutator, (see also par. 5.2)

With this device we can supply pumps directly from the electrical system, not using the fusible present in the board.

<table>
<thead>
<tr>
<th>Code</th>
<th>N. Jumper</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td>J11 (1-2)</td>
<td>Flow temperature probe (High)</td>
</tr>
<tr>
<td>SB</td>
<td>J11 (3-4)</td>
<td>Sanitary temperature probe</td>
</tr>
<tr>
<td>S2</td>
<td>J11 (5-6)</td>
<td>Flow temperature probe (Low)</td>
</tr>
<tr>
<td>SE</td>
<td>J11 (7-8)</td>
<td>External temperature probe</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>T1</td>
<td>J12 (9-10)</td>
<td>Room thermostat (High)</td>
</tr>
<tr>
<td>T2</td>
<td>J12 (11-12)</td>
<td>Room thermostat (Low)</td>
</tr>
<tr>
<td>AI</td>
<td>J12 (13-14)</td>
<td>Analogical device 0-10V</td>
</tr>
<tr>
<td>CR</td>
<td>J12 (15-17)</td>
<td>Remote control</td>
</tr>
<tr>
<td>AL</td>
<td>J8 (18-19)</td>
<td>Alarm device</td>
</tr>
<tr>
<td>VM</td>
<td>J9 (20-22)</td>
<td>Mixing valve</td>
</tr>
<tr>
<td>P3</td>
<td>J10 (23-24)</td>
<td>Low temperature circuit pump</td>
</tr>
<tr>
<td>P1</td>
<td>J10 (25-26)</td>
<td>High temp. circuit pump</td>
</tr>
<tr>
<td>P2</td>
<td>J10 (27-28)</td>
<td>Sanitary pump</td>
</tr>
</tbody>
</table>

**Figure 18**

If you want to connect a unit directly to the system (for example a Corolla 381), the internal pump may be inadequate to assure the circulation in the central heating circuit. In this case it is necessary to install a second pump. In any case Figure 20 shows the curve of available head for the system (the boiler’s flow resistance values have already been taken into consideration), in relation to the water flow rate.
5.3.4 Room Thermostat connection (on/off)
Connect the high temperature system's environment thermostat to terminals no. 9 and 10 Figure 18. The low temperature system's thermostat shall be connected to terminals no. 11 and 12 Figure 18.

5.3.5 External probe connection
If outside temperature regulation is to be used, the outside probe (optional) needs to be connected to terminals no. 7 and 8 (Figure 18). The outside probe shall be installed on an outer wall, North or North/East, at a minimum height of 2.5 metres, away from windows, door, and ventilation grids. Never install the probe in a position exposed to the sun. If it is necessary to modify the climatic curve set, please contact a Fontecal Technical Support Service.

5.3.6 Connection of an external regulation 0-10v
It is possible to use the terminals n. 13 and n. 14 (Figure 18) for an external power or set-point regulation. The input signal is a DC voltage with a range of 0-10 V. It is important to connect the positive input to the terminal n. 13.

5.3.7 Connection of an alarm device
A 220 V clear contact block output on the boiler's terminal strip allows to connect an outside sound or visual alarm device, capable of highlighting any technical anomalies. The alarm device must be connected to terminals no. 18 and 19 (Figure 18).

5.3.8 Connection of a remote control
If the remote control is to be used, it must be connected to terminals no. 15, 16, and 17 (Figure 18).

5.3.9 Emergency mode
Corolla series 380's electronic management system includes an operation mode called "Emergency" mode, which can be activated in case of malfunctioning of the Master card. Indeed, to ensure continuous operation of the thermal assembly, the master card can be disabled in such a way as to have the system operate at a default delivery temperature set by the Manufacturer. To enable the "Emergency" function, carry out the following procedure:

a. Disconnect the 4-pole connector J14 from the Master card (see Figure 21);
b. Set all four J17 switches located on each Slave of the thermal assembly on the Off position (Figure 22);
c. Supply all system circulators with mains current, using the appropriate switches;
d. terminal X1 or terminal X2 which are part of the cabling of the J14 connector disconnected in point a) of this procedure must be connected to a 24V ac power supply (see Figure 23).

![Figure 21](image1)

![Figure 22](image2)

![Figure 23](image3)

**Warning:** if several Corollas are installed in series, one of the two terminals (X1 or X2) or both may be connected to the adjacent thermal group or groups. If this is the case, supply the free terminal with 24 V, (see par. 5.3.10).

### 5.3.10 Battery installation

On of the many functions included in Corolla 380's electronics allows for the installation of several modules in series, to create thermal assemblies having an overall power exceeding 75 kW. This type of system requires on single Corolla series 380 equipped with a Master control unit, while all other Corollas 380 will have no control unit. The cabling of some electronic components present on the system should be carried out as illustrated in Figure 24. The setting of the electronic components is explained in chapter 7.2.
6 Regulation

6.1 Digital control panel: keys description

The Corolla digital Master control panel (Figure 25) is located in the front, low and left, of the boiler’s shell.

The panel includes several adjustment functions and is equipped with a double display, which, depending on the circumstances, shows either the operation status or the error codes related to the most common failures.

Each key has a particular meaning, because there are many use modes.

<table>
<thead>
<tr>
<th>KEY</th>
<th>LEGEND</th>
<th>KEY DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td>Reset</td>
<td>It is necessary to unblock the electronic board after a permanent block</td>
</tr>
<tr>
<td>S2</td>
<td>Set / esc</td>
<td>It is necessary to enter into parameters and monitor mode for the singles units</td>
</tr>
<tr>
<td>S3</td>
<td>Arrow</td>
<td>It is necessary to display the functioning state of master circuits</td>
</tr>
<tr>
<td>S4</td>
<td>Increment</td>
<td>It is necessary to increase a value</td>
</tr>
<tr>
<td>S5</td>
<td>Decrement</td>
<td>It is necessary to decrease a value</td>
</tr>
<tr>
<td>S6</td>
<td>Prog/OK</td>
<td>It is necessary to store a value</td>
</tr>
<tr>
<td>U2</td>
<td>Luminous display</td>
<td>Display information about boiler condition</td>
</tr>
<tr>
<td>U3</td>
<td>Luminous display</td>
<td>Display information about boiler condition</td>
</tr>
<tr>
<td>D4</td>
<td>Green led</td>
<td>If lighted, it indicates that the system has power supply</td>
</tr>
<tr>
<td>D5</td>
<td>Red led</td>
<td>If lighted, it indicates an anomaly</td>
</tr>
</tbody>
</table>
6.2 Display during normal operation

The red led, D5, is turned on in case of anomalies which imply the permanent block-out on any unit (only the Mater or Slave reset button will restore normal functioning).

The green led, D4, shows power on. The 3 7 segment displays shall visualize:

<table>
<thead>
<tr>
<th>SYSTEM STATUS</th>
<th>DISPLAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>No demand from the heating and sanitary circuit</td>
<td>0 30</td>
</tr>
<tr>
<td>(figures on the right display the T1 e.g. T1=30°C)</td>
<td></td>
</tr>
<tr>
<td>Demand from circuit N°1 or simultaneous functioning</td>
<td>1. 80</td>
</tr>
<tr>
<td>the 1° and 2°. (figures on the right display the T1 e.g. T1=80°C)</td>
<td></td>
</tr>
<tr>
<td>Demand from sanitary circuit or simultaneous functioning. (figures on the right display the T1 e.g. T1=80°C) the dot after the first figure must be flashing</td>
<td>1. 80</td>
</tr>
<tr>
<td>Demand from 2° circuit (figures on the right display the T1 e.g. T1=80°C)</td>
<td>I'80</td>
</tr>
<tr>
<td>Antifreeze function is active or external probe is disconnected (see also par 5.3.2)</td>
<td>F 80</td>
</tr>
</tbody>
</table>

6.2.1 Functioning values display

FUNCTIONING VALUES DISPLAY

Press S3 (arrow) to step forward from functioning display and to visualize the following value (below listed values shall be displayed in succession by pressing the S3 button)

<table>
<thead>
<tr>
<th>POS.</th>
<th>DISPLAYED VALUE</th>
<th>DISPLAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Flow Temperature High T1 (e.g. T1=80°C)</td>
<td>1. 80</td>
</tr>
<tr>
<td>2</td>
<td>Sanitary Temperature T3</td>
<td>3. 50</td>
</tr>
<tr>
<td>3</td>
<td>Outdoor temperature T4</td>
<td>4. 7</td>
</tr>
<tr>
<td>4</td>
<td>Flow Temperature Low T6</td>
<td>6. 50</td>
</tr>
<tr>
<td>5</td>
<td>1° circuit room thermostat open or close (e.g. Ta1 close - oF - ; Ta1 open - on)</td>
<td>K. OF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>K. ON</td>
</tr>
<tr>
<td>6</td>
<td>2° circuit room thermostat open or close (e.g. Ta2 close - oF - ; Ta2 open - on)</td>
<td>L. oF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>L. on</td>
</tr>
<tr>
<td>7</td>
<td>Analogical Input 0-10V (e.g.. 5.5V; 10V )</td>
<td>7. 5.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7.10</td>
</tr>
<tr>
<td>8</td>
<td>Mixing valve status e.g. close</td>
<td>8 _[</td>
</tr>
<tr>
<td>9</td>
<td>Main pump status (e.g. pump not functioning; e.g. pump functioning)</td>
<td>P 1.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P 1.1</td>
</tr>
<tr>
<td>10</td>
<td>Sanitary circuit pump status (e.g. pump not functioning; e.g. pump functioning)</td>
<td>P 2.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P 2.1</td>
</tr>
<tr>
<td>11</td>
<td>Secondary pump status (e.g. pump not functioning; e.g. pump functioning)</td>
<td>P 3.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P 3.1</td>
</tr>
</tbody>
</table>

6.3 User’s parameter change

From “Functioning values display” the following users’ parameters can be modified:
Setpoint high temperature circuit
Setpoint sanitary circuit
Setpoint low temperature circuit
By pressing S3 (SET/ESC), on the values display respectively:
T_flow_system_high. (pos.1);
T_dhw (pos.2);
T_flow_system_low. (pos.4).

Follow the procedures below to modify one of the three parameters above:

Press S2: according to the relative functioning value. the set point value will flash on the last two digits
If the value does not need to be changed, press S2 (SET/ESC) to return the display mode. If the value needs to be modified, press S4 (+) and S5 (-) until the desired value will be displayed. Press S6 (Progr./OK) to store the value. Said value will stop lashing and after 3 seconded the display mode will be restored.

In the following table is shown the procedure to change the setpoint of the low temperature circuit from 50° to 40°

<table>
<thead>
<tr>
<th>PROCEDURE</th>
<th>DISPLAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>E.g. installation running with T_flow_system_high at 80°C</td>
</tr>
<tr>
<td>2</td>
<td>Press S3 (arrow), to access into the display mode, press again till the value detected from T_flow_system_low is displayed (e.g. fig.8, 50°C).</td>
</tr>
<tr>
<td>3</td>
<td>Press S2 (Set/esc)</td>
</tr>
<tr>
<td>4</td>
<td>Press S5 till the set point returns to 40°C</td>
</tr>
<tr>
<td>5</td>
<td>Press S6 (Progr/OK) to store the value.</td>
</tr>
<tr>
<td>6</td>
<td>After 3 sec. the display returns to the parameters display mode and the T6 is displayed</td>
</tr>
</tbody>
</table>

If no procedures are carried out for 10 seconds after that S2 (SET/ESC) has been pressed (to modify the set point of the corresponding parameters to the one displayed), the boards returns to “functioning values display” mode.
If after pressing + or – the buttons aren’t used for a period of one minute the display also returns to “functioning values display” mode. When this happened the new setting will not be stored.

6.4 Monitor mode

Press S2 (SET/ESC) for 5 seconds to access the “monitor” mode.

Press S2 for 5 seconds to access the “monitor” mode.
This mode will allow to check the functioning values of the single unit of the system. (address from 1 to 64).

<table>
<thead>
<tr>
<th>POS.</th>
<th>OPERATION</th>
<th>DISPLAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The installation is running with T1 at 80°C</td>
<td>1.80</td>
</tr>
<tr>
<td>2</td>
<td>Press S2 (SET/ESC), for 5 sec. the display shall indicate that it</td>
<td>U 01</td>
</tr>
</tbody>
</table>
is possible to read the functioning value on address 1 unit

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Press S4 (+) and S5 (-) to read the values of the desired unit. E.g. unit 19.</td>
<td>U 19</td>
</tr>
<tr>
<td>4</td>
<td>Use S3 (arrow) to display both the first functioning value of the selected unit and the sequence of all the values that can be displayed. E.g. value n°1 (flow probe temperature 70°C)</td>
<td>1 70</td>
</tr>
<tr>
<td>5</td>
<td>To exit “monitor” mode, press S2 (SET/ESC). If no procedures are carried out for 5 minutes, the boards automatically returns to “functioning display”</td>
<td>1. 80</td>
</tr>
</tbody>
</table>

Through S3 (arrow) the following values can be displayed for each unit:

<table>
<thead>
<tr>
<th>POS.</th>
<th>VALUE</th>
<th>DISPLAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Flow probe (e.g. 70°C)</td>
<td>1 70</td>
</tr>
<tr>
<td>2</td>
<td>Return probe (e.g. 50°C)</td>
<td>2 50</td>
</tr>
<tr>
<td>3</td>
<td>Flue probe (e.g. 60°C)</td>
<td>5 60</td>
</tr>
<tr>
<td>4</td>
<td>Ionization current (index from 0 to 99) E.g. Ionization current index 44</td>
<td>[44]</td>
</tr>
<tr>
<td>5</td>
<td>PWM signal for fan (%). If PWM=100%, 99 value is displayed (e.g. 66%)</td>
<td>7 66</td>
</tr>
<tr>
<td>6</td>
<td>Contact Open or Close by flux switch E.g. open contact</td>
<td>F. on F. off</td>
</tr>
<tr>
<td>7</td>
<td>Unit pump on/off E.g. pump on E.g. pump off</td>
<td>8. on 8. off</td>
</tr>
<tr>
<td>8</td>
<td>Max ionization current (index from 0 to 99) in a start attempt E.g. Max ionization current index 80</td>
<td>1 80</td>
</tr>
<tr>
<td>9</td>
<td>Unit functioning hours (from 0 to 9999 hours) E.g. fig. 8050 hours</td>
<td>H 80, H 50</td>
</tr>
</tbody>
</table>

7 Assistance
To complete the start-up of the boiler, the following operations are necessary:
1. Verification of the installation;
2. Gas verification and, if it is necessary, gas change (see par 7.1);
3. Combustion analysis;
4. Slave board setting (see par. 7.2).

⚠️ Warning: This operations should always be performed by Fontecal Spa qualified technicians,

7.1 Gas change – Methane-LPG conversion
7.1.1 Introduction

The boiler has a configuration for methane. It is possible to change this configuration only using the transformation kit supplied by FONTECAL. The following operations must be carried out only by the authorized Service Technician. To transform from methane to LPG the diaphragm (Figure 26) has to be used.

7.1.2 Operating instruction

1. Shut any electric supply.
2. Close the gas valve.
3. Unscrew the two screws to remove the frontal panel.
4. Remove the 3 screw from the gas valve (Figure 27).
5. Disconnect the venturi from the valve. At this moment it is possible to see the nozzle hole with the gasket (Figure 28).
6. To change from methane to LPG insert the diaphragm Ø 6.5 (or Ø 6.75) into the nozzle hole. Attention! Do not remove the gasket (Figure 29 and Figure 30). If using the Ø 6.5 diaphragm the unit doesn’t start, then install the Ø 6.75 diaphragm.

**Note**: to change from LPG to methane, remove the diaphragm present into the hole.

7. Reassemble the gas valve and the venturi. Switch on the general supply. (**Attention!** Be sure there is not request from any room thermostat). Open the gas supply.
8. Change the parameter n.36 as below indicated:

1 = Methane with flue gas system’s overall length below 15 metres
2 = Methane with flue gas system’s overall length over 15 metres
3 = LPG with flue gas system’s overall length below 15 metres
4 = LPG with flue gas system’s overall length over 15 metres

7.1.3 Gas valve regulation

To adjust the gas valve, follow this procedure:
1. Put the flue sensor into the flue system. (Figure 31)
2. Rotate the Venturi gas regulation screw (throttle) with two turns on the left as shown in Figure 32.
3. Make sure that there is a request from at least one of the two room thermostat. If you have problems with the thermal assembly ignition rotate on the right the regulation screw, only one turn at time.
4. Give the maximum power to the boiler by using the digital control panel: you have to press at the same time S2 key.
(SET/ESC) and S4 key (+) just for 5 sec. Then it’s possible to indicate the maximum fan speed by using the S4 key (par. n°15). All the system fans will work with this selected speed. On the first digit on the left it’s shown the selected speed. H = maximum speed. Other two digit will show the water flow temperature (example T1=80°C).

5. Regulate the combustion acting on throttle (Figure 32) until you arrive to the nominal CO2 value shown in the below table. **NOTE**. To increase the gas flow rotate on the left while to decrease the gas flow rotate on the right.

6. Let the boiler arrive to the maximum power and then change, if it’s necessary, the Venturi regulation.

7. Let the boiler arrive to the minimum power by using S5 key (-).

8. On left of the display it will appear a “L” (Low= minimum power); act on the gas regulation screw Offset (see Figure 33) to arrive to the values present in the below table. **NOTE**. To increase the gas flow rotate on the right while to decrease the gas flow rotate on the left.

<table>
<thead>
<tr>
<th>GAS</th>
<th>MAX POWER</th>
<th>MIN POWER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methane</td>
<td>CO₂ = 9.2 – 9.4</td>
<td>CO₂ = 8.3 – 8.5</td>
</tr>
<tr>
<td>LPG</td>
<td>CO₂ = 10.2 – 10.4</td>
<td>CO₂ = 8.6 – 8.9</td>
</tr>
</tbody>
</table>

7.2 Slave boards setting

Each slave (one for each burner) needs to be properly configured so that the Master board shall detect their right sequence. First of all slave boards needs to be divided into blocks; the system can manage until 15 blocks made of 4 slaves each.

Ex. If 5 slaves are connected to one Master, we have 2 blocks: the first is made of 4 salves and the second of one slave.

As a consequence, complete the following procedure to fulfil the address configuration:

1. Locate the slave position inside each block ( ex. position1,2,3 or 4).
2. Locate the block the slave is related to (ex. Block n°1, n°2…………till block n°15)
3. Supply each Corolla series 380 composing the battery.

As indicated in Figure 34, to set block address we refer to the jumper J17, while for the slaves (singles burners) we refer to the jumper J10.

Refer to Table 1 to see the possible combinations of the jumpers J10 that characterize the four slaves (n 1, 2, 3 and 4) of the same block. Table 2, shows the possible combinations of the jumpers (J17). In Table 2 we have the settings for the maximum (15) number of block. In Figure 35 it is shown a configuration with seven units.

**NOTE**: The address for Corolla 381/382 Master unit are n°1 and n°2 and the block is n.1. The address for Corolla 382 Slave unit are n°3 and n°4 and the block is n.1.
7.2.1 Example of configuration of a battery with seven burner in cascade

In case two blocks are present in an installation having a battery of seven burners (i.e. seven slaves): the first is made of 4 burners and the second is made of 3. As a consequence, two blocks need to be configured, respectively with address 1 and 2 and with relative burners, to the first block with address 1, 2, 3 and 4, and to the second block with address 1, 2 and 3 (see Figure 35).

<table>
<thead>
<tr>
<th>Block</th>
<th>Burner N°1</th>
<th>Burner N°2</th>
<th>Burner N°3</th>
<th>Burner N°4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1°</td>
<td>ON</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>2°</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>Blocks</td>
<td>Block N°1</td>
<td>Block N°2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1°</td>
<td>ON</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>2°</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>3°</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>4°</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>5°</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>6°</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>7°</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>8°</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>9°</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>10°</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>11°</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>12°</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>13°</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>14°</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>15°</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
</tr>
</tbody>
</table>

Table 2

8 Safety devices

All the functions of the thermal module are electrically controlled. Any anomaly causes the lock out of the single thermal element and the automatic shut down of the gas valve.

The following devices are installed on the water circuit:
- Auto reset safety thermostat for each thermal element
- Safety fluxostat (water differential pressure switch) for each thermal element
- Temperature probe on each thermal element flow and return. Probes are managed by an electronics homologated for safety performances and with a double processor technology. Such device allows to continually control both flow temperature and the Dt between flow and return of the battery element.
- Modulating flow temperature regulation for both single elements and the whole battery

The following devices are installed on the combustion circuit:
- Gas electro valve in B+C class for each thermal element, with gas flux pneumatic compensation according to the inlet air flow (air/gas 1:1 ratio)
- Ionization electrode for continuous flame detection
- Flue pipes temperature control for each thermal element
Both protection interventions and gas valve shut-off occur, on each thermal element, when the following situations take place,

- Flame extinguishing
- Exchange circuit overheat
- Flue high temperature
- Air flow reduction

Hot water thermal plants with a global boiler power higher than 35 kW are subject to the ISPESL Institute’s R Collection, therefore we enclose the specific declarations referred to modular heat boilers required by the new ISPEL R Collection, edition 2000. Corolla Series 380 is ISPESL certificated, with certification n. A00-00/0000227/06

INSTALLATIONS WITH MODULAR BOILERS
(ref. Chapter R.12 R Collection, ed. December 2000)

1. Generalities and definitions

1.1 Corolla Pack is a modular boiler which is made up of one or more thermal modules pre-arranged by FONTECAL S.p.A. to work singularly or in battery and connected to a single water circuit by a double manifold (i.e.: one return and one flow manifold);
1.2 Corolla Pack boiler is made up of 2, 3 or 4 inseparable thermal elements;
1.3 One Corolla Pack thermal element consists of a heat exchanger, a burner and its relatives control devices;
1.4 Fontecal S.p.A. pre-arranges the Corolla Pack boiler for the battery matching up. Each single thermal module is supplied together with the following items:

- working drawing with all the electric and mechanic components of the whole boiler
- dimensions and connections in order to provide proper functioning and safety, as foreseen by the manufacturer lay-out

2. Protection devices

[...]

3. Flux circulation

3.1 The flux minimum flow of each single thermal module is controlled by both a water differential pressure switch, installed inside each thermal element and by a safety electronic system which continually and simultaneously controls a sharp temperature probe, installed on the water flow and return pipe of each single thermal element. Each thermal element is equipped with its own pump, separated from the rest of the circuit and it is subject to the burner functioning with post-circulation after the burner turning off. Therefore, water delivery is linked to the power of the element itself.
A three way intercepting device is placed on each element water circuit, in fact the system meets the Collection prescriptions as far as it is the following concerned:

- The thermal element capacity is not higher than 5l, in compliance with the conditions stated on issue 3.2.2 of the R Collection;
- Heat supply is interrupted in case of insufficient water flow thanks to a device installed on the thermal element
- Although the thermal elements’ capacity is lower than 5l, an intercepting device (three way valve) is installed in order to allow the communication of the element with the atmosphere before the interception phase

3.2 Points 3.1 and 3.2 achievement is guaranteed by a Manufacturer’s - FONTECAL S.p.A.- declaration.

4. Boilers not pre-arranged by the Manufacturer

Corolla 380 boiler is pre-arranged by the manufacturer in order to be installed in battery and all the documentation supplied and the homologation certificates achieved (e.g.:DVGW, GASTEC, etc.) are EXPLICITLY referred to such kind of installations.
## Parameter list

<table>
<thead>
<tr>
<th>No</th>
<th>Description</th>
<th>Lower limit</th>
<th>Upper limit</th>
<th>Default value</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Setpoint_T_CH_High</td>
<td>10°C</td>
<td>T_CH_High_Limit</td>
<td>Par.17</td>
<td>Setpoint_t_ch_high : Wanted water temperature for high system when CH_mode_high is 0. Max wanted water temperature for high system when in other modes.</td>
</tr>
<tr>
<td>2</td>
<td>Set value for DHW</td>
<td>10°C</td>
<td>T_DHW_Limit</td>
<td>Par.8</td>
<td>T3set DHW: Detection value for hot water request.</td>
</tr>
<tr>
<td>3</td>
<td>Set value CH-mode 2nd circuit (max value in climatic regulation at the minimum outside temperature)</td>
<td>10°C</td>
<td>T_CH_Low_Limit</td>
<td>Par.23</td>
<td>T6 set CH 2nd Detection and modulation value for hot water request.</td>
</tr>
</tbody>
</table>

### 1ST LEVEL PASSWORD (ON THE MASTER AND ON THE COMPUTER)

<table>
<thead>
<tr>
<th>No</th>
<th>Description</th>
<th>Lower limit</th>
<th>Upper limit</th>
<th>Default value</th>
<th>Specification</th>
</tr>
</thead>
</table>
| 6  | Dhw_type           | 0           | 6           | 0             | 0 = No DHW service  
1 = Instant with NTC sensor  
2 = Storage heater with NTC sensor  
5 = Instant with flow switch  
6 = Storage heater with thermostat       |
| 7  | P_dhw_max          | 1           | 255         | 230           | Setting the max fan speed for dhw-mode.                                       |
| 8  | T_Dhw_limit        | 10°C        | T_Dhw_max   | 60            | This is the maximum set value in Sanitary mode                                |
| 9  | Dhw_priority       | 0           | 2           | 0             | Central heating when:  
0 = T_Flow_high > (Setpoint_T_Ch_high – Dhw & ch_hyst)  
1 = T_Flow_high > (Setpoint_tank + T_tank_extra – Dhw & ch_hyst)  
2 = Only sanitary circuit                                           |
| 10 | T_tank_extra       | 0°C         | 50°C        | 30            | Temperature of the primary circuit during sanitary production. This value has to be added to the sanitary set-point to obtain the setpoint of primary circuit. Ex: 50°C+30°C=80°C |
| 11 | T_tank_hyst_up     | 0°C         | 20°C        | 1             | Upper DHW differential  
Ex:50°C+1°C=51°C       |
| 12 | T_tank_hyst_down   | 0°C         | 20°C        | 5             | Lower DHW differential  
Ex:50°C-5°C=45°C       |
| 13 | Max number of burners active on DHW mode                                      | 1           | 60          | max(60)         | Limit of burners that can start on dhw mode                                   |
| 14 | CH_type_high       | 0           | 3           | 1             | 0 = Fixed temperature  
1 = Climate with outside sensor  
2 = 0-10 Vdc for heat output  
3 = 0-10 Vdc for temperature |
| 15 | P_ch_max           | 1           | 255         | 230           | Setting the max fan speed for CH-mode.                                       |
| 16 | CH_Priority        | 0           | 2           | 0             | 0 = No priority between circuits  
1 = Priority to the high temperature circuit  
2 = Priority to the low temperature circuit |
<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>T_ch_high_limit</td>
<td>10°C</td>
<td>T_CH_High_max-10°C</td>
</tr>
<tr>
<td>18</td>
<td>T_ch_high_foot</td>
<td>10°C</td>
<td>Setpoint_t_ch_high</td>
</tr>
<tr>
<td>19</td>
<td>CH_high_mod_hyst_on</td>
<td>0°C</td>
<td>20°C</td>
</tr>
<tr>
<td>20</td>
<td>CH_high_mod_hyst_off</td>
<td>0°C</td>
<td>20°C</td>
</tr>
<tr>
<td>21</td>
<td>Attenuation_high</td>
<td>0°C</td>
<td>70°C</td>
</tr>
<tr>
<td>22</td>
<td>CH_type_low</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>23</td>
<td>T_ch_low_limit</td>
<td>10°C</td>
<td>T_CH_Low_max-10°C</td>
</tr>
<tr>
<td>24</td>
<td>T_ch_low_foot</td>
<td>10°C</td>
<td>Setpoint_t_ch_low</td>
</tr>
<tr>
<td>25</td>
<td>Attenuation_low</td>
<td>0°C</td>
<td>70°C</td>
</tr>
<tr>
<td>26</td>
<td>CH_low_mod_hyst_on</td>
<td>0°C</td>
<td>20°C</td>
</tr>
<tr>
<td>27</td>
<td>CH_low_mod_hyst_off</td>
<td>0°C</td>
<td>20°C</td>
</tr>
<tr>
<td>28</td>
<td>Mixing_valve_step_open_period</td>
<td>0 sec</td>
<td>255 sec</td>
</tr>
<tr>
<td>29</td>
<td>Mixing_valve_step_closed_period</td>
<td>0 sec</td>
<td>255 sec</td>
</tr>
<tr>
<td>30</td>
<td>Mixing_valve_interval_period</td>
<td>0 sec</td>
<td>255 sec</td>
</tr>
<tr>
<td>31</td>
<td>Mixing_p_hysteresys</td>
<td>0 sec</td>
<td>30°C</td>
</tr>
<tr>
<td>32</td>
<td>Mixing_max_still_hys</td>
<td>0 sec</td>
<td>30°C</td>
</tr>
<tr>
<td>Parameter</td>
<td>Values</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>-------------------------------</td>
<td>--------------</td>
<td>-------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Power_control_mode</td>
<td>0 1 1</td>
<td>Selected mode for distributing power over individual burners</td>
<td></td>
</tr>
<tr>
<td>3rd_Pump</td>
<td>0 1 1</td>
<td>If this parameter is 1 the 3rd_pump is used as the low temperature system pump. If it is 0 it is used as the system pump.</td>
<td></td>
</tr>
<tr>
<td>T4 frost protection</td>
<td>-30°C 15°C 3</td>
<td>Temperature for starting frost protection on T4. If T4 &lt;= this value or T1 &lt;= 5°C then the pump start (+). If after 10 minutes T1 is not over 5°C -&gt; one burner starts at the maximum power until T1 &gt;= 20°C. If after 10 minutes T4 is still under this value -&gt; then pump (+) run until T4 &gt; this value.</td>
<td></td>
</tr>
<tr>
<td>Gas Type</td>
<td>1 7 5</td>
<td>1 = NG with flue gas duct &lt; 15m 2 = NG with flue gas duct &gt; 15m 3 = LPG with flue gas duct &lt; 15m 4 = LPG with flue gas duct &gt; 15m 5 = Town Gas 6 = Gas F 7 = Gas G</td>
<td></td>
</tr>
<tr>
<td>T_out_min</td>
<td>-20°C 30°C 0</td>
<td>Minimum outside temperature (gives maximum set value). High-limited by T_out_max</td>
<td></td>
</tr>
<tr>
<td>T_out_max</td>
<td>0°C 30°C 18</td>
<td>Maximum outside temperature (gives minimum set value). Low-limited by T_out_min. after this value the system disconnect the heating function</td>
<td></td>
</tr>
<tr>
<td>T_out_correct</td>
<td>-30°C 30°C 0</td>
<td>Correction on outside temperature</td>
<td></td>
</tr>
<tr>
<td>P.reduce emergency</td>
<td>10°C 80°C 70°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parameter reset</td>
<td>0 1 0</td>
<td>1 = Reset slaves to factory default. Setting the value of “1” all the default values are restored EXCEPT GAS TYPE NUMBER , par.42 and par.43 settings</td>
<td></td>
</tr>
<tr>
<td>Flow switch present on the slaves</td>
<td>0 1 1</td>
<td>0 = The slave check not for the flow switch</td>
<td></td>
</tr>
<tr>
<td>Protocol</td>
<td>0 1 1</td>
<td>0= Echo protocol 1= Argus link (new protocol)</td>
<td></td>
</tr>
</tbody>
</table>
A label with the default parameter is situated in the front of command panel (see Figure 36). With this label the authorized Service can restore easily the default parameter of the boiler.

<table>
<thead>
<tr>
<th>Parameter Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp. CH1</td>
<td>70</td>
</tr>
<tr>
<td>Temp. san / DHW Temp.</td>
<td>50</td>
</tr>
<tr>
<td>Temp. CH2</td>
<td>40</td>
</tr>
<tr>
<td>Modalità san. / DHW mode</td>
<td>0</td>
</tr>
<tr>
<td>Pot. max san/DHW max power</td>
<td>230</td>
</tr>
<tr>
<td>Max Temp. san./DHW</td>
<td>60</td>
</tr>
<tr>
<td>Priorità san./DHW priority</td>
<td>0</td>
</tr>
<tr>
<td>T plus bollitore/T plus tank</td>
<td>30</td>
</tr>
<tr>
<td>Diff. on san./DHW on hyst.</td>
<td>1</td>
</tr>
<tr>
<td>Diff. off san./DHW off hyst.</td>
<td>5</td>
</tr>
<tr>
<td>max bruc.san./max DHW burn.</td>
<td>60</td>
</tr>
<tr>
<td>Regolaz.CH1/CH1 regulation</td>
<td>1</td>
</tr>
<tr>
<td>Max vel. ventil./max fan speed</td>
<td>230</td>
</tr>
<tr>
<td>Priorità riscald./CH priority</td>
<td>0</td>
</tr>
<tr>
<td>Temp. max CH1</td>
<td>80</td>
</tr>
<tr>
<td>Temp. min CH1</td>
<td>50</td>
</tr>
<tr>
<td>Diff. on CH1/CH1 on hyst.</td>
<td>7</td>
</tr>
<tr>
<td>Diff. off CH1/CH1 off hyst.</td>
<td>3</td>
</tr>
<tr>
<td>Attenuaz.CH1/CH1 attenuation</td>
<td>0</td>
</tr>
<tr>
<td>Regolaz.CH2/CH2 regulation</td>
<td>1</td>
</tr>
<tr>
<td>Temp. max CH2</td>
<td>50</td>
</tr>
<tr>
<td>Temp. min CH2</td>
<td>25</td>
</tr>
<tr>
<td>Attenuaz.CH2/CH2 attenuation</td>
<td>0</td>
</tr>
<tr>
<td>Diff. on CH2/CH2 on hyst.</td>
<td>5</td>
</tr>
<tr>
<td>Diff. off CH2/CH2 off hyst.</td>
<td>3</td>
</tr>
<tr>
<td>t (tempo/time) ON valv, mix</td>
<td>5</td>
</tr>
<tr>
<td>t (tempo/time) OFF valv, mix</td>
<td>7</td>
</tr>
<tr>
<td>At stop valv, mix</td>
<td>5</td>
</tr>
<tr>
<td>Diff.on-off/on-off hyst, valv mix</td>
<td>2</td>
</tr>
<tr>
<td>Diff.stop/hyst. valv mix</td>
<td>2</td>
</tr>
<tr>
<td>Controllo potenz/power control</td>
<td>1</td>
</tr>
<tr>
<td>Modalità pompa/pump mode</td>
<td>0</td>
</tr>
<tr>
<td>Antigelo/frost protection</td>
<td>3</td>
</tr>
<tr>
<td>Tipo gas/gas type</td>
<td>1</td>
</tr>
<tr>
<td>Temp. esterna/external min</td>
<td>0</td>
</tr>
<tr>
<td>Temp. esterna/external max</td>
<td>18</td>
</tr>
<tr>
<td>Correzione $T_{est}$/ $T_{set}$ correction</td>
<td>0</td>
</tr>
<tr>
<td>T emergenza/emergency T</td>
<td>70</td>
</tr>
<tr>
<td>Reset param.</td>
<td>0</td>
</tr>
<tr>
<td>Pressostato/flow switch</td>
<td>1</td>
</tr>
<tr>
<td>Protocollo/communication type</td>
<td>1</td>
</tr>
</tbody>
</table>

**Note:** Set = parametri di fabbrica/factory’s parameters
### 10 Error list

In the following tables are listed the Corolla series 380 errors. If the error is a type “A” the “RESET” button needs to be pressed after eliminating the reason for the failure. If it is an error type “E”, the boiler will go back to normal operation, with no need to press the “RESET” button, once the reason for the failure has been eliminated.

#### 10.1 Master board errors

<table>
<thead>
<tr>
<th>ERROR</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>A16</td>
<td>e2prom_error</td>
</tr>
<tr>
<td>A18</td>
<td>wrong_eeprom_signature</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ERROR</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>E25</td>
<td>e2prom_read_error</td>
</tr>
<tr>
<td>E23</td>
<td>internal hardware error</td>
</tr>
<tr>
<td>E24</td>
<td>internal hardware error</td>
</tr>
<tr>
<td>E25</td>
<td>internal hardware error</td>
</tr>
<tr>
<td>E26</td>
<td>internal hardware error</td>
</tr>
<tr>
<td>E32</td>
<td>no_slaves_present</td>
</tr>
<tr>
<td>E34</td>
<td>50hz_error</td>
</tr>
<tr>
<td>E02</td>
<td>flow probe open</td>
</tr>
<tr>
<td>E04</td>
<td>tank probe open</td>
</tr>
<tr>
<td>E18</td>
<td>flow probe shorted</td>
</tr>
<tr>
<td>E20</td>
<td>tank probe shorted</td>
</tr>
</tbody>
</table>

#### 10.2 Slave board error

<table>
<thead>
<tr>
<th>ERROR</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>A01</td>
<td>five unsuccessful ignitions attempts</td>
</tr>
<tr>
<td>A02</td>
<td>too many flame failures more than 3 flame failures</td>
</tr>
<tr>
<td>A04</td>
<td>internal hardware error</td>
</tr>
<tr>
<td>A06</td>
<td>internal hardware error</td>
</tr>
<tr>
<td>A07</td>
<td>internal hardware error</td>
</tr>
<tr>
<td>A08</td>
<td>internal hardware error</td>
</tr>
<tr>
<td>A09</td>
<td>ram error</td>
</tr>
<tr>
<td>A10</td>
<td>e2prom error</td>
</tr>
<tr>
<td>A11</td>
<td>internal software error</td>
</tr>
<tr>
<td>A12</td>
<td>wrong e2prog signature</td>
</tr>
<tr>
<td>A16</td>
<td>safety relay closed while open expected</td>
</tr>
<tr>
<td>A20</td>
<td>flame out too late after closing gas valve</td>
</tr>
<tr>
<td>A24</td>
<td>fan error.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ERROR</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>E33</td>
<td>live and neutral reversed error (ni)</td>
</tr>
<tr>
<td>E34</td>
<td>reset button error</td>
</tr>
<tr>
<td>E35</td>
<td>water flow switch not closed error</td>
</tr>
<tr>
<td>E36</td>
<td>e2prom_read_error</td>
</tr>
<tr>
<td>E37</td>
<td>blocking flame error</td>
</tr>
<tr>
<td>E38</td>
<td>shorted flue gas sensor</td>
</tr>
<tr>
<td>E39</td>
<td>open flue gas sensor error</td>
</tr>
<tr>
<td>E40</td>
<td>50 hz error</td>
</tr>
<tr>
<td>E41</td>
<td>watchdog communication error</td>
</tr>
<tr>
<td>E42</td>
<td>shorted flow sensor error</td>
</tr>
<tr>
<td>E43</td>
<td>open flow sensor error</td>
</tr>
<tr>
<td>E44</td>
<td>shorted return sensor error</td>
</tr>
<tr>
<td>E45</td>
<td>open return sensor error</td>
</tr>
<tr>
<td>E46</td>
<td>flow sensor error above max_flow_temperature</td>
</tr>
<tr>
<td>E47</td>
<td>return sensor error above max_return_temperature</td>
</tr>
<tr>
<td>E48</td>
<td>flue sensor error above max_flue_gas_temperature</td>
</tr>
</tbody>
</table>
11 Electrical wiring diagram
PB - DHW pump
PZ1 - Pump in zone 1
    (high temperature)
PZ2 - Pump in zone 2
    (low temperature)
VM - Mixing valve
CR - Remote control (accessory)
IA - Analogue input
SB - DHW probe
SZ1 - Probe in zone 1
SZ2 - Probe in zone 2
SE - Outside probe
TA1 - Room thermostat in zone 1
    (high temperature)
TA2 - Room thermostat in zone 2
    (low temperature)

VG - Gas valve
TS - Safety thermostat
PD - Water differential pressure switch
SM - Outlet probe
SR - Return probe
SF - Flue gas probe
EA/ER - Ignition/detection electrode
V - Two-way valve
IG - Main boiler switch
IG1 - FIRST heating unit switch
IG2 - SECOND heating unit switch
J10/J17 - Microswitches for setting the address

SYSTEM

HEATING UNIT
## Technical data

<table>
<thead>
<tr>
<th></th>
<th>COROLLA 381</th>
<th>COROLLA 382</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>N° CE certification</strong></td>
<td>0085AQ0713</td>
<td>12H3+</td>
</tr>
<tr>
<td><strong>Boiler type (EN 297)</strong></td>
<td>B 23 (C 63,C63X)</td>
<td></td>
</tr>
<tr>
<td><strong>Burners x nominal heat input (Hs)</strong></td>
<td>1 x 50</td>
<td>2 x 50</td>
</tr>
<tr>
<td><strong>Max/min water pressure</strong></td>
<td>Bar 6 / 0.5</td>
<td>Bar 6 / 0.5</td>
</tr>
<tr>
<td><strong>Power supply</strong></td>
<td>V 230 V</td>
<td>230 V</td>
</tr>
<tr>
<td><strong>Nominal heat input ( HS )</strong></td>
<td>kW 11 37.5</td>
<td>kW 11 75</td>
</tr>
<tr>
<td><strong>Nominal heat input ( Hi )</strong></td>
<td>kW 9.9 33.8</td>
<td>kW 9.9 67.5</td>
</tr>
<tr>
<td><strong>Nominal heat output 100% (80 - 60° C)</strong></td>
<td>kW 32.8</td>
<td>65.6</td>
</tr>
<tr>
<td><strong>Nominal heat output 100% (50 - 30° C)</strong></td>
<td>kW 36.6</td>
<td>73.2</td>
</tr>
<tr>
<td><strong>Nominal heat output 100% (60 - 40° C)</strong></td>
<td>kW 36</td>
<td>72.1</td>
</tr>
<tr>
<td><strong>Max. condensate production - 100% (50 - 30° C) G20 gas</strong></td>
<td>Kg/h 4.9</td>
<td>9.8</td>
</tr>
</tbody>
</table>

### Efficiency (Hi) (Directive 92/42/CEE)

<table>
<thead>
<tr>
<th></th>
<th>97.0</th>
<th>97.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficiency at full load (80 - 60° C)</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Efficiency at full load (50 - 30° C)</td>
<td>108.3</td>
<td>108.3</td>
</tr>
<tr>
<td>Efficiency at full load Tm = 50° C (60 - 40° C)</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Efficiency at reduced load 30% (80 - 60° C)</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Efficiency at reduced load 30% (50 - 30° C)</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Efficiency at reduced load 30% Tm = 50° C (60 - 40° C)</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Combustion efficiency (80 - 60° C ; Ta = 20° C)</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Energy lost with burner ON (80 - 60° C) Pf</td>
<td>%</td>
<td>1.3</td>
</tr>
<tr>
<td>Energy lost with burner OFF (80 - 60° C) Pub</td>
<td>%</td>
<td>0.1</td>
</tr>
<tr>
<td>Energy lost by the shell (Tm = 70° C)</td>
<td>%</td>
<td>0.5</td>
</tr>
<tr>
<td>Flue temperature ° C</td>
<td>Temp. return+ 2.5° C(max 80° C)</td>
<td></td>
</tr>
<tr>
<td>Heating temperature regulation (min / max) ° C</td>
<td>20 80</td>
<td>20 80</td>
</tr>
<tr>
<td>Gas consumption (G20) (min / nominal) m³/h</td>
<td>1.05+3.58</td>
<td>1.05+7.14</td>
</tr>
</tbody>
</table>

### Pollutants in exhaust gas

<table>
<thead>
<tr>
<th></th>
<th>pap</th>
<th>pap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon monoxide CO (0% O₂) (P min + P max)</td>
<td>10 80</td>
<td>10 80</td>
</tr>
<tr>
<td>Nitrogen oxide Knₓₓ class (ref EN 297)</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

### Power supply data

<table>
<thead>
<tr>
<th></th>
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<th>230</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency Hz</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Maximum electrical power W</td>
<td>169</td>
<td>333</td>
</tr>
</tbody>
</table>

### Weight and dimensions

<table>
<thead>
<tr>
<th></th>
<th>1000</th>
<th>1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Width mm</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>Depth mm</td>
<td>380</td>
<td>380</td>
</tr>
<tr>
<td>Empty weight kg</td>
<td>55</td>
<td>80</td>
</tr>
</tbody>
</table>

### Manifolds diameters

<table>
<thead>
<tr>
<th></th>
<th>1&quot; M</th>
<th>1&quot; M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow water pipe in</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inlet gas pipe in</td>
<td>3/4&quot; M</td>
<td>3/4&quot; M</td>
</tr>
<tr>
<td>Water return pipe in</td>
<td>G 3/4&quot; M</td>
<td>G 3/4&quot; M</td>
</tr>
<tr>
<td>Flue manifold n/mm</td>
<td>1x50</td>
<td>2x50</td>
</tr>
<tr>
<td>Condensate pipe mm</td>
<td>18</td>
<td>18</td>
</tr>
</tbody>
</table>
Evinox reserves the right to make changes and improvements which may necessitate alteration to the specification without prior notice.