COMPENSATING OPTIMIZER FOR 1-, 2-STAGE MODULATING BURNERS WITH 0...10 VOLT – INPUT

XCC 638 Eng.

C ◄RING   OPTIONAL C ◄BUS

- **Control of a 1-, 2-stage or modulating burner**
- **Control of burner/boiler with 0…10 V– input**
- **Especially suitable for condensation boilers**
- **Compensated control of the boiler**
- **Clock for programming boiler**
- **Control of boiler with loading pump or other**
- **Obeys sequence under control of XTC 638**
- **0…10 Volt output for controlling any generator**
- **Power supply 230 V AC (or 240 V AC for UK market) .**
- **Installation on Din 6 rail**
- **Communication systems :**
  - **C-Ring** for exchange data of common interest between local controllers.
  - **C-Bus :** To telemanage **XCC 638** use accessory
  "C-Bus Plug-in type ACB 400 C1 or later (to be ordered separately).

**FOR A SHORT SUMMARY
OF THIS DATA SHEET
GO DIRECTLY
TO LAST PAGE**

CE

**All connections are made on an extractible terminal block for rapid installation & maintenance.
By providing each of the boilers on site with an XCC 638, and one boiler with an XTC 638, you can create a sophisticated sequence with the various 1-, 2-stage or MODULATING BURNERS, and so obtain the maximum SEASONAL OUTPUT.
The whole system is particularly suited to CONDENSATION BOILERS.**

1. APPLICATION

XCC 638 controller is designed for compensated control of winter heating in centraliSed sites, with direct power direct from the boiler (without mixing valve), whether or not condensation type. The 1-, 2-stage or modulating burner can be controlled using one of the switches or by means of the 0…10 Volt input.

**THIS CONTROLLER CAN BE USED WITH BURNERS/BOILERS HAVING INCORPORATED
ELECTRONICS SO AS TO PROVIDE THEM WITH TELEMANAGEMENT**

2. FUNCTION

- Control of boiler temperature at **set point** or variable in relation to **outside temperature** or to the demand of the various consumers (if the controllers are COSTER).
- Control of a 1- or 2-stage or modulating burner.
- Option of sequence under control of XTC 638.
- Compensated control of boiler temperature
  - optimization of all heating starts and stops and of site circulation pump
  - complete range of choices for room temperature,
  - 24hour and 7day clock.
- Control of temperature of DHW storage tank (one per site)
  - own independent 24hour and 7day clock
  - priority and antibacterial function
- Automatic setting of BST.
- Periodic summer site exercise of valves and pumps.
- Metering of degree-days, burner operating hours and number of starts.
- Alarms for short and open sensor circuits and for malfunctions site and controllers.
- **C-Ring** connection for local exchange of data with other COSTER controllers.
- Option of C-Bus communication for transmitting data using local PCs or remote Telemananagement PC.
  **For data transmission and Telemanagement use "C-Bus Plug-in" type ACB 400 C1 or later.
  To communicate locally with a PC use test plug-in type ACX 232.
  XCC 638 is already provided with a 0…10 V output which can be adapted to any generator provided with this input.**

3. SENSORS & ACCESSORIES

No.	Description		Model	Sensor t°		Code	Data sheet
1	Outside temperature sensor		**SAE 001**	NTC	1 kΩ	B2	N 120
1	Boiler temperature sensor:	surface	**SCH 010**	NTC	10 kΩ	B4	N 130
		immersion	**SIH 010**	NTC	10 kΩ	B4	N 140
1	Water storage tank temp. sensor		**SIH 010**	NTC	10 kΩ	B5	N 130
	Optional sensors						
1	Anticondensing sensor for boiler:	surface	**SCH 010**	NTC 10 kΩ		B6	N 130
		immersion	**SIH 010**	NTC 10 kΩ		B6	N 140
1	Room temperature sensor, as alternative to		**SAB 010**	NTC 10 kΩ		B3	N 111
	Flue gases temperature sensor		**STF 001**	PT	1 kΩ	B3	N 165
	Accessories for Telemanagement						
1	Plug-in for communication via C-Bus		**ACB400 C1**	–		–	–

4. PRINCIPAL TECHNICAL DATA

• Electrical

Power supply	230 V AC ± 10%
	or 240 V AC for UK market
Frequency	50 … 60 Hz
Consumption	5 VA
Protection	IP40
Radio disturbances	VDE0875/0871
Vibration test	with 2g (DIN 40 046)
Voltage free output contacts	
maximum switched voltage	250 V ~
maximum switched current	5 (1) A
Construction standards	Italian Electrotech Committee (CEI)
Duration clock battery & data storage in memory	
	pratically without limit

• Mechanical

Enclosure	DIN 6 E module
Materials :	
base	NYLON
cover	ABS
Ambient temperature:	
operating	0 … 45°C
storage	− 25 … + 60°C
Ambient humidity	class F DIN 40040
Dimensions	105 x 115 x 71.5
Weight	0.6 kg

• Individual programs for heating & DHW

24HOUR programs	**1 … 4**
24HOUR events	**2** … 6
7DAY programs :	**0** … 1
Special Period	1
Remote Extension period	0 ... **3** ... 72 h

• Measurement ranges

Outside temperature	− 30 … + 40 °C
Room temperature	0 … 40 °C
Boiler temperature	0 … 99 °C
Storage tank temperature	0 … 99 °C
Flue gases temperature	0 … 500 °C
Anticondensing temperature	0 … 99 °C

• Heating

Flow temperature:	
Radiators	40 ... **70** ... 99 °C
Convertors	40 ... **80** ... 99 °C
Panels	20 ... **40** ... 50 °C
Minimum limit	**1** … 99 °C
Maximum limit	1 ... **99 °C**

External Design Temperature	– 30 … **– 5** … + 20 °C
Correction curve origin	**20** … 40 °C
Ambient authority	**0** ... 20 °C/°C
Temperature modes:	
Room Normal	0 … **21** … 30 °C
Room Setback	0 … **16** … 30 °C
Flow fixed	0 … **30** … 99 °C
Room Frosprot	0 … **6.0** … 30 °C
Optimisation of operating hours:	
Maximum duration optimum start	0.00 ... **2.00** ... 9.00 h
Boosting optimum start	0.0 ... **3.0** ... 9.0 °C
Maximum duration optimum stop	0.00 ... **1.00** ... 5.00 h
Evening switching off pump max.	0.00 ... **6.00** ... 9.00 h

• Control burner

As POWER or TEMPERATURE

Temperature	0 ... **50.0** ... 99.0 °C
Maximum temperature limit	1 ... **99** °C
Minimum temperature limit	**1** ... 99 °C
On-Off control burner	1 independent switch
Burner control - raise	1 independent switch
Burner control - lower	1 independent switch
Burner modulation time	10 ... **45** ... 540 sec.

• Control storage tank

Temperature	0 ... **50.0** ... 99.0 °C
Differential	0.5 ... **5.0** ... 30.0 °C

• Alarms

Configurable functional alarms	6
Alarms for sensors or other configurable devices	6

• Telemanagement

Speed C-Bus chosen from 1200, 2400, 4800, 9600 baud
Data logger of all principal measurements

• Universal Y output

This output can be programmed as:
– status boiler off
– status heating off
– 0 … 10 V output for control of:

<div align="right">Burner as power
Burner as temperature</div>

5. FACIA & OVERALL DIMENSIONS

1 – Protective cover for electronic components
2 – Base with transformer, relay and terminal blocks
3 – Screws for securing base and cover
4 – DIN rail securing elements
5 – DIN rail release lever
6 – Plug-in for C-Bus communication
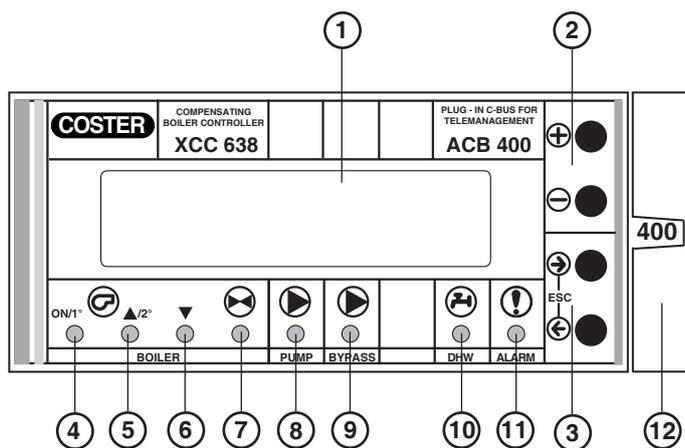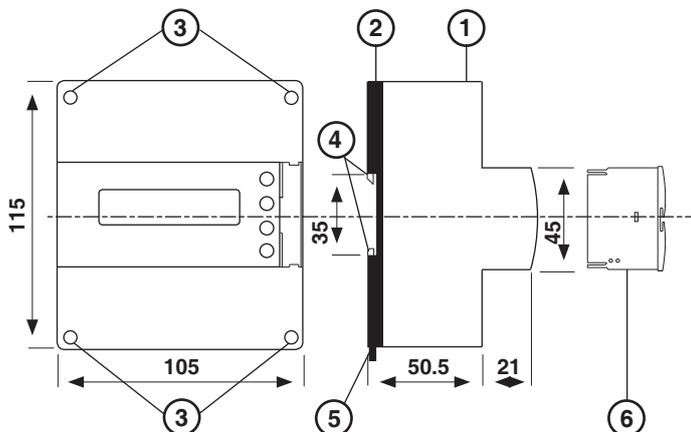
1 - Two-line illuminated alphanumeric display
2 - + and – operating keys
3 - ← and → operating keys
4 - Switching on burner or first stage
5 - Switching on second stage or increase modulation
6 - Reduce modulation
7 - Boiler shut-off valve
8 - Pump for heating or other uses
9 - Boiler recycle pump
10 - DHW
11 - LED for faults inside controller
12 - Type ACB 400 C1 plug-in for C-Bus communication

(CIE)

6. WIRING DIAGRAM

230 V AC
(or 240 V AC
for UK market)
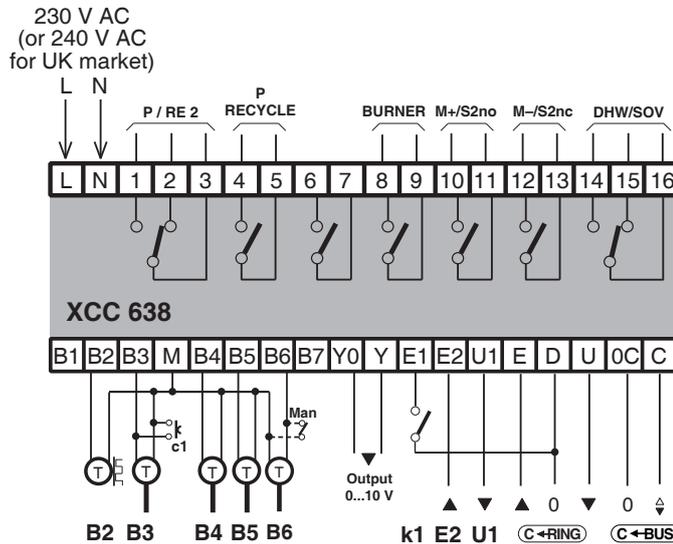
B2 – Outside temp. sensor
B3 – Room or flue gases sensor
c1 – Remote Extension program control button
B4 – Boiler temp. sensor
B5 – Storage tank (DHW) temperature
B6 – Anticondensing sensor for boiler (as alternative to Man)
Man – Control for changing boiler to manual as alternative to anticondensing sensor (B6)
Y0 – Universal optoisolated 0 …10 V (0 V) output
Y – Universal optoisolated 0 …10 V (0 … 10V) output
k1 – Input E1 = alarm switch for burner lockout
E2 – Input for control relay switches 1, 2, 3 (for Master shut-off valve)
U1 – Output (OPEN COLLECTOR) repetition lockout burner for E2 input of Master (XTC 638); communicates burner lockout to Master itself, in the sequences..
C-Ring – Transmission data between controllers
C-Bus – Transmission data for Telemanagement.
C-Bus is enabled using Plug-in type ACB 400 C1
L – 230 Volt AC (or 240 Volt AC for UK market).
N – Neutral

P/RE 2 – **Single Boiler** = control site pump (P)
Pump ON = switch 2, 3 ON, switch 1, 3 OFF
Pump OFF = switch 2, 3 OFF, switch 1, 3 ON
– **Secondary Boiler** – control shut-off valve of Master boiler (operation carried out by a single Slave)
Switch 3 = common
Switch 2 = Opening Master shut-off valve
Switch 1 = Closure Master shut-off valve
RECY. PU – Control boiler recycle pump
BURNER – On-Off control burner
M+/S2 n.o. – **1-stage burner** = not used
– **2-stage burner** = switch which CLOSES when intervention second stage requested (S2 n.o.)
– **Modulating burner** = control RAISES (M+) .
M–/S2 n.c. – **1-stage burner** = not used
– **2-stage burner** = switch which OPENS when intervention second stage requested (S2 n.c.)
– **Modulating burner** = comando ABBASSA (M–)
DHW/SOV – **Single Boiler** = control DHW
Request DHW ON = switch 14,16 ON, switch 15, 16 OFF
Request DHW OFF = switch 14,16 OFF, switch 15,16 ON
– **Secondary Boiler** = control own shut-off valve (SOV)
Switch 16 = Common
Switch 15 = Control opening shut-off valve
Switch 14 = Control closure shut-off valve

7. SITING

7.1 Controller

The controller must be installed in a dry location that respects the ambient conditions specified above.
If sited in a location classified as "Hazardous" it must be installed in a cabinet for electrical equipment constructed according to the regulations in force for the class of danger concerned.

7.2 Outside temperature sensor B2

This must be installed outside the building on the north or north-west side, at least three meters from the ground; it must be protected from the sun's rays and away from windows, doors, fireplaces and other possible sources of direct thermal disturbances.
To be connected to Master controller where several boilers are in sequence.

7.3 Room temperature sensor as alternative to flue gases sensor

This sensor must be installed at a point which represents the average temperature of a representative space.
For flue gases it is installed in the flue.

7.4 Boiler sensor

This must be installed on the boiler flow pipe .

7.5 Storage tank sensor B5

This must be installed in the lower part (1/3 height) of the storage tank.

7.6 Anticondensing temperature sensor B6

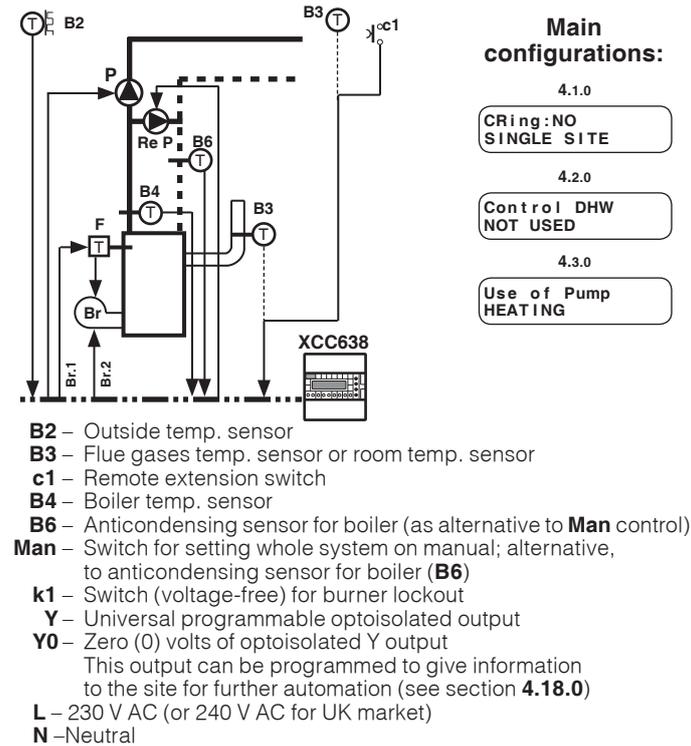This must be installed on the return pipe of the boiler or manifold

8. ELECTRICAL CONNECTIONS

- Make the electrical connections strictly according to the diagram and in respect of the safety regulations in force, using the following cables :
  - 1,5 mm^2 for the power supply and relay control outputs.
  - 1 mm^2 for sensors and remote controls.
  - 1 mm^2 for C-Bus and C-Ring. For length limits see Technical Data Sheets T 021 and T 022.
- Switch on power (230 V AC or 240 V AC for UK market) and check its presence at terminals L and N.

It is advisable not to insert more than two cables in a single terminal of the controller and, if necessary, to use an external terminal block.

9. EXAMPLES OF CONTROL OF SITES WITH RELATIVE WIRING DIAGRAMS

9.1 Single modulating boiler with 1, 2 stages, which supplies heating directly, without production of DHW
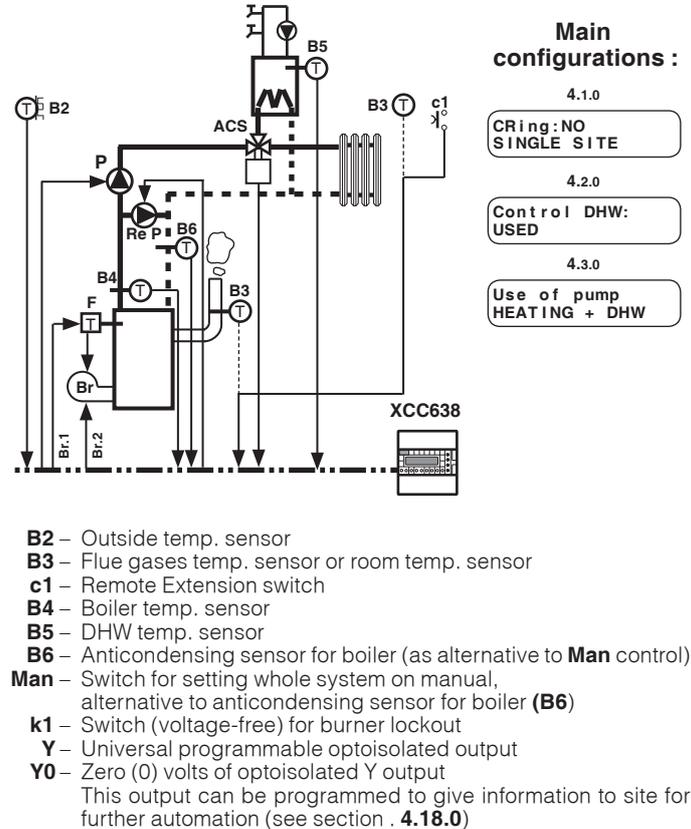
Main configurations:

4.1.0
CRing:NO
SINGLE SITE

4.2.0
Control DHW
NOT USED

4.3.0
Use of Pump
HEATING

230 V AC
(or 240 V AC
for UK market)

XCC 638

- **B2** – Outside temp. sensor
- **B3** – Flue gases temp. sensor or room temp. sensor
- **c1** – Remote extension switch
- **B4** – Boiler temp. sensor
- **B6** – Anticondensing sensor for boiler (as alternative to **Man** control)
- **Man** – Switch for setting whole system on manual; alternative, to anticondensing sensor for boiler (**B6**)
- **k1** – Switch (voltage-free) for burner lockout
- **Y** – Universal programmable optoisolated output
- **Y0** – Zero (0) volts of optoisolated Y output
  This output can be programmed to give information to the site for further automation (see section **4.18.0**)
- **L** – 230 V AC (or 240 V AC for UK market)
- **N** – Neutral

- **P** – Heating pump
- **Re P** – Boiler recycle pump
- **F** – Boiler thermostats in series with burner control
- **Br** – Burner
- **Br1** – On-Off control burner
- **Br2** – Modulating control burner

Operation :
There is only one boiler and it can control any downstream hydraulic circuit, at fixed temperature or compensated.
The pump **P** is programmed to operate only when the boiler is also in operation.
In the example is shown a modulating burner, but the system can also operate with a 1- or 2-stage burner.
If the burner should have a 0…10 V input you can use Y output (see section 13, page 8).
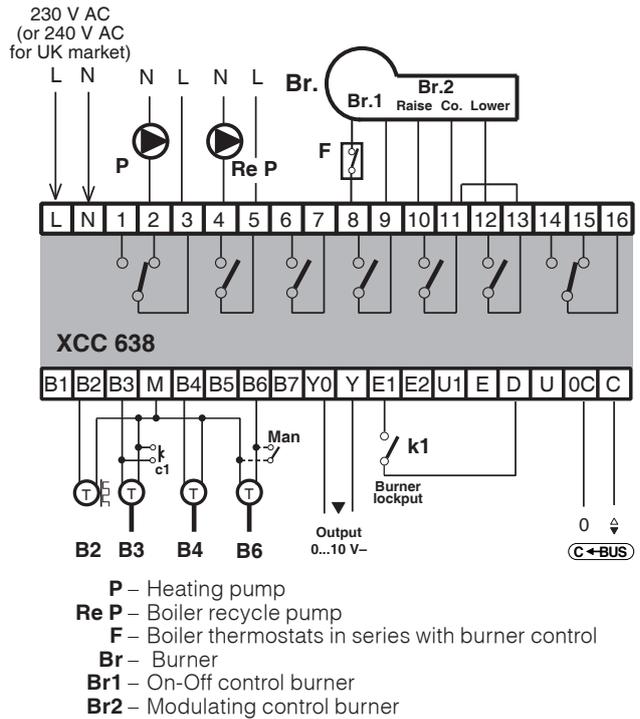
9.2 Single boiler which provides heating, with production of DHW via a diverting valve

Main configurations :

4.1.0
CRing:NO
SINGLE SITE

4.2.0
Control DHW:
USED

4.3.0
Use of pump
HEATING + DHW

230 V AC
(or 240 V AC
for UK market)

XCC 638

- **B2** – Outside temp. sensor
- **B3** – Flue gases temp. sensor or room temp. sensor
- **c1** – Remote Extension switch
- **B4** – Boiler temp. sensor
- **B5** – DHW temp. sensor
- **B6** – Anticondensing sensor for boiler (as alternative to **Man** control)
- **Man** – Switch for setting whole system on manual, alternative to anticondensing sensor for boiler (**B6**)
- **k1** – Switch (voltage-free) for burner lockout
- **Y** – Universal programmable optoisolated output
- **Y0** – Zero (0) volts of optoisolated Y output
  This output can be programmed to give information to site for further automation (see section . **4.18.0**)

- **L** – 230 V AC (or 240 V AC for UK market)
- **N** – Neutral
- **P** – Single pump for heating & DHW
- **Re P** – Boiler recycle pump
- **F** – Boiler thermostats in series with burner control
- **Br** – Burner
- **Br1** – On-Off control burner
- **Br2** – Modulating control burner
- **DHW** – Diverting valve for feeding the DHW production circuit and at same time excluding heating

Opeation :
The boiler is directly connected to heating via the diverting valve for the production of DHW.
The pump **P** is programmed to operate when heating or DHW is requested.
With this hydraulic system, DHW always has precedence over heating.
In the example is shown a modulating burner, but the system can also handle a 1- or 2-stage burner.
**If the burner should have a 0 … 10 V input you can use the Y output (see section 13, page 8).**
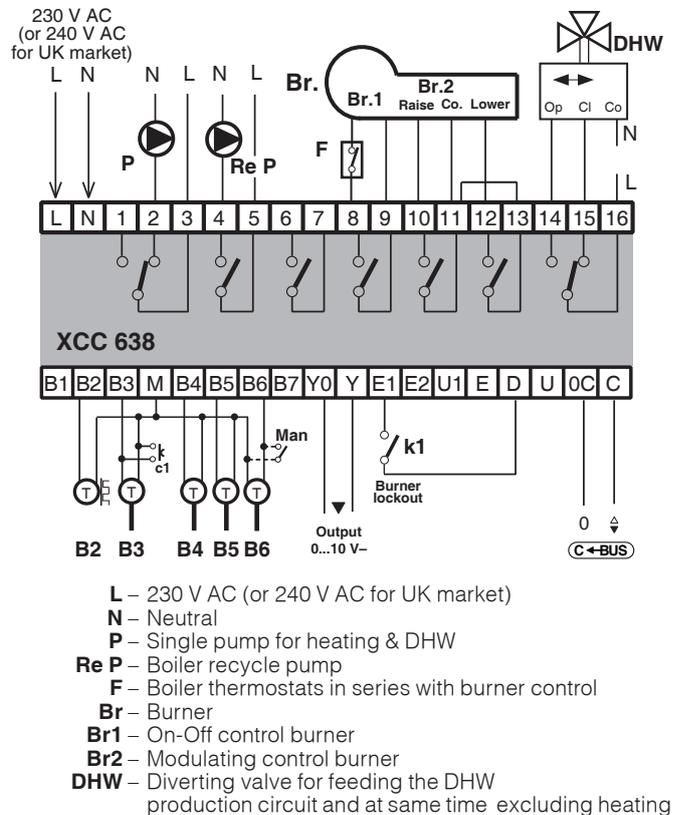
9.3 Single boiler which provides heating, with production of DHW with own pump
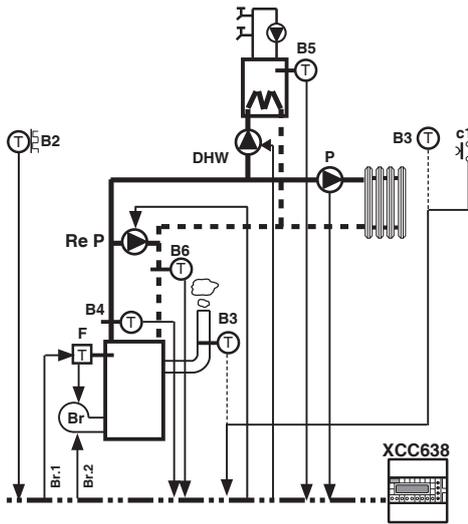
Main configuration :

4.1.0
CRing:NO
SINGLE SITE
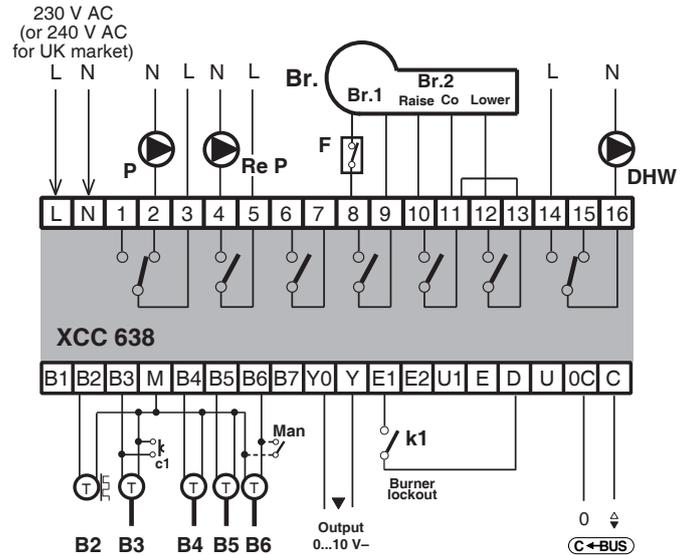
4.2.0
Control DHW
USED

4.3.0
Use of pump
HEATING

B2 – Outside temp, sensor
B3 – Flue gases temp. sensor or room temp. sensor
c1 – Remote Extension switch
B4 – Boiler temp. sensor
B5 – DHW temp. Sensor
B6 – Anticondensing sensor for boiler (asalternative to **Man** control)
Man – For changing whole system to manual, as alternative
to anticondensing sensor for boiler (**B6**)
k1 – Switch (voltage-free) for burner lockout
Y – Universal programmable optoisolated output
Y0 – Zero (0) volt of optoisolated output Y
This output can beprogrammed to give information to site for
further automation (see page **4.18.0**)

L – 230 V AC (or 240 V AC for UK market)
N – Neutral
P – Heating pump
Re P – Boiler recycle pump
F – Boiler thermostats in series to control burner
Br – Burner
Br1 – On-Off burner control
Br2 – Modulating control burner
DHW – Pump DHW production

Operation :
The boiler is in direct contact with the heating via the diverting valve for the production of DHW.
The pump **P** is programmed to operate when heat is requested.
The **DHW** pump is called on to operate when there is a request for DHW from the storage tank.
With this scheme you can decide if or not to give precedence to DHW.
In the example is shown a modulating burner, but the system can also run a 1- or 2-stage burner.
If the burner should have a 0 … 10 V input you can use the Y output (see section 13 on page 8).

OBSERVATION :
Even if this XCC 638 controller can run a boiler in sequence under the control of XTC 638 (functioning as "Slave"), it is preferable to use controller XCC 618.
XCC 618 controller is more economical, since it has been designed to be a "Slave" in order to serve the boilers to be put in sequence, under the general control of XTC 638.

The examples regarding the sequences are not included in this Data Sheet; should you wish to consult them you are referred to the Technical Data Sheet for XTC 638 ("Master" sequencer) or XCC 618 (Pure "Slave" controller).

TELEMANAGEMENT IS POSSIBLE FOR BOILERS & BURNERS PROVIDED WITH INCORPORATED ELECTRONICS, HAVING 0 …10 V INPUT (see section 13.2, page 8).

9.4 Single boiler, which feeds the manifold, with any number of flows with mix and various uses. DHW is obtained by means of own pump
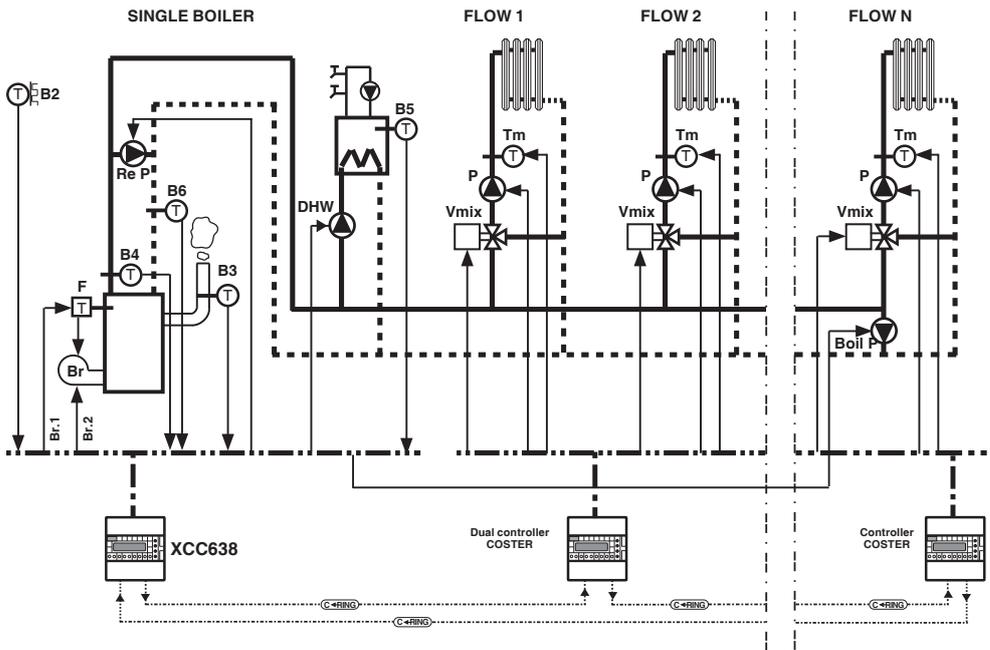
Main configurations :

4.1.0
CRing: PRIMARY SITES

4.2.0
Control DHW : USED

4.3.0
Use of pump BOILER

B2 – Outside temp. sensor
B3 – Flue gases temp. sensor
B4 – Boiler temp. sensor
B5 – DHW temp. sensor
B6 – Anticondensing sensor for boiler (as alternative to **Man** control)
Man – Control for switching whole system to manual, as alternative to boiler anticondensing sensor (**B6**)
k1 – Voltage-free switch burner lockout
Y – Programmable universal optoisolated output
Y0 – Zero volt optoisolated Y output
This output can be programmed to give
Information to the site for further automations (see page. **4.18.0**)

L – 230 V AC (or 240 V AC for UK market)
N – Neutral
Boil P – Boiler pump
Re P – Boiler recycle pump
F – Boiler thermostats in series with burner control
Br – Boiler
Br1 – On-Off control burner
Br2 – Modulating control burner
DHW – Pump production DHW
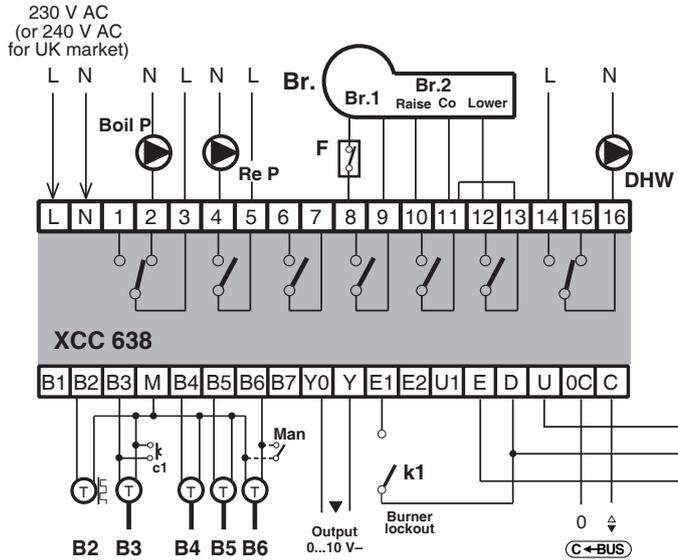
XCC 638 can operate as MASTER for C-Ring. Accordingly, the boiler can function at the temperature desired by the zones and at the same time control the SLAVE controllers.

Operation :
The boiler feeds the manifold from which emanate all the flows and end uses of the site.
If the flows and end uses are controlled by COSTER devices, the boiler is automatically controlled according to the requirements of the whole system so as to optimise the use of energy.
DHW production is provided with its own pump (**DHW**).
The boiler pump (**BoilP**) is controlled directly by XCC 638.
In the example is shown a modulating burner, but the system can also control a 1- or 2-stage burner.
The boiler pump is an alternative to the recycle pump and depends on the type of boiler (condensation or not).
If the burner should have a 0 … 10 V input, you can use the Y output (see section 13, page 8).
Using this layout, the flow or flows can take advantage of "SLAVE" controllers, with all the 24HOUR, 7DAY or ANNUAL programs with which these controllers are provided.

10. C-RING COMMUNICATION

10.2 Comunicazione fra XCC 638 e altri regolatori COSTER dotati di C-Ring

In this situation XCC 638 controller receives from the other controllers in C-Ring the data necessary for the operation of the boiler.
– gives its consent for operation of Slave controllers
– receives and transmits the **outside temperature** value, using a single sensor for the whole site.
– receives the **maximum flow temperature** value requested by consumer outlets.
– communicates the priority of the water storage tank = modulating closure of the valves for the heating circuits.

10.3 C-Ring electrical connection
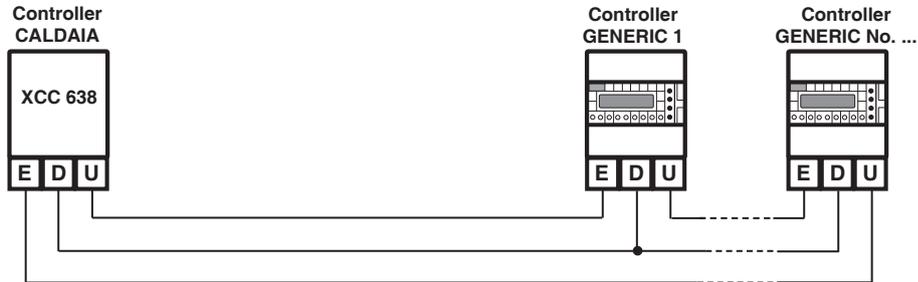
Boiler controller XCC 638 controls, via C-Ring, the other COSTER controllers in order to have all information regarding the end uses. With this information it decides the best strategy for the system.
WARNING: XCC 638 is provided with C-Ring compatible with all COSTER devices provided with C-Ring manufactured not before end of June 2004 (serial number 426 onwards).
Compatibility with older devices is possible: contact COSTER for further information.
The document which explains the C-Ring system in detail is: COMMUNICATION SYSTEM BETWEEN CONTROLLERS (T O22).

11. C-BUS COMMUNICATION (LOCAL OR REMOTE TELEMANAGEMENT)

Each controller must be provided with the appropriate C-Bus Plug in

XCC 638 provides :
– remote Telemanagement via **C-Bus Plug-in type ACB 400 C1.**
Telemanagement is two-way, with one or more local PCs and /or a remote central computer via telephone or other networks.
Local communication is with a portable PC to be connected directly to the unit.
From the PC(s) you can see displayed and/or adjust all the controller parameters and read all the data

XXCC 638 can communicate at different speeds (see page 23, display 4.25.0).
If on the site other devices with different speeds should be connected in C-Bus, it would be necessary to make uniform the speed of all the units and the modem.
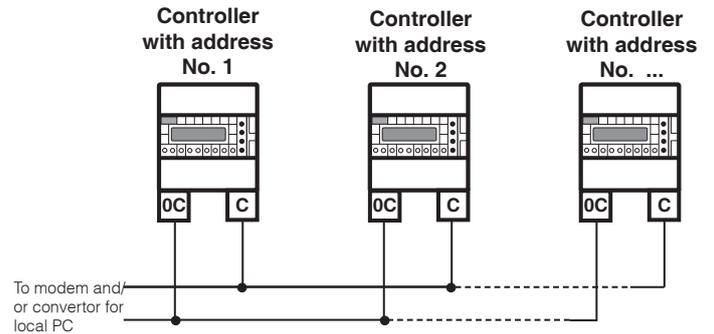
12. CONNECTION TO PC FOR LOCAL COMMUNICATION BY MEANS OF ACX 232 TEST PLUG-IN

Withdraw the C-Bus Plug-in and insert the ACX 232 test Plug-in; use a standard cable to connect the RS 232 plug to the PC (the cables are to be found in the "HANDY KIT").
If the PC has only USB inputs, use a standard RS232 to USB conversion cable.
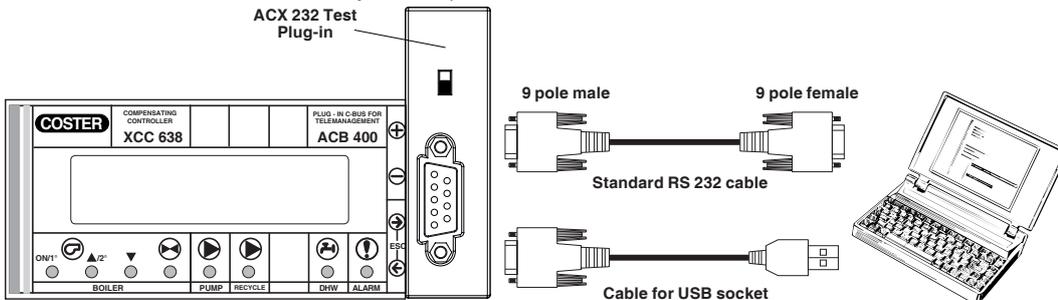
ACCESSORIES :

– Test Plug-in =**ACX 232**

– Handy kit = **KIT RS 232**

The Handy Kit contains the two cables & other accessories useful for servicing.

Notes : – Before communicating ensure that the address entered in the controller is the address with which you want to communicate via PC.
– it is recommended to use a battery-powered portable PC with the connection to 230 V removed (or 240 V for UK market), since the earth (0 V) of the device is connected to that of RS232 and consequently to that of the PC. By connecting the two earths together you can create a situation of dispersed currents, if the earths are not well-made and if the PC has its 0 volts connected directly to the central pole of the plug (as normally happens).

13. CONTROL OF BURNERS AND OF SYSTEMS OF MODULAR BOILERS WITH 0…10 V INPUT

13.1 Control of burners & systems with 0 … 10 V input

XCC 638, besides controlling any type of 1-, 2-stage or modulating burner, can control burners with 0…10 V input.

These burners already have an incorporated, inseparable, controller; two situations can arise:

– **Input 0…10 V as temperature**: the value of the voltage applied to the input is proportional to the value of the temperature at which you want the boiler to run. This input is generally configured with a correspondence between input voltage and temperature, with a scale already pre-established and set.
XCC 638 can adapt its output to any type of scale.
The controller incorporated in the burner is provided with its own sensor and so the boiler sensor for XCC 638 is not strictly necessary, even if very useful for reading the boiler temperature locally and remotely via Telemanagement.

– **Input 0…10 V as power**: the most equipped burners also provide the possibility of configuring the 0…10 V input as power instead as temperature. The burner goes to a power proportional to the input voltage. Generally 0 volts corresponds to 0 power and 10 volts corresponds to 100%.
It does not matter if the burner has different scales, since the 0…10 V output of XCC 638 can, as with temperature, be calibrated as required.
With this input the boiler sensor is indispensable, since the real controller of the boiler becomes the one incorporated in XCC 638, which clearly has to know the boiler temperature in order to control it.

The 0…10 V output of XCC 638 is universal and so it can control any type of heat generator as, for example, a co-generator, a heat exchanger, a boiler running on solid fuel and so on.

The universal 0 … 10 V output of XCC 638 can be used also to control a variable-speed pump with 0…10 volt input. You can adjust the flow to the site according to the temperature or to the absorbed power to generate a return-to-boiler temperature which is lower and more suitable for condensation boilers.

13.2 TELEMANAGEMENT of boilers or burners having incorporated electronics and 0 … 10 V input.

XCC 638 permits TELEMANAGEMENT of burners/boilers already incorporating the electronics.

These burners are almost always provided with a 0 …10 V input to represent the desired temperature for the boiler. They are also almost always provided with a voltage-free switch to indicate burner lockout, and a switch for On-Off control of the burner, which is usually in series with the safety thermostat. By sending these signals to XCC 638 you have complete control the burner and you can exploit all the capacities of controlling temperature and receiving alarms and measurements via
TELEMANAGEMENT.

14. FUNCTIONS OF CONFIGURATION, SETTING & TESTING THE SYSTEM

In this section are described all the functions of XCC 638, without going into detail, since the subject will be discussed further when we examine the programming pages.
The order in which you have to operate on the controller at the moment of installation is the same as that in which the sub-sections are presented.

14.1 Configuration of site (CONFIGURATION menu)(under CONFIGURATION KEY)

For CONFIGURATION SITE is meant the adaptation of XCC 638 to the site in which it is to operate.
As we have seen in the examples of sites, it is necessary to inform XCC 638 of all the details of the site itself, so that it can perform all its functions correctly.
Without a correct CONFIGURATION SITE it is impossible for XCC638 to carry out its functions.
The principal information required for the configuration is:
– SINGLE SITE, PRIMARY SITES or SECONDARY BOILER
– TYPE OF HEATING SITE (MONO- OR MULTIFLOW)
– USE OF DHW
– USE OF PUMP
– TYPE OF BURNER
– CHOICE OF ACCESS KEYS
– FEATURES OF TELEMANAGEMENT
– OTHER PARTICULAR FUNCTIONS

14.2 Settiing burner + boiler (menu BURNER + BOILER)(under CALIBRATION KEY)

The functions carried out by burner control are the most important, since on the accuracy of these functions depends the energy output of the whole system with a single burner or with several burners in SEQUENCE.
For more details on the theoretical criteria on which is based the sequence system you are referred to the document:
"CONTROL IN SEQUENCE OF SEVERAL NORMAL OR CONDENSATION BOILERS, WITH MODULATING OR NORMAL BURNERS" (Definitions for SF 4-070, document available from COSTER).
The principal settings are :
• TYPE OF CONTROL: POWER (suggested for normal boilers) or TEMPERATURE (suggested for condensation boilers).
• SWITCHING OFF POINT OF BURNER: this function generates various operating criteria when there are several boilers in SEQUENCE.
– NORMAL : burner is switched off as soon as possible
– OPTIMISED: burner takes into account type of boiler and burner which precedes it in SEQUENCE, before switching off. For example: allow the second stage of the burner which precedes it to modulate instead of switching off completely. In the document referred to abovethe question is dealt with more fully.
– SEQUENCE, before switching off. For example: allows the second stage of the burner which precedes it to modulate instead of switching off completely. In the document referred to above the question is dealt with more fully.

- BOILER RECYCLE PUMP: XCC 638 can control any boiler recycle pump which may be present in order to resolve the problem of excessively high temperature when the site circulation stops for any reason.
  There are two possible functions:
  – TEMPORARY SWITCHING ON: pump is switched on only when the boiler alone is heating itself up. This function is indispensable for avoiding a rise in the return-to-boiler temperature, when the boiler is of the condensation type and at the same time the circulation is guaranteed by the site.
    In this last situation the recycle pump is switched off
  – FIXED SWITCHING ON: the pump is always switched on when the burner is On.
    This is useful when the boilers are not condensation type
- MANY OTHER PARAMETERS to optimise the energy output

14.3 Compensated control and optimisation (menu SETTING COMPENSATION)(under SETTING KEY)

XCC 638 also provides complete compensated control with optimum starts, stops and the use of heating site pump.

Compensation is established on the basis of the type of heat emitters, on the design outside temperature and on the design flow temperature; it includes also correction of the origin of the compensation curve in order to obtain a more comfortable temperature in the intermediate seasons.

14.4 Control domestic hot water (DHW), (DHW menu)(under SETTING KEY)

XCC 638 incorporates a complete controller for DHW production, with its own clock which is independent of that for heating.

The ANTIBACTERIA and PRIORITY functions are available.

14.5 Testing (TESTING menu)(under SETTING KEY)

XCC 638 is provided with a sophisticated system for testing all the connections to outside.

It is absolutely essential to test the whole electrical system related to these controllers before assuming that the system is functioning correctly

14.6 Programmable optoisolated output (Y, Y0)

XCC 638 is provided with an optoisolated output which can be programmed for various uses.
– indication Off status of heating
– indication Off status of boiler
– 0 … 10 V output; used to control :
  - a burner with 0 … 10 V as power or temperature with any scale
  - a group of boilers (e.g. modular boilers) with 0 … 10 V input as power or temperature with any scale.

IMPORTANT NOTE: It is useless to proceed to the practical use of the system of controllers – site, without having completed all the operations summarised in this section; in other words: it is useless to carry out the operations described in the next section (USE FUNCTIONS) without having completed all the operations of CONFIGURATION, SETTING & TESTING.

15. USE FUNCTIONS

These functions represent the operations the user can carry out to use the controller as he thinks fit.
The use functions are divided into four groups:

15.1 Use of rapid access (under USER KEY)

Refering to the first two pages you can adjust the room temperature and the DHW temperature desired at that moment: in practice, the user carries out a very simple operation to adjust these two values.
Refering to the second two pages you can choose the programs for heating and for DHW.
The four rapid access pages allow the user to adjust the most important parameters which regard ambie comfort.

15.2 Normal use (under USER KEY)

This is a group of pages by means of which you can create timed heating and DHW programs, at the same time choosing the required temperatures.
In the same group of pages you can also set the dates for the heating season, Remote Extension and special periods.

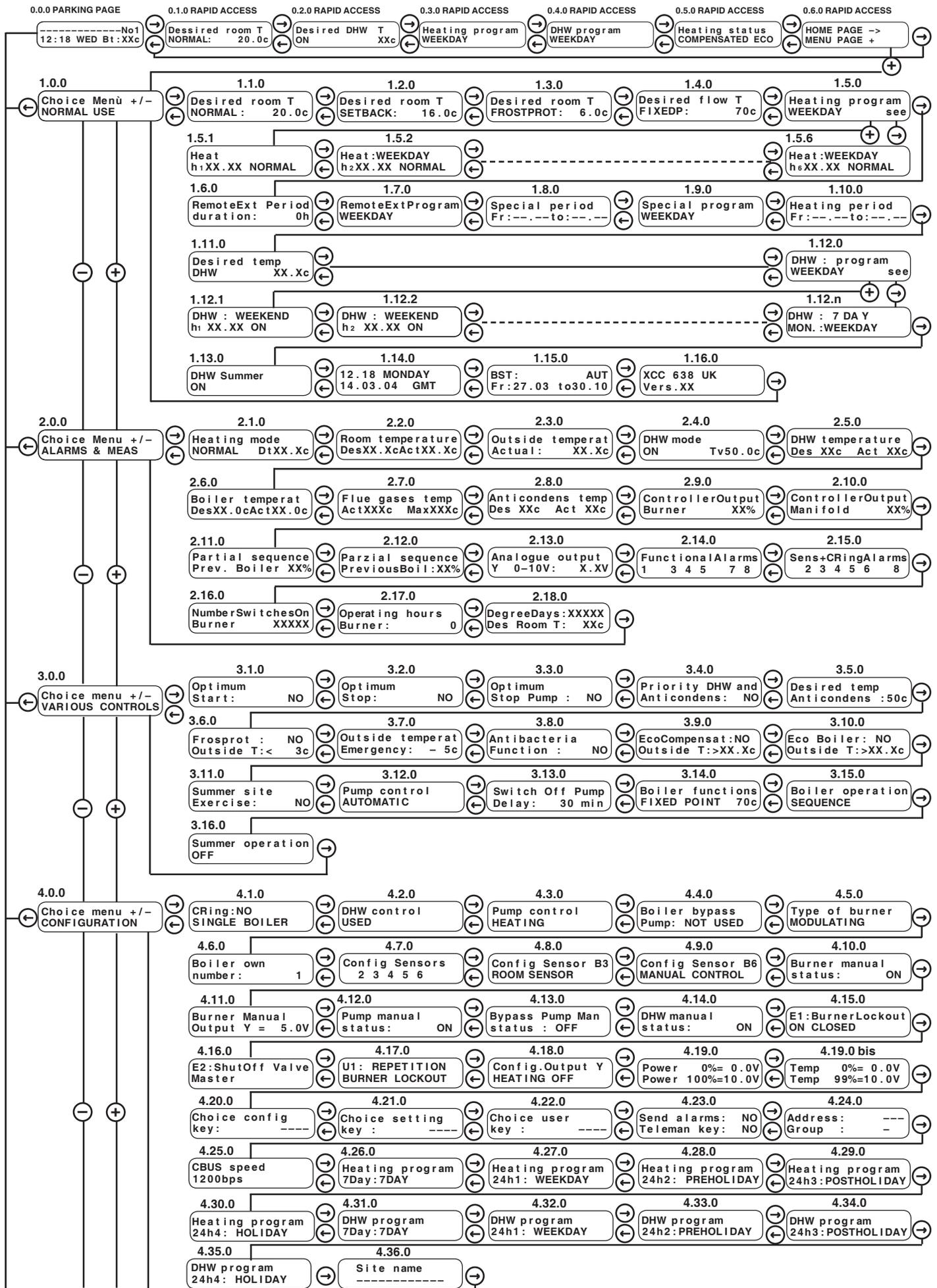### 15.3 Alarms & measurements (free access except for some data protected by key)

This group of pages comprises all the measurements, alarms and counts which illustrate the operation of the system. They are all pages with free access except those regarding the choice of required alarms (SETTING KEY) and those regarding counts, the cancelling of which is protected by the CONFIGURATION KEY, (in order to permit the cancellation of this data only to maximum level operators).
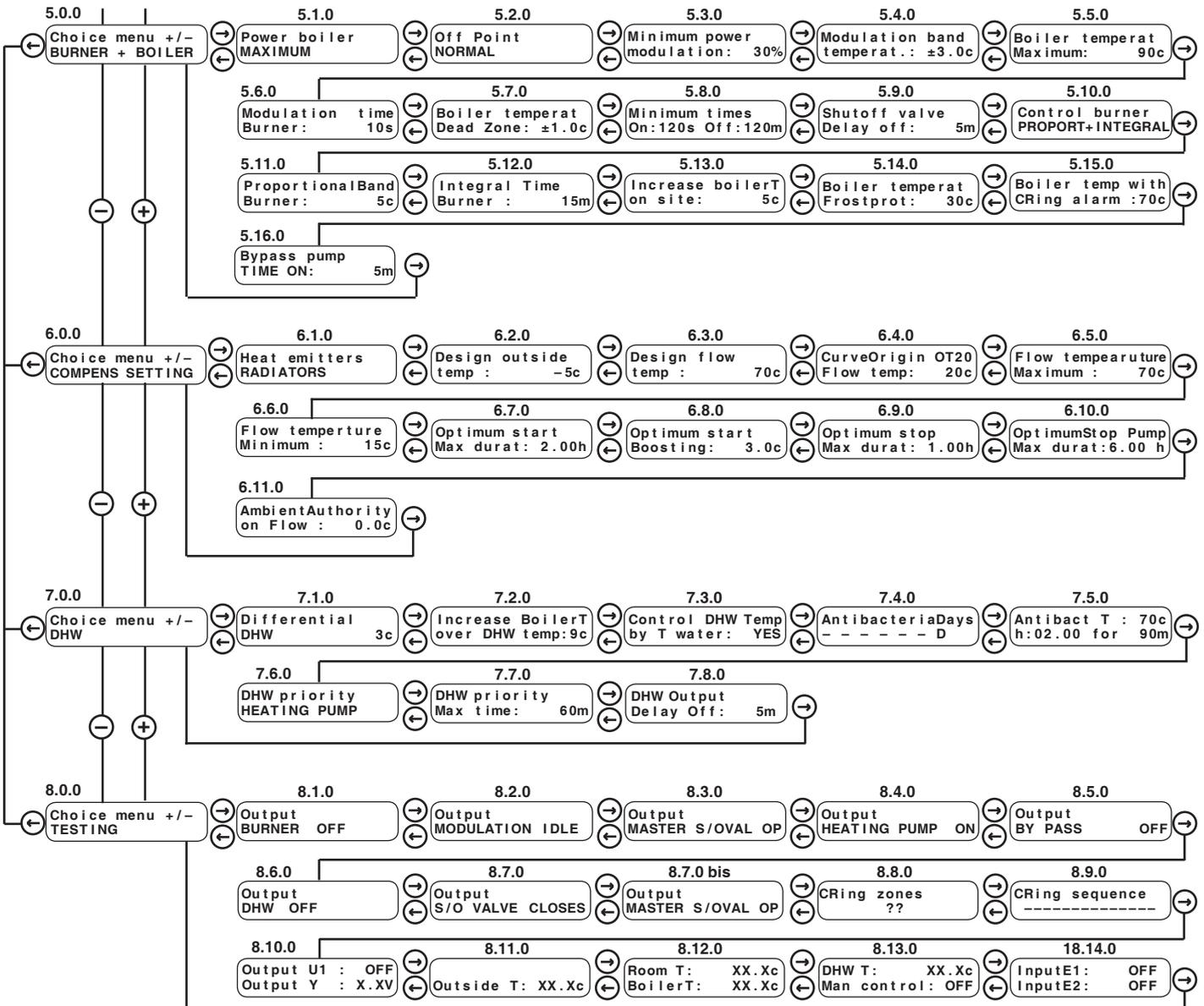
15.4 Various controls (under SETTING KEY)

In this group are included all the parameters which define the operation of the system according to the requirements for good management of the site: for example, the functions of optimisation, priority, Frosprot, antibacterial for DHW, Eco Off, summer site exercise, choice of the sequence and accessory functions for the boiler.
In general, these are functions which, once established, are practically never changed.

16. SEQUENCE OF DISPLAY PAGES (the data are those in memory at consignment)

0.0.0 PARKING PAGE
```
------------No1
12:18 WED Bt:XXc
```

0.1.0 RAPID ACCESS
```
Dessired room T
NORMAL:    20.0c
```

0.2.0 RAPID ACCESS
```
Desired DHW T
ON         XXc
```

0.3.0 RAPID ACCESS
```
Heating program
WEEKDAY
```

0.4.0 RAPID ACCESS
```
DHW program
WEEKDAY
```

0.5.0 RAPID ACCESS
```
Heating status
COMPENSATED ECO
```

0.6.0 RAPID ACCESS
```
HOME PAGE ->
MENU PAGE +
```

1.0.0
```
Choice Menù +/-
NORMAL USE
```

1.1.0
```
Desired room T
NORMAL :    20.0c
```

1.2.0
```
Desired room T
SETBACK:    16.0c
```

1.3.0
```
Desired room T
FROSTPROT:   6.0c
```

1.4.0
```
Desired flow T
FIXEDP:       70c
```

1.5.0
```
Heating program
WEEKDAY      see
```

1.5.1
```
Heat
h1XX.XX NORMAL
```

1.5.2
```
Heat:WEEKDAY
h2XX.XX NORMAL
```

1.5.6
```
Heat:WEEKDAY
h6XX.XX NORMAL
```

1.6.0
```
RemoteExt Period
duration:     0h
```

1.7.0
```
RemoteExtProgram
WEEKDAY
```

1.8.0
```
Special period
Fr:--.--to:--.--
```

1.9.0
```
Special program
WEEKDAY
```

1.10.0
```
Heating period
Fr:--.--to:--.--
```

1.11.0
```
Desired temp
DHW       XX.Xc
```

1.12.0
```
DHW : program
WEEKDAY      see
```

1.12.1
```
DHW : WEEKEND
h1 XX.XX ON
```

1.12.2
```
DHW : WEEKEND
h2 XX.XX ON
```

1.12.n
```
DHW : 7 DAY
MON.:WEEKDAY
```

1.13.0
```
DHW Summer
ON
```

1.14.0
```
12.18 MONDAY
14.03.04  GMT
```

1.15.0
```
BST:        AUT
Fr:27.03 to30.10
```

1.16.0
```
XCC 638 UK
Vers.XX
```

2.0.0
```
Choice Menu +/-
ALARMS & MEAS
```

2.1.0
```
Heating mode
NORMAL   DtXX.Xc
```

2.2.0
```
Room temperature
DesXX.XcActXX.Xc
```

2.3.0
```
Outside temperat
Actual:    XX.Xc
```

2.4.0
```
DHW mode
ON        Tv50.0c
```

2.5.0
```
DHW temperature
Des XXc  Act XXc
```

2.6.0
```
Boiler temperat
DesXX.0cActXX.0c
```

2.7.0
```
Flue gases temp
ActXXXc  MaxXXXc
```

2.8.0
```
Anticondens temp
Des XXc  Act XXc
```

2.9.0
```
ControllerOutput
Burner      XX%
```

2.10.0
```
ControllerOutput
Manifold     XX%
```

2.11.0
```
Partial sequence
Prev. Boiler XX%
```

2.12.0
```
Parzial sequence
PreviousBoil:XX%
```

2.13.0
```
Analogue output
Y  0-10V:   X.XV
```

2.14.0
```
FunctionalAlarms
1   3 4 5   7 8
```

2.15.0
```
Sens+CRingAlarms
  2 3 4 5 6   8
```

2.16.0
```
NumberSwitchesOn
Burner     XXXXX
```

2.17.0
```
Operating hours
Burner:       0
```

2.18.0
```
DegreeDays:XXXXX
Des Room T:  XXc
```

3.0.0
```
Choice menu +/-
VARIOUS CONTROLS
```

3.1.0
```
Optimum
Start:       NO
```

3.2.0
```
Optimum
Stop:        NO
```

3.3.0
```
Optimum
Stop Pump :   NO
```

3.4.0
```
Priority DHW and
Anticondens:  NO
```

3.5.0
```
Desired temp
Anticondens :50c
```

3.6.0
```
Frosprot :    NO
Outside T:<    3c
```

3.7.0
```
Outside temperat
Emergency:   - 5c
```

3.8.0
```
Antibacteria
Function :    NO
```

3.9.0
```
EcoCompensat:NO
Outside T:>XX.Xc
```

3.10.0
```
Eco Boiler: NO
Outside T:>XX.Xc
```

3.11.0
```
Summer site
Exercise:     NO
```

3.12.0
```
Pump control
AUTOMATIC
```

3.13.0
```
Switch Off Pump
Delay:    30 min
```

3.14.0
```
Boiler functions
FIXED POINT  70c
```

3.15.0
```
Boiler operation
SEQUENCE
```

3.16.0
```
Summer operation
OFF
```

4.0.0
```
Choice menu +/-
CONFIGURATION
```

4.1.0
```
CRing:NO
SINGLE BOILER
```

4.2.0
```
DHW control
USED
```

4.3.0
```
Pump control
HEATING
```

4.4.0
```
Boiler bypass
Pump: NOT USED
```

4.5.0
```
Type of burner
MODULATING
```

4.6.0
```
Boiler own
number :     1
```

4.7.0
```
Config Sensors
  2 3 4 5 6
```

4.8.0
```
Config Sensor B3
ROOM SENSOR
```

4.9.0
```
Config Sensor B6
MANUAL CONTROL
```

4.10.0
```
Burner manual
status:      ON
```

4.11.0
```
Burner Manual
Output Y = 5.0V
```

4.12.0
```
Pump manual
status:      ON
```

4.13.0
```
Bypass Pump Man
status : OFF
```

4.14.0
```
DHW manual
status:      ON
```

4.15.0
```
E1:BurnerLockout
ON CLOSED
```

4.16.0
```
E2:ShutOff Valve
Master
```

4.17.0
```
U1: REPETITION
BURNER LOCKOUT
```

4.18.0
```
Config.Output Y
HEATING OFF
```

4.19.0
```
Power    0%= 0.0V
Power 100%=10.0V
```

4.19.0 bis
```
Temp    0%= 0.0V
Temp  99%=10.0V
```

4.20.0
```
Choice config
key:       ----
```

4.21.0
```
Choice setting
key :      ----
```

4.22.0
```
Choice user
key :      ----
```

4.23.0
```
Send alarms:  NO
Teleman key:  NO
```

4.24.0
```
Address :   ---
Group  :     -
```

4.25.0
```
CBUS speed
1200bps
```

4.26.0
```
Heating program
7Day:7DAY
```

4.27.0
```
Heating program
24h1: WEEKDAY
```

4.28.0
```
Heating program
24h2: PREHOLIDAY
```

4.29.0
```
Heating program
24h3:POSTHOLIDAY
```

4.30.0
```
Heating program
24h4: HOLIDAY
```

4.31.0
```
DHW program
7Day:7DAY
```

4.32.0
```
DHW program
24h1: WEEKDAY
```

4.33.0
```
DHW program
24h2:PREHOLIDAY
```

4.34.0
```
DHW program
24h3:POSTHOLIDAY
```

4.35.0
```
DHW program
24h4: HOLIDAY
```

4.36.0
```
Site name
------------
```

FOLLOWS FROM PAGE 14

5.0.0	5.1.0	5.2.0	5.3.0	5.4.0	5.5.0
Choice menu +/− BURNER + BOILER	Power boiler MAXIMUM	Off Point NORMAL	Minimum power modulation: 30%	Modulation band temperat.: ±3.0c	Boiler temperat Maximum: 90c

5.6.0	5.7.0	5.8.0	5.9.0	5.10.0
Modulation time Burner: 10s	Boiler temperat Dead Zone: ±1.0c	Minimum times On:120s Off:120m	Shutoff valve Delay off: 5m	Control burner PROPORT+INTEGRAL

5.11.0	5.12.0	5.13.0	5.14.0	5.15.0
ProportionalBand Burner: 5c	Integral Time Burner : 15m	Increase boilerT on site: 5c	Boiler temperat Frostprot: 30c	Boiler temp with CRing alarm :70c

5.16.0
Bypass pump TIME ON: 5m

6.0.0	6.1.0	6.2.0	6.3.0	6.4.0	6.5.0
Choice menu +/− COMPENS SETTING	Heat emitters RADIATORS	Design outside temp : −5c	Design flow temp : 70c	CurveOrigin OT20 Flow temp: 20c	Flow tempearuture Maximum : 70c

6.6.0	6.7.0	6.8.0	6.9.0	6.10.0
Flow temperture Minimum : 15c	Optimum start Max durat: 2.00h	Optimum start Boosting: 3.0c	Optimum stop Max durat: 1.00h	OptimumStop Pump Max durat:6.00 h

6.11.0
AmbientAuthority on Flow : 0.0c

7.0.0	7.1.0	7.2.0	7.3.0	7.4.0	7.5.0
Choice menu +/− DHW	Differential DHW 3c	Increase BoilerT over DHW temp:9c	Control DHW Temp by T water: YES	AntibacteriaDays − − − − − − D	Antibact T : 70c h:02.00 for 90m

7.6.0	7.7.0	7.8.0
DHW priority HEATING PUMP	DHW priority Max time: 60m	DHW Output Delay Off: 5m

8.0.0	8.1.0	8.2.0	8.3.0	8.4.0	8.5.0
Choice menu +/− TESTING	Output BURNER OFF	Output MODULATION IDLE	Output MASTER S/OVAL OP	Output HEATING PUMP ON	Output BY PASS OFF

8.6.0	8.7.0	8.7.0 bis	8.8.0	8.9.0
Output DHW OFF	Output S/O VALVE CLOSES	Output MASTER S/OVAL OP	CRing zones ??	CRing sequence − − − − − − − − − − − − − −

8.10.0	8.11.0	8.12.0	8.13.0	18.14.0
Output U1 : OFF Output Y : X.XV	Outside T: XX.Xc	Room T: XX.Xc BoilerT: XX.Xc	DHW T: XX.Xc Man control: OFF	InputE1: OFF InputE2: OFF

NUMBERING OF THE PAGES

The pages are numbered with three digits. For greater clarity we give three examples:

– page 7.3.0 = 7 represents the menu (DHW), 3 represents the page number in the menu (Antibacteria Days) and 0 which represents any sub-pages of the preceding page.
The sub-pages are pages which are opened by a particular page, which in this case functions also as a sub-menu

– page 1.5.3 = this is menu 1, the page 5 which generates a sub-menu, the page 6 of the sub-menu

– special page : 0.0.0 = parking page: this is the page to which the system automatically returns if the controls have not been used for a certain period (about 15 minutes). The parking protects the system from involuntary tampering.

0.1.0 ... 0.4.0 = rapid access pages: these are pages for immediate use, very easily and rapidly accessible.

N.B.: Some pages may appear differently or even not appear at all; this depends on the configuration of the controller in relation to the site where it is to be used.

N.B. In the following text the menus, any sub-menus and the pages are shown in the order in which they are presented by the controller

ATTENZIONE : Before using these pages read the last page (section 26).
The values of the parameters shown on the pages are the factory settings (DEFAULT): they can be left as they are, except for those regarding the type of hydraulic site.
All the parameters which can be modified with + and – keys are highlighted thus
Many pages, or entire menus, may not be shown or appear differently, according to the configuration made to adapt XCC 638 to the site.

Page No.	**17. MENU' No. 0** Display	**RAPID ACCESS PAGES (ACCESS WITH USER KEY IF ENTERED)** Description	Sect.
0.0.0	`——————— No1` `12:18 WED Bt:70c`	This is called: PARKING PAGE = the page to which the controller returns automatically (after 15 minutes). The first line gives the site name, shown on page **4.36.0** : No1 : Number of the boiler, only if there are several boilers in SEQUENCE 12 :18 WED Time & day of week XXc Actual temperature of boiler Time & day of week can alternate with one of following indications : – ALARM = one or more alarms in progress (see pages **2.18.0 and 2.19.0**) – MANUAL = whole system controlled on MANUAL (control B6 On) – REMOTE EXTENSION = Remote Extension period On – SPECIAL = Special period in progress – SUMMER = Summer period	15.1
0.1.0	`Desired room T` `NORMAL      20.0c`	Room heating temperature currently programmed appears. With + and – keys this can be adjusted. This adjustment remains: this increase or decrease is easy to set. More complex settings will be explained in the following pages. If in that moment the program requests: OFF or FROSPROT it is not possible to make adjustments; to restart the heating you have to change the program in the following pages. If at that moment the program requires a fixed flow temperature (SETPOINT), in place of Desired Room T there will appear **Desired Flow T**: this temperature can be adjusted.	
0.2.0	`Desired DHW T` `ON         50c`	You can adjust the desired DHW temperature . If, at that moment, the program requires OFF, you have to change the program on the following pages. **WARNING: if the actual boiler temperature is not at least 3°C higher than the actual DHW temperature, the relative control command has no effect so as not to transfer the calorifier heat to the boiler.**	
0.3.0	`Heating program` `WEEKDAY`	You can choose the required heating program from the four 24HOUR programs, the 7DAY program and, always, from NORMAL, SETBACK, FROSPROT, FLOW TEMPERATURE, (SETPOINT) and OFF.	
0.4.0	`DHW program` `WEEKDAY`	You can choose the DHW program you require from another four 24HOUR programs, the 7DAY program and always ON, OFF, or FOLLOWS HEATING. This last choice switches on DHW when the heating is switched on. If the choice is Off or Frosprot this switches off the DHW. The program is updated during the summer period (see page **1.13.0**, section 18, menu 1 on page 18).	
0.5.0	`Heating status` `COMPENSATED ECO`	This page appears if the heating status is different from normal operation. There will appear one or more of the following indications: COMPENSATED ECON (the heating has changed to compensated economic, see page **3.8.0**), ECONOMY BOILER (the boiler has passed to economy, see page **3.9.0**), FROSPROT (frost protection, see page **3.5.0**).	
0.6.0	`HOME PAGE –>` `MENU PAGE +`	This page serves to separate the menu of the rapid access pages from all the other menus which have a technical content which is different or of a higher.level. By pressing -> key = you return to parking page By pressing + key = you go to next menus	
X.X.X	`Enter key` `————`	**ENTERING ACCESS KEY (IF SET)** The key is entered using + and – keys and moving the cursor with <– and –>.keys. Once the correct key has been entered, you return to the page from which you started and you can operate the keys. The access key, once entered, remains active for 15 minutes after having pressed any key; in practice, if, for 15 minutes after having entered the key, no key is pressed, the key is again requested. The key to be entered is that required by the menu you are using, or a key for a higher level (see display page **4.20.0** section 20, page 26).	

18. MENU NO. 1   NORMAL USE (ACCESS WITH USER KEY, IF ENTERED)

Page No.	Display	Description	Sect.
1.0.0	Choice Menu +/− NORMAL USE	This is menu selected. The whole of this menu is protected by USER KEY.	15.2
1.1.0	Desired room T NORMAL 20.0c	The room temperature desired for the normal heating periods is entered: usually this temperature coincides with the day temperature.	
1.2.0	Desired room T SETBACK 16.0c	The room temperature desired for the setback heating periods is entered: usually this temperature coincides with the night temperature.	
1.3.0	Desired room T FROSTPROT: 6.0c	The room temperature desired for the Frostprot periods is entered in order to ensure that in these periods the room temperature does not fall below a critical value when the spaces are not inhabited	
1.4.0	Desired flow T FIXEDP: 70c	A fixed flow temperature (SETPOINT) is entered for the heating site. This temperature can be useful for providing a minimum of heat to the radiators when the spaces are only partially used. This setting is useful also when you require a fixed flow temperature e.g. when user satellites are used with the heat exchanger for DHW. These four temperatures are those which will be entered in the timed programs for heating (illustrated in the following pages).	
1.5.0	Heating program WEEKDAY see	This page is the starting point for the creation or adjustment of the timed program indicated. Using + and − keys select the program you want to create or modify. The available programs are: 7DAY, WEEKDAY, PREHOLIDAY, POSTHOLIDAY, HOLIDAY. These five names are the standard factory settings: on the configuration pages you can change them at will to make it easier for the user to remember and select them. Once the program has been selected, position -> key on the word **"see"** and with the + key enter the relative submenu of the program itself.	
1.5.1	Heat:WEEKDAY h1 06.00 NORMAL	h1 = set start time of first period NORMAL = select the desired temperature from: NORMAL, SETBACK, FROSPROT, SETPOINT, OFF	
1.5.2	Heat:WEEKDAY h2 22.00 SETBACK	h2 = set start time of second period NORMAL = select the desired temperature from: NORMAL, SETBACK, FROSPROT, SETPOINT, OFF	
1.5.6	Heat:WEEKDAY h6 XX.XX NORMAL	h6 = set start time of sixth & last period. NORMAL = select desired temperature from: NORMAL, SETBACK, FROSPROT, SETPOINT, OFF. Should not all 6 periods be required, delete the relative start time by pressing simultaneously + and − keys: there will appear: − −.− − Continue for the other four 24hour programs	
1.5.n	Heat:7DAY MON :WEEKDAY	If on page 1.5.0 the 7DAY program has been selected to create or adjust it, and you have entered the relative submenu with the word **"see"**, there will appear 7 of these pages in a row, with the 7 days of week; for each day you can select a 24hour program from the following: WEEKDAY, PREHOLIDAY, POSTHOLIDAY, HOLIDAY and the temperatures NORMAL, SETBACK, FROSPROT, SETPOINT, OFF.	
1.6.0	RemoteExt Period duration: 0h	Set the number of hours for which you want the extension heating period to be switched on, using the **c1** button (see wiring diagram). The Extension period heating is useful when, with the heating program OFF, you want to switch heating on for a certain period of time: this can be done by means of a simple push-button switch. Example: an office normally closed on Saturday, and so with the heating programmed OFF, is used temporally in the morning for a meeting. **The push-button could be under lock and key and sited in an easily-accessible place. To activate the EXTENSION PERIOD, press the push-button c1 for at least 1 second and, to exit before the set time has expired (the meeting lasts for a shorter time than expected), press the c1 button for at least 10 seconds**	
1.7.0	Emergency Prog WEEKDAY	Set the program you require during the Emergency period	
1.8.0	Special period Fr:−−.−−to:−−.−−	Enter a special period between two dates (included) so as to have a pre-established program in that period, Example: period of special closure of an office, or a period of special opening. By pressing + and − at the same time you see displayed: Fr − −.− − to − −,− −. This function is particularly useful also for setting in advance special periods. By using the COSTER SWC 701 program appropriately it is possible to program any number of periods with dates, even for the whole year.	
1.9.0	Special program WEEKDAY	Set the program you require during the special period.	

18. MENU' NO. 1   NORMAL USE (ACCESS WITH USER KEY, IF ENTERED)

Page No.	Display	Description	Sect.
1.10.0	Heating period Fr:15.10to:15.04	Set the period during which you require heating. The system automatically sets heating for the "summer" period. On page **3.19.0** you can set the operation you require during the summer period for the whole boiler/boilers system. For example: you require the boiler to be in operation.	**15.2**
1.11.0	Desired temp DHW 50c	Set the temperature you require for DHW	
1.12.0	DHW program WEEKDAY see	This page is the starting point for the creation or amendment of the timed program indicated. Using + and – keys, select program you want to create or amend. The possible programs are: 7DAY, WEEKDAY, PREHOLIDAY, POSTHOLIDAY, HOLIDAY. These five names are the standard factory settings: on the configuration pages these can be changed as required so as to make it easier for the user to adopt names he can remember easily. Besides these five programs you can also choose the program FOLLOWSHTG. With this program DHW is available even when the heating has been programmed ON (i.e. not FROSPROT or OFF). Once the operating program has been selected, click the -> key on the word "see" and with the + key enter the submenu of the program itself. The procedure is perfectly similar to that of heating.	
1.12.1	DHW : WEEKDAY h1 06.00 ON ⋮	The choice is between: ON and OFF. Along with these two choices you can choose FOLLOWS HEATING. With this program DHW is available also when the heating has been programmed On (i.e. not FROSPROT or OFF)..	
1.12.n	DHW: 7 DAY MON.:WEEKDAY	The choice for every day of the week is from: WEEKDAY, PREHOLIDAY, POSTHOLIDAY, HOLIDAY and ON, OFF. Along with the above 6 choices you can choose FOLLOWHTG. With this program DHW is available when even the heating has been programmed On: i.e. not FROSPROT or OFF.	
1.13.0	DHW Summer ON 50c	Set the DHW program you require when the heating is off, since you are out of the period on the previous page, You can select any of the programs for DHW, exactly as on page 0.4.0. The chosen program is automatically displayed on the rapid access page 0.4.0. Clearly, from the rapid access page this summer program can be changed as required..	
1.14.0	12.18 MONDAY 14.03.04 GMT	This is the system clock and calendar and must be adjusted. The internal clock is a high-precision instrument and has a battery life (when the controller is switched off) of more than 10 years	
1.15.0	BST: AUT Fr:27.03to:30.10	The clock can change automatically (**AUT**) from GMT to BST and vice versa in accordance with the dates established by the European Community. If on manual (**MAN**) you can set other dates if you are not following those of the European Community or if, in the future, the latter should change.	
1.16.0	XCC 638 UK Vers. XX	The identity card of the controller. Version XX = the software version which corresponds to the technical features.	
1.0.0	Choice Menu +/– NORMAL USE	Continuing, you return to the first page of the menu. If you want to select another menu, use + and – keys; if you want to return for a check on the menu just used, use the -> key. For ease of use, when you reach any page with a choice of menu, there is a delay of a few seconds to give the user the possibility of deciding whether to remain on the current menu or exit definitely. **This holds good for all the other menus.**	

18. MENU' NO. 2   ALARMS, MEASUREMENTS & COUNTS (FREE ACCESS EXCEPT 5 PAGES)

Page No	Display	Description	Sect.
2.0.0	Choice Menu+/− ALARMS & MEAS	This is the chosen menu. The whole of this menu, except for a few pages, has FREE ACCESS,. The pages requiring KEY are indicated. In this menu are included all the alarms, measurements & counts: this menu is of special interest to the site engineer who needs to be aware of how the whole system is functioning. **Usually the measurements not contemplated by the configuration are either without the relative pages or are indicated by dashes. .**	15.3
2.1.0	Heating mode NORMAL Dt 20.0c	On this page you can read the heating temperature mode operating at that moment. Next to the temperature modes contained in the programs appear also the special conditions PREOFF (evening optimisation) and BOOSTING (morning optimisation).	
2.2.0	Room temperature DesXX.XcActXX.Xc	Des = Temperature required by programs Act = Actual temperature measured by sensor (if configured and installed)	
2.3.0	Outside temperat Actual: −5.Xc	This is the outside temperature measured by the relative sensor (if connected to the controller). If the outside temperature arrives via C-Ring (see section **10.2**), in place of Actual will appear C-Ring.	
2.4.0	DHW mode ON Dt 50c	On this page you can read the DHW mode operating at that moment. Next to the ON and OFF modes there will appear also the special conditions: ANTIBACTERIA (in progress a high antibacterial temperature and FOLLOWS HEATING.	
2.5.0	DHW temperature Des 70c Act 70c		
2.6.0	Boiler temperat Des 70c Act 70c	Des = desired temperature (SETPOINT) If the boiler is in SEQUENCE with others, and controlled IN POWER, "Des"(Desired) does not appear Act = actual temperature. If everything is functioning correctly, the desired temperature should be almost the same as the actual temperature, taking the transitories into account. This rule holds good also for all the subsequent measurements..	
2.7.0	Flue gases temp ActXXXc MaxXXXc	This page is dedicated to the temperature of flue gases from the boiler. Act = Actual temperature in that moment Max = Maximum temperature reached by flue gases from last zeroing of memory; to cancel memory press at same time + and – keys for a few seconds.	
2.8.0	Anticondens temp Des 50c Act 50c	This measurement obviously appears only when the anticondensing sensor is configured, as we have seen with the non-condensing boilers.	
2.9.0	Controller Burner XX%	This is the thermal power (expressed as a percentage of the maximum) requested at that moment from the burner. Having overcome the transitory phases it should be fairly close to the figure which may be indicated on the burner (**Burner power**).	
2.10.0	ControllerOutput Burner XX%	This is the thermal power (expressed as a percentage of the maximum) requested at that moment from the total system of boilers, when they are in SEQUENCE. In practice, it is the power which the manifold has to supply. (**Manifold power**)	
2.11.0	Partial sequence Boiler XX%	This is the quota of the total power which the boiler should supply when in SEQUENCE. This value depends above all on its position in the sequence.	
2.12.0	Partial sequence Prev. Boiler:XX%	Has the same significance as above page only that it relates to the preceding boiler in the SEQUENCE. It is useful to know this measurement so as to have information on the POINT OF OPTIMUM STOP (see section **14.2** and document referred to in this section)..	
2.13.0	Analogue output Y 0−10V: 0.0V	On this page you can read the value in volts of the 0 – 10 V analogue output, if it has been configured on page **4.18.0** of CONFIGURATION menu.	

18. MENU' NO. 2   ALARMS, MEASUREMENTS & COUNTS (FREE ACCESS EXCEPT 5 PAGES)

Page No.	Display	Description	Sect.
2.14.0	**FunctionalAlarms** 1 3 4 5 7 8	This page is protected by the SETTING ACCESS KEY. On this page you can select and display the functional alarms of the system. Each alarm can be: – CONFIGURED but not triggered = a fixed number appears – CONFIGURED and triggered = number alternating with letter A appears – ALARM NOT CONFIGURED (not required) = in place of number a dash appears. Each alarm can be selected with the cursor: At each position of the cursor appears the type of functional alarm: – ALARM 1 = BOILER TEMPERATURE – ALARM 3 = DHW TEMPERATURE – ALARM 4 = ROOM TEMPERATURE – ALARM 5 = FLUE GASES TEMPERATURE – ALARM 7 = BURNER LOCKOUT – ALARM 8 = TIME CLOCK Each alarm can be programmed as difference between desired and actual temperature, or as limit (Max) for the flue gases temperature. The delays can be programmed. This programming is carried out by local or remote Telemanagement.	15.3
2.15.0	**Sens+CRingAlarms** 2 3 4 5 6 8	This page is protected by the SETTING ACCESS KEY. These alarms function in exactly the same way as those described above. They are alarms regarding open- or short-circuited sensors. **The alarms for the obligatory sensors are already set**. Each alarm can be selected with the cursor: For each position of the cursor appears the type of functional alarm: – ALARM 2 = OUTSIDE SENSOR – ALARM 3 = ROOM SENSOR or FLUE GASES SENSOR (if configured in this way) – ALARM 4 = BOILER SENSOR – ALARM 5 = DHW SENSOR – ALARM 6 = MANUAL CONTROL or ANTICONDENSING SENSOR – ALARM 8 = CRING NOT FUNCTIONING	
2.16.0	**NumberSwitchesOn** **Burner:** 0	This page is protected by the CONFIGURATION ACCESS KEY, in view of importance of measurement. This is the total number of starts of the burner (if 2-stage those of the first stage). To cancel the counts in memory press at the same time the + and – keys for at least 9 seconds; the cancellation is protected by the CONFIGURATION KEY (if entered).	
2.17.0	**Operating hours** **Burner:** 0	This page is protected by the CONFIGURATION ACCESS KEY, in view of importance of measurement. This is the total number of operating hours of the burner; if the burner is in lockout the counter stops. This figure, too, is useful for optimizing the sequence so as to obtain the maximum seasonal performance. To zero the count memory, press at the same time the + and – keys for at least 5 seconds; the cancellation is protected by the CONFIGURATION KEY (if entered).	
2.18.0	**DegreeDays:XXXXX** **Des Room T: 20c**	This page is protected by the CONFIGURATION ACCESS KEY, in view of importance of measurement. It totals the number of Degree-Days since the last zeroing. 20c = the reference room temperature for the calculation of Degree-Days (officially 20°C). To zero the count memory, press at the same time the + and – keys for at least 5 seconds; the cancellation is protected by the CONFIGURATION KEY (if entered). The change of the reference temperature is also protected by the KEY. **These last three counts, together with the fuel consumption data, are essential for assessing the advantages of energy consumptions which can be obtained by means of a correct configuration and management of the site.**	

Page No.	19. MENU' NO. 3 Display	VARIOUS CONTROLS (ACCESS WITH SETTING KEY, IF ENTERED Description	Sect.
3.0.0	Choice menu +/− VARIOUS CONTROLS	This is the chosen menu. The whole of this menu is underSETTING KEY. In this menu are included all the parameters for defining the operation of the system according to the requirements for efficient running of the site. These are functions which, once established, hardly ever need be changed.	15.4
3.1.0	Optimum Start: NO	You can decide whether or not you want an optimum morning start, whilst the setting of all the related parameters is covered in a successive technical menu.	
3.2.0	Optimum Stop: NO	You can decide whether or not you want an optimum evening stop, whilst the setting of all the related parameters is covered out in a successive technical menu.	
3.3.0	Optimum Stop Pump: NO	You can decide if or not you want evening optimum stop of the heating circuit circulation pump; the setting of all the relative parameters is dealt with in a successive technical menu. The reason for this nocturnal optimal stop is, above all, to avoid the noise inevitably made by the pump (especially annoying at night); the pump is switched off for as long as there is no point in running it, and it is switched on again (usually in the morning) when the thermal balance of the system calls for heat.	
3.4.0	Priority DHW and Anticondens: NO	You can decide if or not you wish give priority to production DHW & to Anticondensing. The type of priority for DHW is decided by configuration choice and is shown on page 27 display **7.5.0**. The priority for DHW and the Anticondensing function are eliminated or applied together.	
3.5.0	Desired temp Anticondens: 50c	On this page you can set the value of the minimum temperature to avoid acid condensation in the boiler, when the boiler is a normal gas or gasoil type (not condensation). Obviously the above applies only if the boiler is not a condensation type; in this type of boiler you want to keep the return temperature as low as possible in order to increase the fuel performance and so the condensation is requested.	
3.6.0	Frosprot: NO Outside T:< −3c	You can decide if you want the FROSPROT function (to protect the site from freezing) and below which outside temperature this function has to be activated. The temperature is chosen ?? This function protects all the elements of the system (boiler, pipework, etc) even when the system is programmed OFF.	
3.7.0	Outside temperat Emergency: −5c	The whole system is controlled on the basis of the outside temperature measured by the appropriate sensor, or received from other controllers via C-Ring. If for any reason (short or open circuit) information on the outside temperature no longer arrives, you can select a fixed emergency value for this so that the site continues to function under acceptable emergency conditions (a sort of spare wheel). Clearly, under these circumstances an alarm is raised.	
3.8.0	Antibacteria Function: NO	You can decide if or not you want the antibacterial function for DHW. The ways in which this function operates are programmed in a successive technical menu.	
3.9.0	EcoCompensat:NO OutsideT:>18.0c	You can decide if or not you want to program the Economy function for the heating pump and above which outside temperature it has to be switched on. The Economy function permits switching off the heating site in the periods in which the outside temperature rises above a certain level (typical of the intermediate seasons). A typical Economy temperature is around 18°C.	
3.10.0	Eco Boiler: NO OutsideT:>18.0c	You can decide if or not you want to program the Economy function for the boiler. This function permits the total exclusion of the boiler, alone or in SEQUENCE, when the outside temperature rises above a pre-set value. In this way the less efficient boilers from the energy point of view can be excluded even if the SEQUENCE calls for them, under conditions in which the site does not call for a large amount of thermal energy. This function is particularly useful in the morning after the nocturnal switching off, in the intermediate seasons.	
3.11.0	Summer site Exercise: NO	You can decide if or not you require the Summer Plant Exercise function. During the summer period (heating off) all the devices connected to the controller (valves, pumps) are operated separately, in order to activate them at least once a week. This operation takes place on Sundays around midday, a time at which any noise does not cause annoyance.	
3.12.0	Pump control AUTOMATIC	You can decide how you want the pump to operate when it is used. AUTOMATIC: the pump is switched on only when required. ALWAYS ON: the pump is always switched on.	
3.13.0	Switch Off Pump Delay: 30 min	You can program a certain delay in switching off the pump when it is controlled in automatic mode: this delay serves to recover the thermal energy on the site. Whilst the factory setting is 30 minutes you can program this delay from 0 to 150 minutes.	

Page No.	**19. MENU NO. 3** Display	**VARIOUS CONTROLS (ACCESS WITH SETTING KEY, IF ENTERED)** Description	Sect.
3.14.0	Boiler functions FIXED POINT 70c	**This page exists only if the boiler functions as PRIMARY SITES (the C-Ring is PRIMARY SITES – see section 4.1.0, CONFIGURATION menu, section 20).** On this page you can establish functions of the boiler (there is only one on the site) in relation to the site requirements, above all taking into consideration the best energy use. **This programming is valid only for the winter period.** The choices are: – FIXED POINT XXc: the boiler is programmed for a set temperature. Clearly, this is only possible if the heating site is equipped with a mixing valve and its own pump. – ZONES: the boiler follows the temperature requested by the heating zone(s) which communicate with the boiler via C-Ring (COSTER controllers). – ZONES + MIN XXc: exactly the same as the previous function, with a minimum of temperature for the boiler itself. This function is useful when it is necessary to ensure a minimum temperature from the boiler, since, besides the consumptions controlled by COSTER controllers there are also other uses without controllers or with controllers which are unable to communicate with XTC 638. – OFF: you require the boiler to be always switched off	15.4
3.15.0	Boiler operation SEQUENCE	This page exists only if the boiler forms part of a sequence of several boilers and is accordingly an alternative to page **3.14.0**. – SEQUENCE: the boiler normally follows the SEQUENCE. – OFF: the boiler is excluded from the SEQUENCE. **These programs are always valid both for summer and winter.**	
3.16.0	Summer operation OFF	This page refers to the boiler, if only one, or to the manifold if the site has several boilers in SEQUENCE. It represents the programming of the system outside the heating period (SUMMER). – OFF: the system is completely OFF during the summer. – ZONES + MIN 40c: the system follows the request of the zones connected via C-Ring with a minimum temperature which can be preset (e.g. following heating in conditioning sites). – ZONES: the system follows the request of the sites, if the controllers concerned are of COSTER manufacture (provided with C-Ring). Programming which is useful, for example, during heating of zones following air-conditioning. – FIXED POINT: XX c: the whole system is kept at a pre-set temperature; if this temperature should be below that necessary to produce DHW it is automatically raised. – DHW ONLY: the system is used only to produce DHW. To this function are later added other functions to avoid too many boilers being used only for DHW.	
	Boiler functions FIXED POINT 70c		

WARNING: The next menu (No. 4) is the most important of all the whole system since it configures XTC 638 on the actual heating site; if this menu is not correctly configured it is pointless to use the controller, since it may display and request parameters not relevant to the actual site.

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	20. MENU' NO. 4	CONFIGURATION (ACCESS WITH CONFIGURATION KEYNUMBER IF ENTERED)	
Page No.	Display	Description	Sect.
4.0.0	Choice menù +/− CONFIGURATION	This is the chosen menu. The whole of this menu is under ACCESS KEY. YOU ARE STRONLY ADVISED TO ENTER THE KEY IN ORDER TO PROTECT THIS MENU. WARNING: Access to this menu must be protected, since an error or tampering, besides interfering with the control, can cause the whole site to malfunction. Press -> key There will appear the page :	14.1
	TECNICAL PAGES PRESS + KEY	PRESS + KEY : there will appear the message PRESS -> KEY. As soon as you press -> you enter CONFIGURATION. This procedure is necessary to ensure that inexperienced users do not make errors which could lead to incorrect configuration. This concept has been repeated several times in order to emphasize its importance.	

4.1.0	CRing:NO
	SINGLE BOILER
		This is the most important page of the whole system, since it communicates the actual heating site to XTC 638 which can then respind as required.
		 The choice is between:
		− **NO**
		  SINGLE BOILER: on site there is a single boiler and XTC638 is not connected to other flows with other COSTER controllers.
		  Examples of this type of site are to be found in sections **9.1**, **9.2**, **9.3** and **9.4**.
		  They are the most common sites having one boiler with or without the production of DHW and with or without a mixing valve on the single heating flow.
		  C-Ring is not used since there are no other flows with COSTER controllers.
		  This choice is valid even if there are other flows with or without other types of controllers (non-COSTER).
		  − **PRIMARY BOILERS**: on site there are several boilers in SEQUENCE and XTC 638 is not connected to other flows with COSTER controllers.
		  Examples of this type of site are given in sections 9.5. 9.6 and 9.7.
		  The most common type of site has several boilers, with or without DHW production, and with or without the mixing valve on the single heating flow.
		  This choice is valid even if there are other flows with or without other types of controller (non-COSTER).
		  C-Ring is used only between boilers to be able to send all the information regarding the SEQUENCE.
		  Since there are several boilers (all provided with XTC 638) which have to operate in SEQUENCE, it is necessary for one of the XTC 638 (and, consequently, one of the boilers) to be selected as PRIMARY.
		  The XTC 638 chosen as PRIMARY is the one which pilots the SEQUENCE of its own and of the other boilers.It is clear that in this instance all the other boilers will have to be configured as SECONDARIES.
		  Even if this XTC 638 is the PRIMARY, the respective boiler is controlled exactly in the same way as all the others, so as not to give a different type of operation during the SEQUENCE.
		− **PRIMARY ZONES**: on the site there is a single boiler and XTC 638 is connected to other flows with COSTER controllers.An example of this type of site is given in section **9.4**.
		  These are sites with a single boiler, with or without the production of DHW, and several flows controlled by mixing valves, controlled by COSTER controllers.
		  C-Ring communication is used between XTC 638 and the other COSTER controllers; C-Ring is not used between the boilers since there is only one boiler.
		  In this instance the part regarding the control of the mixing valve inside XTC 638 is not used; whilst the DHW control can be used.
		− **PRIMARY BOILERS + SITES**: this is a combination of the last two choices, there exist more boilers to be controlled in SEQUENCE, and more flows controlled by COSTER controllers.
		  All the comments made on the last two choices can be applied to this choice.
		  An example of this type of site is given in section 9.9. Included in this choice are more complex sites comprising: UP TO 7 BOILERS of any type and with any type of burner.
		  PRODUCTION OF DHW.ANY NUMBER OF FLOWS of any type: sites can also be served which have several flows controlled by COSTER controllers and others not.In this instance the part regarding the control of the mixing valve withinXTC 638 is not used, while the DHW control can be used.
		− **SECONDARY BOILER**: this is the necessary choice for a boiler to be put in SEQUENCE in a group of boilers where one boiler has been declared PRIMARY (see choices PRIMARY BOILERS and PRIMARY BOILERS + SITES).
		  In this event the controller associated with the boiler is used as a mere "SLAVE", and so the part regarding the control of the mixing valve and the production of DHW are not used.
		  These functions are carried out by the PRIMARY controller and/or by other COSTER controllers.	

	20. MENU' NO. 4	**CONFIGURATION (ACCESS WITH CONFIGURATION KEY IF ENTERED)**	**Sect.**
Page No.	**Display**	**Description**	

Page No.	Display	Description	Sect.
		WARNING: it is pointless going ahead and configuring further pages if you are not absolutely sure that the previous page has been correctly completed.The choice of the previous configuration prepares also for almost all of the other pages, removing the useless parts and amending others.	14.1
4.2.0	DHW control USED	This page does not exist if XCC 638 has been configured as SECONDARY BOILER, since the related output is used to control the shut-off valve of the boiler itself. You can choose between: – NOT USED: production of DHW not used, or this is carried out in another way – USED: the control is used	
4.3.0	Pump control HEATING	This page does not exist if the configuration is SECONDARY BOILER, since the related output can be used to control the shutoff valve of the PRIMARY boiler. This output repeats in practice input E2 at terminal E2, and can be used for any purpose. You can choose between: – NOT USED: pump control not used – HEATING: the pump is dedicated to the heating circuit with or without mixing valves, and so is On only when heating is requested – HEATING + DHW: the pump is used both for heating and for DHW (see diagram in section 9.2), and so is switched on in both situations. – BOILER: the pump is brought into action when the boiler is called into action by any control signal (see diagram in section 9.4).	
4.4.0	Boiler bypass Pump: NOT USED	This page always exists and regards control of the recycle pump which can be used in various ways. This pump resolves the problem of recycling water in the condensation boilers with low water content, when the site circulation is not functioning (e.g. all thermostatic valves of radiators closed). You can choose between: – NOT USED: recycle pump control not used – USED: recycle pump control is used. The method of using it can be programmed in the burner/ boiler menu.	
4.5.0	Type of burner MODULATING	The method of using it can be programmed in the burner/boiler menu. On this page you choose the type of burner: – MODULATING – ONE STAGE – TWO STAGES	
4.6.0	Boiler own number : 1	This page exists only if on site there are several boilers in SEQUENCE: you assign to each boiler a number from 1 to however many boilers there are, so as to form the sequence.	
4.7.0	Config Sensors 2 3 4 5 6	On this page you can configure the sensors present, bearing in mind that those absolutely indispensable on the basis of the CONFIGURATION made in the preceding pages, are automatically entered and cannot be removed; while those not necessary are automatically excluded. Example: if DHW is not used the relative sensor and all the related pages are eliminated. When the cursor is on the number of the sensor, for convenience this is indicated clearly on the page. – 2: EXTERNAL SENSOR: configured automatically, except when boiler is SECONDARY. – 3: ROOM (or FLUE GASES) SENSOR: (choice to make on next page); this sensor is always optional. – 4: BOILER SENSOR: this sensor is always obligatory. – 5: DHW SENSOR: this sensor is obligatory only if DHW control is used. – 6: CONTROL CHANGE SYSTEM TO MANUAL: rather than a sensor this is an On-Off input (On = input closed), to change the whole system to a status (chosen at will) which excludes completely all activity on the site by XCC 638. In place of MANUAL CONTROL, this input can be configured as ANTICONDENSING SENSOR (page **4.9.0**). It can be used in an emergency, by means of the external switch, by non-experts, to ensure a certain level of operation (even if completely manual).	
4.8.0	Config Sensor B3 ROOM SENSOR	On this page you can choose the type of sensor for input B3. – FLUE GASES SENSOR: this input is used to measure the temperature of the flue gases. This choice is strongly recommended when the boiler is SECONDARY, since the Room choice would not be useful – ROOM SENSOR: this input is used for measuring the room temperature of the spaces heated. This last choice is recommended for the single boiler. The choice and the existence of the room sensor will condition the completeness of the compensating function as will be seen in the related menus (page **6.11.0**).	

20. MENU' N. 4	CONFIGURATION (ACCESS WITH CONFIGURATION KEY IF ENTERED)	
Page No. / **Display**	**Description**	**Sect.**

Page No.	Display	Description	Sect.
4.9.0	Config Sensor B6 MANUAL CONTROL	On this page you can choose the type of sensor or control for input B6. – MANUAL CONTROL: CHANGE SYSTEM TO MANUAL; more than a sensor this is an On-Off (On = input closed), to change the whole system to a status (chosen at will) which excludes completely every activity on site on the part of XCC 638. – ANTICOND SENSOR: this input is used to measure the return from boiler temperature (if only one boiler), or of the manifold (if several boilers). The anticondensing sensor serves to prevent the boiler return or the manifold return to fall below levels which could lead to the creation of acid condensates. **Clearly, if the boiler is of the condensation type the anticondensation function does not have to be programmed.**	14.1
4.10.0	Burner manual status: ON	On this and the next four pages you can choose the status to give the various outputs of XCC 638 when the CONTROL TO CHANGE SYSTEM TO MANUAL (page **4.9.0**) is switched on.You can choose between: – ON: the burner control is activated and the shut-off valve is open – OFF: the burner control is deactivated and the shut-off valve is closed If the burner has two stages the first and second stages are switched onIf the burner is modulating it is switched on or brought to the maximum modulation (POWER or TEMPERATURE) Clearly, under these conditions, the burner will be controlled by other devices (e.g. thermostats).	

4.11.0	Burner Manual
	 Output Y = 10.0V
		Value of output Y is set when in MANUAL CONTROL.
		 It appears if : **4.10.0** is "ON" and
		              4.9.0 is "MANUAL CONTROL" and
		              4.18.0 is "0 - 10 V BURNER POW" or "0 - 10 V BURNER T"	

4.12.0	Status pump Manual: ON	You can choose between: – ON: the pump is always switched on – OFF: the pump is always switched off	
4.13.0	StatusRecycPump Manual: OFF	You can choose between: – ON: the recycle pump is always switched on – OFF: the recycle pump is always switched off	
4.14.0	DHW manual status : OFF	You can choose (provided DHW control exists) between: – ON: the operation depends on the control – OFF: the control is always switched off In this event the DHW must have its own control device (thermostat) so it does not reach dangerous temperatures.	
4.15.0	E1:BurnerLockout ON CLOSED	On this page you can decide if, and how, to inform XCC638 that there is a burner lockout. The burner must have a voltage-free switch to connect to input k1, terminal E1. The choice is between: – ON CLOSED = the burner switch closes in the event of a lockout – ON OPEN = the burner switch opens in the event of a lockout	
4.16.0	E2:ShutOff Valve Master	This page is not a choice but merely information for the engineer – WITH SECONDARY BOILER: this input is at the disposal of the primary boiler, and controls the shut-off valve of the primary itself (VALVE SHUTOFF MASTER). **WARNING: the control of the shut-off valve of the primary boiler is carried out by a single XCC 638 of a secondary boiler chosen at will, since there is only one primary shutoff valve.** All the other XCC 638 have this function free and so can be used for other applications. Via Telemanagement (program SWC 701) you can see further information on, for example, when the function is not used.	
4.17.0	U1: REPETITION BURNER LOCKOUT	This page is not a choice but information for the convenience of the site engineer. This is the output "REPETITION BURNER LOCKOUT", to connect to input E2 of the primary boiler. On this page and on the related page **4.16.0**, the engineer is informed of these two functions which are very useful for correct energy management of the system..	

20. MENU' NO. 4		CONFIGURATION (ACCESS KEY CONFIGURATION IF ENTERED)	
Page No.	**Display**	**Description**	**Sect.**
4.18.0	Config Output Y HEATING OFF	Output Y can be programmed in many ways in order to control other functions related to the heating site. This is a further opportunity for an exchange between XCC 638 and other components of the heating site so as to provide automation which is very useful for the operation of the system. This output is optoisolated and can be converted, using the ACR 328 accessory, into a relay output (Com., N.O., N.C.) or used directly as a 0…10 V output. – HEATING OFF = switches on (at 4.5 V– fixed) when the heating is in any mode switched off. It can serve to synchronize the heating OFF function with other external functions. – BOILER OFF = the same function as above related to the switching off of the boiler – 0 – 10 V BURNER POW = the output generates a 0…10 V signal proportional to the **power** demanded from the burner. – 0 – 10 V BURNER T = the output generates a 0…10 V signal proportional to the **temperature** demanded from the burner. This output, correctly programmed and provided with the necessary accessories, can automise sequences of complex and mixed systems: • **Heat exchanger in sequence with boilers** • **Several boilers using various types of fuel, to create sequences that always use the most economic fuel.** • **Heating sites with boilers and co-generators**	14.6
4.19.0	Power 0%= 0.0V Power 100%=10.0V	This page appears if on previous page has been chosen the 0…10V output as power. You can program two points on the scale to set the output as you wish and make it compatible with the input features of the system you want to control. e.g.: Power 5% = 2.0V Power 90% = 9.5 V With this setting you send 2 volts when you want to control a power of 5% and 9.5 V when you want to control a power of 90%; for intermediate values the scale is linear. The scale is calibrated in the factory very simply. 0 volts =0% power 10 volts = 100% power	
4.19.0 bis	Temp 0c= 0.0V Temp 99c=10.0V	This page appears if on page **4.18.0** has been chosen the 0…10 V temperature output. You can program two points on the scale to set the output as you wish and make compatible with the characteristics of the input of the system you want to control. e.g. Temp. 5c = 1.0 V Temp 85c = 9.0 V With this setting you send 1 V when you want to control a temperature of 5°C and 9 V when you want to control a temperature of 85°C; for the intermediate values the scale is linear. The scale is factory set very simply. 0 V = 0°C temperature 10 V = 100°C temperature, even if 100°C will never be used because the safety thermostat will intervene first	
4.20.0	Choice config key: ————	**Given the importance of what is configured in this menu you are strongly advised to enter at least the CONFIGURATION KEY which prevents access to non-authorised persons and so avoids errors and tampering.** The CONFIGURATION, SETTING & USER keys have a decreasing hierarchy: – entering the CONFIGURATION KEY permits entering the other two keys- entering the SETTING KEY permits entering the USER KEY. **It is very important not to forget the access keys because, once entered, they prevent changing the relative parameters.** – the CONFIGURATION KEY permits operating in SETTING and in USER USE, even without knowing these last two keys. The same holds good for SETTING KEY and USER KEY. - - - - : no key has been entered. You can enter a 4-character ALPHANUMERIC KEY, using + and – keys to choose the letters and <- and -> to position the cursor. Once the key has been chosen and the page exited there are 15 minutes from the last depression of any key before the access key is again requested. ****: there exists an access key which has already been entered. Only by knowing this key is it possible to operate: once the key has been entered using the previous method you can cancel by pressing at the same time the + and – key for a few seconds.	14.1

20. MENU' NO. 4 CONFIGURATION (ACCESS CONFIGURATION KEY IF ENTERED)

Page No.	Display	Description	Sect.
4.21.0	Choice setting key : ————	On this page you can choose the SETTING KEY which permits access to the setting menu and to the related pages. The SETTING KEY is second in the hierarchy: knowing this key it is possible to operate also in the parts protected by the USER KEY. The whole procedure of entering, modifying or cancelling is the same as that on the previous page.	14.1
4.22.0	Choice user key : ————	On this page you can choose the USER KEY which permits access to the menus and the related pages. The USER KEY belongs to the lowest hierarchy and permits the use of the whole system by a normal user. The pages accessible with this Key are simple and within the possibilities of a non-expert. The whole procedure of entering, modifying or cancelling is the same as that on the previous pages.	
4.23.0	Send alarms: NO Teleman key: NO	This and the next two pages concern local or remote Telemanagement which is achieved by means of the C-Bus Plug-in type ACB 400 C1. – SEND ALARMS: you can enable the automatic dispatch of the alarms to a local or remote computer. – TELEMAN KEY: you can switch on a Key (which is has nothing to do with the previous ones) which makes possible local or remote Telemanagement. This Key can be entered only via PC since it serves only the PC.	
4.24.0	Address: ——— Group : —	Address: you enter the address of the controller (from 1 to 239). Group: you enter the group to which this controller belongs. Address and Group are two items of data necessary for Telemanagement in order to be able to identify precisely the controller with which you wish to connect.	
4.25.0	CBUS speed 1200bps	The speed of the communication bus (C-Bus) can be chosen from: 1200, 2400, 4800, 9600 bouds. The speed must be chosen above all on the basis of the other devices on the site and on the type of modem use	
4.26.0	Heating program 7Day: 7DAY	This and the next 9 pages are convenience pages which enable you to call up 24HOUR and 7DAY heating and DHW programs using your own choice of names. This makes it easier for the user when he has to choose a program which, instead of having a number, has a name which clearly indicates the use of the program. Each program already has its name assigned at the factory. 7day: 7DAY factory-set. Any other name is set using the usual methodo.	
4.27.0	Heating program 24h1: WEEKDAY	Similar to previous page, again for heating. Day1: WEEKDAY factory setting. Any other name is set using usual method.	
4.28.0	Heating program 24h2: PREHOLIDAY	Similar to previous page, again for heating. Day2; Factory setting: PREHOLIDAY. Any other name is set using usual method..	
4.29.0	Heating program 24h3: POSTHOLIDAY	Pimilar to previous page, again for heating. Day3: Factory setting: POSTHOL. Any other name is set using the usual method.	
4.30.0	Heating program 24h4: HOLIDAY	Similar to previous page, again for heating. Day4: Factory setting: HOLIDAY. Any other name is set using the usual method.	
4.31.0	DHW program 7Day: 7DAY	Similar to previous page but for DHW. 7Day Factory setting: WEEKDAY. Any other name is set using the usual method.	
4.32.0	DHW program 24h1: WEEKDAY	Similar to previous page but for DHW. Day1: Factory setting: PREHOLIDAY. Any other name is set using the usual method.	
4.33.0	DHW program 24h2: PREHOLIDAY	Similar to previous page but for DHW. Day2: Factory setting: PREHOLIDAY. Any other name is set using the usual method.	
4.34.0	DHW program 24h3: POSTHOLIDAY	Similar to previous page but for DHW. Day3: Factory setting: POSTHOLIDAY. Any other name is set using the usual method.	
4.35.0	DHW program 24h4: HOLIDAY	Similar to previous page but for DHW. Day4: Factory setting: HOLIDAY. Any other name is set using the usual method.	
4.36.0	Site name ————————————	On this page you can enter the name of the site with XCC 638. This same name appears on the Parking page 0.0.0.	

21. MENU' N. 5   BURNER + BOILER (ACCESS KEY SETTING IF ENTERED)

Page No.	Display	Description	Sect.
5.0.0	**Choice menu +/–** **BURNER + BOILER**	This is the menu chosen. The whole of this menu is under SETTING KEY. In this menu are included all the parameters to describe the operation of the burner. **This menu also is of strategic importance for the efficient operation of the whole system**	14.2
5.1.0	**Power boiler** **MAXIMUM** In some units this page may appear differently and the same as the following. The functions are exactly the same. Only the wording changes.	This page exists only if there are several boilers which are in SEQUENCE. If there is only one boiler the burner can be controlled only for TEMPERATURE. – MAXIMUM (POWER): the burner (in SEQUENCE) is controlled so as to produce a certain amount of power, independently of the temperature to which it is supplying heat. It is the SEQUENCE which tells each burner how much power it has to provide at any moment. The boiler has a maximum temperature limit above which it cannot go for safety reasons. This limit has to be slightly lower than the boiler thermostats. With the control on MAXIMUM (POWER): the SEQUENCE, before calling on the next boiler in sequence, waits until the preceding one provides the maximum of its power. These concepts are illustrated more fully in the document referred to in section **14.2** – NEW STARTUP (TEMPERATURE): the burner in SEQUENCE receives a temperature "set point" to maintain at the boiler output. Each of the boilers called to operate by the SEQUENCE provides the same power output as the others, when they are controlled according to NEW STARTUP (TEMPERATURE). These concepts are discussed in more detail in the document already referred to in section **14.2** The choice of this parameter and of the parameter illustrated on the next page provides the best weapon to optimize the seasonal output of the SEQUENCE.	
5.2.0	**Off point** **NORMAL**	This page exists only if several boilers are in SEQUENCE. It does not appear on the controller of the main boiler. The Off point is the moment at which the burner of the boiler called to function in SEQUENCE is switched off. The criterion for switching off a burner, once switched on, can influence the output of the burner itself, since the moment of switching on is the least advantageous from the energy point of view: frequent stops an starts, besides wearing out the burner, reduce its seasonal output. For further details on these concepts you are again referred to the document referred to in section **14.2**. – NORMAL: the burner is switched on when the preceding ones cannot provide further heat; and is switched off as soon as possible: the start time is minimized but not the number of starts. – OPTIMISED: the burner is switched off, first allowing the modulation of the power of previous burner, reducing the number of starts and stops, particularly if the previous one is 2-stage or modulating. For condensation boilers, particularly those with modulating gas burners, the best criterion is certainly: Type of control = TEMPERATURE and Off point = OPTIMISED Clearly, other criteria are applicable, these to be decided from time to time depending on the type of site and on the data obtained from the readings referred to on pages **2.16.0**, **2.17.0** and **2.18.0** and on the fuel consumption.	
5.2.0 bis	**Off point** **Burner:** **15%**	This page exists if the burner is modulating and if in **4.1.0** it is SINGLE SITE or PRIMARY SITES, or, in case of BOILER SEQUENCE, if **5.2.0** is NORMAL. Determines the point at which burner goes from minimum modulation (**5.3.0**) to Off.	
5.3.0	**Minimum power** **modulation:** **30%**	This page exists if the burner is modulating: you set the minimum power which the burner has to maintain untill the OFF point set in.	
5.4.0	**Modulation band** **Temperat.:± 3.0c**	This page exists if the burner is controlled on TEMPERATURE. It is the modulation which is given to the temperature "set point" in order to stabilize the whole system of the SEQUENCE. The factory setting of +/– 3.0°C is a value which is generally satisfactory. Increase this value only in event of instability of the system (boilers differing greatly between each other in power). The instability of the system manifests itself in excessive stops and starts of the boilers.	
5.5.0	**Boiler temperat** **Maximum:** **90c**	You establish the maximum temperature at which to regulate the boiler, in whatever way it is controlled. This temperature has to be below the temperature of the boiler thermostats otherwise they come into play too soon thereby altering the SEQUENCE.	
5.6.0	**Modulation time** **Burner:** **45s**	This page exists if the burner is modulating. You establish the time the burner takes to go from minimum to maximum POWER. A difference of +/– 5 seconds in respect of the speed of the modulation motor has no influence on the operation of the burner.	
5.7.0	**Boiler temperat** **Dead Zone: ±1.0c**	This is the interval between desired and actual temperature in which you consider control to be satisfactory. It is suggested to set this at +/- 1°C; you stabilize the system and avoid overworking the modulation.	
5.8.0	**Minimum times** **On:120s Off:120s**	On = the minimum start time corresponding to the cyclic control of the burner. You are advised to set this time at least equal to or slightly above that of the cycle time: this avoids switching off the burner before the start cycle has finished. Off = the minimum stop time of the burner. You avoid switching off the burner immediately after starting it. It is recommended to set this time at least equal to or slightly above that of any "post-washing" in order to avoid interrupting it. Factory setting:120 seconds	

21. MENU' N. 5   BURNER + BOILER (SETTING ACCESS KEY IF ENTERED)

Page No.	Display	Description	Sect.
5.9.0	**Shutoff valve Delay Off: 5m**	This page exists only if you use the boiler shutoff valve and so there are several boilers on the site. The shut-off valve opens when the burner is switched on and closes with a certain delay at the total switching off of the burner, thereby recovering the residual energy accumulated in the hot boiler. Recommended value: 5 minutes.	
5.10.0	**Control burner PROPORT+INTEGRAL**	This is the type of control applied to the burner. – PROPORT+INTEG = the controller is proportional + integral (PI); for the burner this programming is usually the best. – INTEGRAL = the controller is purely integral (I), this type of control dampens the use of the burner.	**14.2**
5.11.0	**ProportionalBand Burner: 5c**	This is the proportional band of the burner controller, if controlled as TEMPERATURE; and of the controller if controlled as POWER. Value suggested is 5°C, even if the optimum value should be found in relation to the operation of the system. Examining the collection of data via Telemanagement it is easy to understand if there are any swings, and to increase the value accordingly.	
5.12.0	**Integral Time Burner: 15m**	A page similar to the previous one. Recommended value: 15 minutes..	
5.13.0	**Increase boilerT on zones: 5c**	This page exists if the C-Ring is PRIMARY SITES (see page **4.1.0** CONFIGURATION menu, section 20). On this page you can set the temperature increase to give to the burner, in respect of the maximum temperature requested by all the other site flows, (provided with COSTER controllers), a request that comes via C-Ring. Factory setting: 5°C	
5.14.0	**Boiler Temperat Frostprot: 30c**	This page exists if there is only one boiler. You set the minimum temperature desired for the boiler if Frosprot is used (see page **3.6.0** of VARIOUS CONTROLS).	
5.15.0	**Boiler temp with CRing alarm: 70c**	This page exists if there is only one boiler or the C-Ring is PRIMARY SITES or SECONDARY BOILER (see page **4.1.0** of CONFIGURATION menu, section 20). You set the desired temperature for the boiler, when the value it should receive via the C-Ring no longer arrives (cable break or short circuit). The boiler operates at this fixed temperature ensuring the Emergency. Absence of C-Ring obviously triggers an alarm.	
5.16.0	**Bypass pump TIME ON: 5m**	This page exists if the boiler recycle pump is used (CONFIGURATION menu). – TIME ON = the pump is switched on each time the burner is switched on and it remains On for this minimum time. If, after this time, the burner continues to remain On, this means that the thermal load (site circulation) is high enough not to cause the boiler to boil. Essentially, this pump operates only when the boiler has to heat only itself, since the site is absolutely not requesting heat: it guarantees not to increase the return temperature of the condensation boilers thereby saving them from boiling over. – DELAY OFF = the recycle pump is always left On when the burner is On. When the burner is switched off, it is switched off with this delay to avoid condensation. Clearly, this function is used only for normal non-condensation boilers precisely in order to avoid damage from acid condensation.	

	22. MENU NO. 6	**COMPENSATION SETTING (ACCESS SETTING KEY IF ENTERED)**	
Page No.	**Display**	**Description**	**Sect.**
		The whole of this menu exists only if the boiler is configured as SINGLE SITE. C-Ring is: NO, SINGLE SITE (page 4.1.0)	14.3
6.0.0	Choice menu +/− COMPENS SETTING	This is the chosen menu. The whole of this menu is protected by SETTING KEY. This menu includes all the parameters for defining the compensation function; it is important for achieving a comfortable temperature combined with an efficient use of energy	
6.1.0	Heat emitters RADIATORS	On this page you can enter the type of heat emitters: RADIATORS, CONVECTORS, PANELS. Factory setting = RADIATORS.	
6.2.0	Design outside temp.: −5.0c	On this page you can set the design outside temperature for the heating site. Factory setting = − 5°C.	
6.3.0	Design flow temp : 70c	On this page you can set the design flow temperature for the heat emitters, when the outside temperature is the design minimum. Factory setting = 70°C.	
6.4.0	CurveOrigin OT20 Flow temp : 20c	On this page you set a correction to the flow temperature of the compensation curve, when the outside temperature is 20 °C. You can make a slight correction to the start of the compensation curve (intermediate seasons) so as to have a more comfortable temperature. Factory setting = 20°C (no correction).	
6.5.0	Flow temperature Maximum : 70c	Set the maximum temperature accepted by the heating site flow. Useful for avoiding too high temperatures for the heat emitters in the event of errors or erroneous settings.Factory setting = 70°C.	
6.6.0	Flow temperature Minimum : 15c	Complementary to the previous page for the minimum values. Factory setting = 15°C	
6.7.0	Optimum start Max durat: 2.00h	This and the following page permit choosing the most suitable parameters for optimizing the morning start. on this page you set the maximum duration in hours you want for the optimum start. By increasing this period you can reduce the forcing on the next page. The criteria for these choices are often personal.Factory setting = 2 hours.	
6.8.0	Optimum start Boosting: 3.0c	This is the second parameter which defines the morning optimum start. Boosting is the increase in room temperature you require during the optimisation itself, in order to compensate more quickly for the heat losses during the night. Factory setting= 3°C The desired increase in room temperature, a basic figure for optimization, is converted to an increase in temperature of the flow; this increase is in inverse proportion to the outside temperature. The forcing is obtained simply by increasing the flow temperature but the flow is increased by a value which depends on the true thermal requirement. The optimum start time is equal to the maximum desired on te previous page, with the outside temperature at the minimum design value, this is equal to 0 (zero) when the outside temperature equals the value desired for the rooms (heating not necessary).The optimum start time is correctly modulated for intermediate situations.	
6.9.0	Optimum stop Max durat: 1.00h	This page permits choosing the most suitable parameters for the optimization of afternoon or evening optimum stop. You set the maximum duration you require for the optimum stop. Factory setting= 1 hour. The optimum stop is maximum when the outside temperature is equal to the room temperature you require and is 0 (zero) when the outside temperature equals the minimum design value.The calculation is made continuously for all the other values.	
6.10.0	OptimumStop Pump Max durat:6.00 h	This page exists if the pump is used for heating. It is an optimisation which operates as follows: − When in the evening you switch off or lower the desired room temperature, the pump continues to function for a certain period to recuperate the site heat (see page **3.13.0**). − After this period the pump switches off to avoid, in particular, making a noise at night. − The pump remains off for a period the length of which is directly proportional to the value of the outside temperature.The system makes the calculation as for the preceding optimisations. Factory setting: 6 HOURS	
6.11.0	AmbientAuthority on Flow: 0.0c	If the ROOM SENSOR is configured and installed, this sends to XCC 638 the value measured and if it is different from the value required by the program, it corrects the flow temperature with a certain authority. The authority represents the value of the increase or decrease in the flow temperature, which you require with a negative or positive variance of the room sensor of 1°C. Factory value = 0°C (authority excluded)	

23. MENU' N. 7   DHW (ACCESS KEY SETTING IF ENTERED)

Page No.	Display	Description	Sect.
		This menu only exists if there is production of DHW and if the boiler is not SECONDARY BOILER.	14.4
7.0.0	Choice menu +/– DHW	This is the chosen menu. The whole of this menu is protected by SETTING KEY. Setting functions for production of DHW. Usually the factory settings are satisfactory**.**	
7.1.0	Differential DHW 3c	This is the differential of switching on and off the On-Off controller for DHW. Factory setting = 3°C. This differential is below the desired temperature so as to avoid excessive temperatures	
7.2.0	Increase BoilerT over DHW temp: 9c	This is the increase in temperature you set for the boiler or the manifold when it is necessary to control the production of DHW in respect of the desired temperature. Factory setting: 9°C This increase is necessary in order to have a fairly efficient thermal exchange with the water heater and thereby reduce the heating times for the water heater itself.	
7.3.0	Control DHW Temp by boilerT: YES	Stops operation of storage tank pump if temperature of boiler/manifold temperature is below temperature measured by storage tank sensor. – YES = Stop On (factory setting) – NO = Stop Off	
7.4.0	AntibacteriaDays – – – – – – D	On this page you enter the days on which you want to use the antibacterial function against the formation of Legionella in the storage tank. It is suggested one or, maximum two, days a week.	
7.5.0	Antibact T : 70c h:02.00 for 90m	Antibacterial T: XXc = temperature for the disinfestation of the water. Factory setting = 70°C h: XX.XX = time at which you require the function. Factory setting = 02.00XXXm = duration of antibacterial function in minutes. Factory setting = 90 minutes. All the factory values have been chosen for a normal application: if, for mechanical or hydraulic reasons there should be difficulties in reaching all the points where Legionella develops the temperature should be raised.	
7.6.0	DHW priority HEATING PUMP	This page exists if the pump (page **4.3.0**) has been configured as HEATING. The priority consists in switching off the heating pump when the production of DHW is requested, in order to leave all the boiler power for this operation. The choice on this page is automatic. If the CONFIGURATION Is PRIMARY SITE: the priority is sent to the sites by means of C-Ring, and limits the site flow temperature to a value which gives maximum power to DHW. In this case the message changes from HEATING PUMP to SITES	
7.7.0	DHW priority Max time: 60m	This page exists if the pump (page **4.3.0** menu CONFIGURATION menu section 20) is not configured as HEATING + DHW. On this page you set a maximum time for the **priority** of the DHW since, if the demand of the function exceeds a certain time (excessive consumption or some fault with the storage tank such as incrustations) you can restart the heating so as not to cool the site excessively. Factory setting: 60 minutes	
7.8.0	DHW Output Delay Off : 5m	On this page you can introduce a delay in switching Off the demand for heat from the water heater for DHW. This delay is very useful in order to ensure that the boilers with only a low water content (e.g. condensation) start to boil when the load is suddenly removed from the water heater. The burner is controlled instantly to the temperature requested before starting the boiler, whilst the pump continues to run in order to remove heat from the combustion chamber. This is a method of raising the temperature of the boiler considerably when DHW is requested without the risk of causing the boiler to boil when the request is met.	

24. MENU' N. 8   TESTING (ACCESS KEY IF ENTERED)

Page No.	Display	Description	Sect.
		This menu serves to test all the electrical wiring between XCC 638 and: The burner, the pump(s), the valve(s), the measurement sensors, the service inputs and outputs. It serves also to simulate the controller outputs in order to check the operation of the whole system..	14.5
8.0.0	Choice menu +/– TESTING	This is the menu selected. The whole of this menu is protected by SETTING KEY. The functions are all those regarding the testing of the electrical system. **You are again advised to carry out a complete check before using the system..** **WARNING: access to this menu has special protection because incorrect use of TESTING could apply voltage to the various site components at incorrect moments.** Press –> key: the following page will appear :	
	TECNICAL PAGES! PRESS + KEY	PRESS + KEY: there will appear PRESS -> KEY. As soon as -> key is pressed you enter TESTING. This procedure is necessary to ensure that inexpert users cannot manipulate On/Off switches incorrectly. **The testing must be carried out when manual On/Off switching cannot cause damage to persons or things.**	
8.1.0	Output BURNER OFF	Using + and – keys you can switch on or off the control output of the 1-, 2-stage or modulating burner.	
8.2.0	Output MODULATION IDLE	This page differs depending on whether the burner is 1- or 2-stage modulating. – If it is 1 stage there appears: second STAGE NOT USED – If it is 2 stages there appears: 2 STAGE ON: with + and – keys you can switch on or off the control output of second stage of burner. – If the burner is modulating there will appear: MODULATION LOWER; with + or – keys you can choose: LOWER, RAISE, IDLE.	
8.3.0	Output MASTER S/OVAL OP	This page appears only if XCC 638 is configured to control a secondary boiler in sequence (SECONDARY BOILER page **4.1.0**). It is not a page for controlling the Master shutoff valve but only an indication if this valve is open or closed. To control this valve it is necessary to operate on XCC 638 Master (page **10.7.0 bis**). For simplicity, operate at the same time on page **10.7.0 bis** of the Master and check the operation on this page of the Slave: in this way you check the connection between Master and Slave and, at the same time, between Slave and valve.	
8.4.0	Output HEATING PUMP OFF	On this page you test the connection with the pump. The message which appears is related to the choice made for the pump in the CONFIGURATION menu (page **4.3.0** of section 20). With + and – keys you switch On-Off..	
8.5.0	Output BYPASS OFF	On this page you test the connection with the recycle pump. With + and – keys you can switch On-Off. If pump not used there will appear: RECY PUMP UNUSED	
8.6.0	Output DHW OFF	On this page you test the connection with the device for the production of DHW (if it exists). Using + and – keys you switch On-Off..	
8.7.0	Output S/O VALVE CLOSES	This page appears only if XCC 638 is configured to control a secondary boiler in sequence (SECONDARY BOILER page **4.1.0**). On this page you test the connection with the boiler shutoff valve, obviously if there are several boilers in SEQUENCE. With + and – keys you can select: OPENS, CLOSES.	

25. MENU' N. 8   TESTING (ACCESS KEY IF ENTERED)

Page No.	Display	Description	Sect.
8.8.0	CRing Zones ??	This page exists if the C-Ring (Bus for communication between controllers, page **4.1.0** of configuration menu in section 20) has been configured as PRIMARY SITE. The correct connections between XCC 638 (primary) and all the other COSTER controllers on the site are tested. If all the connections are correct, after a few seconds, in place of the question marks "YES" appears. If there is some error in the connections or some controller does not respond because incorrectly configured, the question marks "??" remain..	14.5
8.9.0	CRing sequence _ _ _ _ _ _ _ _ _ _ _ _	This page exists if there are several boilers in SEQUENCE, – C-Ring = SECONDARY BOILER There will appear the message WAIT RX MSG (await reception message) as soon as the message sent by the primary boiler has been received, there will appear MSG RECEIVED (message received). This information serves to check if the secondary boilers eceive the message.	
8.10.0	Output U1 : OFF Output Y : XX.X V	On this page you can simulate the outputs U1 and Y (configured on pages **4.17.0** and **4.18.0**, CONFIGURATION menu, section 20). Output U1: you can simulate the On-Off status (remember that this output is an OPEN COLLECTOR). Output Y: you can simulate from 0 to10 the value in volts, if it has been configured. If this output has been configured as 0…10 V (page **4.18.0**) the value can be simulated between 0 and 10 V using the + and – keys. If this output has not been configured as 0…10 V (page **4.18.0**) the choice is between On and Off (On= 4.5 V; Off = 0 V)	
8.11.0	Outside T: −5.0c	This and all the following pages are pages for reading data, put under Testing for convenience. If the measurements are correct, with acceptable values, this means that the connections with the sensors are also correct.	
8.12.0	Room T: XX.Xc Boiler T: XX.Xc	Alternatively Flue gases T if the B3 sensor has been configured as such.	
8.13.0	DHW T : XX.Xc Man control: OFF	You can check if the external switch connected to the manual control input is correctly connected. In place of "Manual swit": ON/OFF, will appear "Anticond T: XX.Xc" if B6 input has been configured as an anticondensing sensor.	

8.14.0	InputE1: OFF
	inputE2: OFF
		Input E1= Burner lockout: you read if the connection to the burner is correct or not.
		        OFF = burner not in lockout
		         ON = burner in lockout
		Input E2= You can see the status of this input.
		SLAVE BOILER: is the input for the relay control switches1, 2, 3 for the control of the Master shutoff valve
		 This input, in this istance, is connected to the U1 output of the Master in order to serve as a shutoff valve (as explained elsewhere)	

26. QUICK GUIDE TO THE CONTENTS OF DATA SHEET

– A : FOR NON-EXPERT USER (XCC 638 MUST ALREADY HAVE BEEN CONFIGURED & SETTINGS MADE):

Read only menu No. 0 (zero), section 17, page 12..
From Parking page :

PRESS–> : with + and – keys adjust heating temperature;
                    Adjustment regards NORMAL or SETBACK temperature which is programmed at that moment
PRESS –> : with + and – keys adjust desired DHW temperature;.
PRESS –> : with + and – keys choose required heating program.
PRESS –> : with + and – keys choose required heating program .

If you do not find these pages this means: these services are carried out by another XCC 638, since on site there is more than one boiler and so more than one XCC 638; look for the correct one.
When you have finished it does not matter how you leave the pages.
If there is a User Key you must enter it.

– B : FOR SLIGHTLY MORE EXPERT USER (XCC 638 MUST ALREADY BE CONFIGURED & SETTINGS MADE):

Read menus No. 0 (zero), section 17 on page 12; and No. 1, section 18 on pages 13 and 14.
With these menus you can create timed programs and other commonly-used functions.

– C : FOR SITE ENGINEER (XCC 638 MUST ALREADY BE CONFIGURED & SETTINGS MADE)

Read menus No. 0 (zero), No. 1, No, 2 and No. 3.
With these menus you can understand how the whole system is functioning and decide on the functions for general use.

– D : FOR ENGINEER RESPONSIBLE FOR TESTING (XCC 638 STILL HAS TO BE CONFIGURED & SETTINGS MADE): :

To set up each XCC 638 correctly, read all the menus and proceed in the following order:

- MENU NUMBER 4
- MENU NUMBER 5
- MENU NUMBER 6 (if CONFIGURATION provides for it)
- MENU NUMBER 7 (if CONFIGURATION provides for it)
- MENU NUMBER 8: this is the testing of the whole site, which is, indeed, the responsibility of this engineer
- MENU NUMBER 3
- MENU NUMBER 2: to check the measurements
- MENU NUMBER 1 & 0 (zero): to explain the operation to the consumers

– E : FOR MANAGER WHO WANTS TO REDUCE ENERGY BILLS :

Read the whole document carefully and read also the document "Definitions for SF 4-070" (referred to in section 14.2 on page 8).
This document is available on request from COSTER whose technical staff will also be happy to supply all the necessary technical advice for running an HVAC site with the maximum efficiency.

Amendment description

Date	Revision No.	Page	Section	Details of amendments	Firmware version	Software version
25.06.08 VM	01	4 - 5 - 6	9. Example control sites 9.1, 9.2, 9.3 and 9.4	In functional diagrams: Sensor B6 moved to branch recycle pump		≥ 0.98.2295
25.07.08 VM	02	11 and 27	23. MENU 7	Added screen shot "Control water storage tank withBoiler T""	≥ 06	≥ 0.98.2360
15.06.09 VM	03	24	21. MENU 5	Added screen shot 5.2.0 bis (Off point burner)	≥ 07	> 0.99.2502
10.11.09 DZ	04	various	various	Update version Plug-in	≥ 07	> 0.99.2502
15.12.09 VM	05	various	20. MENU 4; 21. MENU 5,	Manual burner setting menu changed (output Y)		

D 33343