COSTER

B 242
22.11.10 AM
REV. 02

OPTIMISING COMPENSATOR FOR CONTROL TWO ZONES

OPTIONAL
C ←BUS   C ←RING

XTE 602 C1 Eng.

CE

- **Optimising compensator**
  – compensated and optimised control of two heating zones
- **Power supply 230 V AC (or 240 V AC for UK market); DIN rail mounting**
- **Communication systems :**
  – **C-Ring** for exchanging data between local controllers.
  – **C-Bus** : XTE 602 Telemanagement optional;
             to enable Telemanagement use the "C-Bus Plug-in" type **"C-Bus Plug-in" type ACB 468 C1 or later**,
             to be ordered separately as accessory.

1. APPLICATION

XTE 602 is designed for compensated / optimised control of two central heating zones in:
- commercial and public buildings
- schools
- residential complexes

2. FUNCTIONS

The principal functions of XTE 602 are :
- Compensated control of two heating zones by three-wire control of valves :
  – optimisation of start and stop times of plants
  – control of plant pumps (with delay in switching off) according current programme of event times
  – minimum and maximum temperature limits of flows
    – correction of heating curve origin
    – self-adjusting
    – Eco Off
- Timed programming: twentyfive 24Hour programs & two 7Day periods
- Programming with dates : twentyfive holiday periods ; winter season ; special period.
- Summer plant exercise of valves and pumps
- Automatic change GMT / Summer time
- Metering of degree-days
- Remote control for modifying current timed programmes
- Three On-Off inputs for signalling status or alarm
- Alarms for detector short or open circuits and for irregular operation of plants and components
- Optional C-Bus transmission of data with local PCs or remote Telemanagement PC.
  To enable data transmission and Telemanagement use the "C-Bus Plug-in" type ACB 468 C1 or later
  To communicate locally with a PC use the test Plug-in type ACX 232

3. DETECTORS, REMOTE CONTROLS & ACCESSORIES

No.	Description	Type	Sensing element	Code	Data sheet
1	Heating flow contact[1] temperature detector	**SCH 010**	NTC 10 kΩ	B1-B5	N 130
1	Outside temperature detector	**SAE 001**	NTC 1kΩ	B2	N 120
	Accessories :				
1	Ambient temperature detector	**SAB 010**	NTC 10 kΩ	B3-B6	N 111
1	Boiler anticondensing immersion detector	**SIH 010**	NTC 10 kΩ	B4	–
1	Remote control to modify current programme	**CDB 300**	–	R	–
	Options :				
1	1) Immersion temperature detector	**SIH 010**	NTC 10 kΩ	B1-B5	N 140
	Accessory for Telemanagement				
1	Plug-in for communicating via C-Bus	**ACB 468 C1**	–	–	–

We reserve the right to make changes witout notice   **CIE**   1

4. 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 Electrotec. Committee (CEI)
Data storage	5 years

• Mechanical

Case	DIN 6E module
Mounting	DIN 35 rail
Materials:	
base	NYLON
cover	ABS
Ambient temperature:	
operation	0 … 45°C
storage	− 25 … + 60°C
Ambient humidity	class F DIN 40040
Dimensions	105 x 115 x 71,5
Weight	1.0 kg

• Programmes & periods

24-hour programmes	**1** … 25
24-hour events	**2** … 6
7-day programmes	**0** … 2
Holiday periods	**0** … 25
Special period	1
Remote Extension period	0 ... **3** ... 72 h

• Measurement ranges

Flow temperature	0 … 99 °C
Outside temperature	− 30 … + 40 °C
Ambient temperature	0 … 30 °C
Anticondensing temperature	0 ... 99 °C

• Heating

Flow temperature:	
radiators	40 ... **70** ... 99 °C
fan coil	40 ... **80** ... 99 °C
panels	20 ... **40** ... 50 °C
minimum limit	**1** … 99 °C
maximum limit	1 ... **99** °C
Design outside temperature	− 30 … **− 5** … + 20 °C
Correction curve origin	**20** … 40 °C
Boiler anticondensing temp.	0 ... **50** ... 99 °C
Valve actuator run time	30 ... **630** ... 3,600 s
Delay switching off pump	2 ... **30** ... 60 minutes
Ambient Authority	**0** … 20 °C/°C
Mode temperatures :	
ambient 5 Normal	0 … **19-21** … 30 °C
ambient 2 Setback	0 … **14-16** … 30 °C
ambient Frostprot	0 … **6.0** … 30 °C
ambient Remote Extension	0 … **21.0** … 30 °C
water 2 Flows	0 … **20-30** … 99 °C
Optimisation of operating times:	
start inertia	0.00 … **1.00** … 7.45 h
limit "Normal" optimisation	0.00 … **2.00** … 12.00 h
limit "Holidays" optimisation	0.00 … **10.00** … 40.00 h
boosting	0.0 … **3.0** … 10.0 °C
reduction ambient temp. optimum stop	0.00 ... **0.5** ... 3.5 °C
time constant	1 ... **48** ... 255 h

• Telemanagement

Speed C-Bus chosen from	**1200**, 2400, 4800, 9600 bauds

• Telemanagement (setting by PC)

|	
Attempts send alarms	1 … **5** … 255
Interval between attempts	2 … **10** … 255 min.
Alarms (setting by PC):	
threshold diff. flow 1 temperature (B1)	0.5…**5**…99 °C
delay diff. flow 1 temperature	2…**30**…255 min.
threshold diff. flow 2 temperature (B5)	0.5…**5**…99 °C
delay diff. flow 2 temperature	2…**30**…255 min.
threshold diff. ambient 1 temperature	0,5…**1**…30 °C
delay diff. ambient 1 temperature	2…**30**…255 min.
threshold diff. ambient 2 temperature (B6)	0.5…**1**…30 °C
delay diff. ambient 2 temperature	2…**30**…255 min.

WARNING: In the presence of electrical disturbances the output controls of XTE 602 may change status but this will be restored automatically.
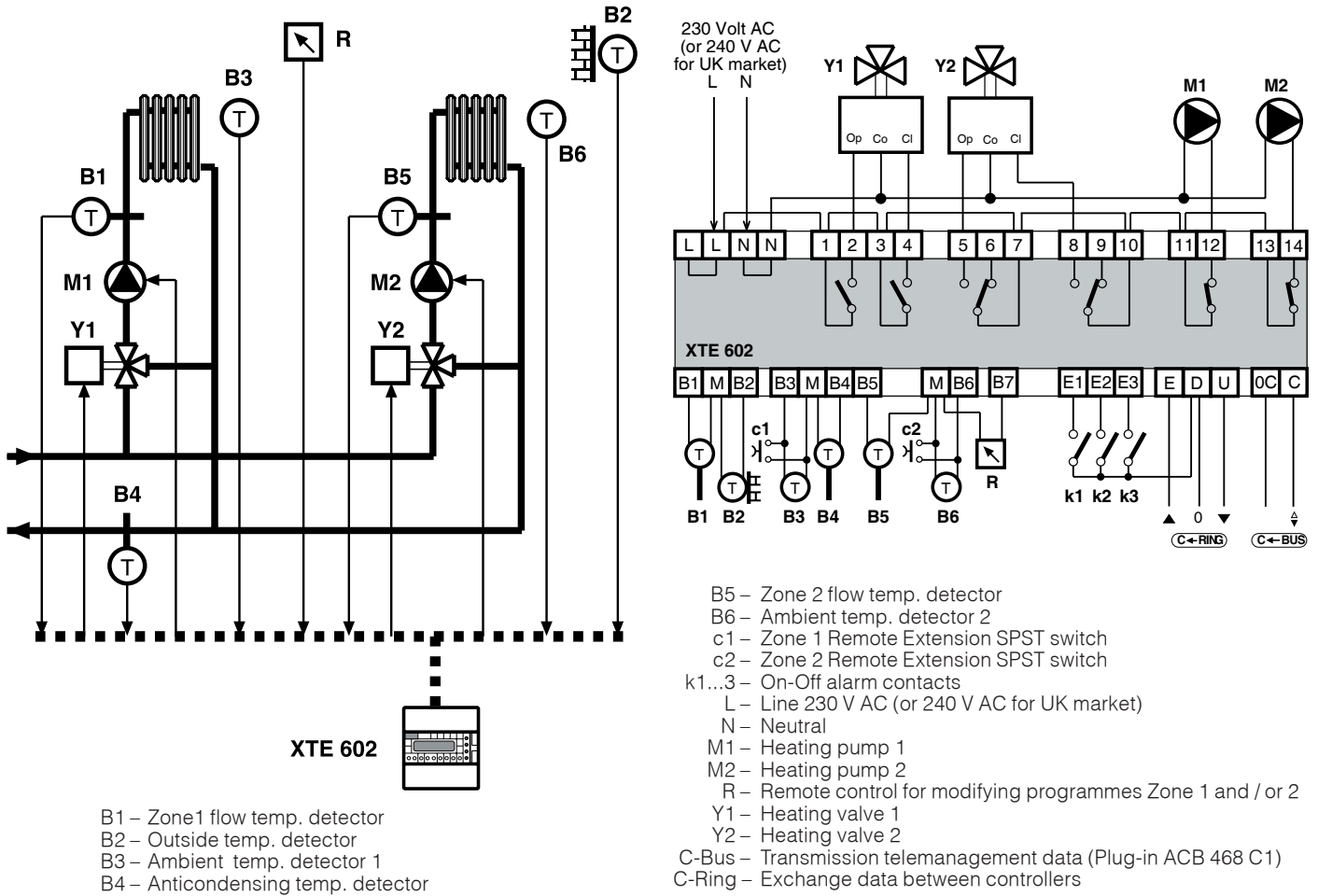
5. OVERALL DIMENSIONS
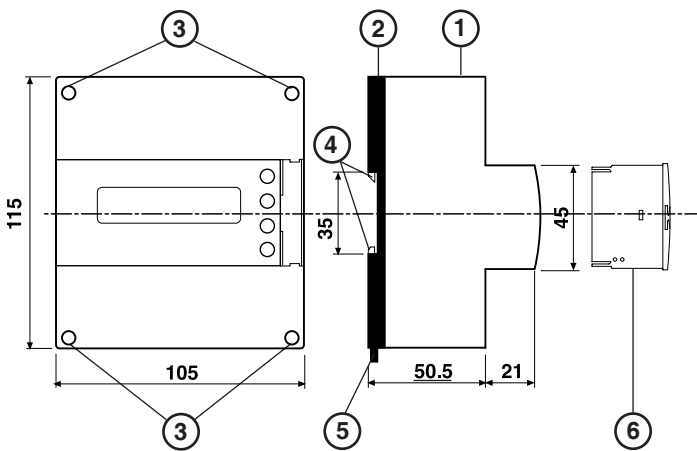
1 – Protective cover for electronic components
2 – Base with transformer, relay & terminal blocks
3 – Screws for fixing cover- base
4 – DIN rail securing elements
5 – DIN rail release lever
6 – Plug-in for C-Bus communication

6. FACIA
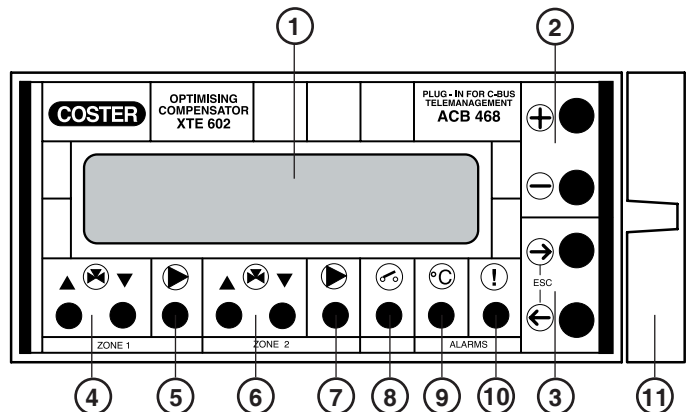
1 - Two-line backlighted alphanumeric display
2 - + and – operating keys
3 - ← and → operating keys
4 - Valve 1 control LEDs
5 - Zone 1 pump control LED
6 - Valve 2 control LEDs
7 - Zone 2 pump control LED
8 - On-Off alarms LED
9 - Measurement alarms LED
10 - Controller fault LED
11 – Plug-in type ACB 468 C1 for C-Bus communication

    CIE   We reserve the right to make changes witout notice

7. SCHEMATIC & WIRING DIAGRAMS

B1 – Zone1 flow temp. detector
B2 – Outside temp. detector
B3 – Ambient temp. detector 1
B4 – Anticondensing temp. detector

B5 – Zone 2 flow temp. detector
B6 – Ambient temp. detector 2
c1 – Zone 1 Remote Extension SPST switch
c2 – Zone 2 Remote Extension SPST switch
k1...3 – On-Off alarm contacts
L – Line 230 V AC (or 240 V AC for UK market)
N – Neutral
M1 – Heating pump 1
M2 – Heating pump 2
R – Remote control for modifying programmes Zone 1 and / or 2
Y1 – Heating valve 1
Y2 – Heating valve 2
C-Bus – Transmission telemanagement data (Plug-in ACB 468 C1)
C-Ring – Exchange data between controllers

8. SITING OF CONTROLLER, VALVES & DETECTORS

8.1 Controller
The controller must be sited in a dry ambience which meets the permitted ambiental limits shown under 4.TECH-NICAL DATA. If positioned in an ambience classified as "Dangerous" it must be enclosed in a cabinet for electrical apparatus constructed according to the regulations in force for the class of danger involved.
It can be installed on a DIN rail or in a DIN modular enclosure.

8.2 Plant flow temperature detectors B1 and B5
With plant pump on flow they must be installed downstream of this; with pump on return they must be installed at least 1.5 meters downsteam of regulating valve.

8.3 Outside temperature detector B2
This must be installed outside the building, on the north or north-west side, at least three meters from the ground and protected from direct sunlight, and as far as possible from windows, doors, chimneys or other possible direct thermal disturbances.

8.4 Ambient temperature detectors B3 and B6
These must be installed at a point which represents the average temperature of a representative room (eg : living room) at a height of 1.5 ... 1.6 metres from the floor, on an internal wall as far as possible from windows, doors and sources of heat ; corners, shelving and curtains must be avoided.

8.5 Anticondensing detector B4
Can be used only if the boiler is provided with an anticondensing pump and must be installed on the return pipe to the boiler between the anticondensing pump connection and the boiler itself.

9. WIRING
Proceed as follows :
• Separate base and cover
• Mount base on DIN rail and check that securing elements (5.4) hold it firmly in place.
• Carry out wiring according to the diagram and in observance of the relevant regulations in force, and using cables of :
  – 1.5 mm^2 for power and relay control outputs
  – 1 mm^2 for sensors and remote control
  – 1 mm^2 for C-Bus and C-Ring. For wire length limits please see technical data sheets T 021 and T 022
• Reposition the cover on the base / terminal block and fasten with the 4 screws supplied (5.3).
• Check that voltage is correct and supplied by the dedicated auxiliary line, measuring it upstream of the protection (circuit breaker, fuse....).
• Power up the device.
You are advised not to insert more than two cables in a single terminal of the controller and if necessary to use external junction boxes.

10. COMMUNICATION

10.1 C-Ring : communication between controllers (for detailed information please see technical data sheet T 022)

XTE 602 controller is **always "Primary"** .
In the C-Ring the following signals are transmitted :
– permission to operate as **Slave** controllers
– value of the **outside temperature** (use of a single detector for several controllers)
– value of **flow temperature** requested by zone controllers; used by "PRIMARY" controller for regulation temperature boilers (if scheduled).
– **DHW priority** and/or **anticondensing =** closure valves heating zones with modulating control action.

26.3
```
CRing connection
       NO
```

NO = connection to C-Ring not scheduled
YES = connection to C-Ring scheduled

10.2 C-Ring wiring diagram
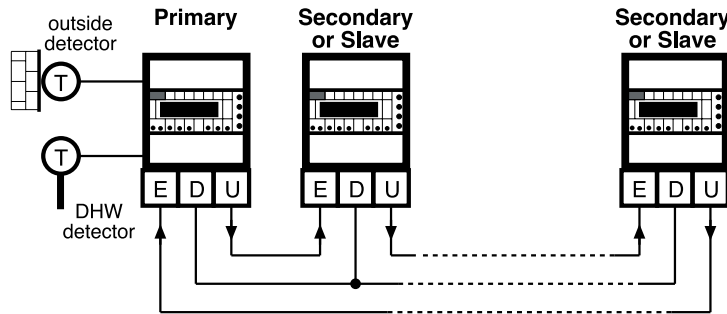
10.3 C-Bus communication for telemanagement (for detailed information please see technical data sheet T 021)

XTE 602 provides :
– remote Telemanagement by when enabled by **C-Bus Plug-in type ACB 468**
– local communication (e.g. setting via PC) when enabled with Test **Plug-in ACX 232**
Telemanagement is bidirectional, with one or more local PCs and/or the remote central PC via PSTN.
Local communication is direct to a portable PC to be connected directly to the unit.
From PC or PCs it is possible to display and/or change :
– the data and values entered on display pages of the controller and those of configuration dedicated exclusively to telemanagment (see 4.TECHNICAL DATA)
– operational status of plant components (pumps, auxiliaries in general)
– acquire alarms coming from boiler plant
– read the measurements of the detectors (temperatures : outside, flow, boiler, etc)

10.4 C-Bus electrical connection for local or remote Telemanagement

Each controller must be equipped with the C-Bus Plug-in of the required type for the controller in question
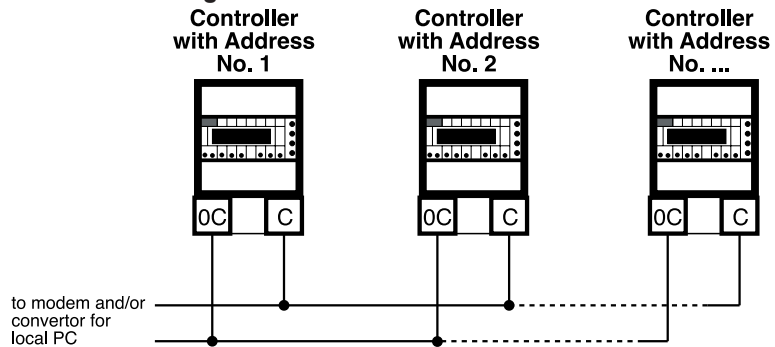
10.5 Connection to PC for local communication via test Plug-in ACX 232

Extract the C-Bus Plug-in and insert the test Plug-in ACX 232; use a standard cable to connect the RS232 plug to the PC (the cables are included in the "CONVENIENCE KIT".
If the PC has only USB inputs use a standard RS232 to USB conversion cable.
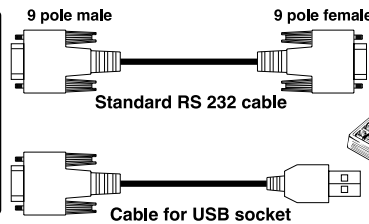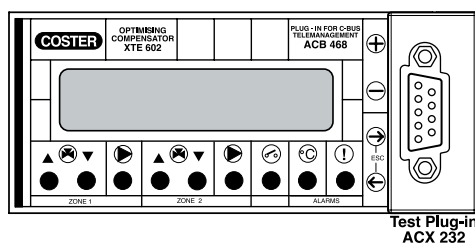
ACCESSORIES:

–Test Plug-in = **ACX 232**

–Convenience kit = **KIT RS 232**

The "Convenience kit" contains the 2 cables & other useful accessories.

Observations : – Before communicating, ensure that the address entered in the controller is the address with which you wish to communicate via PC.
– It is advisable to use a portable PC powered by battery with the connection to 230 volts unplugged (or 240 volts for UK market), since the earth (0 volts) of the controller is connected to that of the RS 232 and so to that of the PC. By connecting the two earths together you could have dispersed currents, if the earths have not been well made and if the PC has its 0 volt connected directly to the central pole of the plug (as is usual)

11. OPERATION

XTE 602 is a digital controller with microprocessor for :
– compensated control, with or without ambient authority, of two heating zones. Three-wire control of motorised valves and On-Off control of circulation pumps.
– the acquistion of status and / or alarms regarding plant components

To configure the controller, please see "18. SEQUENCE OF DISPLAY PAGES"

12. HEATING ZONE

12.1 Type of installation

23.1 - 24.1

```
Heat Emitters
RADIATORS
```

The controller must be configured according to the type of heating zones controlled:
 • Type heat emitters :   RADIATORS
                            PANELS
                            FAN COILS

12.2 Heating control curve

For each heating zone controlled, the flow temperature requested by the controller (detector B1 and B5) is adjusted according to the outside temperture (detector B2 or value transmitted via C-Ring) and to the heating control curve .
The controller compares the actual value of the flow temperature with the corresponding one on the curve, and, in the event of a difference, regulates with PI control action (pre-set proportional band Pb and integral time It), the motorised valve to eliminate it.
The heating control curve , having reference to to a desired ambient temperature of 20 °C, is established, for each heating zone, by :
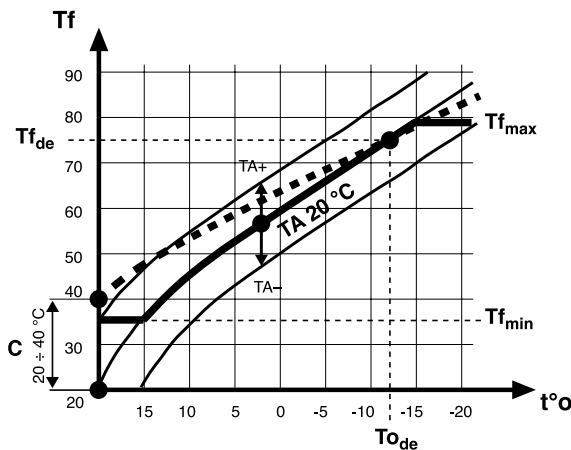
C = correction curve origin
$T°f$ = desired flow temperature
$T°f_{de}$ = design winter flow temperature
$T°o_{de}$ = design winter outside temperature
$T°f_{max}$ = maximum limit winter flow
$T°f_{min}$ = minimum limit winter flow
$t°o$ = outside temperature

23.2 - 24.2

```
Design Outside
Temp    :- 5.0c
```

23.3 - 24.3

```
Design Flow
Temp : 70.0c
```

  • design outside temperature , used for calculation of winter heat losses from building and depends on the climatic zone in which building is situated.
   Note : appears in the setting of both the heating zones controlled but the value is common to both.

  • design flow temperature , used for determining thermal requirements of heating zones (eg: radiators = 70 °C ; fan coils = 80 °C ; panels = 40 °C).

  • heating curve origin = winter flow temperature with outside temperature of 20 °C

The flow temperature required by controller depends also on value of ambient temperature required by operating mode Normal , Setback , Frostprot (parallel + / – adjustment of curve).

12.3 Origin of heating curve

23.4 - 24.4

```
CurveOrigin TO20
Flow T   : 20.0c
```

The conventional point of origin of the heating curve (+ 20 °C flow at 20 °C with + 20 °C outside) can be adjusted by an increase in the flow temperature (Max. + 20 °C).
The adjustment may be necessary to avoid possible unbalances in the output of the heat emitters with high outside temperatures (intermediate seasons).

12.4 Operating temperatures

20.1÷20.5
```
Desired Temp
NORMAL 1    20.0c
```

20.6÷20.7
```
Desired Temp
SETBACK1    16.0c
```

20.8
```
Desired Temp
FROSTPROT    6.0c
```

20.9÷20.10
```
Desired Temp
FLOW 1      30.0c
```

XTE 602 permits configuring, with different values of desired temperature, the various operating modes available, namely :

– 5 NORMAL   = operation with compensated control to provide comfortable ambient temperatures (daytime or when building occupied)

– 2 SETBACK   = operation with compensated control to provide economical ambient temperatures (at night or when building not occupied)

– FROSTPROT = operation with control providing safety temperature (holidays or when building not occupied)

– 2 FLOW   = operation with control providing flow temperature at a constant value (heating curve not taken into consideration)

– OFF   = valve closed and pump idle

12.5 Minimum and maximum flow temperature limits

23.5- 24.5
```
Flow T Limits
Min: 1c  Max:99c
```

When the desired flow temperature reaches one of its limit values it is kept constant at that value.
eg :   - minimum limit to avoid circulation of cold air in fan coils
          - maximum limit to avoid dangerous overtemperatures in panels

Warning :   The maximum limit temperature does not substitute observance of the safety measures in force.

12.6 Actuator run time

23.6 - 24.6
```
Control:VALVE
Time :    630sec
```

This is the time taken for a complete run (open / close) of the valve actuator **necessary** for correct control operation.

12.7 Ambient authority

When ambient sensor B3 is connected, the controller is able to adjust the desired flow temperature in accordance with the ambient authority set.
When sensor B3 is not connected, the adjustment is made only in the Setback / Frostprot modes using the value of the ambient temperature calculated in relation to the time constant.

23.7 - 24.7
```
Ambient Authority
POSITIVE:+ ----c
```

23.8 - 24.8
```
Ambient Authority
NEGATIVE:- ----c
```

– POSITIVE: **increase** of flow temperature for each °C difference between measured room temperature and the desired toom temperature, when the measured room temperature is **below** the desired room temperature.

– NEGATIVE : **reduction** of the flow temperature for each °C difference between the measured room temperature and the desired room temperature, when the measured room temperature is **higher** than the desired room temperature.

12.8 Eco Off

20.13
```
Eco Off
Htg1:NO   Htg2:NO
```

For each heating zone, permits excluding heating when weather conditions do not require it :
– NO = disabled
– YES = enabled

Functions only in Normal /Setback modes for :

$$Tf_c - Ta_{ac} \leq 2°C = \text{Eco Off On}$$

$$Tf_c - Ta_{ac} \geq 4°C = \text{Eco Off Off}$$

where : Tf_c = calculated flow temperature
Ta_{ac} = actual or calculated ambient temperature

12.9 Operating programmes

19.2
```
Htg 1:----------
24HOUR        1
```

19.3
```
Htg 2:----------
24HOUR        1
```

Choice of operating programme for each heating zone according to requirements :
– 24 HOUR 1...25; – 7DAY1 - 2, – NORMAL 1...5; – SETBACK 1 - 2; FROSTPROT;
– FLOW 1 - 2; OFF
In place of programme the following may appear :
– SUMMER = controller is in summer period
– HOLIDAY = controller is in holiday period
– SPECIAL = controller is in special period
– REMOTE EXTENSION = "Remote Extension" period has been activated.
   To cancel this function, on first page press ← and → keys together
– REMOTENORMAL 1 = remote control "R" is in "Normal" position
– REMOTESETBACK 1 = remote control "R" is in "Setback" position
– REMOTE FROSTPROT = remote control "R" is in "Frostprot" position
– REMOTE OFF = remote control "R" is in "Off" position
– REMOTE+2c = remote control "R" is in "TAd + 2°C" position

12.10 Operating mode and adjustment of temperature

19.4

```
Mode1: NORMAL
Td20.0c Var+0.0c
```

19.5

```
Mode2: NORMAL
Td20.0c Var+0.0c
```

The modes in use depend on the programmes set in and can be seen on the two pages of the display :

19.2
```
Htg 1:----------
24HOUR      1
```
and
19.3
```
Htg 2:----------
24HOUR      1
```

- NORMAL   Td - -.- c
  SETBACK   Td - -.- c
  FLOW   Td - -.- c
  FROSTPROT   Td - -.- c
  OFF
  ECO OFF

In the NORMAL / SETBACK operating modes it is possible to adjust the value of the desired temperature :
- **Var +** = variation of ± 3°C

12.11 Modifying programmes by remote control

25.4

```
Enable   Remote
NO
```

The remote control R (CDB300) can be configured to act on a single heating zone or on both heating zones controlled :
- NO   = remote control excluded
- ZONE 1   = modifications by remote control affect only zone 1
- ZONE 2   = modifications by remote control affect only zone 2
- ZONES 1 & 2   = modifications by remote control affect both zones

The remote control permits selecting at a distance the operating programmes :
- OFF   = plant excluded
- FROSTPROT   = continuous operation at desired Frostprot ambient temp.
- NORMAL   = continuous operation at desired Normal 1 ambient temp.
- SETBACK   = continuous operation at desired Setback 1 ambient temp.
- TAd +2c   = increase of 2 °C in temp. desired by mode in use
- AUTOMATIC   = operation with programme chosen for controller

12.12 Control zone pump

23.16 - 24.16

```
Heating Pump:AUT
Delay Off :30min
```

The heating zone pumps can be controlled in two ways :
- MAN = Pump in continuous operation (always On)
  AUT = Pumps M1 and M2 controlled according to modes in use :
  - Off   : pump always Off
  - Eco Off   : pump always Off
  - Extension   : pump always On
  - Normal   : pump always On
  - Setback, Frostprot & Optimum Stop :
    pump Off after Optimum Stop .
    Pump On when actual or calculated ambient temperature is below calculated flow temperature
  - Boosting   : pump always On
  - Flow   : pump always On

- Delay Off :   2 min = delay time in switching off to dissipate heat accumulated in plant

12.13 Metering degree-days

22.7 - 22.8

```
Degree-Days
20:xxxx  Amb:xxxx
```

For each zone controlled XTE 602 meters degree-days in two ways
- 20 = metering of degree-days with reference to conventional ambient temperature of 20 °C

- Amb = metering of degree-days with reference to the actual ambient temperature (with detector B3 or B6) or to that calculated (without B3 or B6)

13. OPTIMISATION

Start and stop at variable times so as to obtain desired ambient temperatures in coincidence with times of start and end of occupancy.
Useful for buildings with discontinuous occupancy such as schools and offices.
The method of establishing the time of optimised start depends on the presence or not of the ambient detector.

13.1 Optimisation with ambient detector

The start time, for both heating zones controlled, is established by the meeting point of the descending curve of the actual ambient temperature, with plant OFF or in the SETBACK / FROSTPROT mode, and the ascending curve of ambient temperature, defined by the parameter "Start inertia ."
With "Start inertia " on AUTOMATIC : if the desired ambient temperature is obtained too soon or too late in respect of the time required, the controller adjusts the start time for the following day by ± 15 minutes until the desired time is obtained.

13.2 Optimisation without ambient detector

"Start inertia " set on MANUAL : the start time is established by the controller on the basis of the "Cooling time constant " (23.13 - 24.13)

13.3 Enabling of the function

```
        20.14
┌──────────────────┐
│Optimis  Htg 1    │
│On  :NO   Off :NO │
└──────────────────┘
```

```
        20.15
┌──────────────────┐
│Optimis  Htg 2    │
│On  :NO   Off :NO │
└──────────────────┘
```

- Optimum start = automatic change of start time of plant after stop / night setback or after holidays.
  - On :   NO = optimum start function disabled
           YES = optimum start function enabled

- Optimum stop = stop before end of NORMAL (day) mode on condition that temperature at end of event is not below that set in 23.14 - 24.14.
  - Off : NO = optimum stop function disabled;
           YES=optimum stop function enabled.

- The functions are not enabled in FLOW 1 and 2 modes and are operative only at first and last event of programme.

13.4 Start inertia

```
      23.9-24.9
┌──────────────────┐
│Start  Inertia    │
│MANUAL   1.00h/c  │
└──────────────────┘
```

Time necessary (hours / °C) for plant to increase ambient temperature by 1 °C.
- MANUAL   = value can be adjusted only manually
- AUTOMATIC   = only with ambient detector; automatic daily adjustment of ± 15 minutes.

13.5 Duration of normal optimisation

```
      23.10-24.10
┌──────────────────┐
│Opt Start Normal  │
│Max Durat: 2.00h  │
└──────────────────┘
```

Maximum period before start occupancy for first startup of plant when controller uses one of 7-day and/or 24-hour programmes available; in practice, startup after being switched off for a night.

13.6 Duration optimisation after holiday

```
      23.11-24.11
┌──────────────────┐
│OptStart Holiday  │
│Max Durat:10.00h  │
└──────────────────┘
```

Maximum period before start occupancy for first startup of plant after a holiday period.

13.7 Boosting

```
      23.12-24.12
┌──────────────────┐
│Optimum Start     │
│Boosting : 3.0c   │
└──────────────────┘
```

Increase in desired ambient temperature, and consequently in flow temperature, during optimum start period, so as to reduce time for heating zone(s) to reach required temperature.
With ambient detector, if desired ambient temperature is reached before required time the controller switches to compensated control according to programme.

13.8 Cooling time constant

```
      23.13-24.13
┌──────────────────┐
│Cooling  Time     │
│Constant: 48 hrs  │
└──────────────────┘
```

Time taken by ambient temperature, with heating zone(s) switched off, to fall by 2/3 its initial value. It is used by controller to calculate ambient temperature (in SETBACK / FROSTPROT modes) when plant is without ambient detector.

13.9 Reduction of temperature for optimum stop

```
      23.14-24.14
┌──────────────────┐
│Optimum Stop      │
│DecreaseTA: 0.5c  │
└──────────────────┘
```

Maximum reduction in ambient temperature permitted at time of end of occupancy in respect of desired ambient temperature.

13.10 Maximum optimum stop

Maximum period before end occupancy permitted for stopping plant.

```
                                          23.14-24.14
                                    ┌──────────────────┐
The time is calculated in relation  │Optimum Stop      │  with
to temperature reduction set in     │DecreaseTA 0.5c   │
                                    └──────────────────┘
```

```
      23.15-24.15
┌──────────────────┐
│Optimum Stop      │
│Max Durat: 1.00h  │
└──────────────────┘
```

ambient detector and to "Cooling time constant" without ambient detector.
With ambient detector: if ambient temperature falls, by the reduction value set, before the time occupancy ends, the controller returns to operating according to programme.

14. PROGRAMMES & PERIODS WITH DATES

All programmes with timed events and periods with dates are available for both heating zones.

14.1 24-hour programmes

```
        21.1
┌──────────────────┐
│How many 24hour   │
│Programmes  ? 1   │
└──────────────────┘
```

```
        21.2
┌──────────────────┐
│P1 Event 1 06.00  │
│NORMAL  3   21.0c │
└──────────────────┘
        ⇓
        21.7
┌──────────────────┐
│P1 Event 6 22.00  │
│SETBACK 1   16.0c │
└──────────────────┘
```

Enter the number of 24-hour programmes you wish to use (from 1 to 25).
In each 24-hour programme (**P1 ... P25**) you can set a maximum of 6 event start times (**Event 1 ... Event 6**) assigning to each one of following modes :

- NORMAL 1...5   = compensated control with NORMAL ambient temperature
- SETBACK 1 - 2 = compensated control with SETBACK ambient temperature
- FLOW 1 - 2   = control with fixed FLOW temperature
- FROSTPROT   = compensated control with FROSTPROT ambient temperature
- OFF   = plant Off, valve closed and pump idle

The event start times must be entered in increasing order.
Events not used must be excluded by pressing + and – keys at the same time (– – –).
Unused times (– – –) must not be left between programmed events.

14.2 7-day programmes

21.8

```
How many 7day
Programmes   ? 0
```

21.9

```
7day 1 MONDAY
24HOUR         1
```

⇓
⇓

21.15

```
7day1 SUNDAY
24HOUR         1
```

Enter the number of programmes you wish to use (max. 2)

In each 7-day programme you can assign to each day of the week one of following programmes :

– 24HOUR 1 …25;
– NORMAL 1...5;
– SETBACK 1 - 2;
– FLOW 1 - 2;
– FROSTPROT ;
– OFF.

14.3 Holiday periods

21.16

```
How many Holiday
Periods    ? 0
```

21.17

```
HolidayProg Htg1
FROSTPROT    6.0c
```

21.18

```
HolidayProg Htg2
FROSTPROT    6.0c
```

21.19

```
Hol 01 Htg      NO
Fr --.--to --.--
```

These establish, for each zone, an operating programme, the same for all holiday periods, which overrides the programme in use. At the end of each holiday period the controller returns to normal operation.
To reduce the number of display pages dedicated to entering the dates, enter the number of holiday periods or of bank holidays you wish to use (max. 25).
If left at 0 the programming pages do not appear.
Choose the programme to be used during all the holiday periods.

– 7DAY 1 - 2; – 24HOUR 1 …25; – NORMAL 1 ... 5; – SETBACK 1 - 2;
– FLOW 1 - 2; – FROSTPROT ; – OFF.
Enter the dates for each single holiday period and assign it to each zone concerned

- Hol. 01 = choice of periods made available by

  21.16
  ```
  How many Holiday
  Periods    ? 0
  ```

- Htg :   – NO = unused holiday period
         – 1   = holiday period used only by heating zone1
         – 2   = holiday period used only by heating zone 2
         – 1+2 = holiday period used by heating zones 1 & 2
- Fr - - . - - to - - . - - = day and month of start and end of holiday period

For a single day of holiday enter the same date for start and end.
To cancel the holiday period keep + and – keys pressed at the same time.

14.4 Special period

19.7

```
Htg 1: Special P
24HOUR          1
```

19.8

```
Htg 1: Special P
Fr --.--to --.--
```

19.9

```
Htg 2: Special P
24HOUR          1
```

19.10

```
Htg 2: Special P
Fr --.--to --.--
```

Period in which, for each heating zone, an operating programme to meet particular requirements is set which substitutes temporarily the one in use :

– 7DAY 1 - 2; – 24HOUR 1 …25; – NORMAL 1 ... 5; – SETBACK 1 - 2;
– FLOW 1 - 2; – FROSTPROT; – OFF.

- Fr - - . - - to - - . - -   = day and month of start and end of special period.

14.5 Extension period

20.11

```
Remote Ext 21.0c
for hours       3
```

The Extension period overrides all programmes and modes in use, causing the heating zones to operate for the time and at the temperature set. To activate the Extension period, close the switch **c1** (for heating zone 1) or **c2** (for heating zone 2), for at least five seconds and then open it. At the expiry of the period set the controller will resume its automatic operation.
- Extension 21.0c   = setting of desired ambient temp. during Extension period
- for hours : 3   = setting of duration of Extension period
To interrupt the Extension period before the duration set expires press ← and → keys together.

14.6 Heating season

21.20

```
Heating Season
Fr --.--to --.--
```

Establishes the winter heating season for both heating zones.
Enter the day and month of start and end of heating season.
To cancel the period keep pressed + and – keys at the same time.

14.7 Summer time

21.21

```
Summer Time AUT
Fr 29.03to 26.10
```

The controller can automatically change the current time of day at the beginning and end of the daylight saving period.
– AUT = The change from BST to GMT and *viceversa* is automatic.
– MAN = you can set date different from that of European Community
To cancel the period, press + and – keys simultaneously

15. COMPLEMENTARY FUNCTIONS

15.1 Anticondensing function

20.12

```
Anticondens : NO
Desired T: 50.0c
```

Choice of enabling or not anticondensing function
– NO = function disabled
– YES= When the return to boiler temperature (measured by detector B4) falls below the desi-
        red anticondensing temp. the controller closes the heating plant valve with modulating
        control action.

• Desired T. : - -. - c = value of anticondensing temperature.

15.2 Summer plant exercise

20.16

```
Summer Plant
Exercise: NO
```

This function, which is applicable to both heating zones, prevents lockouts of valves and pumps
when plant is not used for prolonged periods.
– NO   = function excluded
– YES = every Sunday at 11.00 the valves are opened for 15 minutes and at 12.00 the pumps
         are run for 5 minutes.

15.3 Access keynumber

25.8

```
Choice Keynumber
- - - -
```

```
Access Keynumber
- - - -
```

Choice and enabling of access keynumber which prevents any modification of data by means of +
and – keys. Enter the number (1900 ... 1999) using + and – keys.
To cancel keynumber, press + and – at the same time until the dashes reappear.

When the keynumber is enabled, if + or – keys are pressed on the display appears the request to
enter the keynumber. Only after having entered the correct keynumber can + and - keys be used.
If for 15 minutes no key is pressed the keynumber is automatically re-enabled.

15.4 Denomination of heating zones

23.17

```
NameHtgPlant  1
- - - - - - - - - -
```

24.17

```
NameHtgPlant  2
- - - - - - - - - -
```

Composition of name of heating zones.
Each dash can be replaced, using + and – keys, by a letter of the alphabet (A ...Z) or by a number
(0 ... 9). The ← and → keys serve to position the cursor .

15.5 Display of measurements

The controller displays, for each heating zone, all the values measured by the detectors and the
data necessary to monitor the operational status of the plant :

22.1 - 22.2

```
Dea Amb T :21.0c
Act Amb T :21.0c
```

• **ambient temperature** desired by modes in use and actual measured by detectors B3 and B6.
  If the detectors are not connected, in place of Act Amb T appears Cal Amb T .

22.3 - 22.4

```
Des Flow T:65.0c
Act Flow T:64.0c
```

• **flow temperatures** desired by modes in use and actual measured by detectors B1 and B5.

22.5

```
Outside Temp
Actual    :- 2.0c
```

• **outside temperatures** actual. If detector B2 is not connected to controller, in place of "actual"
  appears "C-Ring" and the value is that coming via C-Ring.

22.6

```
Des AnticT:50.0c
Act AnticT:58.0c
```

• **anticondensing temperature** desired by mode in use and actual measured by detector B4.
  If detector B4 is not connected there appears Act AnictT: - - .-.

16.5 Data recording

For each heating zone controlled the controller, at each change of mode and every two hours, records
a series of data indicating the operational status of the heating zones controlled :

– Current time, day and type of recording (change of mode or expiry of two-hour period); current
  mode, actual outside temp., compensated flow temp., desired and actual flow temp., desired
  and actual ambient temp., anticondensing temp.
– Relay outputs status

The controller can memorise 28 complete recordings and the last recording brings about the can-
cellation of the oldest one.

If the display does not show the first page, the controller makes the recording at the expiry of the
two-hour period, but not that of change of mode because it presumes changes to the setting data
are in progress.

The recordings can be displayed only by the telemanagement PC.

16. ALARMS

The alarms processed by the controller are of three types :
  – alarms for the irregular operation of the controller and of the heating zones controlled
  – alarms for short or open circuits detectors connected
  – alarms by external contacts

The alarm status is indicated by the LEDs on the controller facia and is identified, on the configuration page, by the letter "A" alternating with the number of the alarm concerned.

With C-Bus setup the alarms can be sent to a local PC and / or to the telemanagement central PC.

16.1 Functional alarms

The functional alarms are triggered in the presence of prolonged differences between actual and desired values.
These alarms, with the exception of the real time clock alarm (8), do not affect the normal operation of the controller.

Factory setting : all disabled except for real time clock alarm (8)
Using + and – keys enable the alarms of interest replacing the dashes with the numbers.

When the number blinks = alarm triggered

The limit values and the delay times for sending the alarms can only be modified by PC.

Type of alarm and causes :
  1 = temperature difference heating zone 1 flow (B1)
    – enabled with pump M1 in operation
    – triggered when actual temperature less than that desired.
  3 = temperature difference ambient (B3)
    – enabled with NORMAL modes and with outside temperature below desired ambient temperature.
    – triggered when actual temperature below or above that desired.
  5 = temperature difference heating zone 2 flow 2 (B5)
    – enabled when pump M2 in operation
  6 = temperature difference ambient (B6)
    – enabled with NORMAL modes and with outside temperature below desired ambient temperature.
    – triggered when actual temperature below or above that desired.
  8 = internal real time clock : cannot be disabled
    – triggered when clock assumes meaningless values.

25.5

```
Functional Alarms
–    –    –  –        8
```

16.2 Detector alarms

The detector alarms are triggered in the event of **open** or **short** detector circuits.

Factory setting : all enabled.

With + and – keys disable the alarms which are not of interest by substituting dashes for the numbers.

Type of alarm and effect :
  1 = flow 1 detector (B1) : valve Y1 stops where it is and pump M1 maintains its status at moment of alarm.
  2 = outside detector (B2) : valves stop where they are and pumps maintain their status at moment of alarm. In C-Ring last value continues to be transmitted.
  3 = ambient 1 detector (B3) : with pump M1 On, ambient temp. = desired ambient temp.; with pump M1 Off, value of ambient temp. calculated by controller.
  4 = anticondensing detector (B4) : anticondensing function disabled.
  5 = flow 2 detector (B5) : valve Y2 stops where it is and pump M2 maintains its status at moment of alarm.
  6 = ambient 2 detector (B6) : with pump M2 On, ambient temp. = desired ambient temp.; with pump M2 Off, value of ambient temp. calculated by controller.
  8 = C-Ring : open electric circuit or fault in one of controllers in ring.

25.6

```
Detector Alarms
1  2  3  4  5  6        8
```

The triggering of the alarm is delayed by one minute .

16.3 Alarms or status from external contacts (k)

25.7

```
K  Alarms
–   –   –   –   –
```

Alarms triggered by closure of voltage-free contacts **k1** ... **k3** regarding plant components (pumps, burners, etc).

The triggering of the alarms is delayed by one minute.

Factory setting : all disabled.
With + and – keys enable alarms which are of interest by substituting numbers for dashes.

When number blinks = alarm triggered.
If not used as alarms they can be used as status indicators .

17. COMMISSIONING

Testing to be carried out when installation concluded, wiring and configuration completed and checked.

17.1 Testing C-Ring

26.1

CRing:??

25.3

CRing Connection
PRIMARY   Ensure that all the other controllers connected in C-Ring are :

– correctly powered by 230 V AC (or 240 V AC for UK market)

– Slave controllers or configured as SECONDARIES in   CRing Connection
SECONDARY

– selected on testing page   CRing:??

The "PRIMARY" controller sends a signal every 5 seconds via C-Ring. On all the displays appears "??". If the connection is positive, "OK" replaces "??" on all the displays.
If on one or more displays "OK" does not appear, this means that there is a break between the last controller with "OK" and the first with "??".
Examples of testing a C-Ring setup with four controllers :
– Cont.1 "OK" – Cont. 2 "OK" – Cont.3 "OK" – Cont.4 "OK" : Wiring positive
– Cont.1 "??" – Cont. 2 "OK" – Cont.3 "OK" – Cont.4 "OK" : Break between 4 and 1
– Cont.1 "??" – Cont. 2 "OK" – Cont.3 "??" – Cont.4 "??" : Break between 2 and 3
– Cont.1 "??" – Cont. 2 "??" – Cont.3 "??" – Cont.4 "??" : Break between 1 and 2

17.2 Testing outputs

26.2

Output:VALVE 1
Status:IDLE

With + and – keys choose :

• output to be tested :
– VALVE 1 ; VALVE 2;
– PUMP 1 ; PUMP 2;
• status :
– with VALVE : IDLE ; CLOSES ; OPENS
– with PUMP: ON or OFF

Check the result

18. SEQUENCE OF DISPLAY PAGES (the data and the functions are those in memory at time of delivery)

⊖ ⊝ Keys for scrolling the pages on the display and positioning the cursor ▮ on the data which can be changed.
The data which can be changed, in the following descriptive list of display pages, are highlighted thus   Htg:------------
By pressing these keys at the same time, or in any event after 15 minutes, the first page appears on the display.   12.18 MONDAY

⊖ ⊕ Keys for : - changing the values highlighted by the cursor ▮   Heat Emitters   Heat Emitters
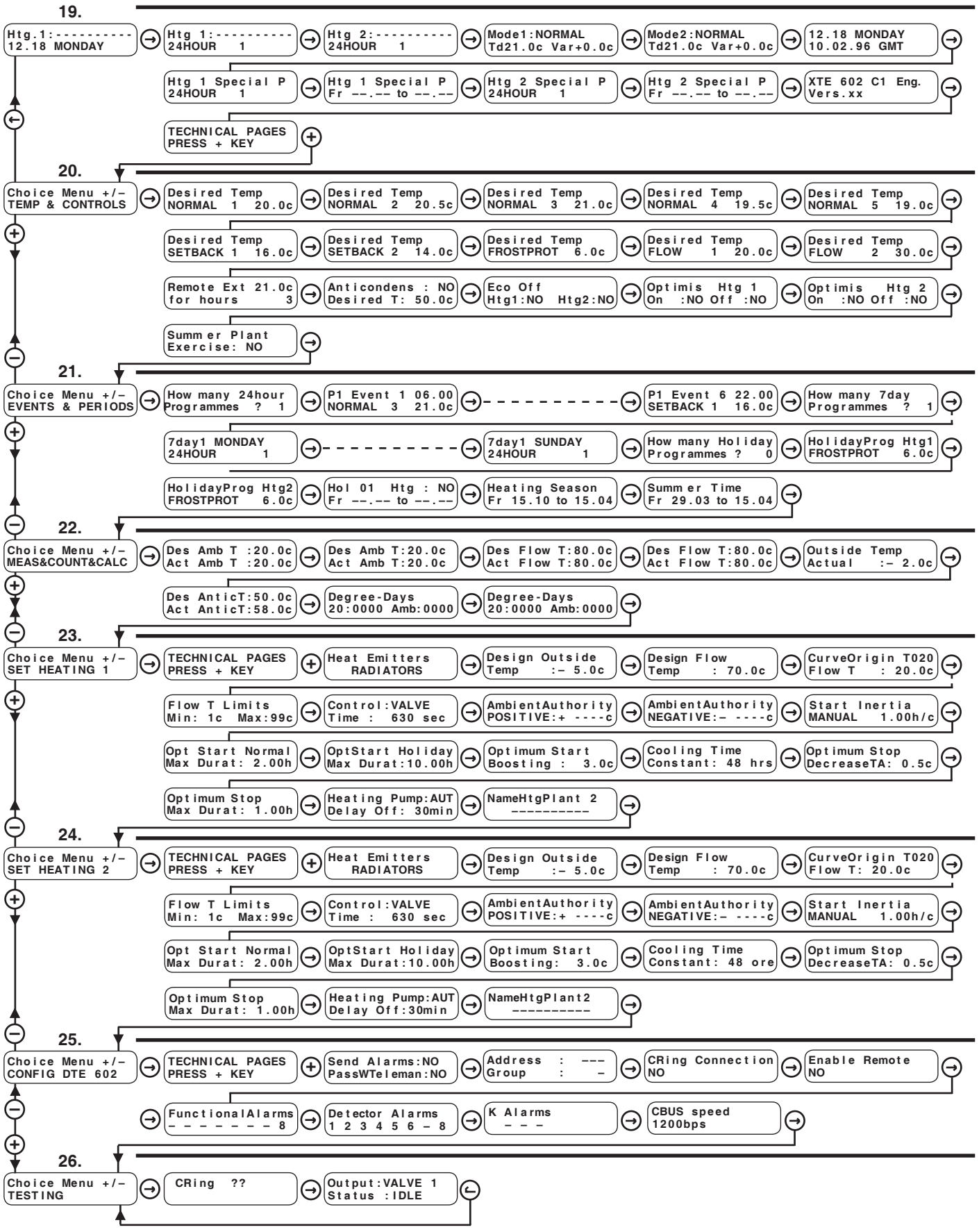– viewing the configuration options of a function, for example :   FAN COILS   or   PANELS
– passing directly from one menu (series of pages) to another

18. SEQUENCE OF DISPLAY PAGES (the data and the functions are those in memory at time of delivery)

19.

| Htg.1:-------- | Htg 1:--------- | Htg 2:--------- | Mode1:NORMAL | Mode2:NORMAL | 12.18 MONDAY |
| 12.18 MONDAY | 24HOUR 1 | 24HOUR 1 | Td21.0c Var+0.0c | Td21.0c Var+0.0c | 10.02.96 GMT |

| Htg 1 Special P | Htg 1 Special P | Htg 2 Special P | Htg 2 Special P | XTE 602 C1 Eng. |
| 24HOUR 1 | Fr --.-- to --.-- | 24HOUR 1 | Fr --.-- to --.-- | Vers.xx |

TECHNICAL PAGES
PRESS + KEY (+)

20.

| Choice Menu +/- | Desired Temp | Desired Temp | Desired Temp | Desired Temp | Desired Temp |
| TEMP & CONTROLS | NORMAL 1 20.0c | NORMAL 2 20.5c | NORMAL 3 21.0c | NORMAL 4 19.5c | NORMAL 5 19.0c |

| Desired Temp | Desired Temp | Desired Temp | Desired Temp | Desired Temp |
| SETBACK 1 16.0c | SETBACK 2 14.0c | FROSTPROT 6.0c | FLOW 1 20.0c | FLOW 2 30.0c |

| Remote Ext 21.0c | Anticondens : NO | Eco Off | Optimis Htg 1 | Optimis Htg 2 |
| for hours 3 | Desired T: 50.0c | Htg1:NO Htg2:NO | On :NO Off :NO | On :NO Off :NO |

Summer Plant
Exercise: NO

21.

| Choice Menu +/- | How many 24hour | P1 Event 1 06.00 | - - - - - - - | P1 Event 6 22.00 | How many 7day |
| EVENTS & PERIODS | Programmes ? 1 | NORMAL 3 21.0c | | SETBACK 1 16.0c | Programmes ? 1 |

| 7day1 MONDAY | - - - - - - - | 7day1 SUNDAY | How many Holiday | HolidayProg Htg1 |
| 24HOUR 1 | | 24HOUR 1 | Programmes ? 0 | FROSTPROT 6.0c |

| HolidayProg Htg2 | Hol 01 Htg : NO | Heating Season | Summer Time |
| FROSTPROT 6.0c | Fr --.-- to --.-- | Fr 15.10 to 15.04 | Fr 29.03 to 15.04 |

22.

| Choice Menu +/- | Des Amb T :20.0c | Des Amb T:20.0c | Des Flow T:80.0c | Des Flow T:80.0c | Outside Temp |
| MEAS&COUNT&CALC | Act Amb T :20.0c | Act Amb T:20.0c | Act Flow T:80.0c | Act Flow T:80.0c | Actual :- 2.0c |

| Des AnticT:50.0c | Degree-Days | Degree-Days |
| Act AnticT:58.0c | 20:0000 Amb:0000 | 20:0000 Amb:0000 |

23.

| Choice Menu +/- | TECHNICAL PAGES | Heat Emitters | Design Outside | Design Flow | CurveOrigin T020 |
| SET HEATING 1 | PRESS + KEY (+) | RADIATORS | Temp :- 5.0c | Temp : 70.0c | Flow T : 20.0c |

| Flow T Limits | Control:VALVE | AmbientAuthority | AmbientAuthority | Start Inertia |
| Min: 1c Max:99c | Time : 630 sec | POSITIVE:+ ----c | NEGATIVE:- ----c | MANUAL 1.00h/c |

| Opt Start Normal | OptStart Holiday | Optimum Start | Cooling Time | Optimum Stop |
| Max Durat: 2.00h | Max Durat:10.00h | Boosting : 3.0c | Constant: 48 hrs | DecreaseTA: 0.5c |

| Optimum Stop | Heating Pump:AUT | NameHtgPlant 2 |
| Max Durat: 1.00h | Delay Off: 30min | ---------- |

24.

| Choice Menu +/- | TECHNICAL PAGES | Heat Emitters | Design Outside | Design Flow | CurveOrigin T020 |
| SET HEATING 2 | PRESS + KEY (+) | RADIATORS | Temp :- 5.0c | Temp : 70.0c | Flow T: 20.0c |

| Flow T Limits | Control:VALVE | AmbientAuthority | AmbientAuthority | Start Inertia |
| Min: 1c Max:99c | Time : 630 sec | POSITIVE:+ ----c | NEGATIVE:- ----c | MANUAL 1.00h/c |

| Opt Start Normal | OptStart Holiday | Optimum Start | Cooling Time | Optimum Stop |
| Max Durat: 2.00h | Max Durat:10.00h | Boosting : 3.0c | Constant: 48 ore | DecreaseTA: 0.5c |

| Optimum Stop | Heating Pump:AUT | NameHtgPlant2 |
| Max Durat: 1.00h | Delay Off:30min | ---------- |

25.

| Choice Menu +/- | TECHNICAL PAGES | Send Alarms:NO | Address : --- | CRing Connection | Enable Remote |
| CONFIG DTE 602 | PRESS + KEY (+) | PassWTeleman:NO | Group : - | NO | NO |

| FunctionalAlarms | Detector Alarms | K Alarms | CBUS speed |
| - - - - - - 8 | 1 2 3 4 5 6 - 8 | - - - | 1200bps |

26.

| Choice Menu +/- | CRing ?? | Output:VALVE 1 |
| TESTING | | Status :IDLE |

WARNING: to indicate to which heating zone the data displayed refer, "Htg 1" or "Htg 2" appear on the display. Where these indications do not appear the heating zone is indicated by the blinking of the corresponding "Valve" and "Pump" LEDs. If no indication appears the data displayed are common to both heating zones.

19. NORMAL USE

Ref.	Display	Description	Notes	Sect.
19.1	`Htg 1:- - - - - - - - - -` `12.18 MONDAY`	Name heating zone 1. Current time and day	Set in **23.16** Set in **19.6**	
19.2	`Htg 1:- - - - - - - - - -` `24HOUR     1`	Choice programme for heating zone 1: 7DAY 1-2 ; 24HOUR 1 ...25 ; NORMAL 1... 5 ; SETBACK 1...2 ; FROSTPROT ; FLOW 1-2 ; OFF.	Instead of programme may appear : REMOTE NORMAL 1; REMOTE SETBACK; REMOTE + 2c; REMOTE FROSTPROT; REMOTE OFF; SUMMER; HOLIDAY; SPECIAL; REMOTE EXTENSION	12.9
19.3	`Htg 2:- - - - - - - - - -` `24HOUR     1`	Choice programme for heating zone 2 : 7DAY 1-2 ; 24HOUR 1 ...25 ; NORMAL 1... 5 ; SETBACK 1...2 ; FROSTPROT ; FLOW 1-2 ; OFF.	Instead of programme may appear : REMOTE NORMAL 2; REMOTE SETBACK; REMOTE + 2c; REMOTE FROSTPROT; REMOTE OFF; SUMMER; HOLIDAY; SPECIAL; REMOTE EXTENSION	12.9
19.4	`Mode 1:NORMAL` `Td21.0c Var+0.0c`	Mode in use heating zone 1 Td : Mode desired temperature Var : Variation of desired temp. (max ± 3 °C)	Modes in use : NORMAL ; SETBACK ; BOOSTING ; OPTIMSTOP ; FROSTPROT ; FLOW ; OFF ; EXTENSION ; ECO OFF.	12.10
19.5	`Mode 2:NORMAL` `Td21.0c Var+0.0c`	Mode in use heating zone 2. Td: Mode desired temperature. Var : Variation of desired temp. (max ± 3 °C)	Modes in use : NORMAL ; SETBACK ; BOOSTING ; OPTIMSTOP ; FROSTPROT ; FLOW ; OFF ; EXTENSION ; ECO OFF.	12.10
19.6	`12.18 MONDAY` `10.02.96 GMT`	Setting : Time, Day of week and Date. Current time period : BST or GMT	Dates summer time set in **21.21**.	
19.7	`Htg 1 Special P` `24HOUR     1`	Choice programme special period heating zone 1 7DAY 1-2 ; 24HOUR 1 ...25 ; NORMAL 1 ... 5 ; SETBACK 1-2 ; FROSTPROT; FLOW 1-2 ; OFF.		14.4
19.8	`Htg 1:Special P` `Fr --.-- to --.--`	Dates of start and end special period heating zone 1		14.4
19.9	`Htg 2:Special P` `24HOUR     1`	Choice programme special period heating zone 2 :7DAY 1-2 ; 24HOUR 1 ... 25 ; NORMAL 1 ... 5 ; SETBACK 1-2 ; FROSTPROT; FLOW 1-2 ; OFF.		14.4
19.10	`Htg 2:Special P` `Fr --.-- to --.--`	Dates of start and end special period heating zone 2		14.4
19.11	`XTE 602 C1 Eng.` `Vers.xx`	Identifying data of controller		

20. TEMPERATURES & CONTROLS

Ref.	Display	Description	Notes	Sect.
20.1 20.5	`Desired Temp` `NORMAL  1   20.0c`	Value of desired ambient temp. NORMAL 1 ... 5 to be used in 24-hour programmes in **21.2**.		12.4
20.6 20.7	`Desired Temp` `SETBACK 1   16.0c`	Value of desired ambient temp. SETBACK 1-2 to be used in 24-hour programmes in **21.2**.		12.4
20.8	`Desired Temp` `FROSTPROT   6.0c`	Value of desired ambient temp. FROSTPROT to be used in 24-hour programmes in **21.2**.		12.4
20.9 20.10	`Desired Temp` `FLOW    1   20.0c`	Value of desired ambient temp. FLOW 1 - 2 to be used in 24-hour programmes in **21.2**.		12.4
20.11	`Remote Ext 21.0c` `for hours      3`	Desired temp. during EXTENSION period. Duration of EXTENSION period.	To activate EXTENSION period close switch c1 or c2 for at least 5 seconds and then open it (see wiring diagram). To disactivate EXTENSION period keep pressed at the same time for several seconds ← and →keys.	14.5
20.12	`Anticondens : NO` `Desired T: 50.0c`	Enabling of anticondensing function : NO ; YES. Setting value anticondensing temperature.	NO: function excluded YES: When return to boiler temp. (B4) < desired anticondensing temp. controller closes heating valve with modulating control action.	15.1
20.13	`Eco Off` `Htg1:NO   Htg2:NO`	Eco Off: NO; YES.	In Normal or Setback modes with • Desired flow temp. - measured or calculated temp. ≤ 2 °C = ECO OFF On, valve closed & heating pump Off. • Tfd – Ta meas. or calc. ≥ 4 °C = ECO OFF Off	12.8
20.14	`Optimis    Htg.1` `On  :NO  Off :NO`	Functions of Optimum Start and Optimum Stop heating zone 1 : NO ; YES.		13.3
20.15	`Optimis    Htg.2` `On  :NO  Off :NO`	Functions of Optimum Start and Optimum Stop heating zone 2 : NO ; YES.		13.3
20.16	`Summer Plant` `Exercise: NO`	Function of summer plant exercise: NO; YES.	During summer period, to prevent lockouts, controller switches on periodically valves & pumps.	15.2

21. EVENTS & PERIODS

Rif.	Display	Description	Notes	Sect.
21.1	How many 24hour Programmes ? 1	Choice of number of 24-hour programmes to be used (1…25).	Avoids scrolling unnecessary pages	14.1
21.2 ⇓ ⇓ 21.7	P1 Event 1 06.00 NORMAL 3 21.0c P1 Event 6 22.00 SETBACK 1 16.0c	Number of programme, number of event & start time of period in programme. Choice of type of mode to assign to period : NORMAL 1...5 ; SETBACK 1 - 2 ; FROSTPROT; FLOW 1 - 2; OFF. **Further groups of 6 pages according choice in 21.1**	Max. 6 periods. To eliminate unused period upress + and – together: - - . - - appears. The events must be in increasing order. Do not leave - - . - - between programmed events.	14.1
21.8	How many 7day Programmes ? 0	Choice of number of 7-day programmes to be used (1- 2).	Avoids scrolling unnecessary pages	14.2
21.9 ⇓ ⇓ 21.15	7day1 MONDAY 24HOUR 1 7day1 SUNDAY 24HOUR 1	Choice of programme for each day of week : 24 HOUR 1…25 ; NORMAL 1...5; SETBACK 1 - 2; FROSTPROT ; FLOW 1 - 2; OFF.		14.2
21.16	How many Holiday Periods ? 0	Choice of number of holiday periods to be used (0...25)	Avoids scrolling unnecessary pages	14.2
21.17	HolidayProg Htg1 FROSTPROT 6.0c	Choice of programme for all the holiday periods heating zone1: 7DAY1-2; 24HOUR1…25; NORMAL 1 ... 5; SETBACK 1-2; FROSTPROT; FLOW 1 - 2; OFF.	Appears only if in **21.16** number is greater than 0	14.3
21.18	HolidayProg Htg2 FROSTPROT 6.0c	Choice of programme for all the holiday periods heating zone 2: 7DAY1-2; 24HOUR1…25; NORMAL 1...5; SETBACK 1-2; FROSTPROT; FLOW1 - 2; OFF.	Appears only if in **21.16** number is greater than 0	14.3
21.19	Hol 01 Htg : NO Fr --.-- to --.--	NO = period not used 1=period used by heating zone 1 2= period used by heating zone 2 1+2 = period used by heating zones 1 & 2 Dates of start and end of holiday period. **Further pages according choice in 21.16.**	Appears only if in **21.16** number is greater than 0	14.3
21.20	Heating Season Fr 15.10 to 15.04	Dates of start and end of heating season.		14.6
21.21	Summer Time AUT Fr 29.03 to 26.10	Dates of start and end of summer time period.		14.6

22. MEAS&COUNT&CALC

Ref.	Display	Description	Notes	Sect.
22.1	Des Amb T :20.0c Act Amb T :20.5c	Ambient T desired by mode in use - heating zone 1 Temp. measured by ambient detector B3.	Valve and pump LEDs of heating zone 1 blink	15.5
22.2	Des Amb T :20.0c Act Amb T :20.5c	Ambient T desired by mode in use - heating zone 2 Temp. measured by ambient detector B6.	Valve and pump LEDs of heating zone 2 blink	15.5
22.3	Des Flow T:80.0c Act Flow T:80.0c	Flow temp. desired by mode in use - heating zone 1 Temp. measured by flow detector B1	Valve and pump LEDs of heating zone 1 blink	15.5
22.4	Des Flow T:80.0c Act Flow T:80.0c	Flow temp. desired by mode in use - heating zone 2 Temp. measured by flow detector B5	Valve and pump LEDs of heating zone 2 blink	15.5
22.5	Outside Temp Actual :– 2.0c	Actual outside temp. measured by B2 or coming via C- Ring .	If outside detector B2 not connected & value comes via C- Ring , the word "Actual" is replaced by "C-Ring"	15.5
22.6	Des AnticT:60.0c Act AnticT:58.0c	Desired anticondensing temp. Temp. measured by anticondensing detector B4.		15.5
22.7	Degree-Days 20:0000 Amb:0000	20: referred to fixed ambient temp. of 20 °C Amb: referred to actual ambient temp.heat. zone 1	Valve and pump LEDs of heating zone 1 blink	12.13
22.8	Degree-Days 20:0000 Amb:0000	20: referred to fixed ambient temp. of 20 °C Amb: referred to actual ambient temp. heat zone 2	Valve and pump LEDs of heating zone 2 blink	12.13

23. SETTING HEATING ZONE 1

Ref.	Display	Description	Notes	Sect.
23.1	Heat Emitters RADIATORS	Choice type heat emittters : RADIATORS ; PANELS; FAN COILS.	Valve and pump LEDs of heating zone 1 blink	12.1
23.2	Design Outside Temp :– 5.0c	Design outside temp. for compensated control. See also 24.2	Valve and pump LEDs of heating zone 1 blink	12.2
23.3	Design Flow Temp : 70.0c	Design flow temp. for compensated control	Valve and pump LEDs of heating zone 1 blink	12.2
23.4	CurveOrigin TO20 Flow T : 20.0c	Correction heating curve origin	Valve and pump LEDs of heating zone 1 blink	12.3
23.5	Flow T Limits Min: 1c Max:99c	Minimum and maximum limits flow temperature	Valve and pump LEDs of heating zone 1 blink	12.5
23.6	Control: VALVE Time : 630sec	Actuator run time	Valve and pump LEDs of heating zone 1 blink	12.6
23.7	AmbientAuthority POSITIVE:+ ----c	Ambient authority. Variation in + °C flow temp. with − 1 °C difference in ambient temp.		12.7
23.8	AmbientAuthority NEGATIVE:– ----c	Ambient authority. Variation in − °C flow temp. with + 1 °C difference in ambient temp.		12.7
23.9	Start inertia MANUAL 1.00h/c	Optimum start inertia	Valve and pump LEDs of heating zone 1 blink MANUAL = correction of value manually AUTOMAT = correction of value automatically	13.4
23.10	Opt Start Normal Max Durat: 2.00h	Maximum duration optimum start after period of 24-hour or 7-day operation	Valve and pump LEDs of heating zone 1 blink	13.5
23.11	OptStart Holiday Max Durat:10.00h	Maximum duraton optimum start after a holiday period	Valve and pump LEDs of heating zone 1 blink	13.6
23.12	Optimum Start Boosting 3.0c	Increase in desired ambient temp. during optimum start period	Valve and pump LEDs of heating zone 1 blink	13.7
23.13	Cooling Time Constant 48.00h	Used when ambient detector B3 not installed to calculate decrease in ambient temp.	Valve and pump LEDs of heating zone 1 blink	13.8
23.14	Optimum Stop DecreaseTA 0.5c	Reduction in desired ambient temp. at last event end occupancy	Valve and pump LEDs of heating zone 1 blink	13.9
23.15	Optimum Stop Max Durat: 1.00h	Maximum duration period optimum stop	Valve and pump LEDs of heating zone 1 blink	13.10
23.16	Heating Pump:AUT Delay Off: 30min	Control plant pump : MAN ; AUT Delay switching off pump	Valve and pump LEDs of heating zone 1 blink MAN: always On; AUT: On with times of current programme.	12.12
23.17	NameHtgPlant 1 ----------	Entering name heating zone 1	Use + and – to enter letters or numbers Use ← or → to position cursor	15.4

24. SETTING HEATING ZONE 2

Ref.	Display	Description	Notes	Sect.
24.1	Heat Emitters RADIATORS	Choice type heat emitters: RADIATORS ; PANELS; FAN COILS.	Valve and pump LEDs of heating zone 2 blink	12.1
24.2	Design Outside Temp : – 5.0c	Design outside temp. for compensated control. See also 23.2.	Valve and pump LEDs of heating zone 2 blink	12.2
24.3	Design Flow Temp : 70.0c	Design flow temp. for compensated control	Valve and pump LEDs of heating zone 2 blink	12.2
24.4	CurveOrigin TO20 FLOW T : 20.0c	Correction of heating curve origin	Valve and pump LEDs of heating zone 2 blink	12.3
24.5	Flow T Limits Min: 1c Max:99c	Minimum and maximum limits flow temperature	Valve and pump LEDs of heating zone 2 blink	12.5
24.6	Control: VALVE Time : 630sec	Actuator run time	Valve and pump LEDs of heating zone 2 blink	12.6
23.7	AmbientAuthority POSITIVE:+ ----c	Ambient authority. Variation in + °C flow temp. with − 1 °C difference in ambient temp.		12.7
23.8	AmbientAuthority NEGATIVE:– ----c	Ambient authority. Variation in − °C flow temp. with + 1 °C difference in ambient temp.		12.7
24.8	Start Inertia MANUAL 1.00h/c	Optimum start inertia	Valve and pump LEDs of heating zone 2 blink MANUAL = correction of value manually AUTOMAT = correction of value automatically	13.4
24.9	Opt Start Normal Max Durat: 2.00h	Maximum duration optimum start after a period of 24-hour or 7-day operation	Valve and pump LEDs of heating zone 2 blink	13.5

24. SETTING HEATING ZONE 2

Ref.	Display	Description	Notes	Sect.
24.10	OptStart Holiday / Max Durat: 10.00h	Maximum duration optimum start after a holiday period	Valve and pump LEDs of heating zone 2 blink	13.6
24.11	Optimum Start / Boosting 3.0c	Increase in desired ambient temp. during optimum start period	Valve and pump LEDs of heating zone 2 blink	13.7
24.12	Cooling Time / Constant: 48.00h	Used when ambient detector B6 not installed to calculate decrease in ambient temp. Temp. Ambiente.	Valve and pump LEDs of heating zone 2 blink	13.8
24.13	Optimum Stop / DecreaseTA 0.5c	Reduction in desired ambient temp. at last event end occupancy	Valve and pump LEDs of heating zone 2 blink	13.9
24.14	Optimum Stop / Max Durat: 1.00h	Maximum duration period optimum stop	Valve and pump LEDs of heating zone 2 blink	13.10
24.15	Heating Pump:AUT / Delay Off :30min	Control plant pump: MAN; AUT. Delay switching off pump	Valve and pump LEDs of heating zone 2 blink MAN: always On AUT: On with events of current programme	12.12
24.16	NameHtgPlant 2 / - - - - - - - - - -	Entering name heating zone 2	Use + and – to enter letters or numbers Use ← and → to position cursor	15.4

25. CONFIGURATION CONTROLLER

Ref.	Display	Description	Notes	Sect.
25.1	Send Alarms :NO / PassWTeleman :NO	Enabling alarms to send to telemanagement PC Enabling telemanagement keynumber	Only if connected in C-Bus	10.5
25.2	Address : – – – / Group : –	Telemanagement address of controller Group to which controller assigned	Only if connected in C-Bus	10.4
25.3	CRing Connection / NO	NO = not connected in C-Ring PRIMARY= connected as Primary SECONDARY= connected as Secondary		10.1
25.4	Enable Remote / NO	NO = remote control excluded HEATING ZONE 1= remote control zone1; HEATING ZONE2= remote control zone 2; HEATING ZONES= remote control for both zones		12.11
25.5	FunctionalAlarms / – – – – 8	Disabling functional alarms Factory setting : only 8 enabled (cannot be disabled)	1 : Alarm difference temp. flow 1 **B1** 3 : Alarm difference temp. ambient 1 **B3** 5 : Alarm difference temp. flow 2 **B5** 6 : Alarm difference temp. ambient 2 **B6** 8 : Alarm internal real time clock	16.1
25.6	Detector Alarms / 1 2 3 4 5 6 8	Enabling alarms detector short or open circuits. Factory setting : all enabled.	1 : Flow 1 detector **B1** 2 : Outside detector **B2** 3 : Ambient 1 detector **B3** 4 : Anticondensing detector **B4** 5 : Flow 2 detector **B5** 6 : Ambient 2 detector **B6** 8 : C-Ring alarm	16.2
25.7	K Alarms / – – –	Enabling On-Off alarms. Factory setting : all disabled.		16.3
25.8	CBUS speed / 1200 bps	The speed of the communication bus (C-Bus) can be chosen from: 1200, 2400, 4800, 9600 bouds.		
25.9	Choice Keynumber / - - - -	Choice keynumber for preventing modification data by + and – keys. – 1901 … 1999	To eliminate keynumber press + and – together.	15.3

26. TESTING

Ref.	Display	Description	Notes	Sect.
26.1	CRing:??	Page of testing C-Ring connections. ?? = C-Ring test in progress or test negative YES = test positive	Appears only if in **25.3** choice is YES	17.1
26.2	Output:VALVE 1 / Status :IDLE	Choice outputs to be tested Choice status of output.	Choice output : VALVE1 ; PUMP1 ; VALVE2 ; PUMP2 ; Choice status: With VALVE1 & 2 : IDLE ; CLOSES ; OPENS. With PUMP 1 & 2 : ON; OFF.	17.2

Amendment to data sheet

Date	Revision No.	Page	Section	Amended description	Firmware version	Software version
15.09.09 VM	**01**	various	various	Change to version C1		≥ 0.99.2650
22.11.10 VM	**02**	3	9. Wiring	Wiring procedure modified		≥ 0.99.2650