

TEMPERATURE CONTROLLER FOR TWO-BATTERY AIR HANDLING UNIT

OPTIONAL

C ← BUS

XTA 624 C1 Eng.



- **Temperature control in air handling units**
- **Communication systems :**
 - C-Bus : XTA 624 Telemangement optional; to enable Telemangement use the "C-Bus Plug-in" type **ACB 400 C1** or later, to be ordered separately as accessory.
- **24 V ~ power supply; DIN rail mounting**

1. APPLICATION

XTA 624 is designed for temperature control in air handling units composed of:

- 2 hot/chilled water or vapor batteries with 3-wire modulating control or electric batteries with 1-,2-, or 3-stage On-Off control or direct expansion batteries with 1- or 2-stage On-Off control
- 1 air mixing unit with 0...10 V- air damper actuators or 1 heat recuperator with 0...10 V- or On-Off control (CSV 304 converter).

The equipment can be included in a Telemangement system through the C-Bus connection.

2. OPERATION

The main features of XTA 624 are as follows:

- Two 3-wire modulating outputs or 2-stage On-Off (two equal loads) or 3-stage (two unequal loads) outputs, configurable for:
 - room temperature control (heating or cooling) with summer external compensation if desired, minimum and maximum flow limits to prevent cold drafts.
 - flow temperature control (heating or cooling) with winter and summer compensation if desired
 - pre-heating temperature control at a fixed value
- One 0...10 V- progressive output, configurable for:
 - air mixing control based on temperature comparison or with minimum external air limit
 - heat recuperator On-Off control according to room-external temperature comparison
- 2 pump control On-Off outputs accoring to output load
- Manual seasonal switching from a display or an external switch.
- Remote-controlled temperature setting adjustment
- Alarms for short and open detector circuits and for system and equipment malfunction.
- Programming by means of 25 24-hour programs, five 7-day programs, and 25 annual period programs
- Enabled for data transmission via C-Bus with local PCs or remote Telemangement PC.
- Optional C-Bus transmission of data with local PCs or remote Telemangement PC.

To enable data transmission and Telemangement use the "C-Bus Plug-in" type ACB 400 C1 or later
To communicate locally with a PC use the test Plug-in type ACX 232

3. ACCESSORIES

No.	Description	Type	Application range	Sensing element	Code	Data sheet
1	Duct flow air temperature detector	STA 010	0...60 °C	NTC 10 kΩ	B1	–
1	Duct outside air temperature detector or wall outside air temperature detector	STA 001 SAE 001	–30...+40 °C –30...+40 °C	NTC 1 kΩ NTC 1 kΩ	B2 B2	– –
1	Duct extract air temperature detector or room air temperature detector	STA 010 SAB 010	0...40 °C 0...40 °C	NTC 10 kΩ NTC 10 kΩ	B3 B3	– –
1	Duct pre-heating temperature detector	STA 010	0...40 °C	NTC 10 kΩ	B4	–
1	Temperature set-point adjuster	CDB 100	± 5 °C	–	Rt°	–
1	Outside air minimum distance positioner	PCS 04	–	–	Rs	–
1	Accessory for Telemangement Plug-in for communicating via C-Bus	ACB 400 C1	–	–	–	–

4. TECHNICAL DATA (default values in bold print)

• Electrical data

Power supply	24 V ~ ± 10%
Frequency	50 ... 60 Hz
Consumption	5 VA
Protection	IP40
Radio interference	VDE0875/0871
Vibration test	with 2g (DIN 40 046)
Voltage-free output contacts:	
maximum switching voltage	250 V ~
maximum switching current	5 (1) A
Construction standards	Italian Electroth. Committee(CEI)
Data storage period	5 years
Software	Class A

• Mechanical data

Case	DIN 6E Module
Mounting	DIN 35 rail
Materials:	
base	NYLON
cover	ABS
Room humidity	
operating	0 ... 45 °C
storage	- 25 ... + 60 °C
Room humidity	Class F DIN 40040
Dimensions	105 x 115 x 71.5
Weight	0.6 kg

• Adjustment ranges

Heating (or cooling) temperatures:	
desired room temp. (B3 or B1+B3)	0... 20 (25) ...40 °C
desired flow temp. (B1)	0... 20 (25) ...60 °C
min. flow limit (B1+B3)	1... 18 (8) ...60 °C
max. flow limit (B1+B3)	1... 50 (25) ...60 °C
outside default temp. (B1+B2)	-30...- 10 (35) ...40 °C
flow default temp. (B1+B2)	1... 50 (10) ...60 °C
summer compensation $T_e - T_a$ (B2+B3)	0... 6 ...20 °C

Preheating temperature (B4)	0... 10 ...40 °C
Temp. proportional band (base value):	
Heating (room)(B3 o B1+B3)	±1...± 2 ...±40 °C
Heating flow (B1)	±1...± 10 ...±40 °C
Various temp. proportional band multipliers:	
Heating flow(B1+B3)	Bp amb x 0,5... 10 ...20
Cooling temperatures	Pb heat x 0,5 ...20
preheating (B4)	Pb heat disch x 0,5... 1 ...20
Air dampers (B2+B3)	Pb room heat x 0,5... 1 ...20
Valve stroke time (modulating)	0... 10 ...255 min.
Y1, Y2 output control	- modulating
	- 2 stage
	- 3 stage
Valve stroke time (modulating)	30... 120 ...630 s
Ys output control	0...10 V-
Season switching:	- manual (display)
	- external control
M1, M2 pump Off control delay	0... 20 ...99 min.

• Alarm adjustments

Telemangement (PC-controlled adjustments)	
Alarm call attempts	1... 5 ...255
Alarm call interval	2... 10 ...255 m
Alarms (PC-controlled adjustments):	
Disch.temp. diff. threshold (B1)	1... 5 ...99 °C
Disch.temp. diff. delay	2... 30 ...255 min.
Room temp. diff. threshold (B3)	0,5... 1 ...30 °C
Room temp. diff. delay	2... 30 ...255 min.
Preheat temp. diff. threshold (B4)	1... 5 ...99 °C
Preheat temp. diff. delay (B4)	2... 5 ...255 min.

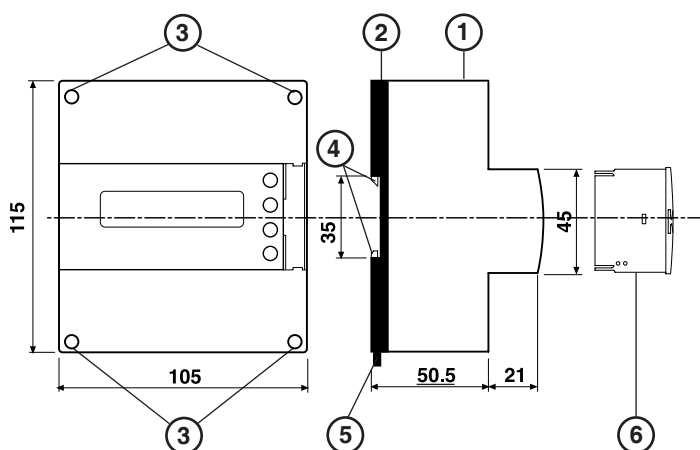
• Telemangement

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

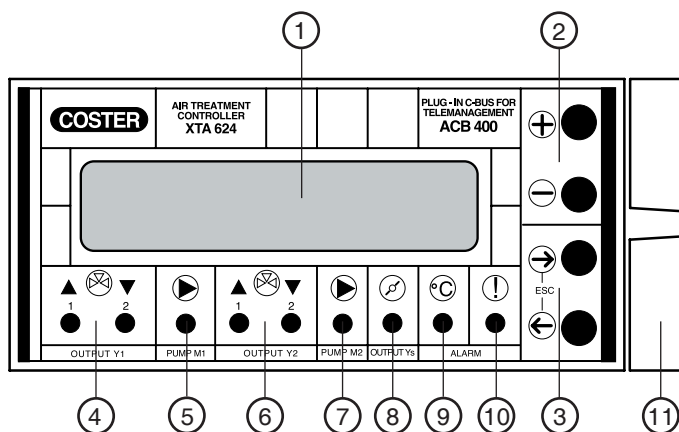
In case of static, the equipment's output controls may change settings; original settings will be subsequently restored automatically.

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

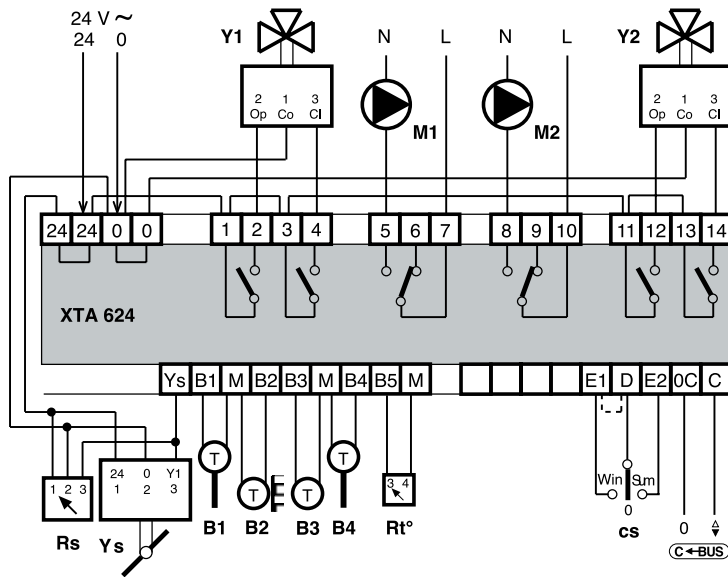
6. FACIA



- 1 - Alphanumeric display
- 2 - + and - operating keys
- 3 - ← and → operating keys
- 4 - Y1 output LED
- 5 - M1 pump LED
- 6 - Y2 output LED
- 7 - M2 pump LED
- 8 - Ys output LED
- 9 - Measurement alarm LED
- 10 - Microprocessor malfunction LED
- 11 - Plug-in type ACB 400 C1 for C-Bus communication

7. WIRING DIAGRAMS

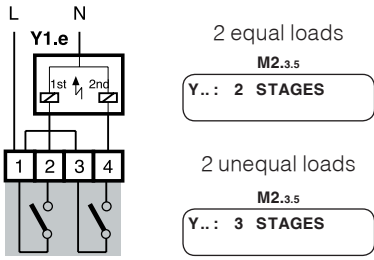
7.1 3-Wire Modulating Valve Control



M2.3.5
Y..: MODULATING
Run Time :xxxx

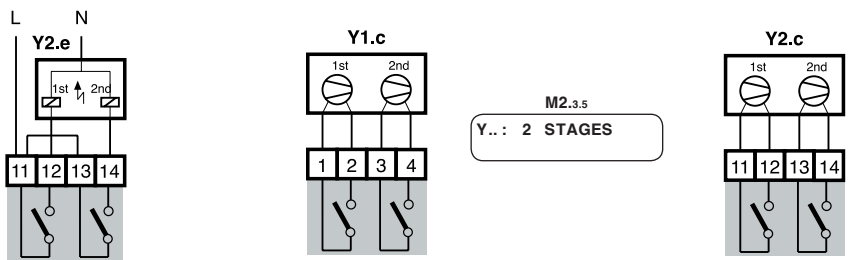
- B1 – Flow air temp. detector
- B2 – Outside temp. detector
- B3 – Room or extract air temp. detector
- B4 – Preheating temp. detector
- ss – Season switch (eliminate D-E1 link)
 Win = Winter, Sum = Summer.
- M 1-2 – Pump On-Off control
- Y 1-2 – 3-wire modulating controls
- Ys – Air dampers or recuperator 0...10V- control
- Rt° –Temp. set-point adjuster
- Rs –Minimum outside air positioner
- C-Bus –Transmission data via Telemanagement; C-Bus is enabled using the Plug-in type ACB 400 C1

7.2 Electric Battery Control



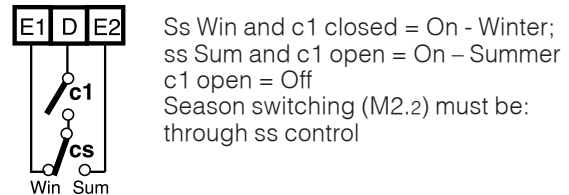
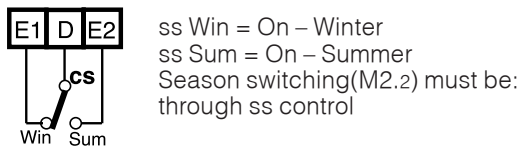
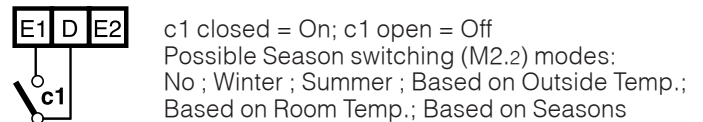
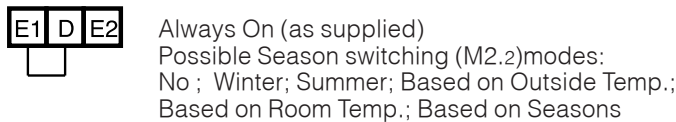
Y1-2.e – Electric batteries

7.3 Direct Expansion Battery Control



Y1-2.c – Direct expansion batteries (refrigerators)

7.4 Use of D-E1-E2 Outputs – Examples



ss – Control through manual or centralized season switch or through XTU 614-type controller.

c1 – on-off contact through timeswitch or through manual control or through fan relay

8. 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 mm² for power and relay control outputs
 - 1 mm² for sensors and remote control
 - 1 mm² 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.

9. WHERE TO PLACE DEVICES

9.1 Controller

The controller should be placed in a dry environment, in compliance with acceptable environment conditions as described under "Technical Data". If located in environments classified as "hazardous" it should be installed in switchboards built in accordance with applicable regulations depending on hazard class.
The controller may be installed on the board's bottom on a DIN rail, or in DIN modular boards

9.2 Flow temperature detector B1

B1 must be installed downstream with respect to the flow fan.

9.3 Outside temperature detector B2

STA 001 : It may be used in systems with constant outside air inflow. It must be installed upstream with respect to the outside air dampers near the air intake.
SAE 001 : It should be used in systems where outside air flow is not constant. It must be installed outside the building, on the north or northwest side, at a height of at least 3 m. above the ground, protected from sunshine and away from windows, doors, chimneys or other direct thermal interference.

9.4 Room temperature or extract air detector B3

SAB 010 : environment : It must be installed in a spot that reflects the average temperature of a significant room (e.g. living room) at a height of 1.5...1.6 m. above the floor, on an inside wall away from windows, doors and sources of heat (no alcoves, scaffolds or hangings).
STA 010 : extract air: It should be installed upstream with respect to the extract fan.

9.5 Preheating temperature detector B4

It must be installed downstream with respect to the humidifying unit, preferably downstream of the drop separator.

10. COMMUNICATION

10.1 C-Bus communication for telemanagement (for detailed information please see technical data sheet T 021)

XTA 624 provides :

- remote Telemanagement by when enabled by C-Bus Plug-in type ACB 400 C1
- 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.

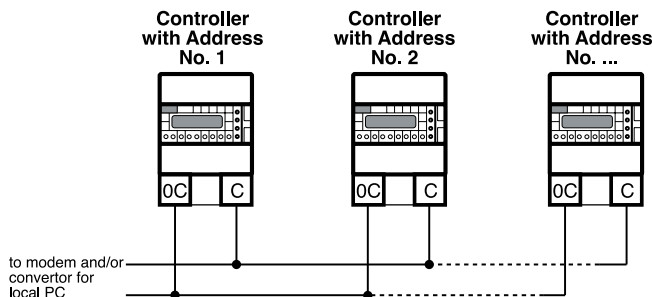
Local communication is direct to a portable PC to be connected directly to the unit.

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 telemanagement (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)

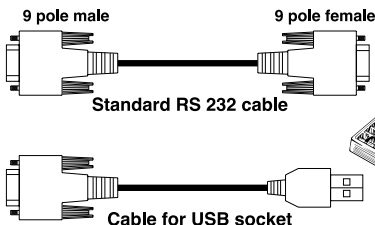
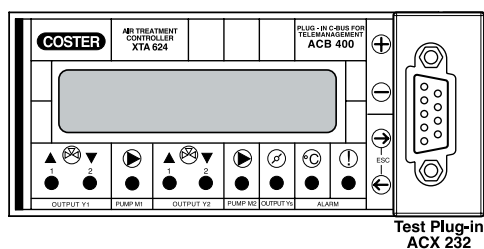
10.2 C-Bus electrical connection for local or remote Telemanagement

Each controller must be equipped with the C-Bus Plug-in of the required type for the controller in question



10.3 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:

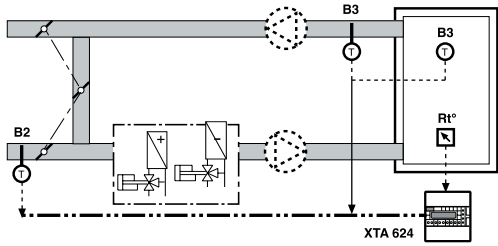
- Test Plug-in = ACX 232
- Convenience kit = KIT RS 232

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, 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)
 - The transmission speed can be adjusted (1200, 2400, 4800, 9600 bps).
A speed suitable for all the devices connected in C-Bus must be chosen.

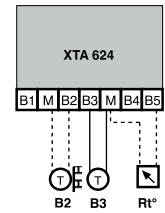
11. TEMPERATURE CONTROL – EXAMPLES

11.1 Room temperature control

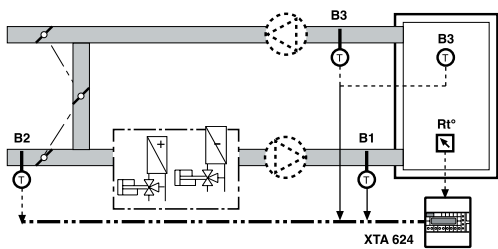


B2 – Outside temp. detector (for compensation only)
 B3 – Room or extract temperature detector
 Rt° – Temperature set point adjuster (optional)

M2.1
Detectors Layout
 - 2 3 - 5

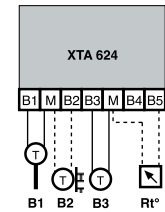


11.2 Room temperature control with flow temperature limits

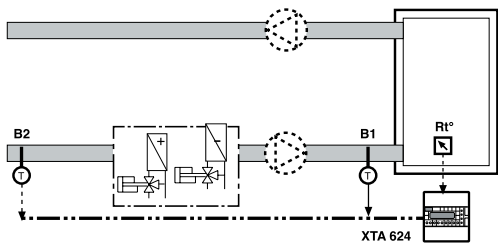


B1 – Flow temperature detector
 B2 – Outside temperature detector (for compensation only)
 B3 – Room or extract temperature detector
 Rt° – Temperature set point adjuster (optional)

M2.1
Detectors Layout
 1 2 3 - 5

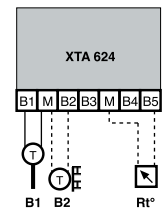


11.3 Flow temperature control



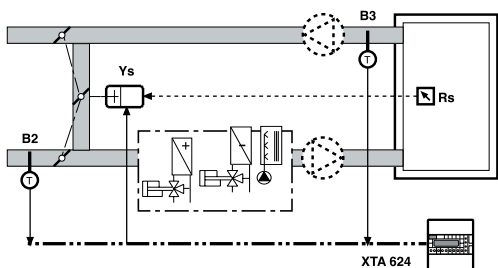
B1 – Flow temp. detector
 B2 – Outside temperature detector (for compensation only)
 Rt° – Temperature set point adjuster (optional)

M2.1
Detectors Layout
 1 2 - - 5



12. USE OF Ys OUTPUT- EXAMPLES

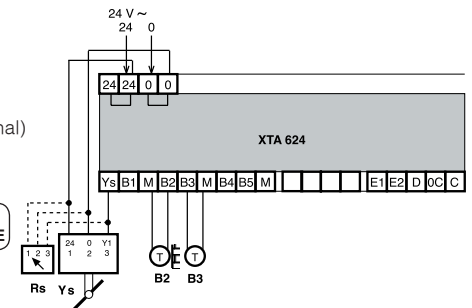
12.1 Temperature comparison air damper optimization



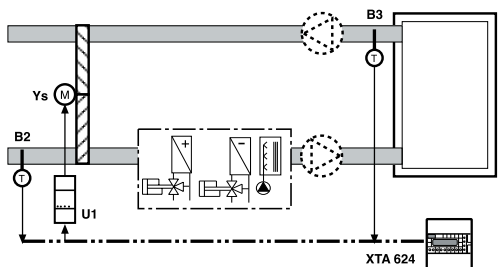
B2 – Outside temperature detector
 B3 – Room or extract temperature detector
 Ys – Progressive air damper control
 Rs – Outside air min. distance positioner (optional)

M2.1
Detectors Layout
 - 2 3 - - - -

M2.7
**Ys-Control :
 DAMP. TEMPERATURE**



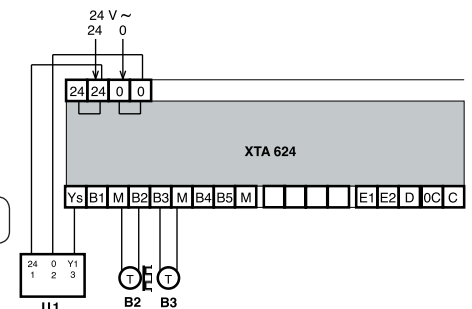
12.2 Heat recuperator On-Off control



B2 – Outside temp. detector
 B3 – Room or extract temperature detector
 Ys – Recuperator
 U1 – 0...10 V- into On-Off signal converter

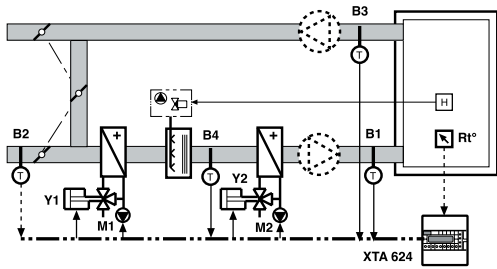
M2.1
Detectors Layout
 - 2 3 - - - -

M2.7
**Ys-Control :
 RECUPERATOR**

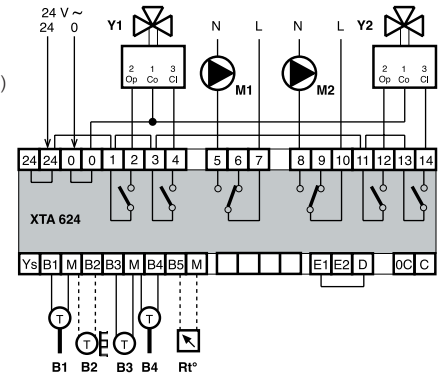
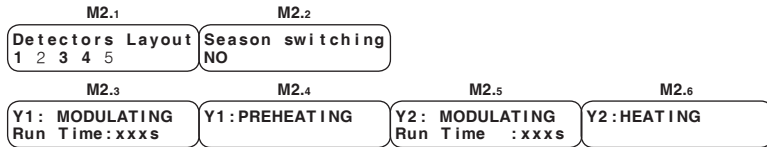


13. USE OF Y1, Y2 OUTPUT – EXAMPLES

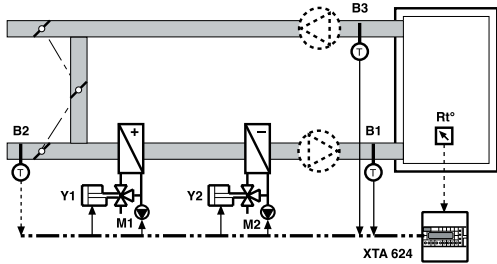
13.1 – 1 Preheating modulating battery – 1 Post-heating modulating battery – 1 Humidifying On-Off unit (controlled from outside the controller)



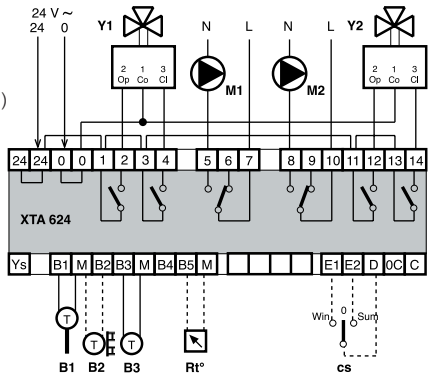
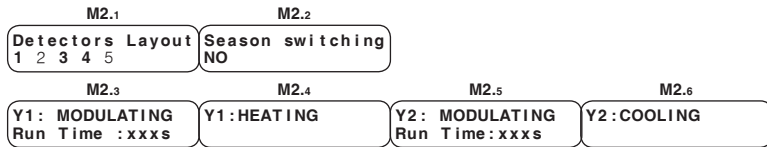
- B1 – Flow temp. detector
- B2 – Outsidetemperature detector (for compensation)
- B3 – Room or extract temperature detector
- B4 – Pre-heating temperature detector
- M1 – Pre-heating pump
- M2 – Post-heating pump
- Rt° – Temperature set point adjuster (optional)
- Y1 – Heating modulating control
- Y2 – Cooling modulating control



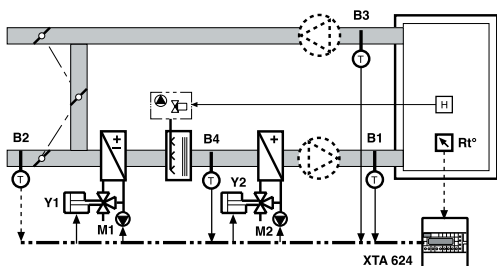
13.2 – 1 Heating modulating battery – 1 Cooling modulating battery



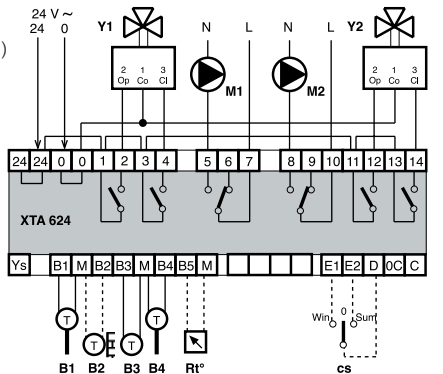
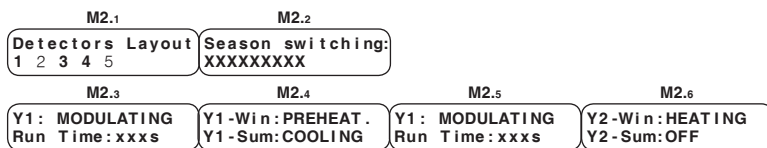
- B1 – Flow temperature detector
- B2 – Outside temperature detector (for compensation)
- B3 – Room or extract temperature detector
- M1 – Heating pump
- M2 – Cooling pump
- Rt° – Temperature set point adjuster (optional)
- Y1 – Heating modulating control
- Y2 – Cooling modulating control



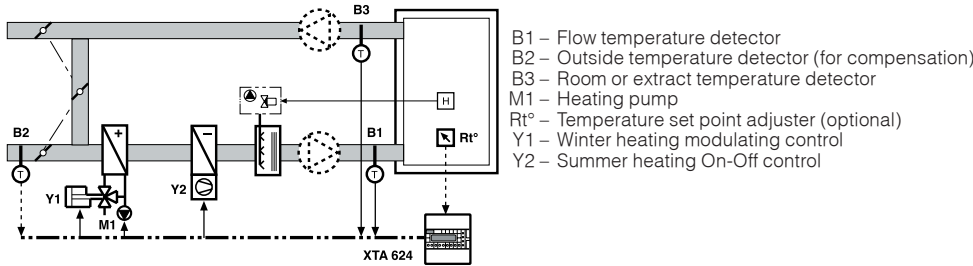
13.3 – 1 Winter pre-heating, summer cooling modulating battery – 1 Winter post-heating modulating battery – 1 Humidifying On-Off unit (controlled from outside the controller)



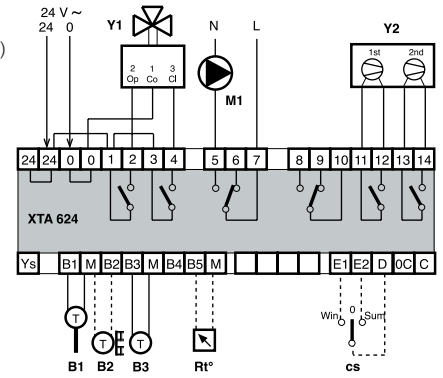
- B1 – Flow temperature detector
- B2 – Outside temperature detector (for compensation)
- B3 – Room or extract temperature detector
- B4 – Winter pre-heating temperature detector
- M1 – Winter pre-heating, summer cooling pump
- M2 – Winter post-heating pump
- Rt° – Temperature set point adjuster (optional)
- Y1 – Winter pre-heating, summer cooling modulating control
- Y2 – Winter post-heating modulating control



13.4 – 1 Winter heating modulating battery
 – 1 Summer cooling direct expansion On-Off battery
 – 1 Humidifying On-Off unit (controlled from outside the controller)

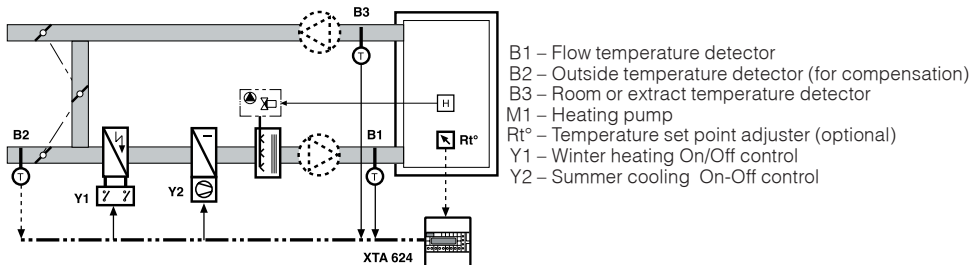


B1 – Flow temperature detector
 B2 – Outside temperature detector (for compensation)
 B3 – Room or extract temperature detector
 M1 – Heating pump
 Rt° – Temperature set point adjuster (optional)
 Y1 – Winter heating modulating control
 Y2 – Summer heating On-Off control

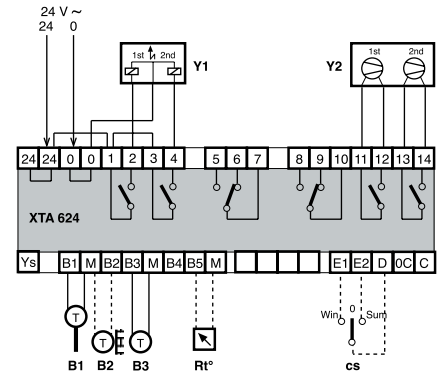


M2.1		M2.2		M2.5		M2.6	
Detectors Layout 1 2 3 - 5		Season switching XXXXXXXXXX		Y2: 2 STAGES		Y2-Win: OFF Y2 - Sum: COOLING	
M2.3		M2.4		M2.5		M2.6	
Y1: MODULATING Run time : xxxs		Y1-Win: HEATING Y1 - Sum: OFF		Y2: 2 STAGES		Y2-Win: OFF Y2 - Sum: COOLING	

13.5 – 1 Winter heating electric On-Off battery
 – 1 Summer cooling direct expansion On-Off battery
 – 1 Humidifying On-Off unit (controlled from outside the controller)



B1 – Flow temperature detector
 B2 – Outside temperature detector (for compensation)
 B3 – Room or extract temperature detector
 M1 – Heating pump
 Rt° – Temperature set point adjuster (optional)
 Y1 – Winter heating On/Off control
 Y2 – Summer cooling On-Off control



M2.1		M2.2		M2.5		M2.6	
Detectors Layout 1 2 3 - 5		Season switching XXXXXXXXXX		Y2: 2 STAGES		Y2-Win: OFF Y2 - Sum: COOLING	
M2.3		M2.4		M2.5		M2.6	
Y1: 2 STAGES		Y1-Win: HEATING Y1 - Sum: OFF		Y2: 2 STAGES		Y2-Win: OFF Y2 - Sum: COOLING	

14. OPERATION

XTA 624 is a microprocessor-operated digital controller for temperature control in air handling units composed of: 2 units with 3-wire or 1, 2 or 3-stage On-Off modulating control. The units can have the following functions: Preheating; Heating; Cooling.

M3.1

Detectors Layout
- - - - -

To adjust the controller to system requirements, proceed as follows:

- configure system according to connected detectors and controls

M3.4.6

Y.. : HEATING

- assign control outputs Y1, Y2 and Y3 the action they are to perform also according to season switching, if applicable.

Y..-Win: HEATING
Y..-Sum: COOLING

15. TEMPERATURE CONTROL

M3.1

Detectors Layout
- - 3 - - -

Temperature control can operate either with:

- Room or extract air detector B3 only:
Fixed point room Heating and Cooling temperature control, or;
- Discharge air detector B1 only:
Fixed point flow Heating and Cooling temperature control, or;
- Room or extract air detector B3 and discharge air detector B1:
Flow Heating and Cooling temperature control according to room temperature deviation

Detectors Layout
1 - - - - -

Detectors Layout
1 - 3 - - -

15.1 Desired temperatures

Desired temperatures for heating and cooling

M3.1

Detectors Layout
- - - - 5

Can be set in

M0.3
Heat.T. Room Desir.: 20.0c±0.0

 and

M0.5
Cool.T. Room Desir.: 25.0c±0.0

 if B3 or B1 and B3 are connected
or in

M0.3
Heat.T. Flow Desir.: 20.0c±0.0

 and

M0.5
Heat.T. Flow Desir.: 25.0c±0.0

 if only B1 is connected

If the set point adjuster Rt° is connected, these values can be changed remotely. The value of the change expressed in ± °C is displayed next to the set values.

15.2 Proportional band and Integral Time

M2.1

Temper. Room
Prop.Band: ± 2.0c

Basic temperature control parameters, **Proportional Band** and **Integral Time**, refer to **heating** control (Room: if B3 only or B1 + B3 are connected, or Flow: if B1 only is connected) and can be changed through the ADJUSTMENT menu.

M2.2

Temper. Room
Integr. Time: 10m

The Proportional Band parameter (in ± °C) is used for other temperature settings through modifiable multipliers that adapt it to the different types of controls (Cooling; Preheating; Air Damper).

M3.14

Pb Flow =
Pb Room x5.0

Examples of PB multipliers with

M2.1
Temper. Room Prop.Band : 2.0c

Pb Flow (heating) = Pb Room (heating) x **5.0** (= ±10 °C)

M3.15

Pb Cooling =
Pb Heating x0.5

Pb Cooling (room) = Pb heating (room) x **0.5** (= ±1 °C)
Pb Cooling (flow) = Pb room heating x **0.5** (= ±5 °C)

M3.16

Pb Preheating =
Pb HeatFlow x1.0

Pb Preheating = Pb flow heating x **1.0** (= ±10 °C)

M3.17

Pb Dampers =
Pb HeatRoom x1.0

Pb Air damper= Pb room heating x **1.0** (= ±2 °C)

dt Recuperator =
Pb HeatRoom x1.0

dT recuperator = Pb room heatingx **1.0** (= 2 °C)

M2.3

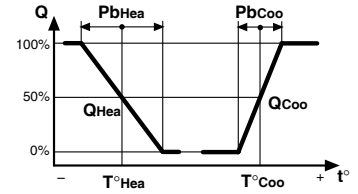
Flow Temperature
Integr. Time: 10m

When detectors **B1** and **B3** are connected, the flow temperature (B1) Integral Time parameter is displayed on a display page to allow for changes to be made separately from the room temperature parameter.

15.3 Control through room detector (B3) only or discharge air detector (B1) only

The controller compares the values $\begin{matrix} \text{M0.3} \\ \text{Heat . T. Room} \\ \text{Desir. : } 20.0c \pm 0.0 \end{matrix}$ and $\begin{matrix} \text{M0.5} \\ \text{Cool . T. Room} \\ \text{Desir. : } 25.0c \pm 0.0 \end{matrix}$ if B3 is used
 or $\begin{matrix} \text{Heat . T. Flow} \\ \text{Desir. : } 20.0c \pm 0.0 \end{matrix}$ and $\begin{matrix} \text{Cool . T. Flow} \\ \text{Desir. : } 25.0c \pm 0.0 \end{matrix}$ if B1 is used

against the temperature measured by detector B1 or B3, and calculates the load values for Heating **QHea** and for Cooling **QCoo** according to the deviation measured.



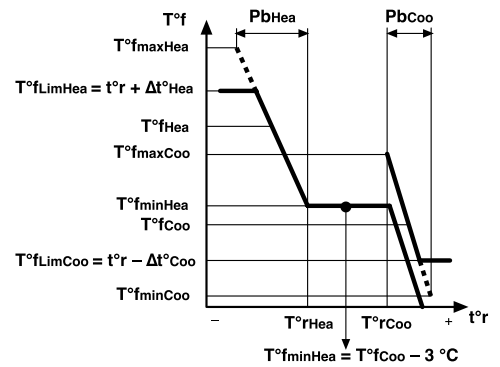
15.4 Control through room detector (B3) and discharge air detector (B1)

The controller compares the values: $\begin{matrix} \text{M0.3} \\ \text{Heat . T. Room} \\ \text{Desir. : } 20.0c \pm 0.0 \end{matrix}$ and $\begin{matrix} \text{M0.5} \\ \text{Cool . T. Room} \\ \text{Desir. : } 25.0c \pm 0.0 \end{matrix}$

against the temperature measured by detector B3, and calculates the load values for desired flow temperatures for Heating **T°fHea** and for Cooling **T°fCoo** according to the deviation measured and values set:

M2.4
Heating Flow
 Min: 18c Max: 50c

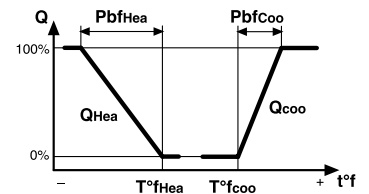
- Min : -- c Max : -- c = Heating flow temp. min and max values determine the **PbHea** proportional band's range. The minimum value **T°fminHea** helps eliminate annoying **cold drafts** in the room. To prevent heating and cooling simultaneousness, the minimum value **T°fminHea** is always 3°C lower than Cooling flow temperature **T°fCoo**.



M2.5
Cooling Flow
 Min: 8c Max: 25c

- Min : -- c Max : -- c = Cooling flow temp. min and max values determine the **PbCoo** proportional band's range.

The controller compares desired flow temperatures for Heating **T°minHea** and for Cooling **T°fCoo** against the temperature measured by the discharge air detector B1 and derives the load values for Heating **Qhea** and for Cooling **Qcoo** according to the deviations detected.



M2.5 bis
Ambient Authority
 MinFlowHeat : 0.0c

When the manipulation of air dampers (**M3.7**) is foreseen the operation is optimised.

M3.7
Ys-Control :
DAMP TEMPERATURE

If under **Ambient Authority** (**M2.5 bis**) a value other than zero has been set, the controller re-calculates the desired minimum heating flow temperature (**T°minHea**) at the moment in which the measured room temperature is between **T°minHea** at the moment in which the measured room temperature is between **T°Hea** and **T°Coo**

M2.5 bis
Ambient Authority
 MinFlowHeat : 0.0c

Example: values set **T°minHea**: 18°C, **T°Hea**: 20°C, **T°Coo**: 25°C, **Ambient Authority**: 2°C.

Operation: for each degree of increase in room temperature between 20°C (**T°Hea**) and 25°C (**T°Coo**), the desired value of minimum flow heating will be decreased by 2°C (**T°min Hea**).

If Ambient Authority: 0°C the function is excluded

15.5 Operating modes

M0.2

Current mode :
ON Winter

The controller can operate in the following modes:

- ON Winter; OFF Winter
- ON Summer; OFF Summer
- ON; OFF

depending on :

- current season according to setting in M3.2
Season Switching
xxxxxxxx (see paragraph 24).
- status of season switching (**ss**) and/or the control **c1** (terminals D-E1-E2).

Examples :

- With M3.2
Season Switching
NO mode is : ON - when contact c1 (D-E1) is closed
OFF - when contact c1 (D-E1) is open
- With M3.2
Season Switching
WINTER mode is : ON winter - when contact c1 (D-E1) is closed
OFF winter - when contact c1 (D-E1) is open
- With M3.2
Season Switching
SUMMER mode is : ON Summer - when contact c1 (D-E1) is closed
OFF Summer - when contact c1 (D-E1) is open
- With M3.2
Season Switching
FR CONTROL ss with ss contact on Winter (D-E1 closed)
mode is : ON Winter - when contact c1 (D-E1) is closed
OFF Winter - when contact c1 (D-E1) is open
- With M3.2
Season Switching
FR CONTROL ss with ss contact on Summer (D-E2 closed)
mode is : ON Summer - when contact c1 (D-E2) is closed
OFF Summer - when contact c1 (D-E1) is open

16. OUTSIDE COMPENSATION OF TEMPERATURE

Compensation functions are only enabled if the outside detector B2 is connected. Such functions can be as follows:

- Compensation of desired flow Heating and Cooling temperatures;
- Summer compensation of desired room or flow Cooling temperatures;

M0.4
Flow Heat T.
Compensat : ±00.0

M0.6
Flow Cool T.
Compensat : ±00.0

M0.6
Cool T. Room
Compensat . : ±00.0

16.1 Compensation of desired flow Heating and Cooling temperatures

M3.1

Season Switching
1 2 - - -

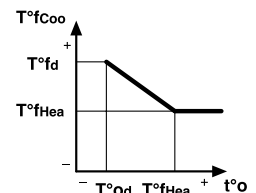
This function can only be used if detectors B1 and B2 are connected, and Detector B3 is not connected. It is useful when the primary air system, in addition to ensuring air circulation, is also intended to make up for ambient dispersion.

Desired flow Heating temperature

M0.3
Heat T. Flow
Desir . : 20.0c ± 0.0

The controller increases desired temp. when outside temperature drops, according to settings:

- Heating Comp.: NO = function disabled
YES = function enabled
- Opt : xx c = default outside temp. : winter
- Fpt : xx c = default flow temp. : winter



M2.6

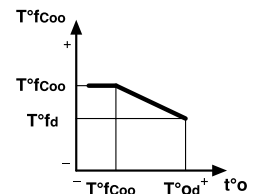
Heating Comp. : NO
Opt : -10c Fpt : 50c

Desired flow Cooling temperature

M0.5
Cool T. Flow
Desir . : 25.0c ± 0.0

The controller decreases desired temp. when outside temperature increases, according to settings:

- Heating Comp. : NO = function disabled
YES = function enabled
- Opt : xx c = default outside temp. : summer
- Fpt : xx c = default flow temp. : summer



M2.7

Cooling Comp. : NO
Opt : +35c Fpt : 10c

16.2 Summer compensation of desired room Cooling temperature

M3.1

Season Switching
1 2 3 - - -

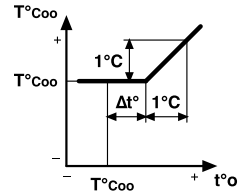
This function can only be used if detectors B2 and B3 or B1, B2 and B3 are connected. It is useful to prevent excessive temp. differences between room and outside.

M0.5

Cool T. Room
Desir. : 25.0c±0.0

The controller maintains temp. at a constant level

until outside temp. exceeds the value $T^{\circ}\text{Coo} + \Delta t^{\circ}$; when this occurs $T^{\circ}\text{Coo}$ is increased by 1°C per each °C increase in outside temp.



M2.8

SummerComp: NO
Diff. T-R.T : 6c

- Summer Comp. : NO = function disabled
YES = function enabled
- Diff. T - R. T : xx c = maximum allowed difference between outside and room temp.

17. PREHEATING TEMPERATURE CONTROL

M3.1

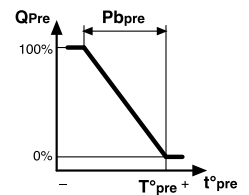
Season Switching
- - - 4 -

The function is only enabled if detector B4 is connected. It can be used for the following purposes:

M0.7

Preheating T.
Desir. : 18.0c

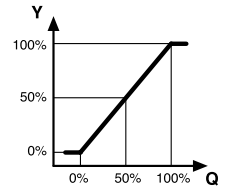
The controller compares preheating temp. $T^{\circ}\text{pre}$ with the temp. measured by detector B4, and calculates the load value for Preheating Q^{pre} according to deviation detected.



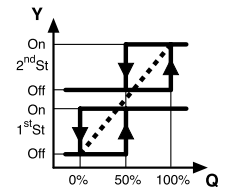
18. OUTPUT Y1, Y2

Outputs **Y1** and **Y2** can be configured as:

- Y.. - MODULATING = modulating control for 3-wire valves or 3-wire signal converters into 0... 10 V- or step controllers.



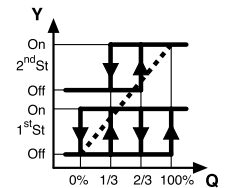
- 2 STAGE = 2-stage On-Off control (1 ; 1+2) for solenoid valves, pumps, humidifiers, burners, refrigerators, 2 equal-load electric batteries, etc.



M3.3.5

Y.. - MODULATING
Run Time : 120s

- 3 STAGE = 2-stage On-Off control (1 ; 2; 1+2) for 2 unequal-load electric batteries.



- Stroke time : xxx s =valve actuator stroke time. It only appears if control is MODULATING.

Each output can be assigned a different action (load). E.g.: Y1: Heating. If Season Switching is enabled in **M2.2**, a different action can be assigned for each season. E.g.: Y1 – Win: Heating; Y1 – Sum: Cooling.

M3.4

Y1: HEATING

Y1-Win: HEATING
Y1-Sum: HEATING

- Y1 -: PREHEAT = Preheating (only if B4 is configured)
HEATING = Heating
COOLING = Cooling
OFF = Not used in current season

M3.6

Y2: COOLING

Y2-Win: COOLING
Y2-Sum: COOLING

- Y2 -: PREHEAT = Preheating (only if B4 is configured)
HEATING = Heating
COOLING = Cooling
OFF = Not used in current season

19. OUTPUT Ys

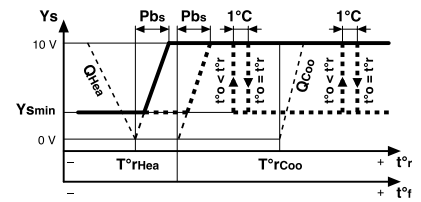
Output **Ys** with 0...10 V– control signal can be used for:

- AIR DAMPER TEMP. RECUPERATOR = Temp. comparison air damper control = Heat recuperator control

19.1 Air damper control through temperature comparison

Whenever actual outside temperature t^o exceeds the target T^rHea value, the controller starts the progressive opening of outside air through the PI feature.

Whenever actual outside temperature t^o exceeds the target T^rCoo value, and outside temperature t^o exceeds actual room temperature t^r , the controller shuts outside air through the On-Off control.



M2.7

**Ys-Control :
DAMP. TEMPERATURE**

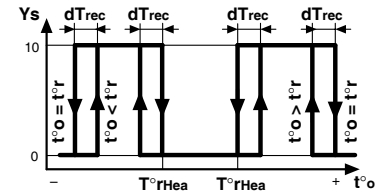
19.2 Heat recuperator control

The recuperator is off (Ys signal = 0 V–) when:

- The outside temperature value t^o is comprised between T^rhea and T^rCoo .

The recuperator is on (Ys signal = 10 V–) when:

- The outside temperature value t^o is lower than actual room temperature T^r and lower than the target T^rHea value.
- The outside temperature value t^o is higher than actual room temperature T^r and higher than the target T^rCoo value.



M2.7

**Ys-Control :
RECUPERATOR**

A signal converter is required to transform the 0...10V– signal into an On-Off control.

19.3 Minimum flow temperature limit

M2.7

In the case shown : **Ys-Control :
DAMP. TEMPERATURE**

When actual flow temperature t^f drops below the minimum flow value T^fmin the controller shuts off outside air with a modulating action.

M1.4

**Heating Flow
Min : 18c Max : 50c**

19.4 Minimum outside air

M2.7

In the case shown : **Ys-Control :
DAMP. TEMPERATURE**

The minimum amount of outside air required to ensure air circulation can be controlled in two different ways:

- directly through the controller display
- using a minimum air positioner **Rs** directly connected to the air damper actuator.

M1.9

**Ys-Outside air
Minimum : xxx%**

20. SEASON SWITCHING

The controller switches the action of output **Y1** and **Y2** depending on the choice: NO; WINTER; SUMMER; BY cs CONTROL; BY cs + c1 CONTROL; AUTOM. BASED ON OUTSIDE TEMP.; AUTOM. BASED ON SEASON;

M2.2

**Season Switching
NO**

- Without season switching :

- the action of output **Y** is according to setting in **Y..- :XXXXXXXX**
- output D-E1 can be used for Remote Control On-Off with D-E1 closed: outputs **Y1, Y2** controlling with D-E1 open: outputs **Y1, Y2** closing

M2.4.6

- Manual season switching through display:

M2.2

**Season Switching
WINTER**

Winter: – the action of output **Y1, Y2** is according to setting in

M2.4.6

**Y..-Win :XXXXXXXX
Y..-Sum :**

M2.2

**Season Switching
SUMMER**

Summer : – the action of output **Y1, Y2** is according to setting in

M2.4.6

**Y..-Win :
Y..-Sum:XXXXXXXX**

M3.2

**Season Switching
FR. CONTROL ss**

- Season switching according to position of season switch **cs** (D-E1-E2).

- with D-E1 closed and D-E2 open: action of output **Y1, Y2** on Winter
- with D-E1 open and D-E2 closed: action of output **Y1, Y2** on Summer

**Season Switching
FR. CONTROL ss+c1**

M3.2

**Season Switching
FR. OUTSIDE T.**

- Automatic season switching according to outside temp. (only if B2 is connected).

M2.15

When outside temp. remains lower than **OutWinter T. : 20c**
for a period exceeding **Delay : 24hrs**

The controller switches the action of output **Y** and season control **Ysc** to Winter

M2.16

When outside temp. remains lower than **OutSummer T. : 25c**
for a period exceeding **Delay : 4hrs**

The controller switches the action of output **Y** and season control **Ycs** to Summer

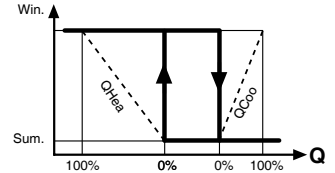
M3.2

**Season Switching
FR. ROOM T.**

- Automatic season switching according to room temp. (only if B3 is connected).

When Heating load value **Qhea** is higher than 0% and the Cooling load value **Qcoo** is 0%.

When Heating load value **Qhea** is 0% and the Cooling load value **Qcoo** is higher than 0%



M3.2

**Season Switching
FR. SEASONS**

- Automatic season switching according to season periods. In this case, the following conditions may occur:

M1.19

M1.20

- Successive season periods : **Winter Season Fr:15.10to:15.04** **Summer Season Fr:16.04to:14.10**

Result: no intermediate periods
From 15.10 to 15.04 = **Y1** and **Y2** control
From 16.04 to 14.10 = **Y1** and **Y2** control.

M1.19

M1.20

- Shortened season periods : **Winter Season Fr:15.10to:15.04** **Summer Season Fr:15.05to:15.09**

Result: intermediate periods with unit off
From 15.10 to 15.04 = **Y1** and **Y2** control
From 16.04 to 14.05 = **Y1** and **Y2** control in OFF
From 15.05 to 15.09 = **Y1** and **Y2** control
From 16.09 to 14.10 = **Y1** and **Y2** control IN OFF

M1.19

M1.20

- Overlapping season periods: **Winter Season Fr:01.09to:15.05** **Summer Season Fr:15.03to:01.11**

Result: overlapping periods according to outside temperature

From 02.11 to 14.03 : = **Y1** and **Y2** control
From 16.05 to 31.08 : = **Y1** and **Y2** control

From 15.03 to 15.05 and from 01.09 to 01.11 :

When outside temperature remains below temperature for a period exceeding: **OutSummer T. : 20c**
the controller switches **Y1** and **Y2** control **Delay : 24hrs**

M2.15

when outside temperature stays above Summer Outside Temp. for a period exceeding: **OutSummer T. : 25c**
the controller switches **Y1** and **Y2** control **Delay : 8hrs**

M2.16

21. PROGRAMS & PERIODS WITH DATES

XTU 614 can start and shut down the air handling sites using:
 - 25 24-hour programs
 - 5 7-day programs
 - 25 annual periods with dates

21.1 Assigning the program

M0.2
 Program
 DAILY 1

If Season Switching is not required ^{M3.2} Season Switching
NO the program is assigned on a single page

If Season Switching is enabled, the program is assigned on two separate pages, one for the Winter season and one for the Summer season.

M0.2 M0.4
Program Winter
DAILY 1 Program Summer
DAILY 1

21.2 24-hour programs

M1.1
 How many daily
 Programmes ? 1

Set the number of 24-hour programs to be used (1 to 25) in order to eliminate unused display pages.

In each 24-hour program (24hr 1 ... 24hr 25) you can enter up a maximum of 6 start times (h1 ... h6), assigning to each one of the following modes :

- ON : - output Y1 and Y2 active
- OFF : - output Y1 and Y2 closed or off (if On-Off type)

M1.2.7
 Daily 1hr1 6.00
 ON

Period start times must be entered in increasing order.
 Unused times (---) should be deleted by pressing the two + and - keys simultaneously.
 No unused times (---) should be left between programmed times.

21.3 7-day programs

M1.8
 How many weekly
 Programmes ? 1

Enter the number of 7-day programs to be used (1 to 5) in order to eliminate unused display pages.

M1.9
 Week 1 : MONDAY
 DAYLY 1

In each 7-day program you can assign to each day of the week one of the programs (24hr 1 ... 25); ON; or OFF.

21.4 Annual periods

M1.16
 How many annual
 periods ? 0

Each annual period, as defined by the period start and end dates, imposes an operating program that replaces the one currently in use.

At the end of each annual period, the controller restores the normal program.
 Enter the number of annual periods to be used, in order to eliminate unused display pages.

M1.17
 Prog. Period 1
 OFF

For each annual period, select the program to be used:
 - 7-DAY 1...4; 24-HOUR 1...25; ON; OFF

M1.18
 AnnP 1 Start NO
 Fr: --- -- to: --- --

Enter the data for each individual period:
 • Per. 01 = selection of available periods
 • Start : - NO = annual period not used
 - 00 = annual period used; start time midnight
 - 12 = annual period used; start time 12 o'clock noon
 • from - - . - - t o - - . - - = day and month start and end of the annual period

For one-day periods set the same date as start and end .
 To cancel annual period, press + and - keys simultaneously

21.5 Season periods

M1.19
 Winter Season
 Fr: --- -- to: --- --

Season periods define the winter and summer seasons.

Enter the day and month of start and end of the winter season.

31.19
 Summer Season
 Fr: --- -- to: --- --

Enter the day and month of start and end of the summer season.

To cancel periods, press + and - keys simultaneously
 For use of season periods, please see section 24. SEASON SWITCHING

21.6 Summer time

M1.21
 BST AUT
 Fr: 25.03 to: 27.10

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

22. M1, M2 PUMP CONTROLS

The controller controls **M1** pump output depending on control output **Y1** load, and **M2** pump output depending on control output **Y2** load:

- Pump on with load over 0%
- Pump off with load equal to 0 after delay time

M1.10

Delay	Off	M1 : x xm
Delay	Off	M2 : x xm

23. COMPLEMENTARY FUNCTIONS

23.1 Password

M2.12

Password choice
- - - -

Password selection and enabling. The command disables the use of keys + and -, so that data cannot be modified. Enter the number (1900... 1999) using the + and - keys. To delete password press + and - simultaneously until the dashes reappear.

M2.13

Password choice
- - - -

Password selection and enabling. The command disables the use of keys + and -, so that data cannot be modified. Enter the number (1900... 1999) using the + and - keys. To delete password press + and - simultaneously until the dashes reappear.

23.2 Site name

M2.13

Site Name
- - - - - - - -

Site name as it appears on the first display page. Each dash can be replaced with a letter (A...Z) or a number (0...9), using the + and - keys. The → key is used to position the cursor.

23.3 Display of values and operating data

The controller displays all values measured by the detectors as well as all data that help understand the system's operating status:

M0.1

Site - - - - - - - -
Room T. : 20.0c

- Actual room temperature (if **B3** is connected) or flow temperature (if only **B1** is connected).

M0.8

Calculated Flow
Cooling T. : 22.0c

- Calculated flow temperature based on Heating setting (if **B3** and **B1** are connected).

M0.9

Calculated Flow
Cooling T. : 35.0c

- Calculated flow temperature based on Cooling setting (if **B3** and **B1** are connected).

M0.10

Flow T. : 20.0c
Preheating : 15.0c

- Actual temperature measured by detector **B3** (only if **B3** and **B1** are connected).
- Actual Pre-heating temperature, only if **B4** is connected

M0.11

Outside T. : - 2.0c

- Actual outside temperature (only if **B2** is connected).

M0.12

Y1 - PREHEAT : 100%
Y2 - COOLING : 100%

- Output Y1 load value: Preheat. or Heat. or Cool.
- Output Y2 load value: Preheat. or Heat. or Cool.

M0.12

Ys - DAMP. TEM: 100%

- Output Ys load value: DampTemp. or Recuper.

23.4 Data recording

Every hour and with every mode change the controller stores a set of data indicating operating status:

- Current date and time, type of recording (new hour or mode change)
- Current mode: On or Off; current season: Winter or Summer.
- Controller desired and calculated values
- Values measured by the detectors connected
- Outputs Y1, Y2 load value.

The controller is able to store 32 complete recordings, and the latest recording causes the oldest to be deleted. If the display is not on page 1, the controller will perform the new hour recordings, but not the mode change recordings, as it assumes that changes are being made on adjustment data.

Recordings can only be viewed from the Telemanagement computer.

24. ALARMS

The controller processes two types of alarms:

- alarms related to functional irregularities affecting the controller and the controlled systems (LED 6.10)
- alarms related to short and open detector circuits (LED 6.8)

Alarms are signaled by LEDs located on the controller's front panel. On the display page alarms are identified by a letter "A" flashing alternately to the number corresponding to the relevant alarm.

Alarms can be transmitted to a local and/or a central telemanagement computer through the C-Bus connection.

24.1 Functional alarms

M2.10

Alarms Function.
- - - 8

Functional alarms occur when there is a continuing deviation between actual and desired measures. These alarms do not affect the controller's proper operation.

"By default" all alarms are disabled except clock alarm (8)

Use the + and – keys to enable desired alarms, entering numbers in place of the dashes.

Number flashing = the alarm is on

Alarm limit values and delays can only be changed via computer.

Types and reasons of alarms:

- 1** = flow temperature difference (if only B1 is connected)
 - for actual temp. lower than T^fHea when Y..: Heating
 - or higher than T^fCoo when Y..: Cooling
- 3** = room temperature difference (if B3 is connected)
 - for actual temp. lower than T^rHea when Y..: Heating
 - or higher than T^rCoo when Y..: Cooling
- 4** = preheating temperature difference (if B4 is connected and when Y..: Pre-heating)
 - for actual temp. lower than desired value
- 8** = internal clock cannot be disabled
 - when the clock assumes inconsistent values

24.2 Detector alarms

M2.11

Alarms Detector
- - - -

Detector alarms occur when there is a short circuit or open circuit affecting the connected detectors.

The effect of alarm situations is delayed by one minute.

"By default" all alarms are disabled.

Use the + and – keys to enable desired alarms, entering numbers in place of the dashes.

Types and effects of alarms:

- 1** = flow temp. detector (B1): valve stops where it is
- 2** = outside temp. detector (B2): valve stops where it is
- 3** = room temp. detector (B3): valve stops where it is
- 4** = preheating temp. detector (B4): valve stops where it is

25. SYSTEM STARTUP TEST

The test must be carried out once installation is completed and the wiring and configuration have been executed and checked.

M3.1

Output: Y1 MODUL.
Status: IDLE

Using the + and – keys, select:

- output to be tested:
 - Y1 MODUL. or Y1 2 STAGES or Y1 3 STAGES: depending on **M2.3** setting .
 - Y2 MODUL. or Y2 2 STAGES or Y2 3 STAGES: depending on **M2.5** setting .
 - PUMP M1 ;
 - PUMP M2 ;
 - Ys ;
- status :
 - with Y...MODUL. : IDLE ; CCLOSES ; OPEN
 - with Y.. 2 STAGES : ON 1 ; ON 1+2 ; OFF.
 - with Y.. 3 STAGES : ON 1 ; ON 2 ; ON 1+2 ; OFF.
 - with Ys : 0 VOLT ; 5 VOLT ; 10 VOLT.
 - with PUMP M1 and PUMP M2 : ON ; OFF.

Check results.

26. SEQUENCE OF DISPLAY PAGES (the data and functions are those set at factory)



← → Keys for scrolling the display pages and positioning the cursor ▣ on adjustable data on the pages.

The adjustable data, in the following descriptive tables of display pages are highlighted by

By pressing these keys together, or in any event after 15 minutes, the first page returns to the display

Site-----
Room T. :20.0c

⊖ ⊕ Keys forr : – adjusting the values highlighted by the cursor ▣

– displaying the configuration options of a function, e.g. : Season Switching
WINTER or Season Switching
SUMMER

– switch directly from one menu (block of pages) to another.

M0. NORMAL USE

Ref.	Display	Description	Notes	Sect.
M0.1	Site----- Room T. : 20.0c	Site name. Actual temperature	Set in M2.13 Room temp. : if B3 or B1 and B3 are connected Flow temp. : if only B1 is connected	22.2
M0.2	Current mode : ON Winter	Current mode : - ON; OFF. - ON Winter ; OFF Winter. - ON Summer ; OFF Summer.	Mode is determined by Season Switching (M2.2) and output D-E1-E2	15.5
M0.3	Heat T. Room Desir. : 20.0c±0.0 Heat T. Flow Desir. : 20.0c±0.0	Required heating temperature and adjustment through set point adjuster Rt° (only if configured)	Displayed if B3 or B1 and B3 are connected, and if M2.4 or M2.6 setting is HEATING Displayed only if B1 is connected, and if M2.4 or M2.6 setting is HEATING	15.1
M0.4	Flow Heat T. Compensat. : ±00.0	Compensation of heating flow temperature as calculated by the controller	Displayed if B1 and B2 are connected and B3 is not connected, and if M2.4 or M2.6 setting is HEATING	16.
M0.5	Cool. T. Room Desir. : 25.0c±0.0 Cool. T. Flow Desir. : 25.0c±0.0	Required cooling temperature and adjustment through set point adjuster Ht° (only if configured)	Displayed if B3 or B1 and B3 are connected, and if M2.4 or M2.6 setting is COOLING Displayed if only B1 is connected, and if M2.4 or M2.6 setting is COOLING	15.1
M0.6	Cool. T. Flow Compensat. : ±00.0 Cool. T. Flow Compensat. : ±00.0	Compensation of cooling temperature as calculated by the controller	Displayed if B2 and B3 or B1 , B2 and B3 are connected, and if M2.4 or M2.6 setting is COOLING Displayed if B2 with B1 only is connected, and if M2.4 or M2.6 setting is COOLING	16.
M0.7	Preheating T. Desir. : 18.0c	Desired Preheating temperature	Displayed if B4 is connected, and if M2.4 or M2.6 setting is PREHEATING	17.
M0.8	Calculated Flow Heating T. : 22.0c	Calculated flow temperature based on Heating control	Displayed if B1 and B3 are connected, and if M2.4 or M2.6 setting is HEATING	22.3
M0.9	Calculated Flow Cooling T. : 35.0c	Calculated flow temperature based on Cooling control	Displayed if B1 and B3 are connected, and if M2.4 or M2.6 setting is COOLING	22.3
M0.10	Flow T. : 22.0c Preheat T. : 15.0c	Actual flow temp. as measured by B1 Preheating temp. as measured by B4	Flow T.: Displayed if B1 and B3 are connected Preheat. T.: Displayed if B4 is connected	22.3
M0.11	Outside T. : - 2.0c	Outside temp. as measured by B2	Outside t.: Displayed if B2 is connected	22.3
M0.12	Y1-Heating. : 100% Y2-Cooling. : 100%	Value of load assigned to output Y1 Value of load assigned to output Y2	Y1 - Y2 : PREHEAT; HEATING; COOLING; OFF	22.3
M0.13	Ys -DAMP. TEM: 100%	Value of load assigned to output Ys	Ys : DAMP.TEM.; RECUPERATOR	22.3
M0.14	12.18 MONDAY 10.03.00 GMT	Setting: time of day, day of week and date Current time: GMT, BST	For data recording only. Dates for BST (daylight saving time) to be set in M0.15	
M0.15	Summer Time Fr: 26.03 to: 28.10	BST (daylight saving time) start and end dates	For data recording only.	
M0.16	XTA 624 Vers.xx	Controller ID data		

M1. TIME SETTINGS AND PERIODS				
Ref.	Display	Description	Notes	Sect.
M1.1	How many daily programmes ? 1	Selection of amount of 24-hour programs to be used (1...25)	Eliminates unused display pages	25.2
M1.2	Daily 1hr1 6.00 ON	Program number, time setting number, and programmed period starting time.	Max. 6 periods. To eliminate an unused period press + and - simultaneously, display will show - - - - Time settings must be in increasing order. No - - - - should be left among programmed time settings. Modes set are winter modes.	25.2
M1.7	Daily 1hr6 22.00 OFF	Selection of type of mode to be assigned to the period: ON; OFF. Other 6-page groups according to data in M1.1		
M1.8	How many weekly Programmes ? 0	Selection of amount of 7-day programs to be used (0...5)	Eliminates unused display pages	25.3
M1.9	Week. 1: MONDAY DAILY 1	Winter program selection for the entire year period 1 : 7-DAY 1...5; 24-HOUR 1...25; ON; OFF		25.3
M1.15	Week. 1: SUNDAY DAILY 1			
M1.16	How many annual periods ? 0	Selection of amount of year period programs to be used (0...25).	Eliminates unused display pages	25.4
M1.17	Progr. Period 1 OFF	Program selection for the entire year period 1: 7-DAY 1...5; 24-HOUR 1...25; ON; OFF Other 6-page groups according to data in M1.16	Displayed only if more than 0 in M1.16	25.4
M1.18	AnnP 01 start NO Fr: - - - - to: - - - -	NO=period not used; 00=starting time midnight; 12=starting time 12 o'clock noon; Year period start and end date Other pages according to selection in M1.16	Displayed only if more than 0 in M1.16	25.4
M1.19	Winter Season Fr: 15.10 to: 15.04	Winter season start and end dates		25.5
M1.20	Summer Season Fr: 15.06 to: 15.09	Summer season start and end dates		25.5
M1.21	BST AUT Fr: 25.03 to: 27.10	Dates of start and end of BST period.		25.6

M2. ADJUSTMENT				
Ref.	Display	Description	Notes	Sect.
M2.1	Temper. Room Prop. Band: ± 2.0c Temper. Flow Prop. Band: ±10.0c	Heating proportional band in ± °C. If B3 or B1 and B3 are connected If only B1 is connected	Based on this value the controller derives other functions' proportional bands using the multipliers set in the EQUIPMENT CONFIGURATION menu	15.2
M2.2	Temper. Room Integ. Time: 10m Flow Temperature Integ. Time : 10m	Heating and cooling integral time, in minutes	Displayed if B3 or B1 and B3 are connected Displayed if only B1 is connected	15.2
M2.3	Flow Temperature Integ. Time: 10m	Heating and cooling flow temperature integral time.	Displayed if B1 and B3 are connected	15.2
M2.4	Heating Flow Min: 18c Max: 50c	Heating flow temp. limits Field of room heating Pb.	Displayed if B1 and B3 are connected, and if M2.4 or M2.6 setting is HEATING	15.4
M2.5	Cooling Flow Min: 8c Max: 25c	Cooling flow temp. limits Field of room cooling Pb.	Displayed if B1 and B3 are connected, and if M2.4 or M2.6 setting is COOLING	15.4
M2.6	Heating Comp.: NO Opt: -10c Fpt: 50c	Climatic variation of winter flow temp. Opt=Outside project temp. Fpt =flow project temp.	Displayed if B1 and B2 are connected and B3 is not connected, and if M2.4 or M2.6 setting is HEATING.	16.1
M2.7	Cooling Comp.: NO Opt: +35c Fpt: 10c	Climatic variation of summer flow temp. Opt=Outside project temp. Fpt=flow project temp.	Displayed if B1 and B2 are connected and B3 is not connected, and if M2.4 or M2.6 setting is COOLING	16.1
M2.8	Summer Comp.: NO Differ. O.T - R.T.: 6c	Summer compensation : NO ; YES. Differ. O.T - R.T. = maximum allowed difference between summer outside temp. and desired temp., above which desired temp. is increased by 1°C for each °C increase in outside temp.	Displayed if B2 and B3 or B1, B2 and B3 are connected, and if M2.4 or M2.6 setting is COOLING	16.2
M2.9	Ys-Outside Air Minimum : 0%	Outside air damper opening minimum percentage	Displayed only if M2.12 setting is DAMP. TEMPERATURE	19.4
M2.15	OutWinter T.: 20c Delay : 24hrs	Outside temp. for winter switching. Period during which outside temp. must remain lower than the set value before switching to Winter	Displayed if M3.2 setting is FR.OUTSIDE T.	24.
M2.16	OutSummer T.: 25c Delay : 4hrs	Outside temp. for summer switching. Period during which outside temp. must remain higher than the set value before switching to Summer	Displayed if M3.2 setting is FR.OUTSIDE T.	24.
M2.10	Delay Off M1: 20m Delay Off M2: 20m	Delay time to M1 and M2 pump switch off		21.

M3. EQUIPMENT CONFIGURATION				
Ref.	Display	Description	Notes	Sect.
M3.1	Detectors Layout - - - - -	Configuration of connected detectors (outputs B-M) - = detector not connected; number = detector connected. Default config.: no detectors connected	1 : Flow temp. detector B1 . 2 : Outside temp. detector B2 . 3 : Room or extract air temp. detector B3 . 4 : Preheating or dew point temp. detector B4 . 5 : Temperature set point adjuster Rt° .	14.
M3.2	Season Switching NO	Commutazione stagionale : NO ; WINTER ; SUMMER; FR ss CONTROL ;		20.
M3.3	Y1 : MODULATING Run time :120s	Output Y1 : MODULATING ; 2 STAGES ; 3 STAGES ; actuator stroke time in seconds	Stroke time: displayed only if MODULATING	18.
M3.4	Y1 : HEATING Y1 -Win : HEATING Y1 -Sum : HEATING	Output Y1 action. Displayed if M2.2 setting is NO Output Y1 action in season periods. Displayed if M2.2 setting is NO	Select action: PREHEAT; HEATING; COOLING; OFF	18.
M3.5	Y2 : MODULATING Run time :120s	Output Y2 : MODULATING ; 2 STAGES ; 3 STAGES ; actuator stroke time in seconds	Stroke time: displayed only if MODULATING	18.
M3.6	Y2 : COOLING Y2 -Win : COOLING Y2 -Sum : COOLING	Output Y2 action. Displayed if M2.2 setting is NO Output Y2 action in season periods. Displayed if M2.2 setting is NO	Output Y2 action. PREHEAT; HEATING; COOLING; OFF	18.
M3.7	Ys -Control : DAMP. TEMP.	Select Ys action: DAMP.TEM.; RECUPER	.	19.
M3.8	Send Alarms : NO PassWTeleman : NO	Alarm transmission enabled. Telemangement password enabled	Required only if connected through C-Bus	10.4
M3.9	Address : --- Group : -	Equipment Web address Equipment group	Required only if connected through C-Bus	10.3
M3.10	Alarm Functions - - - 8	Functional alarms enabled. Default config.: Only alarm 8 enabled (cannot be disabled)	1 : flow temperature difference B1 3 : room temperature difference B3 4 : preheating temperature difference B4 8 : internal clock alarm	23.1
M3.11	Alarms Detector - - - -	Detector alarms enabled. Default config.: all disabled	1 : flow temp. detector B1 malfunction 2 : outside temp. detector B2 malfunction. 3 : room temp. detector B3 malfunction 4 : preheating detector B4 .	23.2
M3.12	CBUS speed 1200 bps	The speed of the communication bus (C-Bus) can be chosen from: 1200, 2400, 4800, 9600 bouds.		
M3.13	Password choice - - - -	Select password to disable + and - keys: 1901 ... 1999	To delete key press + and - simultaneously	22.1
M3.14	Site Name - - - - - - - -	Set site name	Use + and - to enter letters or numbers Use ← and → to change positions	22.2
	TECHNICAL PAGES PRESS + KEY			
M3.15	Pb Flow = Pb Room x5.0	Multiplier to obtain Pbs of cooling temp. from heating Pbs.	Displayed if B1 and B3 are connected	15.2
M3.16	Pb Cooling = Pc Heating x0.5	Multiplier to obtain Pbs of cooling temp. from heating Pbs.	Displayed if either output has been assigned the function COOLING	15.2
M3.17	Pb Preheating = Pb HeatFlow x1.0	Multiplier to obtain Pb of Preheating temp. from heating flow Pb.	Displayed if either output has been assigned the function PREHEATING	15.2
M3.18	Pb Dampers = Pb HeatFlow x1.0 dT Recuperator = Pb HeatFlow x1.0	Multiplier to obtain Pb of Air Damper Control from room heating Pb. Multiplier to obtain Pb of recuperator Control from room heating Pb.	Displayed if B2 and B3 are connected, and if M2.7 setting is DAMP.TEMPERATURE Displayed if B2 and B3 are connected, and if M2.7 setting is RECUPERATOR	15.2

M4. TESTING				
Ref.	Display	Description	Notes	Sect
M4.1	<div style="border: 1px solid black; padding: 2px;"> Output : Y1 MODUL. Status : IDLE </div>	Select outputs to be tested Select output status	Output selection: Y1 MODUL. or Y1 2 STAGES or Y1 3 STAGES ; Y2 MODUL. or Y2 2 STAGES or Y2 3 STAGES ; PUMP M1 ; PUMP M2 ; Ys ; Status selection : with Y... MODUL.: STOPS; OPENS; CLOSES with Y... 2 STAGES: ON 1; ON 1+2; OFF with Y...3 -STAGE: ON 1; ON 2; ON 1+2; OFF with M1 PUMP AND M2 PUMP ON; OFF with Ys: 0 VOLT; 5 VOLT; 10 VOLT	24.

Amendments to data sheet

Data	Revision No.	Page	Section	Amendment description	Firmware version	Software version
01.09.09 VM	01	All 14 20 19	All 21. Programs & periods ... M3. Equipment configuration M1. Time setting & period	Change to version C1 New section Added C-Bus speed display Added menu	01	> 0.99.2650
22.11.10 VM	02	3	8. Wiring	Wiring procedure modified	01	> 0.99.2650

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