D 216
08.07.02 LB

TEMPERATURE CONTROLLER WITH TIMED PROGRAMMING

C ◄RING

RTR 628 Eng.

- **1 PI temperature controller with 3-wire modulating control or On-Off in 1 or 2 stages**
- **2 temperature controllers or timed On-Off controls**
- **Independent timed programs for the 3 controllers**
- **Communication systems:**
  – **C-Ring** for data communication between local controllers
- **Power supply 230 V~ , DIN rail mounting**

CE

1. APPLICATION

RTR 628 controller is designed for fixed point temperature control in plants for:
- – DHW production
- – heating swimming pools
- – underfloor heating
- – heating horticultural beds
- – fan coil heating

2. FUNCTIONS

The principal functions of RTR 628 are :
- 1temperature control at fixed point (Y1) with :
  - – temperature monitoring by one or two detectors (0…99 °C);
  - – PI three-wire modulating control or On-Off PI or differential control in 1 or 2 stages;
- 2 temperature controls or timed controls (M1 - M2) with :
  - – measurement of temperature by one detector (0…99°C)
  - – On-Off control PI or differential in one stage;
- Complementary functions for the three controllers :
  - – Anticondensing (detector on another controller connected in C-Ring);
  - – Priority (only if connected in C-Ring);
  - – Antibacteria ;
- Independent timed programss for each of the three controllers:
  - – 25 annual periods with the same dates at the three outputs with separate choice of programming ;
  - – 7 7day programs ;
- 25 annual periods with the same dates at the three outputs with separate choice of programming ;
- Automatic switching British Summer Time (BST) /Greenwich Mean Time (GMT.
- 1 On-Off input for changing program of Y1 controller ;
- 2 On-Off inputs for changing programs of M1 and M2 controllers ;
- Alarms for controller fault and for short or open detector circuits.
- C-Ring connection for local transmission data among other controllers.

3. DETECTORS & REMOTE CONTROLS

No.	Description	Type	Sensing element	Code	Data sheet
	For controller Y1 (essential):				
1	Temp. detector immersion type Normal (0…99°C)	**SIH 010**	NTC 10 kΩ	B1	–
	or immersion type Rapid (0…99 °C)	**SIR 010**	NTC 10 kΩ	B1	–
	or room(0…40 °C)	**SAB 010**	NTC 10 kΩ	B1	–
	or room with set-point adjuster (0…40 °C)	**SCB 110**	NTC 10 kΩ	B1 + Rt°	–
	For controller Y1 (optional):				
1	**Flow temp. detector**	**SIH 010**	NTC 10 kΩ	B2	–
1	Temperature set-point adjuster	**CDB 100**	–	Rt°	–
	For controllers M1 and/or M2:				
1 or 2	**Temp. detector.immersion (0…99 °C)**	**SIH 010**	NTC 10 kΩ	B5 - B6	–
	or room (0…40 °C)	**SAB 010**	NTC 10 kΩ	B5 - B6	–

4. TECNICAL DATA (factory settings in bold type)

• Electrical

Power supply	230 V ~ ± 10%
Frequency	50…60 Hz
Consumtion	5 VA
Protection	IP40
Radio disturbances	VDE0875/0871
Vibration test	with 2g(DIN 40 046)
Voltage-free output contacts:	
Maximum switched voltage	250 V ~
Maximum switched current	5 (1) A
Construction standards	Italian Electrotech. Committee (CEI)
Data storage in memory	5 years

• Mechanical

Case	DIN 6E module
Mountig	on DIN 35 rail
Materials:	
Base	NYLON
Cover	ABS
Ambient temperature:	
operating	0…45 °C
Storage	– 25…+ 60 °C
Ambient humidity	Class F DIN 40040
Dimensions	105 x 115 x 71.5
Weight	0.6 kg

• Measuremets

Range	0…99 °C
Resolution	0.1 °C

• Setting ranges

Desired temperature	1…99 °C
Increase desired T on plants T	0…40 °C
Set-point temperature adjuster (Rt°)	± 5 °C or ± 10 °C
Minimum flow temp (B2)	**1**…99 °C
Maximum flow temp. (B2)	1…**99** °C

• Programs

24hour programs	**1**…25
24hour Events	**2**…6
7day programs	**0**…7
Annual periods	**0**…25

• Control setting Y1

Type of control :	**– MODULATING**
	– 1 STAGE On - Off P.I.
	– 2 STAGE On - Off P.I.
	– 1 STAGE On - Off DIFFER.
	– 2 STAGE On - Off DIFFER.
Actuator run time	**30…60**…3.600 s
Proportional Band	0.5…**10**…99 °C
Integral time	0…**300**…3,600 s
On-Off differential	0.5…**10**…99 °C
Minimum On time	**0**…990 s
Minimum Off time	**0…990 s**

• Control min. and max. limits:

range :	**– TEMPERATURE**
– CALCULATED OUTPUT	
temperature hysteresis	1 °C
calculated output hysteresis	2 %

• Setting controllers M1 - M2

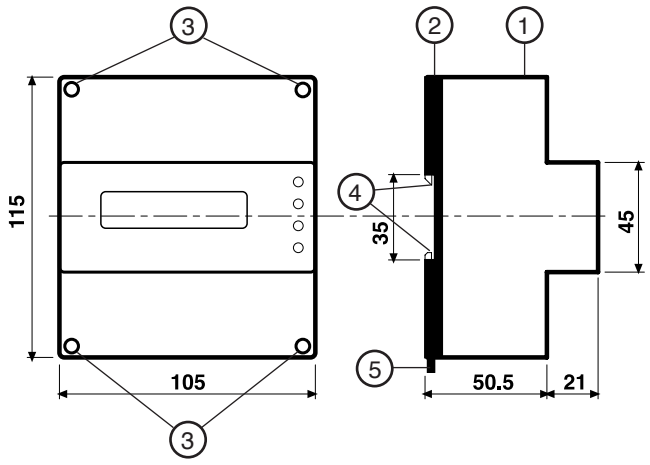
Control :	**– On - Off DIFFER.**
	– On - Off PI
	– timed On - Off (without detector)
Proportional band	0.5…**10**…99 °C
Integral time	0…**300**…3,600 s
On-Off differential	0.5…**10**…99 °C
Minimum On time	**0**…990 s
Minimum Off time	**0**…990 s
Delay in switching Off	**0**…990 s

• Antibacteria function

Temperature	0…**70**…99 °C
Duration	10…**90**…360 min.

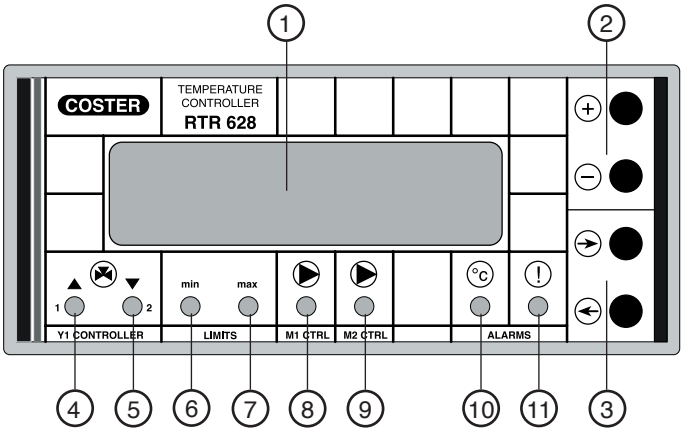
In the presence of electrical disturbances the output controls of the controller may change status but this will return to normal automatically.

5. OVERALL DIMENSIONS



1 – Protective cover for electronic components
2 – Base with transformer, relay and terminal blocks
3 – Screws for securing base and cover
4 – DIN rail securing elements
5 – DIN rail release lever

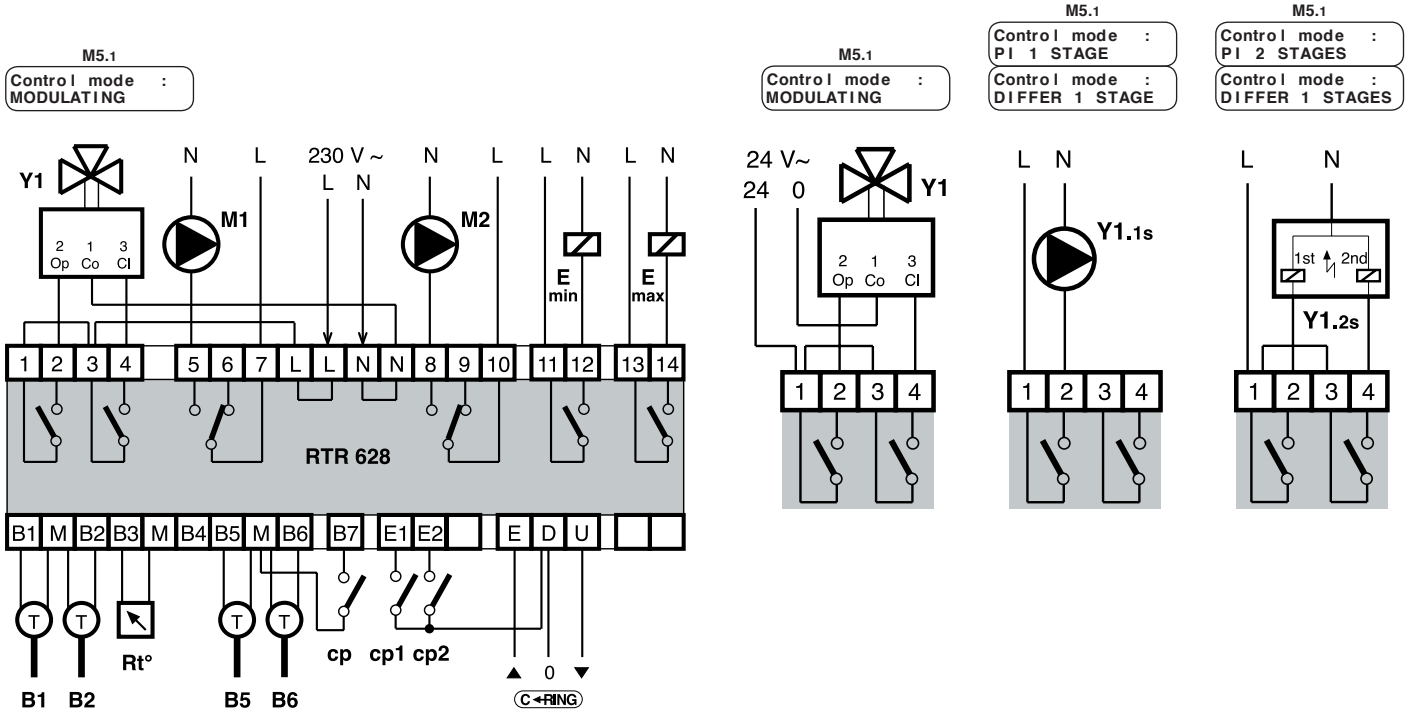
6. FRONT PANEL



1 – Two-line alphanumeric display
2 – Tasti operativi + and – keys
3 – Page scrolling ← and → keys LEDs
4 – Valve opens or 1st stage controller Y1
5 – Valve closes or 2nd stage controller Y1
6 – Minimum limit Y1 controller
7 – Maximum limit Y1 controller
8 – On-Off control M1 controller
9 – On-Off control M2 controller
10 – SFault detectors & internal clock
11 – Fault microprocessor

We reserve the right to make changes without notice

7. WIRING DIAGRAMS



B1 – Temp. detector primary controller Y1 (0…99 °C)
B2 – Flow temp. detector controller Y1 (0…99 °C) (only with B1)
B5 – Temp. detector On-Off controller M1(0…99 *C)
B6 – Temp. detector On-Off controller M2(0…99 *C)
cp – Change program switch controller Y1
cp1 – Change program switch controller M1
cp2 – Change program switch controller M2

E_{min} – Minimum limit control controller Y1
E_{max} – Maximum limit control controller Y1
M1 – On-Off control M1
M2 – On-Of control M2
Y1 – 3-wire modulating control controller 1
$Y1_{.1s}$ – On-Off control in 1 stage controller 1
$Y1_{.2s}$ – On-Off control in 2 stages controller 1
Rt° – Temperature set-point adjuster controller Y1

8. SITING CONTROLLER

The controller must be installed in a dry location that meets the ambiental limits given under TECHNICAL DATA.
If installed in spaces classified as “Hazardous” it must be mounted in a cabinet for electrical appliances constructed according to the regulations in force for the type of danger concerned.
The controller can be mounted on a DIN rail and installed in a standard DIN enclosure.

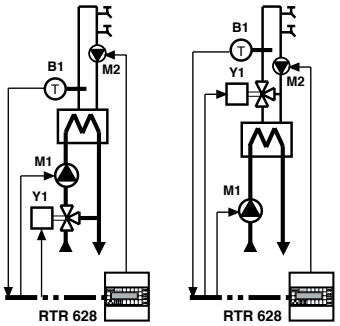
9. SITING CONTROLLER

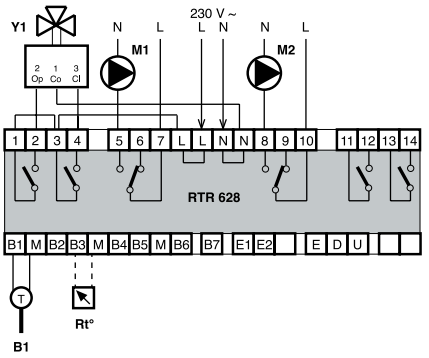
Procedere come segue :
• Separate base from cover
• Mount the base on the DIN rail and check that it is firmly anchored by the securing elements (5.4)
• Carry out the wiring according to the diagram in compliance with the applicable regulations and using :
– 1.5 mm^2 cables for power supply and relay control outputs
– 1 mm^2 for the detectors and remote control.
– 1 mm^2 for C-Bus. For length limits see data sheet T 021 and T 022.
• Apply power (230 V~) and check its presence across terminals L and N.
• Remove power, replace cover on base/terminal block and secure it with the four screws supplied (5.3).

You are advised not to insert more than two cables in a single terminal of the controller and, if necessary, to use an external junction box.

10. EXAMPLES OF INSTALLATIONS

10.1 Plant for production of DHW with rapid heat exchanger:
– Control of DHW temp. (B1) by control valve (Y1), primary pump (M1) and DHW recycling pump (M2)

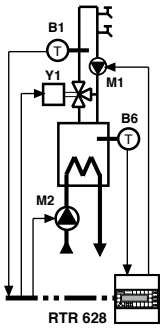


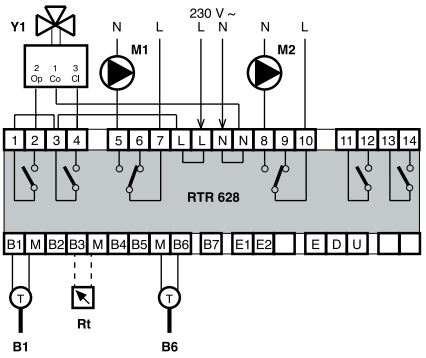


B1 – DHW temp.detector
M1 – Primary circuit pump
M2 – DHW recycling pump
Y1 – DHW control valve
Rt° – DHW temperature set-point adjuster (optional)

Config RTR 628	Setting Y1 Control	Setting M1 Control	Setting M2 Control	Normal use
M8.1 Config detectors 1 – 3 – –	M5.1 Type of control FIXED POINT	M6.1 Control mode : ON-OFF TIMED	M7.1 Control mode : ON-OFF TIMED	M0.2 Y1 : DHW XXXXXXXXX
	M5.2 Control mode : MODULATING			M0.8 M1 :Primary DHW As Y1 Controler
	M5.3 Prop Band run time xxs			M0.10 M2 :Ricycle DHW As Y1 Controller
	M5.4 Prop Band ±20.0c Integ Time 60s			

10.2 Plant for production of DHW with storage heat exchanger:
– Control of DHW temp. (B1) by control valve (Y1) and distribution circuit pump (M1).
– Control of storage temp. (B6) by On-Off differential control storage pump (M2).



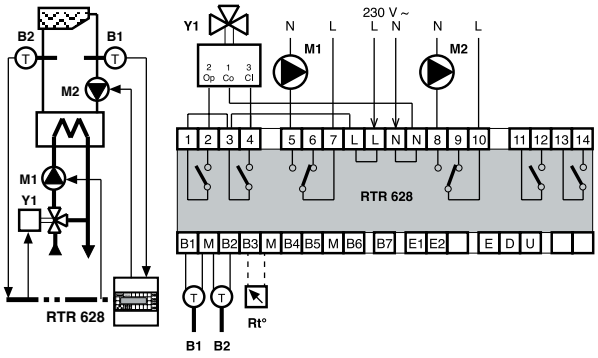


B1 – DHW temp.detector
B6 – Storage temp. detector
M1 – DHW recycle pump
Y1 – DHW control valve
M2 – Primary circuit pump
Rt° – DHW temperature set-point adjuster (optional)

Config RTR 628	Setting Y1 Control	Setting M1 Control	Setting M2 Control	Normal use
M8.1 Config detectors 1 – 3 – 6	M5.1 Type of control FIXED POINT	M6.1 Control mode : ON-OFF TIMED	M7.1 Control mode : ON-OFF DIFFER	M0.2 Y1 : DHW XXXXXXXXX
	M5.2 Control mode : MODULATING		M7.2 Different 5.0c	M0.8 M1 :Ricycle DHW As Y1 Controller
	M5.3 Valve actuator run time xx			M0.10 M2:Contr storage XXXXXXXXX
	M5.4 Prop Band ±20.0c Integ Time 60s			

We reserve the right to make changes without notice

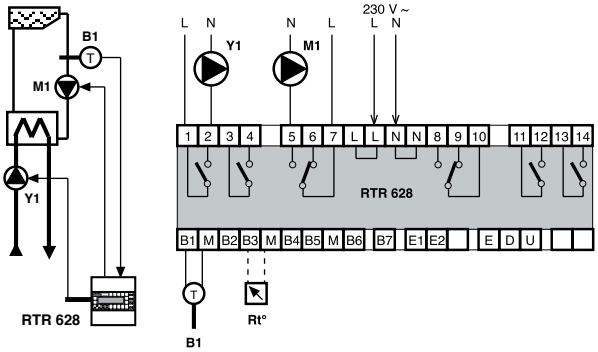
10.3 Swimming pool water heating plant:
– Control swimming pool water temp. (B1) and maximum flow limit (B2) by control valve (Y1) and primary pump (M1).
– Timed control swimming pool pump M2.



B1 – Swimming pool water temp. detector
B2 – Swimming pool water flow temp. detector
M1 – Primary pump
M2 – Swimming pool pump
Y – Primary control valve
Rt° – Swimming pool water temp. set-point adjuster (optional)

Config RTR 628	SettingY1 control	Setting M1 control	Normal use
M8.1	M5.1	M6.1	M0.2
Config detectors 1 2 3 – –	Type of control FIXED POINT	Control mode : ON-OFF TIMED	Y1 : Swimpool XXXXXXXXX
	M5.2		M0.8
	Control mode : MODULATING	SettingM2 control	M1 :Pool primary As Y1 Controller
	M5.3	M7.1	M0.10
	Valve actuator run time xxs	Control mode : ON-OFF TIMED	M2 :Swimpool pump XXXXXXXXX
	M5.4		
	Prop Band ± 2.0c Integ Time 3600s		
	M5.5		
	Flow PB ±10.0c Flow IT 60s		
	M5.6		
	Flow temperature Min: 1c Max:40c		

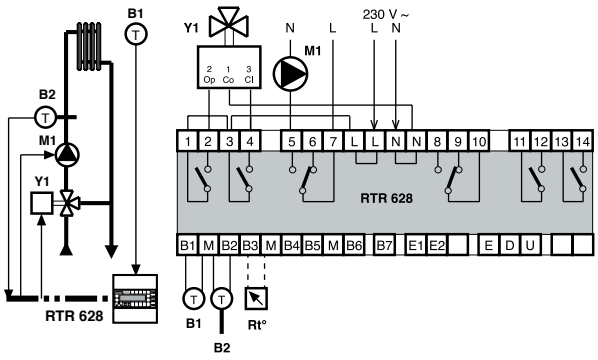
10.4 Swimming pool water heating plant:
– Control swimming pool water temp. (B1) by control primary circuit pump (Y1).
– Timed control swimming pool pump M2.



B1 – Swimming pool water temp. detector
Y1 – Primary pump
M1 – Swimming pool pump
Rt° – Swimming pool water temp. set-point adjuster (optional)

Config RTR 628	SettingY1 control	Setting M1 control	Normal use
M8.1	M5.1	M6.1	M0.2
Config detectors 1 – 3 – –	Type of control FIXED POINT	Control mode : ON-OFF TIMED	Y1:Pool primary XXXXXXXXX
	M5.2		M0.8
	Control : PI 1 STAGE		M1 :Pool pump XXXXXXXXX
	M5.3		
	Prop Band ± 2.0c Integ Time 3600s		

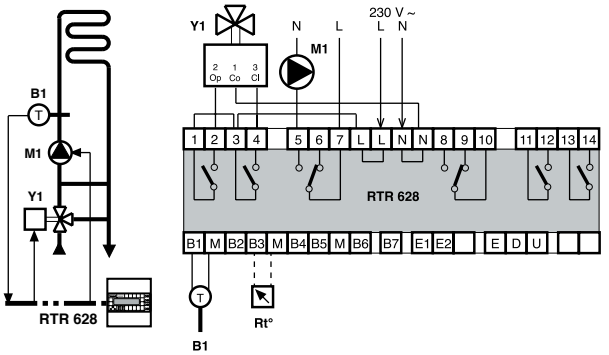
10.5 Heating plant with radiators:
– Control room temp. (B1) and flow limit (B2) by control valve (Y1) and pump (M1)



B1 – Room temp. detector
B2 – Flow temp. detector
M1 – Radiators pump
Y1 – Control valve
Rt° – Room temp. set-point adjuster (optional)

Config RTR 628	SettingY1 control	SettingM1control	Normal use
M8.1	M5.1	M6.1	M0.2
Config detectors 1 2 3 – – –	Type of control FIXED POINT	Control mode : ON-OFF TIMED	Y1 : Radiators XXXXXXXXX
	M5.2		M0.8
	Control mode : MODULATING		M1 : Pump As Y1 Controller
	M5.3		
	Valve actuator run time xxs		
	M5.4		
	Prop Band ± 2.0c Integ Time 1200s		
	M5.5		
	PB Flow ±10.0c IT Flow 60s		
	M5.6		
	Flow temp Min: 1c Max:80c		

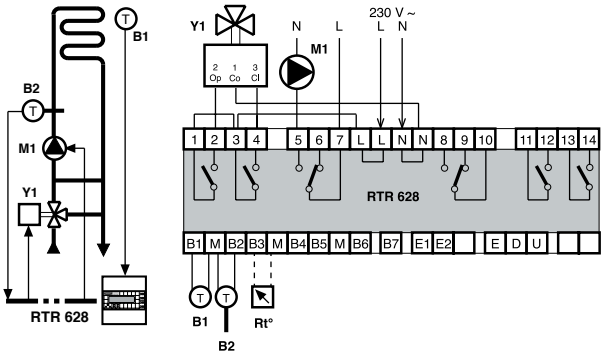
10.6 Heating plant with underfloor panels
– Control flow temp. (B1) by control valve (Y1) and pump (M1)



Config RTR 628	Setting Y1 control	Setting M1 control	Normal use
M8.1	M5.1	M6.1	M0.2
Config detectors 1 – 3 – –	Type of control FIXED POINT	Control mode : ON-OFF TIMED	Y1 : Panels XXXXXXXXX
	M5.2		M0.8
	Control mode : MODULATING		M1 : Pump As Y1 Controller
	M5.3		
	Valve actuator run time xxs		
	M5.4		
	Prop Band ±10.0c Integ Time 60s		

B1 – Flow temp. detector
M1 – Panels pump
Y1 – Control valve
Rt° – Set-point adjuster (optional)

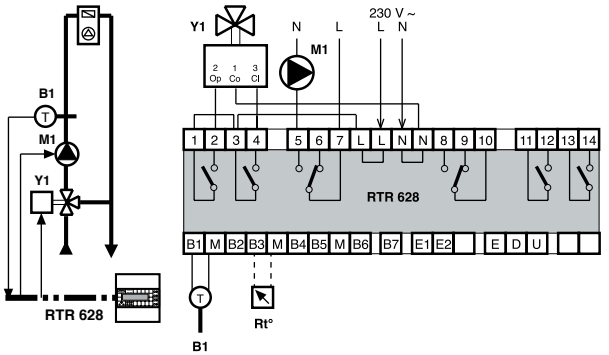
10.7 Heating plant with underfloor panels:
– Control room temp. (B1) and flow limit (B2) by control valve (Y1) and pump (M1)



Config RTR 628	Setting Y1 control	Setting M1 control	Normal use
M8.1	M5.1	M6.1	M0.2
Config detectors 1 2 3 – –	Type of control FIXED POINT	Control mode : ON-OFF TIMED	Y1 : Panelis XXXXXXXXX
	M5.2		M0.8
	Control mode : MODULATING		M1 : Pump As Y1 Controller
	M5.3		
	Valve actuator run time xxs		
	M5.4		
	Prop Band.± 2.0c Integ Time 1800s		
	M5.5		
	PB Flow ±10.0c IT Flow 60s		
	M5.6		
	Flow Temp Min: 1c Max:40c		

B1 – Room temp. detector
B2 – Flow temp. detector
M1 – Panels pump
Y1 – Control valve
Rt° – Temp. set-point adjuster (optional)

10.8 Fan coil heating plant :
– Control flow temp. (B1) by control valve (Y1) and pump (M1)

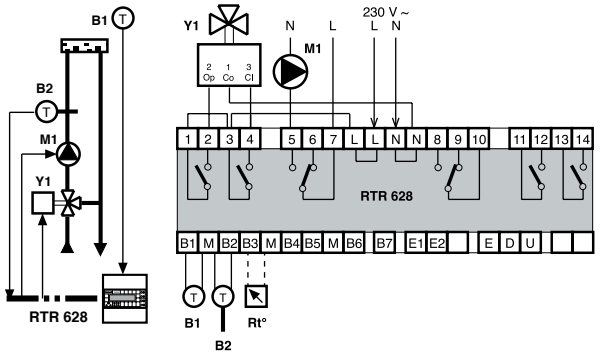


Config RTR 628	Setting Y1 control	Setting M1 control	Normal use
M8.1	M5.1	M6.1	M0.2
Config detectors 1 – 3 – –	Type of control FIXED POINT	Control mode : ON-OFF TIMED	Y1 : Fan-Coil XXXXXXXXX
	M5.2		M0.8
	Control mode : MODULATING		M1 : Poump As Y1 Controller
	M5.3		
	Valve actuator run time xxs		
	M5.4		
	PB Flow ±10.0c Integ Time 60s		

B1 – Flow temp. detector
M1 – Pump
Y1 – Control valve
Rt° – Temp. set-point adjuster (optional)

We reserve the right to make changes without notice

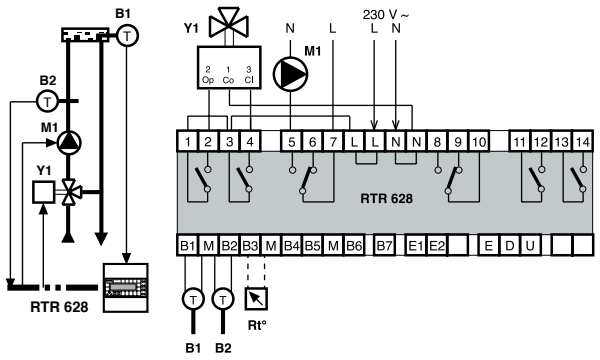
10.9 Heating plant for horticultural beds:
– Control room temp. (B1) and flow limit (B2) by control valve (Y1) and pump (M1)



B1 – Room temp. detector
B2 – Flow temp. detector
M1 – Pump
Y1 – Control valve
Rt° – Temp. set-point adjuster (optional)

Config RTR 628	Setting Y1 control	Setting M1 control	Normal use
M8.1	M5.1	M6.1	M0.2
Config detectors 1 2 3 – –	Type of control FIXED POINT	Control mode : ON-OFF TIMED	Y1:Horticul beds XXXXXXXXX
	M5.2		M0.8
	Control mode : MODULATING		M1 : Pump As Y1 Controller
	M5.3		
	Valve actuator run time xxs		
	M5.4		
	Prop Band ± 2.0c Integ Time 1800s		
	M5.5		
	PB Flow ±10.0c IT Flow 60s		
	M5.6		
	Flow temp Min: 1c Max:40c		

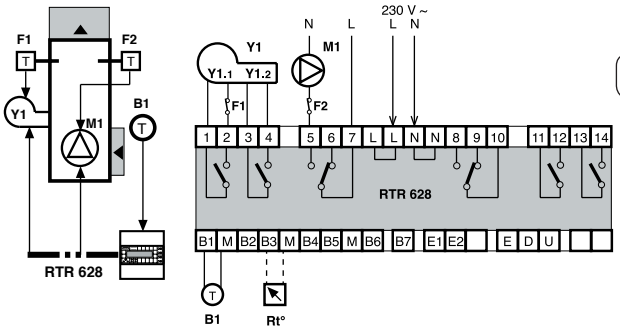
10.10 Heating plant for horticultural beds:
– Control soil temp. (B1) and flow limit (B2) by control valve (Y1) and pump (M1)



B1 – Soil temp. detector
B2 – Flow temp. detector
M1 – Pump
Y1 – Control valve
Rt° – Temp.set-point adjuster (optional)

Config RTR 628	Setting Y1 control	Setting M1 control	Normal use
M8.1	M5.1	M6.1	M0.2
Config detectors 1 2 3 – –	Type of control FIXED POINT	Control mode : ON-OFF TIMED	Y1:Horticul beds XXXXXXXXX
	M5.2		M0.8
	Control mode : MODULATING		M1 : Pump As Y1 Controller
	M5.3		
	Valve actuator run time xxs		
	M5.4		
	Prop Band ± 2.0c Integ Time.1200s		
	M5.5		
	PB Flow ± 10.0c IT Flow 60s		
	M5.6		
	Flow temp Min: 1c Max:40c		

10.11 Heating plant with hot air generator :
– Control room temp. (B1) by control two-stage burner (Y1) and fan (M1)



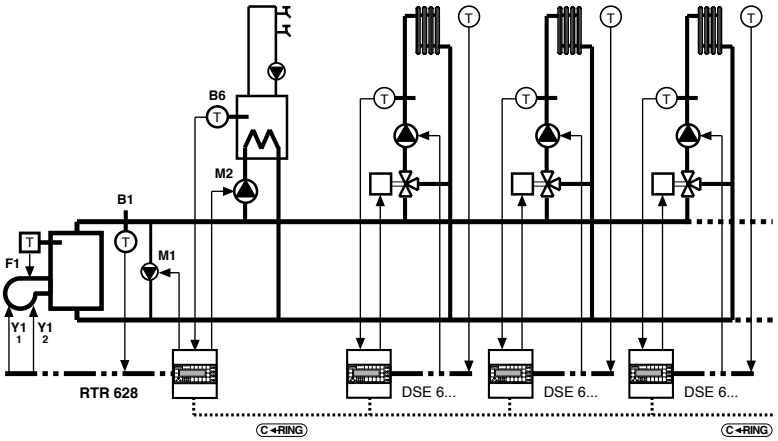
Config RTR 628	Setting Y1 control	Setting M1 control	Normal use
M8.1	M5.1	M6.1	M0.2
Config detectors 1 – 3 – –	Type of control FIXED POINT	Control mode : ON-OFF TIMED	Y1 : Room XXXXXXXXX
	M5.2		M0.8
	Control mode : PI 2 STAGES		M1 :Fan As Y1 Controller
	M5.4		
	Prop Band ± 2.0c Integ Time 1200s		

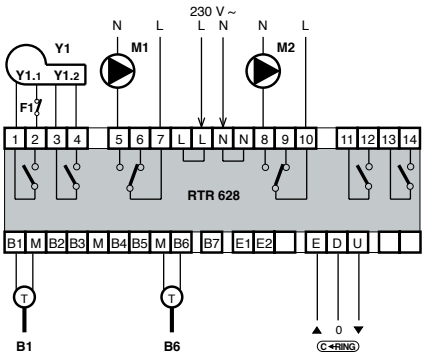
B1 – Room detector
M1 – Fan
Y1 – Burner
Y1.1 – 1st stage burner
Y1.2 – 2nd stage burner
F1 – Safety thermostat (limit)
F2 – Fan thermostat (fan)
Rt° – Temp. set-point adjuster (optional)

10.12 Heating plant :

– Control boiler temp. (B1) in relation to temp. plants (C-Ring) by control one-stage (Y1.1) or two-stage (Y1.1 + Y1.2) burner and anticondensing pump (M1).

– Control of DHW temp. (B6) by On-Off differential control storage pump (M2).





B1 – Boiler temp. detector
B6 – DHW temp. detector
F1 – Boiler thermostat
M1 – Anticondensing pump
M2 – DHW storage pump
Y1.1 – Control 1st stage burner
Y1.2 – Control 2nd stage burner

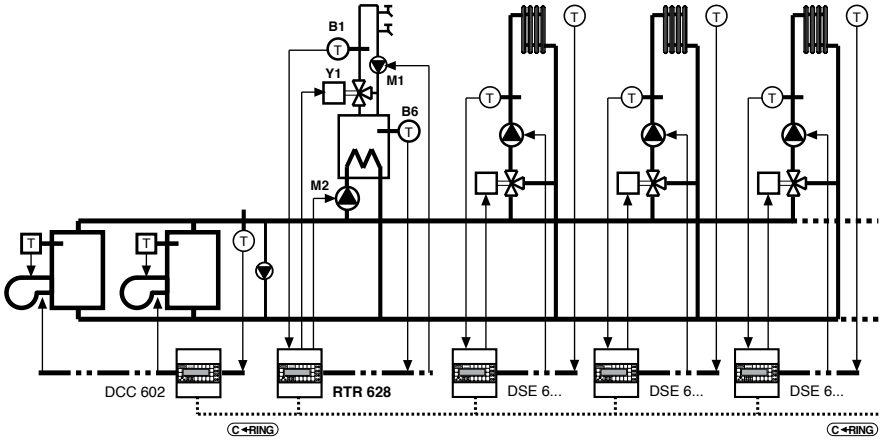
Config RTR 628	Setting Y1 control	Setting M1 control	SettingM2control	Normal use
M8.1 Config detectors 1 – – – 6	M5.1 Type of control PLANTS	M6.1 Control mode: ON-OFF TIMED	M7.1 Control mode: ON-OFF DIFFERENT	M0.2 Y1 : Boiler PLANTS
M8.4 CRing: PRIMARY	M5.2 Control mode: PI 2 STAGES		M7.2 Different 5.0c	M0.3 Increase Des T on plants : 5c
M8.5 Temperature in CRing: -- -- M2	M5.4 Prop Band ±10.0c Integ Time 600s			M0.8 M1 : Antic Pump As Y1 controller
M8.6 Increase Temp in CRing: 5c				M0.8 M2:PumpCalorif. XXXXXXXXX

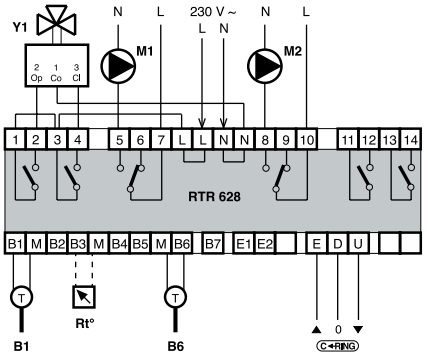
10.13 Heating plant :

– Control DHW temp. (B1) by control valve (Y1) and distribution circuit pump (M1).

– Control of storage temp. (B6) by On-Off differential control of storage pump (M2).

– Sending via C-Ring desired value of storage temp. (B1) for control of boiler temp.





B1 – DHW temp. detector
B6 – Storage temp. detector
M1 – DHW recycle pump
Y1 – DHW control valve
M2 – Storage pump
Rt° – DHW temp. set-point adjuster (optional)

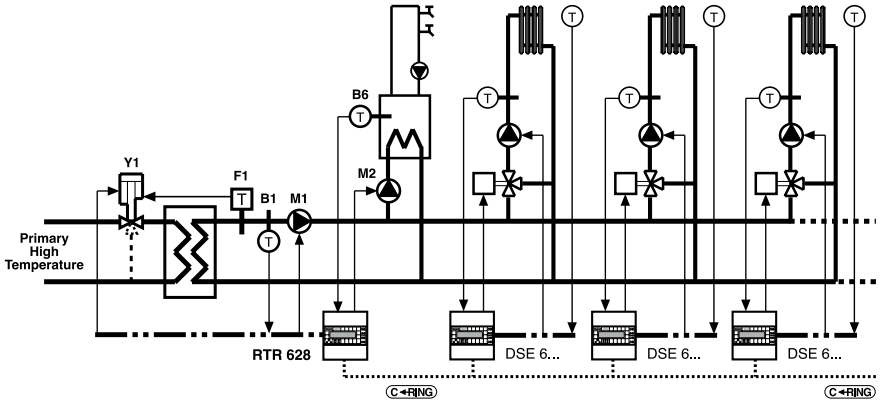
Config RTR 628	Setting Y1 control	Setting M1 control	SettingM2control	Normal use
M8.1 Config detectors 1 – – – 6	M5.1 Type of control FIXED POINT	M6.1 Control mode: ON-OFF TIMED	M7.1 Control mode: ON-OFF DIFFERENT	M0.2 Y1 : DHW XXXXXXXXX
M8.4 CRing: SECONDARY	M5.2 Control mode: MODULATING		M7.2 Different 5.0c	M0.8 M1 :Recycle As Y1 controller
M8.5 Temperature in CRing: -- -- M2	M5.3 Valve actuator run time xxs			M0.10 M2:Contr storage XXXXXXXXX
M8.6 Temperature in CRing: 5c	M5.4 Prop Band ±20.0c Integ Time 60s			

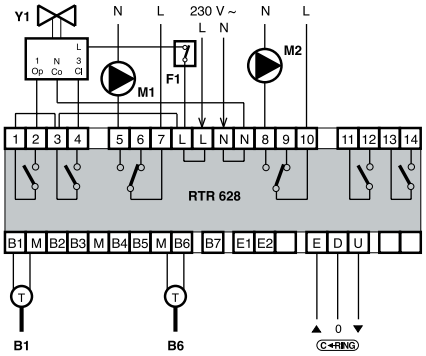
We reserve the right to make changes without notice

10.14 Heat exchanger :

– Control secondary temp. (B1) in relation to temp. of plants (C-Ring) by control primary valve (Y1) and secondary pump (M1).

– Control DHW temp. (B6) by On-Off differential control of storage pump (M2).





B1 – Secondary detector
B6 – DHW temp. detector
F1 – Safety thermostat
M1 – Secondary circuit pump
M2 – DHW storage pump
Y1 – Primary circuit valve

Config RTR 628	Setting Y1 control	Setting M1 control	SettingM2control	Normal use
M8.1 Config detectors 1 – – – 6	M5.1 Type of control PLANTS	M6.1 Control mode: ON-OFF TIMED	M7.1 Control mode: ON-OFF DIFFERENT	M0.2 Y1 : Primary PLANTS
M8.4 CRing: PRIMARY	M5.2 Control mode: MODULATING		M7.2 Different 5.0c	M0.3 Increase Des T on plants : 5c
M8.5 Temperature in CRing: -- -- M2	M5.3 Valve actuator run time xxs			M0.8 M1 :P Secondary As Y1 controller
M8.6 Increase Temp in CRing: 5c	M5.4 Prop Band ±10.0c Integ Time 60s			M0.8 M2: Boiler Pump XXXXXXXXX

11. COMMUNICATION

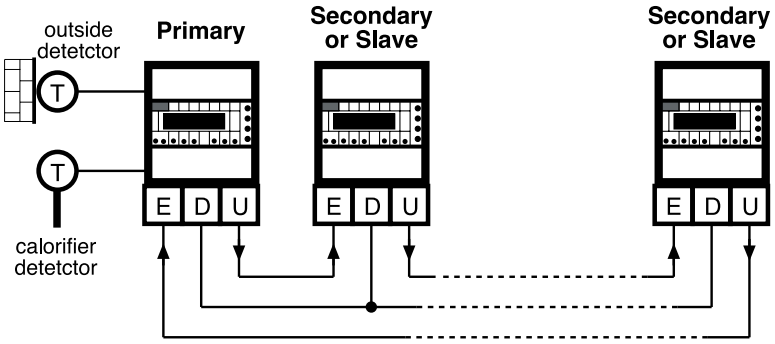
11.1 C-Ring communication between controllers (for detailed information see Technical Data Sheet T 022)

Controller RTR 628 can be "**Primary**" or "**Secondary**"..
In the C-Ring circuit the following signals can be transmitted:
– permission to operate as **Slave** controllers;
– measurement of **outside temperature** - use of a single detector for several controllers.
– value of **flow temperature** requested by consumer controllers, used by "PRIMARY" controller to control temperature of boilers or of primary manifold.
– **priority calorifier** (see 16.2) and/or **anticondensing** (see16.3).

– NO = connection in C-Ring not scheduled
– PRIMARY = connected to C-Ring as PRIMARY controller
– SECONDARY = connected to C-Ring as SECONDARY controller

M8.4
CRing:
NO

11.2 Electrical connections C-Ring



12. OPERATION

RTR 628 is a microprocessor-based digital controller comprising:
– 1 temperature controller: three-wire modulating or On-Off in one or two stages.
– 2 temperature controllers: On-Off or timed On-Off.

M8.1
```
Config.detectors
1 – –   – – –
```

It is important to configure the controller according to the detectors and the controls connected:
Replace the dashes with the numbers identifying the detectors and the control connected (+ and – keys):

1 : Primary detector Y1 controller (**B1**).
2 : Flow detector Y1 controller (**B2**).
3 : Set-point temperature adjuster Y1 controller (**Rt°**).
5 : Detector M1 controller (**B5**).
6 : Sonda regolatore M2 (**B6**).
7 : Program changer (**cp**) Y1 controller..

To avoid occasional configuration errors,
when the configuration of a detector is changed appears
```
Change config.
detectors   ??
```
Using + or – keys choose YES to confirm or NO to return to the preceding configuration.

13. TEMPERATURE CONTROLLERS Y1

The Y1 controller can function with three different measurement systems:

M8.1
```
Config.detectors
1 – –   – – –
```
```
Config.detectors
1 2 –   – – –
```

• With only **B1** primary detector (**room, flow, return, DHW storage** , etc)
• With B1 primary detector (room, return water, etc) & B2 flow detector
With Y1 controller any of the following modes can be used:

M5.2
```
Control :
XXXXXXXXXXXX
```

– MODULATING : three-wire modulating proportional integral
– PI 1 STAGE : one stage On-Off proportional integral
– PI 2 STAGES : two stages On-Off proportional integral
– DIFFER 1 STAGE : one On-Off stage differential
– DIFFER 2 STAGES : two stages On-Off differential

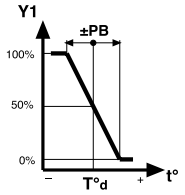
13.1 Control with only primary detector B1

The controller compares the temperature desired by the current mode T°d with the temperature measured by detector B1 and responds with control Y1 in relation to the temperature difference and the parameters set.

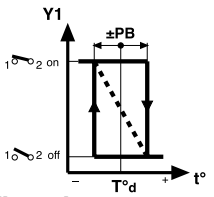
• Prop. Band : x x .x c = Proportional Band **PB** in ± °C.
• Integ Time : x x x x s = Integral Time in seconds
or
• Different : x x .x c = On-Off differential of stage**Δt**

M5.4
```
Prop.Band ±xx.xc
Integ.time xxxxs
```
```
Different. xx.xc
```

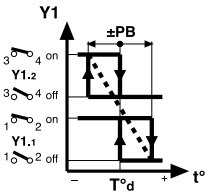
M5.2 `Control : MODULATING`



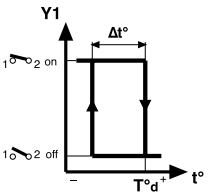
M5.2 `Control : PI 1 STAGE`



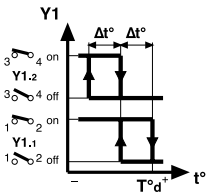
M5.2 `Control : PI 2 STAGE`



M5.2 `Control : DIFF. 1 STAGE`



M5.2 `Control : DIFF. 2 STAGES`



13.2 Control with primary detector B1 and flow detector B2

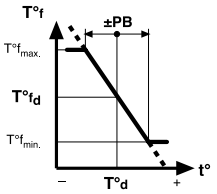
The controller compares the temperature measured by detector B1 with the temperature required by the program in use **T°d** and calculates the desired flow temperature **T°fd** in relation to the difference measured and the parameters set:

M5.4
```
Prop.Band ±xx.xc
Integ.Time xxxxs
```

• Prop Band ± xx.x c = Proportional Band **PB** in ± °C of primary temperature
• Integ. Time xxx x s = Integral Time in seconds of primary temperature

M5.6
```
Flow temp
Min:xxc  Max:xxc
```

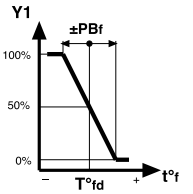
• Min: xx c Max: xx c = Minimum and maximum limits of flow temp.; these establish **PB** range of primary temperature (**M5.4).**



The controller compares the temperature measured by the flow detector B2 with the calculated value T°fd and responds with **PBf** control action Y1 in relation to difference measured and parameters set:

M5.5
```
PB Flow   ±xx.xc
IT Flow    xxxxs
```

• PB ± xx.x c = Proportional Band **PB**f in ±°C of flow temperature.
• IT xxxx s = Integral Time in seconds of flow temperature.



We reserve the right to make changes without notice

13.3 Control output Y1

M5.2
```
Valve actuator
run time     xxxs
```

If in **M5.2 is : – MODULATING**
you must set:
•complete run time (open/closed) of valve actuator; indispensable for correct control operation.

If in **M5.2 is : – PI 1 STAGE ; – PI 2 STAGES ; – DIFFER 1 STAGE ; – DIFFER 2 STAGES.**

M5.6
```
Minimum times
On: xxs Off: xxs
```

it is possible to set, if necessary for the electric component controlled:
• On : xx s = minimum switching on time in seconds of On control
• Off : xx s = minimum switching off time in seconds of Off control

13.4 Desired temperature

M0.2
```
Y1 :------------
TEMPER. xx.xc
```

The operation of Y1controller can be configured for temperature control at:

M5.1
```
Type of control:
XXXXXXXXXX
```

– FIXED POINT = Control of temperature at value set in or in drawing up 24hour progs where, for each Event time, a different temp can be set

M1.2...7
```
24hxx Evx   xx.xx
TEMPER      xx.xc
```

M8.4
```
CRing:
PRIMARY
```

– PLANTS = RTR 628 must have the setting
To use DTR 628 as temperature controller of a manifold from which are derived plants controlled by devices connected in C-Ring (see Examples Plants 10.12 and 10.14).

M0.3
```
Increase Des T
on plants T :xxc
```

The desired manifold temp. increased by is the greater value between:
– that sent by C-Ring (maximum requested by plant controllers);
– those requested by internal controllers M1 and/or M2, if in

M8.5
```
Temp to send to
CRing: -- M1 M2
```

M8.6
```
Increase temp to
CRing:      +xxc
```

increased by

13.5 Temperature set-point adjuster

M5.11
```
Adjuster range
–xxc
```

If the set-point adjuster Rt° is configured in **M8.1**, it is possible to adjust, from a distance, the value of the desired temp. in use within the limits set in **M5.11** (– 5…+5 °C or – 10…+10 °C).

M0.4
```
Y1:Temp set by
Adjuster: + x.xc
```

The value of the adjustment made is shown on the display page

13.6 Limit controls

M5.8
```
Limits action
PRIMARY TEMP
```

M5.9
```
11-12 CLOSEDwith
Temp above:xx.xc
```

M5.10
```
13-14 CLOSEDwith
Temp above:xx.xc
```

The controller is able to process two On-Off relay controls to be used as minimum limit (11 -12) and maximum limit (13 - 14) with reference to:

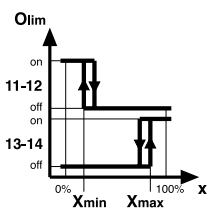
• Limits on :
– PRIMARY TEMP = if B1 or B1 and B2 connected & configured.
– FLOW TEMP = if B1and B2 connected & configured.
– CALCULATED OUTPUT = value of controller output (0…100 %).

• Choice of type of action of minimum limit relay 11-12: - CLOSED; - OPEN
• Setting of Temper or Output value below which minimum limit relay intervenes.

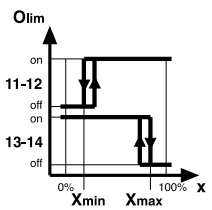
• Choice of type of action of maximum limit relay 13-14; - CLOSED; - OPEN
• Setting of Temper or Output value above which maximum limit relay intervenes

The possible combinations are:

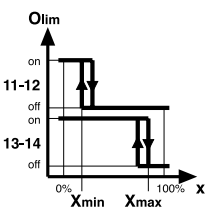
M5.8 `11-12 CLOSEDwith XXXXXXbelow:xx.x` / M5.9 `13-14 CLOSEDwith XXXXXXabove:xx.x`



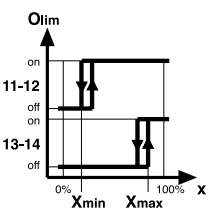
M5.8 `11-12 OPEn with XXXXXXbelow:xx.x` / M5.9 `13-14 OPEn with XXXXXXabove:xx.x`



M5.8 `11-12 CLOSEDwith XXXXXXbelow:xx.x` / M5.9 `13-14 OPEn with XXXXXXabove:xx.x`



M5.8 `11-12 OPEn with XXXXXXbelow:xx.x` / M5.9 `13-14 CLOSEDwith XXXXXXabove:xx.x`



Olim – On-Off limit outputs
x – Calculated temperature or output
X_{min} – Minimum limit temperature or calculated output
X_{max} – Maximum temperature limit or calculated output

14. ON-OFF CONTROLLERS M - M2

M8.1
Config detectors
– –
Config detectors
5 6

RTR 628 provides two On-Off controllers **M1** and **M2** that can be:

- **Without detectors B5 and/or B6 :** On-Off controls for independent timed programming or identical to controller Y
- **With detectors B5 and/or B6 :** On-Off controls for temperature control with independent-timed programming.

M1 or M2 can be used to regulate the pump in the circuit controlled by Y1.

The option of having separate timed event programming for control and for the relative pump permits more elastic management of the plants. e.g. DHW distribution circuit with continuous temperature control and timed operation of the circulation pump to **save energy**.

14.1 Temperature control (B5 and/or B6 detectors connected and configured)

M6.1 - M7.1
Control mode :
ON-OFF DIFFER

The control outputs M1 and M2 can be:

– ON-OFF PI : controller On-Off proportional integral
– ON-OFF DIFFER. : controller On-Off differential

If detectors B5 and/or B6 are not connected and configured, there will appear:
– TIMED ON-OFF : timed On-Off control.

The desired temperature **T°d :**

M0.8 - M0.10
Mx :----------
TEMPER xx.xc

– if timed programs not used, must be set in

M1.2...7 - M2.2...7
24hxx Evx xx.xx
TEMPER xx.xc

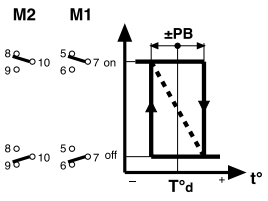
– if timed event programs used, must be entered when setting the 24hour programs where, for each timed event, a different temperature can be set.

The controller compares the desired temperature T°d for the current mode with the temperature measured by detector B5 or B6 and responds with M1 and/or M2 control in relation to the difference in temperature and the parameters set:

With M6.1 - M7.1
Control mode:
ON-OFF P I

M6.2 - M7.2
Prop Band ±xx.xc
Integ Time xxxxs

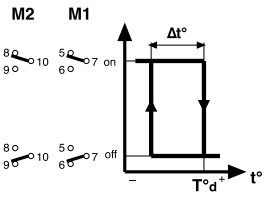
- Prop Band : xx.x c = Proportional band **PB** in ± °C.
- Integ Time : xxxx s = integral Time in seconds



With M6.1 - M7.1
Control mode::
ON-OFF DIFFER.

M6.2 - M7.2
Different xx.xc

- Differ. : x x .x c = On-Off differential of stage **Δt°**



14.2 Control outputs M1 and M2

If necessary for a device controlled electrically (e.g. burner), it is possible to set:

M6.3 - M7.3
Minimum times
On: xxs Off: xxs

- On : xx s = minimum On time in seconds of On switch
- Off : xx s = minimum Off time in seconds of Off switch

For plant requirements (e.g. delay in switching off calorifier loading pump to reduce thermal load of the boiler piloted by the temperature required by plants), it is possible to set:

M6.4 - M7.4
Switching Off
delay off : xxs

- : xx s = delay in switching off after the Off instruction by timed program or by temperature control.

We reserve the right to make changes without notice

15. PROGRAMS & PERIODS WITH DATES

The controller Y1 controller and of the two On-Off controllers M1 and M2 can each be programmed independently and can use:
- 25 24hour programmes
- Seven 7day programmes
- 25 annual periods with dates

15.1 Assigning programmes

You can assign separate operating programs to the Y1 controller and to the On-Off controllers M1 and M2.

M0.2

```
Y1  : - - - - - - - - - - - -
24  HOUR  1
```

- Y1 : - - - - - - - - - - - - : name of **Y1** controller (set in M8.14)
- XXXXXXXXXXXXX : program assigned:
  - 7 DAY 1…7 = one of seven 7day prog.s (M1.9...15).
  - 24 HOUR 1…25 = one of 25 24hour prog.s (M1.2...7).
  - TEMPER xx.x c = desired temp. always set as required.
  - OFF = always off (valve closed or stages off)

  instead of the programme there may appear one of the following (non-adjustable) indications:
  - PLANTS = when M5.1 is PLANTS
  - ANNUAL 1…25 = one of annual periods in use (M4.).
  - ANTIBACTERIA = Antibacteria function in use (M5.14).
  - Rem XXXXXXXXXX = switch cp is closed & imposes the program set in M5.12 :
    - TEMPER xx.x c;
    - 24 HOUR.1…25 ; – 7 DAY.1…7 ;
    - OFF;

M0.8

```
M1  : - - - - - - - - - - - -
24  HOUR  1
```

- M 1 :- - - - - - - - - - - - : name of On-Off controller **M1**(set in M8.15)
- XXXXXXXXXXXXX : program assigned :
  - As Y1 controller = same prog. as **Y1** control. (only if B5 not configured).
  - 7 DAY 1…7 = one of seven 7day progs (M2.9...15).
  - 24 HOUR1…25 = one of 25 24hour programs (M2.2...7).
  - TEMPER xx.x c = desired temp. always set as required. (only if B5 is configured).
  - ON = always on. (only if B5 is not configured).
  - OFF = always off.

  Instead of programme there may appear one of following (non-adjustable) indications:
  - PLANTS = when M5.1 is PLANTS
  - ANNUAL 1…25 = one of annual periods in use (M4.).
  - ANTIBACTERIA = Antibacteria function in use (M6.7).
  - Rem XXXXXXXXXX = switch cp1 closed & imposes the program set in M6.5 : – TEMPER xx.x c; – 24 HOUR.1…25 ; – 7 DAY.1…7 ; – ON; – OFF;

M0.10

```
M2  : - - - - - - - - - - - -
24  HOUR  1
```

- M 2 :- - - - - - - - - - - - : name of On-Off controller **M2** (set in M8.16)
- XXXXXXXXXXXXX : program assigned :
  - As Y1 controller = same prog. as **Y1** control. (only if B6 not configured).
  - 7 DAY. 1…7 = one of seven 7day prog.s (M3.9...15).
  - 24 HOUR.1…25 = one of 25 24hour programmes(M3.2...7).
  - TEMPER xx.x c = desired temp.always set as required. (only if B6 is configured).
  - ON = always on (only if B6 not configured).
  - OFF = always off

  Instead of program there may appear one of following (non-adjustable) indications:
  - PLANTS = when M5.1 is PLANTS
  - ANNUAL 1…25 = one of annual periods in use (M4.).
  - ANTIBACTERIA = Antibacteria function in use (M6.7).
  - Rem XXXXXXXXX =switch cp2 closed & imposes the program M7.5 :
    - TEMPER xx.x c;
    - 24 HOUR 1…25 ; – 7 DAY1…7 ;
    - ON; – OFF;

15.2 24hour programs

M1.1

```
Number of 24HOUR
programs    : x
```

M1.2...7

```
24H x Ev x xx.xx
XXXXXXXXX  xx.xc
```

M2.1

```
Number of 24HOUR
programs    : x
```

M2.2...7

```
24H x Evx  xx.xx
XXXXXXXXX  xx.xc
```

M3 .1

```
Number of 24HOUR
programs    : x
```

M3.2...7

```
24H 1 Ev 1 xx.xx
XXXXXXXXX  xx.xc
```

In each 24hour program you can set a maximum of six event start times (**Ev1…Ev6**) assigning to each the desired mode :

• Number of 24hour programs (1…25) you wish to use for Y1 controller.

• 24H x: number prog. (1…25); ° Ev x; number event (2…6); ° Fr xx.xx: event start time.
• XXXXXXXX : mode assigned to the period :
– TEMPER. xx.x c = desired temperature always set as required.
– OFF = always off

• Number of 24hour programs (1…25) you wish to use for **M1** controller..

• 24H x: number prog. (1…25); ° Ev x; number event (2…6); °Fr xx.xx: event start.
• XXXXXXXX : mode assigned to period :
– TEMPER. xx.x c = desired temp. always set as required
If **B5 is** configured
– ON = always on. If **B5** not configured.
– OFF = always off

• Number of 24hour programs (1…25) you wish to use for **M2** controller.

• 24H x: number prog. (1…25); ° Ev x; number event (2…6); °Fr xx.xx: event start time
• XXXXXXXX : mode assigned to period :
– TEMPER. xx.x c = desired temp. always set as required.
If **B6 is** configured
– ON = always on. If **B6 not** configured.
– OFF = always off

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

15.3 7day programs

M1.8

```
Number of 7DAY
programs    : x
```

M1.9...15

```
7DAY x-XXXXXXXX
XXXXXXXXX  xx.xc
```

M2.8

```
Number of 7DAY
programs    : x
```

M2.9...15

```
7DAY x-XXXXXXXX
XXXXXXXXX  xx.xc
```

M3.8

```
Number of 7DAY
programs    : x
```

M3.9...15

```
7DAY x-XXXXXXXX
XXXXXXXXX  xx.xc
```

In each 7day programs you can assign a program to each day of the week.

• Number of 7day programs (0…7) you wish to use for Y1 controller.

• 7day x : number of program 1…7 ; XXXXXXXXX: day of week ;
• XXXXXXXXX : program assigned to day of week :
– 24 HOUR. x = one of 25 24hour programs (**M1.2...7**).
– TEMPER xx.x c = desired temp. always set as required.
– OFF = always off.

• Number of 7day programs (0…7) you wish to use for **M1** controller.

• 7day x : number of program 1…7 : XXXXXXXXX : day of week ;
• XXXXXXXXX : program assigned to day of week :
– 24 HOUR x = one of 25 24hour programs (**M2.2...7**).
– TEMPER. xx.x c = desired temp. always set as required.
If **B5 is** configured
– ON = always on. If **B5 not** configured.
– OFF = always off.

• Number of 7day programs (0…7) you wish to use for **M2** controller.

• 7day x : number of program 1…7 : XXXXXXXXX : day of week ;
• XXXXXXXXX : program assigned to day of week :
– 24 HOUR x = one of 25 24hour programs (**M3.2...7**).
– TEMPER xx.x c = desired temp. always set as required.
If **B6 is** configured
– ON = always on. If **B6 not** configured
– OFF = always off.

15.4 Annual periods

The annual periods with dates apply to the Y controller and to the two On-Off controllers M1 and M2.

M4.1

```
Number of Annual
Periods    :  xx
```

Each annual period, defined by the start and end dates of the period, sets an operating programme that overrides the one in use. At the end of each period the controller returns to the one previously in use.

- Number of annual periods you wish to use (1…25).

M4.2

```
APxxfor:-- -- --
Fr:xx.xxto:xx.xx
```

Enter the dates for each single period:

- AP xx : number period (1…25);
- for : -- -- -- : replace the dashes (+ or – keys) by the required data for the period:
  -- -- -- = not used.
  Y1 -- -- = for Y1 controller.
  -- M1 -- = for On-Off M1 controller.
  -- -- M2 = for On-Off M2 controller.
- Fr : xx.xx to : xx.xx : day and month of start and end of annual period.

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

M4.3

```
APxx  Prog  Y1
XXXXXXXXX
```

Select, for each annual period, the programme to be used for the outputs concerned :

- XXXXXXXX : programme assigned for the period to controller Y1:
  – 7 DAY. 1…7 = with one of seven 7day progs (M1.9...15).
  – 24 HOUR 1…25 = with one of 25 24hour progs (M1.2...7).
  – TEMPER xx.x c = desired temp. always set as required.
  – OFF = always off (valve closed or stages off).

M4.4

```
APxx  Prog  M1
XXXXXXXXX
```

- XXXXXXXX : programme assigned for the period to controller M1 :
  – As Y1 controller = same programme as control Y1. If B5 not configured.
  – 7 DAY 1…7 = with one of seven 7day progs (M2.9...15).
  – 24 HOUR 1…25 = with one of 25 24hour progs (M2.2...7).
  – TEMPER xx.x c = desired temp. always set as required. If B5 is configured.
  – ON = always on. If B5 not configured.
  – OFF = always off.

M4.5

```
APxx  Prog. M2
XXXXXXXXX
```

- XXXXXXXX : programme assigned for the period to controller M2 :
  – AsY1 controller = same programme as control Y1. If B6 not configured.
  – 7 DAY 1…7 = with one of seven 7day progs (M3.9...15).
  – 24 HOUR 1…25 = with one of 25 24hour progs (M3.2...7).
  – TEMPER. xx.x c = desired temp. always set as required. If B5 is configured.
  – ON = always on. If B6 not configured.
  – OFF = always off.

15.5 British Summer Time (BST)

M0.13

```
BST          : AUT
Fr:xx.xxto:xx.xx
```

The controller changes the time automatically according to BST period.

- BST : – MAN = Changes the time at the dates set.
  – AUT = Changes the time automatically:
  - at 02.00 on the last Sunday in March the clock is put forward an hour;
  - at 02.00 on the last Sunday in October the clock is put back an hour.
- Fr - - . - - to - - . - - = day and month of start and end of BST (only if MAN).

To cancel the period keep pressed + and – keys at the same time.

16. COMPLEMENTARY FUNCTIONS

16.1 Changing programme using cp, cp1 and cp2 switches

M8.1
Config detectors
– – – – – 7

By connecting and configuring the **cp** switch it is possible (closure switch) to set on **Y1** controller an operating programme that replaces the one in use:

M5.12
Change prog cp
XXXXXXXXXXXXXX

– NO = disabled.
– 7 DAY x = one of seven 7day programmes (**M1.9...15**).
– 24 HOUR x x = one of 25 24hour programmes (**M1.2...7**).
– TEMPER xx.x c = desired temp. always set as required.
– OFF = always off.

M8.2
Input E1
SWITCH cp1

By connecting the switch **cp1** and entering it is possible (closure switch) to set on **M1** controller an operating programme that replaces the one in use:

M6.5
Change prog cp1
XXXXXXXXXXXXXX

– NO = disabled
– 7 DAY x = one of seven 7day programmes (**M2.9...15**).
– 24 HOUR xx = one of 25 24hour programmes (**M2.2...7**).
– TEMPER xx.x c = desired temp. always set as required. Only if **B5 is** configured.
– ON = always on. Only if **B6 not** configured.
– OFF = always off..

M8.3
Input E2:
SWITCH cp2

By connecting the switch **cp2** and setting it is possible (closure switch) to set on **M2** controller an operating programme that replaces the one in use:

M7.5
Change prog cp2
XXXXXXXXXXXXXX

– NO = disabled
– 7 DAY x = one of seven 7day programmes (**M3.9...15**).
– 24 HOUR xx = one of 25 24hour programmes(**M3.2...7**).
– TEMPER xx.x c = desired temp. always set as required. Only if **B6 is** configured.
– ON = always on. Only if **B6 not** configured.
– OFF = always off.

16.2 Priority function

This function can be used both by the Y1 controller and by the two On-Off controllers M1 and M2, only, however, if RTR 628 is connected in C-Ring and if M8.6 is PRIMARY or SECONDARY.
It permits giving precedence to the circuits controlled by RTR 628 (e.g. DHW production) in respect of other circuits in the plant regulated by controllers connected in C-Ring and with the Anticondensing function enabled.

M5.13 - M6.6 - M7.6
Priority :NO
Anticondens :NO

• Priority : – NO = function excluded ; – YES = function enabled

When RTR 628 is connected in C-Ring with other controllers and the Priority function is enabled:
– each controller with the Priority function enabled, when temperature is requested (On), sends via C-Ring the difference in value between its own desired temperature and the actual one;
– the C-Ring controllers, with the Anticondensing function enabled, decrease their desired Flow temperature by 4 °C for each °C of difference to give precedence to the controller that requests priority.

16.3 Anticondensing function

This function can be used both by controller Y1 and by the two On-Off controllers M1 and M2, only, however, if RTR 628 is connected in C-Ring and if **M8.4** is PRIMARY or SECONDARY.
It permits :
– avoiding the formation of condensation in the boiler,
– using the Priority function.

M5.13 - M6.6 - M7.6
Priority :NO
Anticondens :NO

• Anticondens : – NO = function disabled ; – YES = function enabled

When DTR 628 is connected in C-Ring with other controllers, it receives the anticondensing difference value (desired – actual) from the controller with the anticondensing detector connected, and, imposes on its own outputs with the Anticondensing function enabled, :
– a reduction of 4 °C in its own desired temperature for each °C of anticondensing difference for the output Y1 with modulating control.
– switching off of the On-Off outputs, when the anticondensing difference is more than 4 °C.

We reserve the right to make changes without notice

16.4 Antibacteria function

This function can be used both by the controller Y1 and by the two On-Off controllers M1 and M2; it prevents the formation of bacterial colonies in the storage tank or in the DHW circuit by increasing the desired temperature for a certain period of time.

M5.14 - M6.7 - M7.7

```
Antibacteria:NO
Temp:xxc forxxxm
```

- Antibacteria : – NO = function disabled ; – YES = function enabled.
- Temp : xx c = desired temp. for antibacterial function.
  for xxx m = duration in minutes of antibacteria function.

M5.15 - M6.8 - M7.8

```
Antibacteria
xx.xx XXXandXXX
```

Entering of time & days of week (1 or 2) in which antibacteria function active.

- xx.xx = time

XXX and XXX = days of the week : MON ; … … SUN ; if - - - = none

16.5 Access keynumber

M8.12

```
Choice keynumber
      ----
```

To enable the access keynumber enter the number (1900 … 1999) using + and – keys.
Prevents the use of + and – keys and thus any modification of the data
To cancel the keynumber press + and – at the same time until the dashes re-appear.

When the keynumber is enabled if you press + or – keys there will appear on the display
Only after having entered the exact number is it possible to use + and – keys.
If for 15 minutes no key is pressed the keynumber is automatically enabled.

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

16.6 Denomination plants

M8.13

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

Entering name of plant site that appears on first page of display **M0.1**.

M8.14

```
ControllerNameY1
  ------------
```

Entering name of Y1 controller that appears on programme choice page **M0.2**.

M8.15

```
ControllerNameM1
  ------------
```

Entering name of M1 controller that appears on programme choice page **M0.5**.

M8.16

```
ControllerNameM2
  ------------
```

Entering name of M2 controller that appears on programme choice page **M0.6**.

Each dash can be replaced, using + and – keys, by a letter of the alphabet (A…Z) or by a number (0…9). The → key serves to position the cursor.

16.7 Display measurements

The display shows, for each controller, all the measurements made by the detectors and the data useful for understanding the functioning of the three controllers.

M0.4

```
Y1:Temperature
D:xx.xc  A:xx.xc
```

- D : xx.x c = temperature desired by current mode.
- A : xx.x c = actual temperature measured by detector **B1**.

M0.5

```
Y1:Flow temp
D:xx.xc  A:xx.xc
```

Appears only if detector **B2** is configured.
- D : xx.x c = Flow temperature desired by controller.
- A : xx.x c = actual Flow temperature measured by detector **B2**.

M0.6

```
Y1: Controller
output      :xxx%
```

Appears only if **M5.2** is MODULATING or PI 1-2 STAGES
- value of controller output (0…100%), if **M5.2** is MODULATING is the position of the valve calculated by the controller.

M0.8

```
M1:Temperature
D:xx.xc  A:xx.xc
```

Appears only if detector **B5** is configured.
- D : xx.x c = flow temperature required by controller.
- A : xx.x c = actual flow temperature measured by detector **B5**.

M0.10

```
M2:Temperature
D:xx.xc  A:xx.xc
```

Appears only if detector **B6** is configured.
- V : xx.x c = flow temperature desired by controller.
- R : xx.x c = actual flow temperature measured by detector **B6**.

17. ALARMS

The alarms processed by the controller are of three types:

- Functional alarm for microprocessor fault :
  – Signalled by LED 6.11.

M8.7
```
FunctionalAlarms
                8
```

- Functional alarm for internal clock fault :
  – occurs when clock shows absusrd values.
  – Signalled by LED 6.10.
  – Shown on the configuration page (cannot be disabled) by the letter “A” alternating with the number 8.

M8.7
```
Detector alarms
– –     – –   –
```

- Detector alarms :
  – On the configuration page enable (+ and – keys) the alarms of interest by replacing the dashes with numbers. Factory setting: all disabled
  – The alarms are triggered, with a delay of a minute, by open or short circuits to the detectors connected.
  – Signalled by LED 6.10 .
  – Identified on the configuration page by the letter “A” alternating with the number of the alarm concerned.
  – Type of alarm and effect:
    1 = Primary detector controller Y1 (**B1**) : valve closing or stages off.
    2 = Flow detector controller Y1 (**B2**) : valve closing or stages off.
    5 = detector controller M1 (**B5**) : M1 control off.
    6 = detector controller M2 (**B6**) : M2 control off.
    8 = C-Ring: break in electric circuit or fault in a controller

18. TESTING AT COMMISSIONING

Testing to be carried out when installation has been completed and electric wiring and configuration carried out and tested.

18.1 Testing C-Ring

The C-Ring testing page appears only if it is configured in

M8.5
```
CRing connection
PRIMARY
SECONDARY
```

M9.1
```
CRing:??
```

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

– correctly powered at mains voltage (230 V~).

– Slave controllers or configured as SECONDARY in
```
CRing connection:
SECONDARY
```

– selected on testing page
```
CRing:??
```

The PRIMARY controller sends via C-Ring a signal every 5 seconds. On all the displays appears “??”. If the connection if satisfactory the word “YES” replaces “??” on all the displays. If on one or more displays “YES” does not appear, this means that there is a break in the connection between the last controller with “YES” and the first with “??”.
Examples of testing a C-Ring with four controllers:
– Cont.1 "YES"– Cont.2 "YES" – Cont.3 "YES" – Cont.4 "YES" : Connection OK
– Cont.1 "??" – Cont.2 "YES" – Cont.3 "YES" – Cont.4 "YES" : Break between 4 and 1
– Cont.1 "??" – Cont.2 "YES" – Cont.3 "??" – Cont.4 "??" : Break between 2 and 3
– Cont.1 "??" – Cont.2 "??" – Cont.3 "??" – Cont.4 "??" : Break between1 and 2

18.2 Testing outputs

With + and – keys choose :

M9.2
```
Output:XXXXXXX
Status:XXXXXXX
```

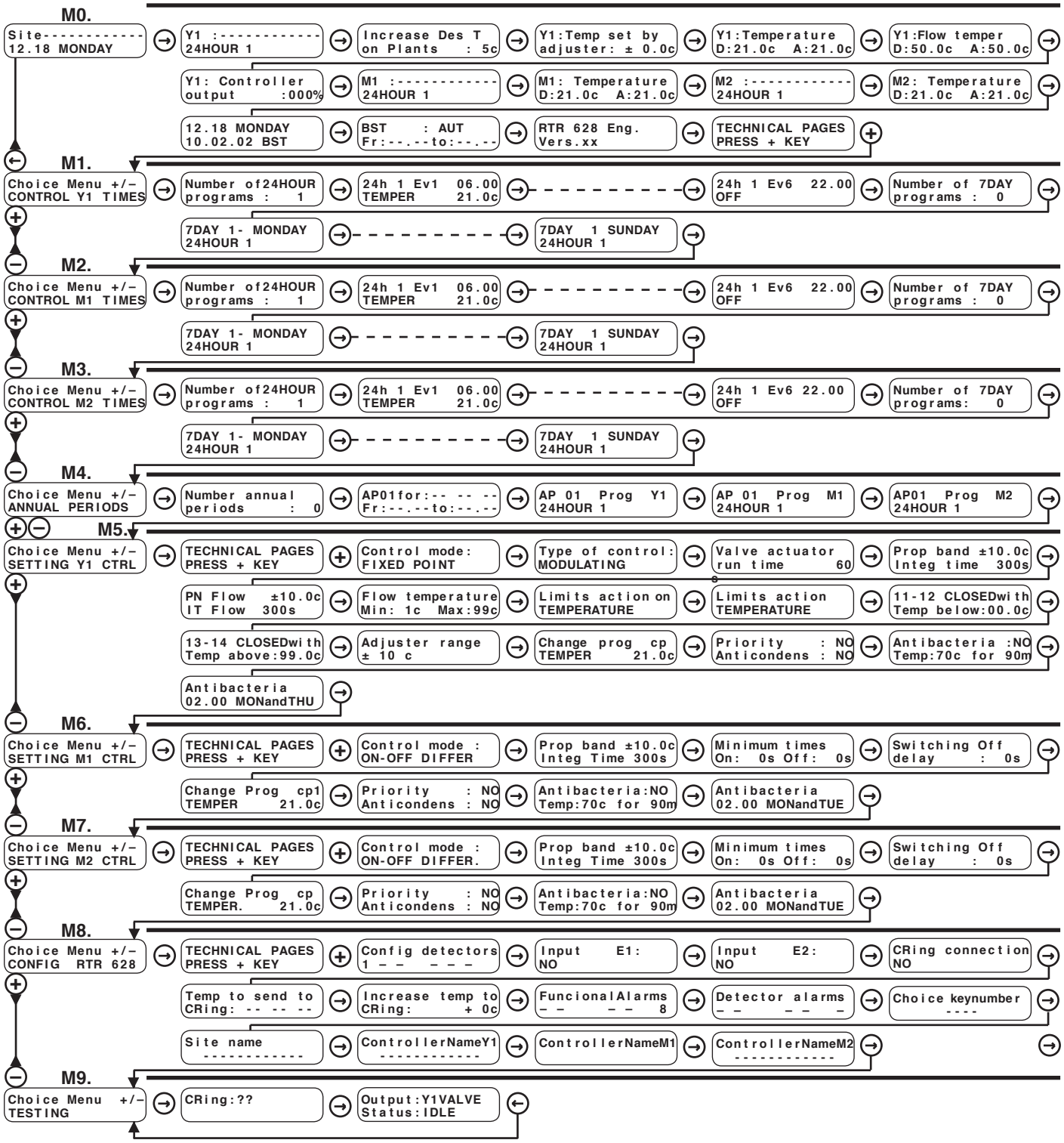
- Output to test: – Y1 VALVE : if **M5.2** is MODULATING
  – Y1 1 ST. : if **M5.2** is PI 1 STAGE or DIFFER 1 STAGE
  – Y1 2 ST. : if **M5.2** is PI 2 STAGES or DIFFER 2 STAGES
  – M 1
  – M 2
  – Emin
  – Emax
- Status :– with Y1 VALVE : IDLE; CLOSED ; OPEN
  – with Y1 1 ST. , M1 , M2 , Emin , Emax : ON ; OFF
  – with Y1 2 ST. : ON 1 ; ON 2 ; OFF

Check the results.

We reserve the right to make changes without notice

19. SEQUENCE OF DISPLAY PAGES (data and functions are those in memory at delivery)

Warning: Start the programming from page M8.1 “Configuration Detectors” (menu M8. CONFIG.DTR 628) because each change in configuration of the detectors restores the default data and cancels any changes made to the timed events programmes and to the setting data of the controls concerned.



Keys for scrolling the display pages and positioning the cursor ▮ on adjustable data on the pages.
The adjustable data, in the following descriptive list of display pages, are highlighted thus
By pressing these keys at the same time, or in any event after15 minutes, the

Site----------
12.18 MONDAY

Keys for : – adjusting the values indicated by the cursor ▮
– seeing the possibility of configuring a function, e.g.Control:
– passing directly from one menu (series of pages) to another.

Control mode :
MODULATING

or

Control mode :
DIFFER ON-OFF

M0. NORMAL USE

Ref.	Display	Description	Notes	Sect.
M0.1	Site- - - - - - - - - - - - 12.18 MONDAY	Name plant site. Set in **M8.13**. Current time and day. Set in **M0.12**.	.	
M0.2	Y1 : - - - - - - - - - - - - 24HOUR 1	Name control. Set in **M8.14**. Choice of control program : – 24 HOUR 1…25 : set in **M1.** ; – 7 DAY 1…7 : set in **M1.** ; – TEMPER xx.x c : desired temp. set as required . – OFF : control off.	Instead of prog. one of non-adjustable indications can appear: – PLANTS: if in **M5.1** PLANTS is set – ANNUAL xx : If in use one of annual periods set in **M4.** ; – ANTIBACTERIA : if in use Antibacteria function **M5.14**. If switch **cp** closed, according to settingin **M5.12**: – RemTEMPER xx.x c ; – Rem24HOUR.xx; – Rem7DAY. x ; – RemOFF.	**13.4** **15.1**
M0.3	Increase Des T on plants T : 5c	Increase desired temp. in respect of temp. requested by plants.	Appears if **M5.1** is PLANTS	**13.4**
M0.4	Y1:Temp set by adjuster: ± 0.0c	Readout temperature variation made by set-point adjuster **Rt°**.	Appears if set-point adjuster **Rt°**configured.	**13.5**
M0.5	Y1:Temperature D:21.0c A:21.0c	D = Desired temp. for controller Y1. A = Actual temp. measured by detector B1.	When D : – – . – = Off mode	**13.4** **16.7**
M0.6	Y1:Flow temper D:50.0c A:50.0c	Desired Flow temp. calculated by controllerY1. Temp. measured by detector B2.	Appears if detector **B2** configured. When D : – – – = Off mode	**16.7**
M0.7	Y1: Controller Output :000%	Controller output of by controllerY1. If in **M5.2** the position of valve is MODULATING	Appears if **M5.2** is : – MODULATING ; – 1 PI STAGE. ; – 2 PI STAGES	**16.7**
M0.8	M1 : - - - - - - - - - - - - 24HOUR 1	Name On-Off control M1. Set in **M8.15**. Choice programme for On-Off controller M1 : – As Y1 controller : follows program of controller Y1. Only if **B5 not** configured – 24 HOUR.1…25 : set in **M2.** ; – 7 DAY 1…7 : set in **M2.** ; – TEMPER xx.x c : desired temp. set as required. Only if **B5 is** configured. – ON : always on. Only if B5 **not** configured – OFF : always Off.	Instead of programme may appear the non-modifiable indications: If one of annual period current : – ANNUAL xx :set in **M4.** ; – ANTIBACTERIA : if in use Antibacteria function **M6.7**. If switch **cp1**, is closed, according setting **M6.5**: – RemTEMPER xx.x c ; – Rem24HOUR.x ; – Rem7DAY.x ; – RemON. – RemOFF.	**15.1**
M0.9	M1:Temperature D:21.0c A:21.0c	D = Desired temp. for On-Off controller M1. A = Actual temp. measured by detector B5.	Appears if **B5**. configured When D : – – – = Off mode.	**16.7**
M0.10	M2 : - - - - - - - - - - - - 24HOUR 1	Name On-Off control M1. Set in **M8.16**. Choice programme for On-Off controller M2 : – As Y1 controller : follows program of controller Y1. Only if **B6 not** configured. – 24 HOUR1…25 : Set in **M3.** ; – 7DAY 1…7 : Seti in **M3.** ; – TEMPER xx.x c : desired temp. set as required. Only if **B6 is** configured. – ON : always on. Only if **B6 not** configured. – OFF : always Off.	Instead of programme may appear non-modifiable indications: if in use one of annual periods: – ANNUAL xx : set in **M4.** ; – ANTIBACTERIA : if in use Antibacteria function **M7.7**. If switch **cp2** closed according setting in **M7.5**: – RemTEMPER xx.x c ; – Rem24HOUR.x ; – Rem7DAY.x ; – RemON; – RemOFF.	**15.1**
M0.11	M2:Temperature D:21.0c A:21.0c	D = Desired temp. for On-Off controller M2. A = Actual temp.measured by detector B6.	Appears if **B6** configured When D : – – – = Off mode.	**16.7**
M0.12	12.18 MONDAY 10.02.02 GMT	Setting: Time, day of week & date Current time period: GMT or BST	According to dates BST set in **M0.12**.	
M0.13	BST : AUT fr:- - . - - to:- - . - -	AUT ; MAN. Date of start and end of BST period (only if MAN).	AUT : Automatic change (March – October) MAN : Changes time at dates set.	**15.5**
M0.14	RTR 628 Eng Vers.xx	Identity data of controller.		

We reserve the right to make changes without notice

M1. EVENTS Y1 CONTROL (LED is 6.4 and 6.5 flash)

Ref.	Display	Description	Notes	Sect.
M1.1	Number of 24HOUR programs : 1	Choice number 24hour programs to programmes: to use (1…25) for control 1.	Cancel unused display pages	15.2
M1.2 ⇓ ⇓ M1.7	24H 1 Ev1 6.00 TEMPER 21.0c 24H 1 Ev6 22.00 OFF	Number of program, number event & start time event. Choice of mode to assign to period: – TEMPER xx.x c : period with desired temp-set as required – OFF : period with control off. **Other groups 6 pages according figure in M1.1**	Max. 6 periods. To cancel unused period press + and – together: - - . - - appears Times must be in increasing order. Do not leave - - . - - between programmed events	15.2
M1.8	Number of 7DAY programs: 0	Choice number 7day programs to use (0…7) for control 1.	Cancel unused display pages	15.3
M1.9 ⇓ ⇓ M1.15	7DAY 1 MONDAY 24HOUR 1 7DAY 1 SUNDAY 24HOUR 1	Choice program for each day of week: – 24 HOUR1…25: Set in **M1.** ; – TEMPER xx.x c : with desired temp. set as required – OFF : control off. **Other groups 6 pages according figure in M1.8**	Appear if **M1.8** is not 0.	15.3

M2. EVENTS M1 CONTROL (LED 6.8 flashes)

Ref.	Display	Description	Notes	Sect.
M2.1	Number of 24HOUR programs : 1	Choice number 24hour programs to use (1…25) for control 1.	Cancel unused display pages	15.2
M2.2 ⇓ ⇓ M2.7	24H 1 Ev1 6.00 TEMPER 21.0c 24H 1 Ev6 22.00 OFF	Number of program, number event & start time event. Choice mode to assign to period: – TEMPER xx.x c : with desired temp. set as required. Only if **B5** is configured. – ON : always on. Only if **B5 not** configured. – OFF : always Off **Other groups 6 pages according figure in M2.1**	Max. 6 periods. To cancel unused period press + and – together: - - . - - The times must be in increasing order. You must not leave - - . - - between Events.	15.2
M2.8	Number 7DAY programs : 0	Choice number of 7day programs to use (0…7) for control 1.	Cancel unused display pages	15.3
M2.9 ⇓ ⇓ M2.15	7DAY 1 MONDAY 24HOUR 1 7DAY 1 SUNDAY 24HOUR 1	Choice program for each day of week : – 24 HOUR 1…25 : Set in **M2.** ; – TEMPER xx.x c : with desired temp. set as required. Only if **B6 is** configured – ON : always on. Only if **B6 not** configured.. – OFF : always Off **Other groups 6 pages according figure M2.8**	Appears if **M2.8** is not : 0.	15.3

M3. EVENTS M2 CONTROL (LED 6.9 flashes)

Ref.	Display	Description	Notes	Sect.
M3.1	Number of 24HOUR Periods : 1	Choice number 24hour programs to use (1…25) for control 2.	Cancel unused display pages	15.2
M3.2 ⇓ ⇓ M3.7	24H 1 Ev1 6.00 TEMPER 21.0c 24H 1 Ev6 22.00 OFF	Number of program, number event & start time event. Choice mode to assign to period: – TEMPER xx.x c : with desired temp. set as required. Only if **B6** is configured – ON : always On. Only if **B6 not** configured. – OFF : always Off **Other groups 6 pages according figure in M3.1**	Max. 6 periods. To cancel unused period press + and – together, appears. - - . - - Times must be in increasing order. Do not leave - - . - - between programmed events	15.2
M3.8	Number of 7DAY programs : 0	Choice number of 7day programs to use (0…7) for control 2.	Cancel unused display pages	15.3
M3.9 ⇓ ⇓ M3.15	7DAY 1 MONDAY 24HOUR 1 7DAY 1 SUNDAY 24HOUR 1	Choice of program for each day of week: – 24 HOUR1…25 : set in **M3.** ; – TEMPER xx.x c : with desired temp. set as required. Only if **B6 is** configured. – ON : always On. Only if **B6 not** configured.. – OFF : always Off **Other groups 6 pages according figure in M3.8**	Appears if **M3.8** is not : 0.	15.3

M4. ANNUAL PERIODS

Ref.	Display	Description	Notes	Sect.
M4.1	**Number of Annual Periods: 0**	Choice number Annual Periods to use (0…25).	Cancel unused display pages	**15.4**
M4.2	**AP01 for: -- -- -- Fr: --.-- to: --.--**	AP xx : number of Annual Period. For : – – – – : replace dashes with outputs of interest to period: Y1 - - - - = for Y1 controller; - - M1 - - = for M1 controller; - - - - M2 = for M2 controller; - - - - - - = unused period.. Fr : - - . - - : date of start of period. to : - - . - - : date of end of period.	Appears only if **M4.1** greater than 0.	**15.4**
M4.3	**AP01 Prog Y1 24HOUR 1**	Choice program assigned for period to Y1 controller : – 7DAY1…7 : Set in **M1.** ; – 24HOUR1…25 : Set in **M1.** ; – TEMPER. xx.x c: with desired temp. set as required. – OFF : control off	Appears only if **M4.2** Y1 assigned .	**15.4**
M4.4	**AP01 Prog M1 24HOUR 1**	Choice program assigned for period to M1 controller : – As Y1 controller : :follows prog. of controller Y1. Only if **B5** not configured. – 7 DAY 1…7 : Set in **M2.** ; – 24 HOUR1…25 : Set in **M2.** ; – TEMPER. xx.x c : with desired temp.set as required. Only if **B5 is** configured – ON : always on. Only if **B5** not configured – OFF : always Off.	Appears only if **M4.2** M1assigned.	**15.4**
M4.5	**AP01 Prog M2 24HOUR 1**	Choice programme assigned for period to M2 controller : – As Y1 controller : follows prog. of controller Y1.Only if **B6** not configured. – 7DAY 1…7 : set in **M3.** ; – 24HOUR1…25 : set in **M3.** ; – TEMPER. xx.x c : with desired temp. set as required. Only **if B6** is configured. – ON : always on. Only if **B6** not configured. – OFF : always Off. **Other pages as M4.2.3.4.5 according setting M4.1**	Apears only if **M4.2** M2 assigned.	**15.4**

We reserve the right to make changes without notice

M5. SETTING Y1 CONTROL (LED 6.4 and 6.5 flash)

Ref.	Display	Description	Notes	Sect.
M5.1	Type of control: FIXED POINT	Choice type of control: – FIXED POINT : Control at constant value. Always choice value to set. – PLANTS : Control with temp. requested by C-Ring. Choice setting only if **M8.6** is PRIMARY.	.	13.
M5.2	Control mode : MODULATING	Choice type of control: – MODULATING : 3-wire modulating valve. – PI 1 STAGE : 1 On-Off stage Prop. Integral. – PI 2 STAGES 2 stages On-Off prop. integral. – DIFFER 1 STAGE : 1 On-Off differential stage. – DIFFER 2 STAGES : 2 On-Off differential stages.	.	13.
M5.3	Valve actuator run time 60s	Actuator run time in seconds	Appears if **M5.2** is MODULATING.	13.3
M5.4	Prop Band ±10.0c Integ Time 300s	Proportional Band in ± °C. Integral Time in seconds	Appears if **M5.2** is MODULATING ; PI 1 STAGE ; PI 2 STAGES	13.1.2
	Different 10.0c	Differential of stage °C.	Appears only if **M5.2** is : DIFF1 STAGE DIFF 2 STAGES	13.1
M5.5	PB Flow ±10.0c IT Flow 300s	Proportional Band in ± °C and Integral Time in seconds of Flow temperature	Appears if **B1** and **B2** configured	13.2
M5.6	Flow temperature Min: 1c Max:99c	Minimum and maximum limits of flow temperature	Appears if **B1** and **B2** configured	13.2
M5.7	Minimum times On: 0s Off: 0s	Minimum switching on and off times of On-Off control.	Appears only if **M5.2** is : PI 1 STAGE ; PI 2 STAGE; DIFFER 1 STAGE; DIFFER 2 STAGES.	13.3
M5.8	Limits action on PRIMARY TEMPER	Action range of limit controls **Emin** e **Emax** – PRIMARY TEMPER **B1** or **B1** and **B2** config. – FLOW TEMPERATURE : if **B1** and **B2** config. – CALCULATED OUTPUT: value of Controller output (0…100 %).		13.6
M5.9	11-12 CLOSEDwith Temp below:00.0c	Intervention of minimum limit: – Action switch 11-12 : – CLOSED; – OPEN – Intervention with value below xx.x ;	According setting in **M5.8** : – Temper. below : xx.x c – Output below : xxx %	13.6
M5.10	13-14 CLOSEDwith Temp below:99.0c	Intervention of minimum limit: – Action switch 13-14: - CLOSED; - OPEN – Intervention with value above xx.x;	According setting in **M5.8** : – Temp above : xx.x c – Output above : xxx %	13.6
M5.11	Adjuster range ± 10 c	Minimum and maximum adjustment limits permitted for **Rt°**:set-point adjuster : ± 5 ; ±10.	Appears if **Rt°**set-point adjuster configured.	13.5
M5.12	Change Prog cp TEMPER 21.0c	Choice of programme to override Y1 control by closure switch **cp** : – NO : no action ; – 7 DAY1…7 : Set in **M1.** ; – 24 HOUR1…25 : Set in **M1.** ; – TEMPER xx.x c : with desired temp. set as required. – OFF : control Off.	Appears if program change switch **cp** configured.	16.1
M5.13	Priority :NO Anticondens :NO	Priority function : YES ; NO. Anticondensing function : YES ; NO.	Appears if in **M8.6** C-Ring is enabled.	16.2.3
M5.14	Antibacteria:NO Temp:70c per 90m	Antibacteria function :YES ; NO. Temperature and duration of Antibacteria function.	Function disabled if **M5.1** is PLANTS .	16.4
M5.15	Antibacteria 02.00 MONandTHU	Time and day of week (1 or 2) in whichAntibacteria function activated : – MON ; –TUE ; –WED ; –THU; –FRI ; – SAT ; – SUN; - - -;	.	16.4

M6. SETTING M1 CONTROL (LED 6.8 flashes)

Ref.	Display	Descrption	Notes	Sect
M6.1	Control mode: ON-OFF DIFFER	Choice type control mode if **B5** configured: – ON-OFF PI : On-Off prop. integ. – ON-OFF DIFFER.: On-Off differential. If **B5 not** configured there will appear: – ON OFF TIMED : On-Off timed	.	14.1
M6.2	Prop Band ±10.0c Integ Time 300s	Proportional Band in ± °C. Integral Time in seconds.	Appears if **B5** configured. & if **M6.1** is: ON-OFF PI	14.1
	Different 10.0c	Temperature differential in °C.	Appears if **B5** configured & if **M6.1** is : ON-OFF DIFFER	14.1
M6.3	Minimum time On: 0s Off: 0s	Minimum switching on and off times with On-Off control.	Appears if **B5** configured.	14.2
M6.4	Switching Off delay : 0s	Delay time in switching off after "Off" from program or from temperature	.	14.2
M6.5	Change Prog cp1 TEMPER 21.0c	Choice of programme to override control M1 by closure of switch **cp1** : – NO : does not act;; – 7 DAY1…7 : Set in **M2.** ; – 24 HOUR1…25 : Setin **M2.** ; – TEMPER xx.x c : with desired temp.set as required. If **B5 is** configured. – ON : always On. If **B5** not configured	Appears only if **M8.2** is: SWITCH cp1. .	16.1
M6.6	Priority :NO Anticondens :NO	Priority function : YES ; NO. Anticondensing function : YES; NO.	Appears if in **M8.6** C-Ring enabled.	16.2.3
M6.7	Antibacteria:NO Temp:70c for090m	Antibacteria function :YES ; NO. Temp. & duration of Antibacteria function.	Appears if **B5** configured.	16.4
M6.8	Antibacteria 02.00 MONandTHU	Antibacteria function will operate:: – MON ; – TUE; – WED ; – THU; – FRI; – SAT ; – SUN ; - - - ;	Appears if **B5** configured.	16.4

M7. SETTING M2 CONTROL (LED 6.9 flashes)

Ref.	Display	Description	Notes	Sect.
M7.1	Control mode: ON-OFF DIFFER	Choice control mode if **B6** configured: – ON-OFF PI : On-Off prop. integ. – ON-OFF DIFFER : On-Off differential If **B6** not configured there will appear: – ON-OFF TIMED : On-Off timed.	.	14.1
M7.2	Prop Band ±10.0c Integ time 300s	Proportional band in ± °C. Integral time in seconds	Appears if **B6** configured and if **M7.1** is : ON-OFF PI	14.1
	Different 10.0c	Temperature differential in °C.	Appears if **B6 configured** and if **M7.1** is : ON-OFF DIFFER	14.1
M7.3	Minimimum time On: 0s Off: 0s	Minimum switching on and off times by On-Off control	Appears if **B6** configured	14.2
M7.4	Switching Off delay : 0s	Delay time in switching off after "Off" from program or temperature	.	14.2
M7.5	Change prog cp2 TEMPER 21.0c	Choice of programme to override control M2 by closure of switch **cp2** : – NO : does not act; – 7DAY 1…7 : Set in **M3.** ; – 24HOUR1…25 : Set in **M3.** ; – TEMPER xx.x c : with desired temp set as required. If **B6** is configured – ON : always On. if **B6 not** confugured – OFF : always Off.	Appears only if **M8.3** is : SWITCH cp2. .	16.1
M7.6	Priority :NO Anticondens :NO	Priority function : YES ; NO. Anticondensing function : YES; NO.	Appears if in **M8.6** is enabled il C-Ring.	16.2.3
M7.7	Antibacteria: NO Temp:70c per090m	Antibacteria function :YES; NO. Temperature & duration of Antibacteria function	Appears if **B6** configured	16.4
M7.8	Antibacteria 02.00 MONandTHU	Times and days of week (1 or 2) in which antibacteia function will operate –MON ; – TUE ; – WED; – THU ; – FRI ; – SAT; – SUM ; - - - ;	Appears if **B6** configured	16.4

M8. CONFIGURATION RTR 628

Ref.	Display	Description	Notes	Sect.
M8.1	Config. detector 1 – – – – –	Config. detectors connected (inputs B-M). – = detector not connected; number = detector connected. Factory setting: B1 configured (cannot be disabled)	1 : Primary detector controller Y1 (**B1**). 2 : Flow detector controller Y1 (**B2**). 3 : Temp.adjuster controller Y1 (**Rt°**). 5 : Detector controller M1 (**B5**). 6 : Detector controller M2 (**B6**). 7 : Change prog. switch (**cp**) controller Y1.	12.
	Change config detectors ??	Warning of configuration change, to prevent any changes made to Event times & to setting data from being cancelled – YES : confirms the change; – NO : returns to previous configuration.	Appears when configuration of a detector is changed	12.
M8.2	E1 input: NO	Configuration input E1-D : – NO : input not used. – cp1SWITCH : prog. change switch **cp1** for controller M1 is connected.	.	16.4
M8.3	E2 input: NO	Configuration input E2-D : – NO : input no used. – cp2 SWITCH : prog. change switc **cp2** for controller M2 is connected	.	16.4
M8.4	CRing connection: NO	– NO : Not connected in C-Ring. – PRIMARY : Connected in C-Ring as Primary –SECONDARY:Connected in C-Ring as secondary		11.1
M8.5	Temp to send to CRing: -- -- --	Enabling desired temp. to send to C-Ring. -- = temp. not sent; number = temp. sent. Factory setting: all disabled.	Appears if **M8.4** is : PRIMARY or SECONDARY. Y1 : temp.required by controller Y1. If **M8.4** is : PRIMARY cannot be enabled M1 : temp.required by controller M1. M2 : temp.required by controller M2.	11.1
M8.6	Increase temp to CRing: + 0c	Entering Increase in desired temperatures sent to C-Ring.	Appears if **M8.4** is : PRIMARY or SECONDARY.	11.1
M8.7	FunctionalAlarms 8	Alarm for fault internal clock. Signalled bysegnalato letter A alternating with number 8.	.	17.
M8.8	Detector alarms – – – – – –	Enabling detector alarms.. – = alarm not enabled number = alarm enabled. Factory setting: all disabled.	1 : Primary detector controllerY1 (**B1**). 2 : Flow detector controller Y1 (**B2**). 5 : Detector controller M1 (**B5**). 6 : Detector controller M2 (**B6**). 8 : Alarm C-Ring.	17.
M8.9	Choice keynumber ----	Choice keynumber for preventing use: 1901 … 1999	To cancel keynumber press + and – together.	16.5
M8.10	Site name ----------	Enter name plant site.	Use + and – to enter letters or numbers Use ← and → to change position.	16.6
M8.11	ControllerNameY1 ----------	Entering controller name Y1.	Use + and – to enter letters or numbers Usare ← and → to change position.	16.6
M8.12	ControllerNameM1 ----------	Entering controller name M1.	Use + and – to enter letters or numbers Use ← and → per cambiare posizione.	16.6
M8.13	ControllerNameM2 ----------	Entering controller name M2.	Use + and – to enter letters or numbers. Use ← and → to change position.	16.6

M9. TESTING

Ref.	Display	Description	Notes	Sect.
M9.1	CRing:??	?? = test C-Ring in progress or test negative YES = test positive	Appears if in **M8.6** C-Ring enabled.	18.1
M9.2	Output:Y1 VALVE Status:IDLE	Choice outputs to test: : – Y1 VALVE : if **M5.2** is : – MODULATING – Y1 1 ST : if **M5.2** is : – PI 1 STAGE – DIFFER 1 STAGE – Y1 2 ST.: if **M5.2** is : – PI 2 STAGES – DIFFER 2 STAGES – M 1; – M 2; – Emin; – Emax Choice output status : With Y1 VALVE : – IDLE ; – CLOSES ; – OPENS With Y1 1st Stage , M1 , M2 , Emin , Emax : – ON ; – OFF. With Y1 2nd Stage : – ON 1 ; – ON 2 ; – OFF.		18.2

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