

# SERVICE & SETUP MANUAL



## BOILER & WATER HEATER CONTROL

## INDEX

1	TECHNICAL DATA _____	3
2	WIRING DIAGRAMS _____	3
3.	DISPLAY AND INTERFACE _____	4
3.1	KEYBOARD _____	4
3.2	MEANING OF LEDS _____	5
3.3	UPPERDISPLAY (PROBE 2 AND 3) AND THE DIFFERENCE BETWEEN PROBE 1 AND 2 _____	6
3.4	LOWER DISPLAY (PROBE 1 AND TIME) _____	6
3.5	TO SET THE CURRENT TIME AND DAY (QUICK WAY) _____	6
3.6	TO SET THE ENERGY SAVING TIME (QUICK WAY) _____	6
3.7	TO SET THE ANALOG OUTPUT (QUICK WAY) _____	7
3.8	HOW TO SEE THE WORKING HOURS OF LOADS _____	7
3.9	HOW TO RESET THE WORKING HOURS OF LOADS _____	7
4.	PROGRAMMING _____	7
4.1	SET POINTS PROGRAMMING _____	7
4.2	HOW TO ENTER AND CHANGE PARAMETERS IN THE "PR1" LIST _____	8
4.3	HOW TO ENTER AND CHANGE PARAMETERS IN THE "PR2" LIST _____	8
4.4	HOW TO CHANGE THE PARAMETER VALUE _____	8
4.5	HOW TO LOCK THE KEYBOARD _____	8
5.	PARAMETERS _____	9, 10, 11
6.	RELAY OUTPUTS _____	11
6.1	OUTPUT 1 _____	11
6.2	OUTPUT 2 _____	12
6.3	OUTPUT 3 _____	12
6.4	OUTPUT 3 ALTERNATE SET POINT _____	13
7.	MODULATION OUTPUT _____	14
8.	MODULATION BUFFER _____	14
9.	DYNAMIC RESET OF SET1 _____	15
10.	WARM WEATHER SHUT DOWN _____	15
11.	HOT KEY PROGRAMMING _____	15
12.	ALARMS _____	16
12.1	DIGITAL INPUT ALARMS _____	16
12.2	BUZZER _____	16
12.3	ALARM RECOVERY _____	16

## 1. TECHNICAL DATA

**Housing:** self extinguishing ABS.

**Case:** facia 100x64 mm; depth 76mm

**Mounting:** panel mounting in a 56x72 mm panel cut-out with two screws.  $\varnothing$  3x2mm. Distance between the holes 40mm

**Protection:** IP20.

**Frontal protection:** IP65 with optional frontal gasket mod. RGW-V

**Connections:** Spade on connectors 6.3 mm for supply and relays and 4÷20mA-  
Screw terminals block for probes, digital input

**Power supply:** 24Vac Class 2

**Power absorption:** 7VA max.

**Display:** dual display

**Relay outputs:** 3 relay 8(3)A

**Other output :** alarm buzzer

4.20mA modulation output

**Inputs:** 3 NTC probes

**Digital inputs:** 3 voltage free

**Hot key facility** for fast programming

**Serial output :** TTL standard

**Communication protocol:** Modbus - RTU

**Data storing:** on the non-volatile memory (EEPROM).

**Internal clock back-up:** 24 hours

**Kind of action:** 1B.

**Pollution grade:** normal

**Software class:** A.

**Operating temperature:** 32÷140°F (0÷60 °C)

**Storage temperature:** -13÷140°F (-25÷60 °C)

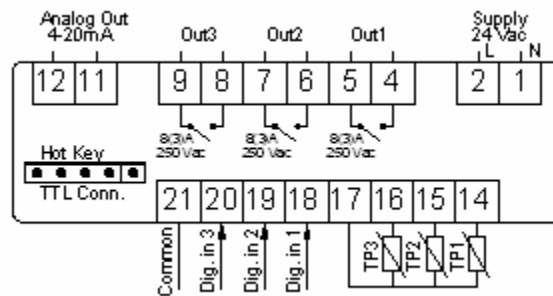
**Relative humidity:** 20-85% (no condensing)

**Measuring and regulation range: NTC probe:** -58÷230°F (-40÷110°C)

**Resolution:** 1°F or 1 °C (selectable).

**Accuracy (ambient temp. 77°F):**  $\pm 1$  °F  $\pm 1$  digit







## 2. WIRING DIAGRAMS





### 3. DISPLAY AND INTERFACE







#### 3.1 KEYBOARD

-  - Displays and modifies target set point;
- SET** - In programming mode it selects a parameter or confirms an operation.
-  - Displays and modifies the energy saving (Night Time Setback) settings.
- UP** - In programming mode it browses the parameter codes or increases the displayed value.
-  - Displays the working hours of the load relays.
- DOWN** - In programming mode it browses the parameter codes or decreases the displayed value.
-  - Changes lower display from inlet temperature to current time and day.
- CLOCK** - To set the current time and day.
-  - Changes upper display from outlet temperature to outdoor reset temperature probe reading and displays the temperature difference of the inlet temperature and the outlet temperature.
- EXT** - In programming mode it sets the modulation output (4-20mA output). Password is required (321).
-  - Switch ON and OFF the instrument.
- ON/OFF**




















## KEY COMBINATIONS

 +  To lock and unlock the keyboard.

 +  To enter the programming mode.

 +  To exit the programming mode.

### 3.2 LED ICON LEDGEND


LED	MODE	Function
°F	ON	Temperatures are displayed in degrees Fahrenheit.
°C	ON	Temperatures are displayed in degrees Celsius.
	Flashing	Output 1 time delay. Output 1 will not energize until AC1 time delay expires.
	ON	Output 1 relay is on.
	Flashing	Output 2 time delay. Output 2 will not energize until A21 time delay expires.
	ON	Output 2 relay is on.
	Flashing	Output 3 time delay. Output 3 will not energize until AC3 time delay expires.
	ON	Output 3 relay is on.
	ON	Modulation output signal is in manual control mode. Parameter <i>PS4</i> should be set to nu for automatic operation.
	ON	Modulation output signal is automatically controlled by temperature probe 1
	Flashing	Modulation output time delay is activated. Modulation output will remain at 4mA until the AC4 time delay expires.
Ext	ON	The outside temperature is displayed
	FLASHING	Low gas pressure alarm (digital input 2 activated) When both  and  are flashing other safety interlocks such as low water cut-off or high temperature limit may be in failure.
	FLASHING	High gas pressure alarm (digital input 3 activated) When both  and  are flashing other safety interlocks such as low water cut-off or high temperature limit may be in failure.
	ON	Lower LED display is displaying time clock
Pr1	ON	In Pr2 signals that the parameter is present also in Pr1
	FLASHING	ALARM signal
	FLASHING	Programmed working hours limit is exceeded
	ON	Working hours are displayed in the lower LED display
ES	ON	The Energy saving function is running

### 3.3 UPPER LED READOUT (PROBE 2 AND 3) AND THE DIFFERENCE BETWEEN PROBE 1 AND 2

The upper LED display will display as default the temperature sensed at (probe 2) usually the outlet of the heater. The **dS2** parameter defines the default readout.

To pass from the outlet temperature (Probe 2) to the outdoor temperature (Probe 3) and viceversa, push and release


the  button.

Push the  button again and the difference between (Probe 1) usually the inlet temperature and out (probe 2) (P1-P2) will be displayed flashing for 15s. Then the controller will revert to (Probe 2) display.



NOTE: When the TempTrac control is applied to the PRIMERA, (Probe 1) will come installed on the inlet of the appliance and (Probe 2) will be installed on the outlet of the appliance. The difference between (Probe 1) and (Probe 2) is important in achieving the proper temperature rise through the appliance. (Probe 1) may be relocated to a storage tank or a common header after completing the initial start up.

### 3.4 LOWER LED READOUT (PROBE 1 AND TIME)

The lower LED readout will display as the default (Probe 1). The **dS1** parameter defines the default readout. In a boiler, (Probe 1) will be inserted at the desired point of temperature control. In a water heater, (Probe 1) will be inserted into the side arm storage tank.

By pressing and releasing the  button once, the lower LED readout will display the Time of Day. Press again to return to default display.

### 3.5 TO SET THE CURRENT TIME AND DAY (MILITARY TIME)



1. Push and hold the  key for more than 3 seconds: The  LED starts flashing and the following message is displayed:
  - **Hur** (hour) in the upper display, its value in the lower display.
2. Pushing the **UP** and **DOWN** keys, minutes and day of the week will be displayed
  - **Min** (Minute) in the upper display, its value in the lower display.
  - **dAY** (day) in the upper display, its value in the lower display.
3. By pushing the **SET** key, the value will start flashing and setting the current hour, minutes and day will be possible.
4. To exit push **SET + UP** keys or wait 30 seconds without pressing any keys.

### 3.6 TO SET THE ENERGY SAVING TIME

1. Push the **UP/ES** key for more than 3 seconds and the first parameter of the energy saving will be displayed.
2. Use **UP** and **DOWN** keys to browse them.
3. To change a value push **SET** key followed by **UP** or **DOWN**.
4. To exit, press **SET + UP** or wait 30s without pressing any key.

### 3.7 TO SET THE MODULATION OUTPUT MANUALLY





1. Push and hold the  key for more than 3 seconds.  LED switches ON and the **PS4** parameter is displayed in the upper display, while the **PAS** label is shown in the lower display.
2. Release the key, and insert the password as described in the par. 4.3. The value of the par. **PS4** will be displayed in the lower display. **(nu)** stands for not used. Return to this condition for automatic operation.
3. To adjust modulation manually, push the **SET** key, the value starts flashing. Then use **UP** or **DOWN** keys to modified it.
4. To exit, press **SET + UP** or wait 30s without pressing any key.

**NOTE:** After a modification, it will be possible to enter the Modulation output setting without entering the password for 10min. After this time you will be asked for the password again.

### 3.8 HOW TO SEE THE WORKING HOURS OF RELAY OUTPUTS



1. Push the  key for more than 3 seconds,  LED switches ON, the display 2 will show **ou1** and the display 1 will show the working hours of the relay 1.
2. By pushing **UP** or **DOWN** keys, the working hours of other outputs are displayed.
3. To exit, press **SET + UP** or wait 30s without pressing any key.

### 3.9 HOW TO RESET THE WORKING HOURS OF RELAY OUTPUTS

1. To reset the working hours of a load enter Pr2 menu. See section 4.3
2. Select the parameter: **ou1** for the output 1 or **ou2** for output 2 or **ou3** for output 3.
3. Push the **SET** key, and the value will start flashing, use the **DOWN** key to decrease the value.

## 4. PROGRAMMING

### 4.1 SET POINTS PROGRAMMING

1. Push the **SET** key, the upper display will show the "**St1**", while the lower display will show its value.
2. Use the **UP** and **DOWN** key to see the set point to be modified.
3. Push the **SET** key to modify the displayed value. It starts flashing.
4. To change it push the **UP** or **DOWN** keys.
5. Push the **SET** key to confirm the value and pass to the setting of next set point.
6. Repeat the operations for additional set points.

**To exit:** press **SET + UP** or wait 30s without pressing any key

**NOTE:** each point has a time out of 30 seconds. If no key is pressed within 30s the controller exits the set points programming procedure.

**NOTE:** the set value is stored even when the procedure is exited by waiting for the time-out to expire.

#### 4.2 HOW TO ENTER AND CHANGE PARAMETERS IN THE “PR1” LIST ( NOT PASSWORD PROTECTED)





1. Enter the Programming mode by pressing the **Set** and **DOWN** key for 3s.
  2. Select the required parameter. The name of the parameter is on the upper display and its value is on the lower display.
  3. Press the “**SET**” key: the value of the parameter will start blinking.
  4. Use “**UP**” or “**DOWN**” to change the value.
  5. Press “**SET**” to store the new value and move to the following parameter.
- To exit:** Press **SET + UP** or wait 30s without pressing a key.

**NOTE:** the set value is stored even when the procedure is exited by waiting for the time-out to expire.

#### 4.3 TO ENTER IN PARAMETERS LIST “PR2” (PASSWORD PROTECTED)

1. Enter the “Pr1” level.
2. Press the DOWN key.
3. Select “Pr2” – “PAS” parameter and press the “**SET**” key.
4. The value “0 - -” with a flashing zero is displayed.
4. Use **UP** or **DOWN** keys to input the security code in the flashing digit; confirm the figure by pressing “**SET**”. The security code is “321”.

**NOTE:** each parameter in “Pr2” can be removed or put into “Pr1” (user level) by pressing  +  . When a parameter is present also in “Pr1” the “Pr1” icon is on.

#### 4.4 HOW TO CHANGE THE PARAMETER VALUE IN “PR2”

1. Enter the Programming mode.
  2. Select the required parameter with **UP** or **DOWN** keys.
  3. Press the “**SET**” key and the value will start blinking.
  4. Use **UP** or **DOWN** keys to change its value.
  5. Press “**SET**” to store the new value and move to the next parameter.
- To exit:** Press **SET + UP** or wait 30s without pressing a key.

**NOTE:** the new programming is stored even when the procedure is exited by waiting for the time-out.

#### 4.5 HOW TO LOCK THE KEYBOARD



1. Keep the **UP** and **DOWN** keys pressed together for more than 3 s.
2. The “POF” message will be displayed and the keyboard is locked. At this point it is only possible to view the set point.
3. Repeat step 1 to unlock the keyboard.

## 5. PARAMETERS

All the parameters can be set in:

- Pr1: immediately accessible menu
- Pr2: password protected menu
- Pr3: factory only programmable menu. Modifications can be made via HOT KEY.

Label	Menu	Name	Range	Note
		<b>REGULATION</b>		
Set1	Pr1	Set point1	LS1÷US1	
Set2	Pr1	Set point2	LS2÷US2	
Set3	Pr1	Set point3	LS3÷US3	
Set5	Pr1	Set point5	-20÷70°F	EMBLEM
Hy1	Pr2	Differential for set1	-22÷22°F	
LS1	Pr2	Minimum set point 1	-40°F÷SET	
US1	Pr2	Maximum set point 1	SET ÷ 230°F	
AC1	Pr2	Anti-short cycle delay for output 1	0÷30 min.	
S2c	Pr3	Configuration of Set2: dependent on set1 or independent	diP; ind	
Hy2	Pr2	Differential for set2	-22÷22°F	
LS2	Pr2	Minimum set point 2	-40°F÷SET2	
US2	Pr2	Maximum set point 2	SET2 ÷ 230°F	
AC2	Pr2	Anti-short cycle delay for output 2	0÷30 min.	
S3c	Pr2	Configuration of Set3: dependent on set1 or independent	diP; ind	
Hy3	Pr2	Differential for set3	-22÷22°F	
LS3	Pr2	Minimum set point 3	-40°F÷SET3	
US3	Pr2	Maximum set point 3	SET3 ÷ 230°F	
AC3	Pr2	Anti-short cycle delay for output 3	0÷30 min.	
O3p	Pr2	Probe selection for output 3	Pb1/Pb2	EMBLEM
SSE	Pr2	Set point shift for output 3 enable disable	Yes/No	EMBLEM
Hy5	Pr2	Differential for set point 5	-22÷22°F	EMBLEM
AC5	Pr2	Anti-short cycle delay for output 3 alternate set point	0÷30 min.	EMBLEM
ACA	Pr2	Time delay between the St3 to St5 set point	0÷15 min.	EMBLEM
		<b>MODULATION OUTPUT 4÷20mA (output 4)</b>		
S4c	Pr3	Configuration of Set4: dependent on set1 or independent	diP; ind	
St4	Pr2	Modulation output set point	with S4c=diP: -100÷100°F With S4c=ind -40÷230°F	
SR	Pr2	Modulation output band width	-100÷100°F	with sr<0: heating
TH4	Pr2	Outdoor temperature threshold for forcing to 4ma the modulation output	°F ÷ 230°F	
HY4	Pr2	Differential for the restart of normal modulation output	-45 ÷ -1 °F	
Ac4	Pr2	Anti-short cycle delay for output 4	0÷30 min.	
PS4	Pr2	Modulation output percentage	0÷100, nu	
PP4	Pr3	Modulation output percentage with fault probe 1	0÷100, nu	
		<b>DYNAMIC RESET</b>		
tt	Pr2	Outdoor temperature threshold for dynamic reset of SET1	-40÷230°F	
rr2	Pr2	Outdoor temperature band width	-100÷100°F	with rr2<0: heating
rr1	Pr2	Maximum shift of SET1	-100÷100°F	with rr1<0: heating
tt2	Pr2	Outdoor temperature threshold to open all the loads	-40÷230°F	
Ht2	Pr2	Differential to restart normal working of controller	-45 ÷ -1 °F	

Label	Menu	Name	Range	Note
		<b>DIGITAL INPUTS</b>		
i1P	Pr3	Digital input 1 polarity	CL÷OP	
i2P	Pr2	Digital input 2 polarity	CL÷OP	
i2d	Pr3	Digital input 2 alarm delay	0÷255 min.	
i3P	Pr2	Digital input 3 polarity	CL÷OP	
i3d	Pr3	Digital input 3 alarm delay	0÷255 min.	
		<b>DISPLAY</b>		
CF	Pr3	Temperature measurement unit	°C ÷ °F	
rES	Pr3	Resolution (integer/decimal point) only for °C	in ÷ de	
dS1	Pr2	Default showing for lower display	Pb2, Pb3	
dS2	Pr2	Default showing for upper display	Pb1; tiM	
		<b>ALARMS</b>		
ALC	Pr3	Temperature alarms configuration: dependent on SET1 or independent	rE÷Ab	
ALU	Pr2	MAXIMUM temperature alarm, referring to TP1	-40÷230°F	
ALL	Pr2	Minimum temperature alarm, referring to TP1	-40÷230°F	
AFH	Pr2	Differential for temperature alarm recovery	1÷45°F	
ALd	Pr2	Temperature alarm delay	0÷255 min.	
dAO	Pr2	Delay of temperature alarm at start up	0 ÷ 23h 50 min.	
		<b>TEMPERATURE INPUTS</b>		
oF1	Pr3	First probe calibration	-21÷21°F	
P2P	Pr2	Second probe presence	yES; no	
oF2	Pr3	Second probe calibration	-21÷21°F	
P3P	Pr2	Third probe presence	yES; no	
oF3	Pr3	Third probe calibration	-21÷21°F	
		<b>TIME AND DATE</b>		
Hur	Pr2	Current hour	0 ÷ 23	
Min	Pr2	Current minute	0 ÷ 59	
dAY	Pr2	Current day	Sun ÷ SAt	
		<b>ENERGY SAVING TIMES</b>		
E1	Pr2	Energy saving start on Sunday	0 ÷ 23h 50 min. - nu	
S1	Pr2	Energy saving stop on Sunday	0 ÷ 23h 50 min. - nu	
Sb1	Pr2	Set back temperature on Sunday	-40÷40°F	
E2	Pr2	Energy saving start on Monday	0 ÷ 23h 50 min. - nu	
S2	Pr2	Energy saving stop on Monday	0 ÷ 23h 50 min. - nu	
Sb2	Pr2	Set back temperature on Monday	-40÷40°F	
E3	Pr2	Energy saving start on Tuesday	0 ÷ 23h 50 min. - nu	
S3	Pr2	Energy saving stop on Tuesday	0 ÷ 23h 50 min. - nu	
Sb3	Pr2	Set back temperature on Tuesday	-40÷40°F	
E4	Pr2	Energy saving start on Wednesday	0 ÷ 23h 50 min. - nu	
S4	Pr2	Energy saving stop on Wednesday	0 ÷ 23h 50 min. - nu	
Sb4	Pr2	Set back temperature on Wednesday	-40÷40°F	
E5	Pr2	Energy saving start on Thursday	0 ÷ 23h 50 min. - nu	
S5	Pr2	Energy saving stop on Thursday	0 ÷ 23h 50 min. - nu	
Sb5	Pr2	Set back temperature on Thursday	-40÷40°F	
E6	Pr2	Energy saving start on Friday	0 ÷ 23h 50 min. - nu	
S6	Pr2	Energy saving stop on Friday	0 ÷ 23h 50 min. - nu	
Sb6	Pr2	Set back temperature on Friday	-40÷40°F	
E7	Pr2	Energy saving start on Saturday	0 ÷ 23h 50 min. - nu	
S7	Pr2	Energy saving stop on Saturday	0 ÷ 23h 50 min. - nu	
Sb7	Pr2	Set back temperature on Saturday	-40÷40°F	

Label	Menu	Name	Range	Note
<b>WORKING HOURS</b>				
oP1	Pr2	working hours limit of relay 1	0÷9999h; with 0 the function is disabled	
oP2	Pr2	working hours limit of relay 2	0÷9999h; with 0 the function is disabled	
oP3	Pr2	working hours limit of relay 3	0÷9999h; with 0 the function is disabled	
oP1	Pr2	working hours of relay 1	---	
oP2	Pr2	working hours of relay 2	---	
oP3	Pr2	working hours of relay 3	---	
<b>OUTPUTS SETTING</b>				
1on	Pr2	The output 1 is always on/off <b>or</b> depending on temperature	rEG; YES; no	
2on	Pr2	The output 2 is always on/off <b>or</b> depending on temperature	rEG; YES; no	
3on	Pr2	The output 3 is always on/off <b>or</b> depending on temperature	rEG; YES; no	
<b>OTHER</b>				
Adr	Pr2	Serial address	0÷247	
rEL	Pr2	Software release	readable only	
Ptb	Pr2	Parameter map code	readable only	

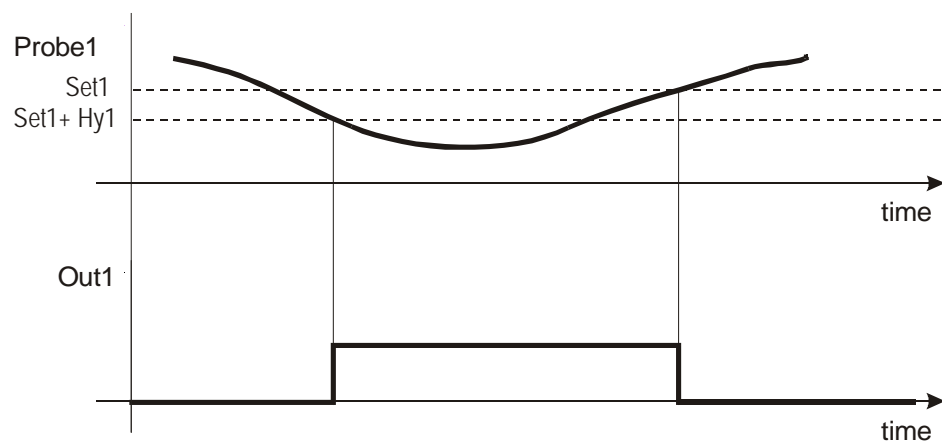
## 6. RELAY OUTPUTS

### 6.1 OUTPUT 1 CALL FOR HEAT

Kind of action: heating

Reference probe: TP1

Related Parameters: Set1, Hy1, LS1, US1, AC1

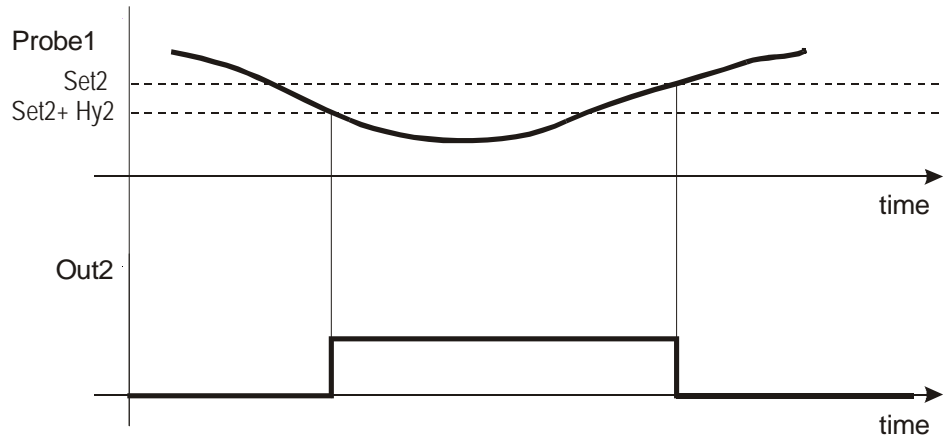


## 6.2 OUTPUT 2 2<sup>ND</sup> STAGE

**Kind of action:** heating

**Reference probe:** TP1

**Related Parameters:** S2c, Set2, Hy2, LS2, US2, AC2

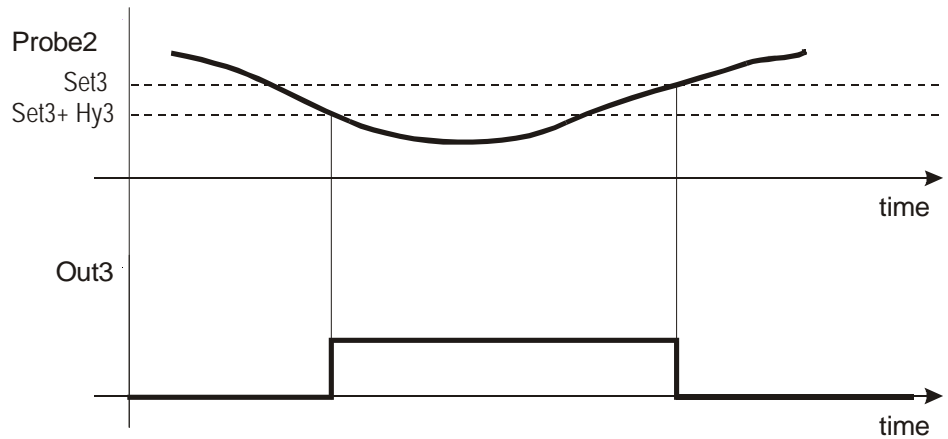


## 6.3 OUTPUT 3 FREEZE PROTECTION

**Kind of action:** heating

**Reference probe:** TP2

**Related Parameters:** S3c, Set3, Hy3, LS3, US3, AC3



## 6.4 OUTPUT 3 ALTERNATE SET POINT

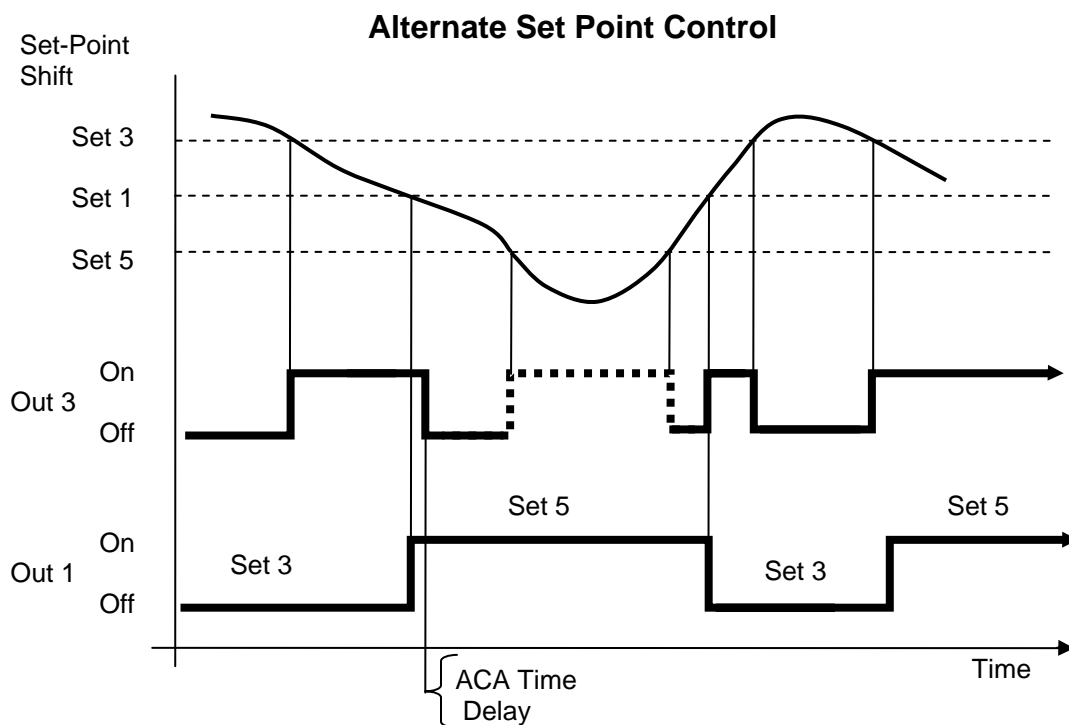
**Kind of action:** heating

**Reference probe:** TP1 or TP2

**Related Parameters:** Set3, Hy3, LS3, US3, AC3, Set5, Hy5, o3P, SSE, AC5, ACA

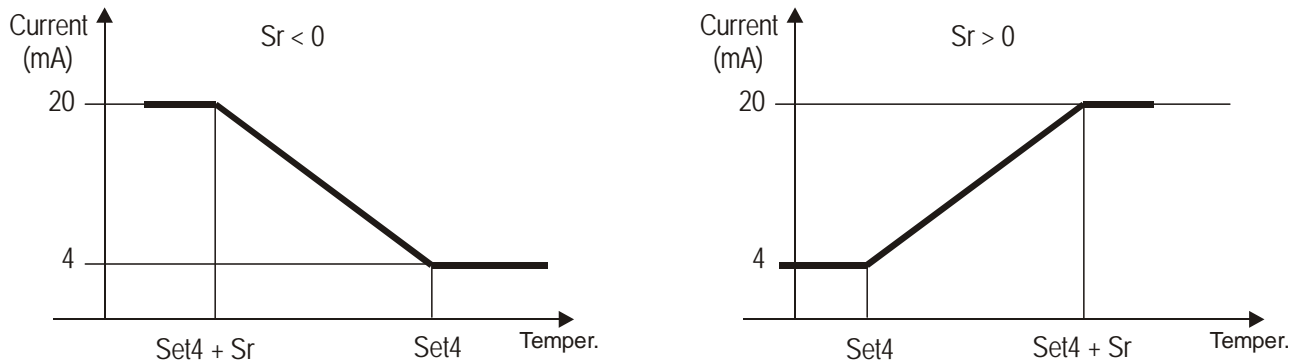
### NOTES

1. When SSE is enabled and Output 1 is in a de-energized state (off) Output 3 will function according to Set3. When Output 1 is in an energized state Output 3 will function according to Set 5.
2. ACA delays the change from Set3 to Set5.
3. o3P selects temperature probe to be referenced by Output 3.
4. Hy1, Hy3 and Hy5 are active but not shown in this illustration.



## 7. MODULATION OUTPUT


**Kind of action:** if  $Sr < 0$  heating; if  $Sr > 0$  cooling. See diagrams.



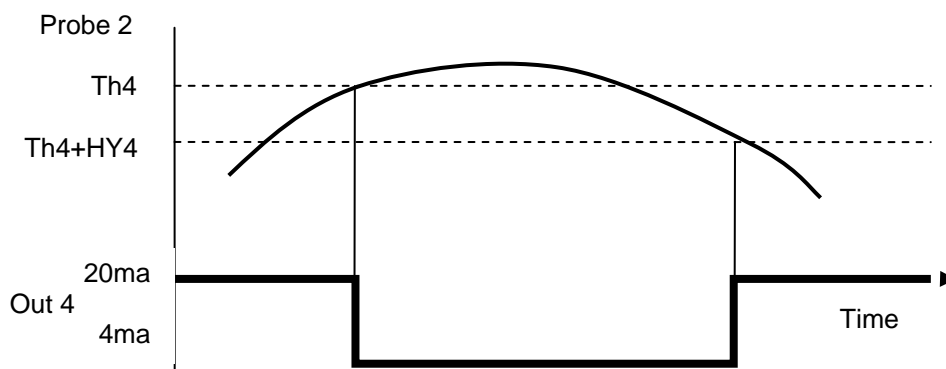
**Reference probe:** TP1

**Related Parameters:** S4c, St4, Sr, PS4, PP4, Ac4

### NOTES

5. The kind of action of the modulation output depends on the sign of the **Sr** parameter.
6. If the parameter **PS4** is different from **nu**, the percentage of the modulation output depends on the value set in **PS4**, independently from the value of the probe.
7. If the digital input 1 is activated the analog output is forced at 20mA independently from the value of the probe and the value of the **PS4** parameters.
8. If the probe **TP1** is broken, **PS4=nu** and the digital input 1 is off, the value of the modulation output depends on the **PP4** parameter.
9. The value of the **PS4** parameter can be set directly by the keyboard. See par. 3.6.
10. Anti-short cycle delay for the analog output: when the analog output reaches the 4mA, it is held at 4mA for this time. During this time the  icon is flashing. When this delay has expired, normal functioning of modulation output restarts. This delay will be reinitiated again after output 1 switches off.

## 8. MODULATION BUFFER



**Kind of action:** Heating.

**Reference probe:** TP2

**Related Parameters:** Th4, HY4

### NOTES

1. This function references probe **TP2** and will trigger output 4 to reduce the signal to 4mA when the temperature of **Th4** is reached by **TP2** and hold it until **TP2** drops below **TH4+HY4**. Output 4 then returns to normal operation referencing **TP1**.

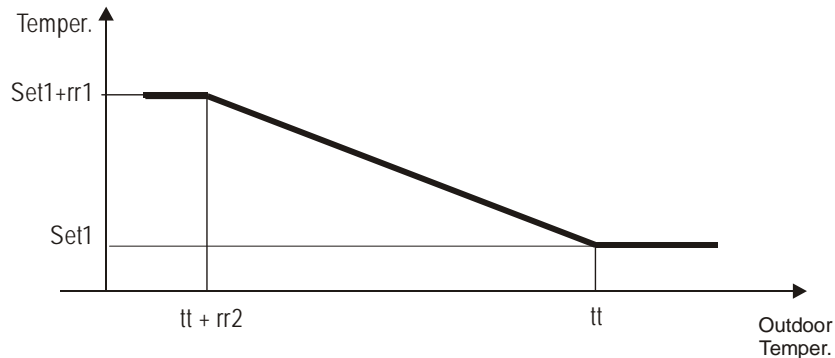
## 9. DYNAMIC RESET OF SET1

**Kind of action:** inverse

**Reference probe:** TP3

**Related Parameters:** tt, rr2, Set1, rr1

If the outdoor temperature is lower than “tt” the dynamic reset of the **Set1** action starts as described in the following diagrams.



### NOTES

1. With **rr1=0** the dynamic reset of the set point 1 is disabled.
2. If the **TP3** is not present (**P3P=no**) or broken, the dynamic reset of the set point 1 is disabled.

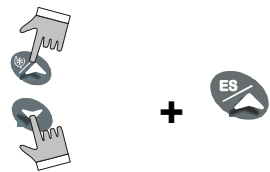
## 10. WARM WEATHER SHUT DOWN

The **tt2** parameter, referring to the outdoor probe TP3, establishes the upper threshold which all the relay outputs are open. Normal regulation restarts when **TP3 < tt2+Ht2**.

To disable this function set **tt2** to high a value. If the third probe is not present **P3P=no**, this function is disabled.

## 11. HOT KEY PROGRAMMING

To upload program from control to HOT KEY.



Insert **HOT KEY** into the TTL/HOT KEY connection on the back of the control. Press **UP** and **DOWN** keys together momentarily then press the **UP** key. The **uPL** message will appear while uploading is occurring and the **End** message will appear when finished. Push any key to return to normal operation.

To download program from HOT KEY to control.



Press the **ON/OFF** key to turn off the control. Insert the **HOT KEY** into the TTL connection on the back of the control. Press the **ON/OFF** key again and downloading will begin. The **DoL** message will appear while downloading is occurring and the **End** message will appear when finished. Push any key to return to normal operation.

If **err** message is displayed during upload or download the programming failed. The cause of a failed program may be user error, faulty control or Hot Key.

## 12. ALARMS

Alarm messages are displayed in the display 2 and alternated with the default message. These alarm messages are displayed together with the icon devoted to signalling the alarm conditions. See par. 3.2 about meaning of LEDs.

Message	Cause	Outputs
"P1"	TP1 probe failure	Relay 1 and 2, if depending on the probe, open; modulation output, if depending on the probe, according to the PP4 parameter.
"P2"	TP2 probe failure	Output 3 open;
"P3"	TP3 probe failure	Dynamic reset of set1 disabled Warm weather shut down disabled.
"HA"	Max. temperature alarm	Outputs unchanged
"LA"	Min. temperature alarm	Outputs unchanged
HP	High pressure alarm	Relays 1, 2, 3 open
LP	Low pressure alarm	Relays 1, 2, 3 open
Mn1	Maintenance alarm for output 1	Outputs unchanged.
Mn2	Maintenance alarm for output 2	Outputs unchanged
Mn3	Maintenance alarm for output 3	Outputs unchanged
"rtc"	The real time clock has lost its setting	Energy saving functions disabled
"rtF"	Real time clock failure	Energy saving functions disabled

### 12.1 DIGITAL INPUT ALARMS

The digital input alarms for High & Low Gas Pressure are activated when the corresponding terminal blocks are open or closed, depending on the settings of parameter i2p and i3p.

The corresponding icon will flash, and all the relay outputs will open.

The Instrument will revert to normal operation when the digital input is disabled + any button is pressed.

### 12.2 BUZZER

The buzzer is activated each time an alarm conditions occurs:

- high/low temp. alarm
- sensor failures
- digital inputs dg2 and dg3 activation.

The buzzer is silenced by pressing any key (alarm condition still present)

### 12.3 ALARM RECOVERY

1. Probe alarms: "P1" (TP1 faulty), "P2" and "P3"; automatically stop a few seconds after the probe returns to normal operation. Check connections before replacing the probe.
2. Temperature alarms "HA" and "LA" automatically stop as soon as probe 1 temperature returns to **AFH** degrees below the alarm value.
3. The digital input alarms recover when the digital input is disabled + any button is pressed
4. RTC alarm stops after programming the real time clock
5. RTF alarm requires the replacement of the real time clock.

**For additional information, contact the Riverside Hydronics customer service department at 800-990-5918.**