Relay 2 with $c_2=\text{dir}$. Temperature of probe 1 <= SP1+SP2-r2 $\rightarrow$ relay 2 ON
Temperature of probe 1 >= SP1+SP2 $\rightarrow$ relay 2 OFF

Mode ONOFF2 (On2)
Output works as in Independent ON/OFF control (Figure 1 and 2), but output 2 works as follows:

- Relay 2 with $c_2=\text{dir}$.
  Temperature of probe 2 >= SP2 $\rightarrow$ relay 2 OFF
  Temperature of probe 2 <= SP2+r2 $\rightarrow$ relay 2 ON

Neutral Area Mode (nEU)
Relay 1
Temperature of probe 1 >= SP1+r3 $\rightarrow$ relay 2 ON
Temperature of probe 1 <= SP1 $\rightarrow$ relay 2 OFF

Relay 2
Temperature of probe 1 <= SP1+SP2-r2 $\rightarrow$ relay 2 ON
Temperature of probe 1 >= SP1+SP2 $\rightarrow$ relay 2 OFF

Operation in case of error.
If probe 1 fails, the operation is through $c_3$.(See Parameter description)
If probe 2 fails, the operation is through $c_4$.(See Parameter description)
In case of memory failure, both relays will remain open.

Technical Data
Supply voltages
115 Vac 10%, 230 Vac 10%, 24 Vac/dc 10%, 12 Vac/dc 10%

Supply powers
4VA (230V/115V) 1,5VA(24V /12V)

Storage temperature
-20°C to 80°C (-4 to 176°F)

Operating temperature
0°C to 70°C (32 to 158°F)

Probe range
PTC -50°C to 150°C (-58 to 302°F)

Accuracy
Better than 1% of full scale

Resolution
0.1º (3 digits)

Display
3-digit and sign (red, green or blue)

Probe Input
PTC1000 probes (25ºC - 1000 Ohm)

KLKey Input
For a quick programming of all parameters

Output
2 relays OUT1 SPDT Relay Resistive load 16A OUT2 SPDT Relay Resistive load 8A
1HP 240Vac - 10FLA, 60LRA 250Vac
250Vac 8(3)A

Dimensions
Front 77 x 36 mm Depth 62 mm (3.03 x 1.42 x 2.44 inch)

Front Protection IP64
List of parameters

<table>
<thead>
<tr>
<th>Description</th>
<th>Units</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP1 Set Point 1</td>
<td>Degrees</td>
<td>0 to 6</td>
</tr>
<tr>
<td>SP2 Set Point 2</td>
<td>Degrees</td>
<td>0 to 7</td>
</tr>
<tr>
<td>r0 Dependency SP1 - SP2</td>
<td>Indicates if order for relay 2, SP2 is ind</td>
<td></td>
</tr>
<tr>
<td>r1 Differential for SP1</td>
<td>Degrees</td>
<td>0.1 to 200</td>
</tr>
<tr>
<td>r2 Differential for SP2</td>
<td>Degrees</td>
<td>0.1 to 200</td>
</tr>
<tr>
<td>r3 Band differential</td>
<td>Degrees</td>
<td>0.1 to 20.0</td>
</tr>
<tr>
<td>r4 Lowest value for SP2</td>
<td>Degrees</td>
<td>-99.9 to 9.9</td>
</tr>
<tr>
<td>r5 Lowest value for SP2</td>
<td>Degrees</td>
<td>-99.9 to 9.9</td>
</tr>
<tr>
<td>r6 Highest value for SP1</td>
<td>Degrees</td>
<td>302</td>
</tr>
<tr>
<td>r7 Highest value for SP1</td>
<td>Degrees</td>
<td>302</td>
</tr>
<tr>
<td>r8 Regulation or operating mode</td>
<td>Range</td>
<td>On/Off/2</td>
</tr>
<tr>
<td>A0 Alarm differential</td>
<td>Degrees</td>
<td>0.1 to 20.0</td>
</tr>
<tr>
<td>A1 Lowest alarm probe 1</td>
<td>Degrees</td>
<td>-99.9</td>
</tr>
<tr>
<td>A2 Minimum alarm probe 1</td>
<td>Degrees</td>
<td>0.1 to 99.9</td>
</tr>
<tr>
<td>A3 Minimum alarm probe 1</td>
<td>Degrees</td>
<td>0.1 to 99.9</td>
</tr>
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<td>Degrees</td>
<td>0.1 to 99.9</td>
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<td>Minutes</td>
<td>0 to 240</td>
</tr>
<tr>
<td>A6 Alarm probe 1 selection</td>
<td>Range</td>
<td>AHL/Aha/Anl</td>
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<td>Range</td>
<td>AHN/Ah2/Anl</td>
</tr>
<tr>
<td>A8 Default operation relay 1</td>
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<td>Opr/Clo</td>
</tr>
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<td>A9 Default operation relay 2</td>
<td>Range</td>
<td>Opr/Clo</td>
</tr>
<tr>
<td>P0 Temperature scale selection</td>
<td>Range</td>
<td>°C</td>
</tr>
<tr>
<td>P1 Calibration of probe 1</td>
<td>Degrees</td>
<td>-20.0 to 20.0</td>
</tr>
<tr>
<td>P2 Calibration of probe 2</td>
<td>Degrees</td>
<td>-20.0 to 20.0</td>
</tr>
<tr>
<td>P3 Decimal point</td>
<td>No/Yes</td>
<td></td>
</tr>
<tr>
<td>P4 Probe to be displayed</td>
<td>Sr/hdx</td>
<td></td>
</tr>
<tr>
<td>P5 Number of probes</td>
<td>Range</td>
<td>1/2</td>
</tr>
<tr>
<td>H0 Reprogramming</td>
<td>Range</td>
<td>0</td>
</tr>
<tr>
<td>H1 Keyboard protection</td>
<td>Range</td>
<td>No/Yes</td>
</tr>
<tr>
<td>H2 Operation led OUT1</td>
<td>Range</td>
<td>Dir/Inv</td>
</tr>
<tr>
<td>H3 Operation led OUT2</td>
<td>Range</td>
<td>Dir/Inv</td>
</tr>
<tr>
<td>H4 Address for serial communication</td>
<td>Numeric</td>
<td>0 to 999</td>
</tr>
<tr>
<td>H5 Access code to parameter</td>
<td>Numeric</td>
<td>0 to 999</td>
</tr>
</tbody>
</table>

A1 = Maximum alarm probe 1. Maximum alarm ON when probe 1 is higher than SP1+A1. Maximum alarm OFF when probe 1 is lower than SP1-A1-A0. 

A2 = Maximum alarm probe 2. Maximum alarm ON when probe 2 is higher than SP2+A2. Maximum alarm OFF when probe 2 is lower than SP2-A2-A0. 

A3 = Minimum alarm probe 1. Minimum alarm OFF when probe 1 is lower than SP1-A3. Minimum alarm ON when probe 1 is higher than SP1+A3+A0. 

A4 = Minimum alarm probe 2. Minimum alarm OFF when probe 2 is lower than SP2-A4. Minimum alarm ON when probe 2 is higher than SP2+A4+A0. 

A5 = Alarm probe 1 selection. AHN=Maximum and minimum alarm probe 1 enabled. Anl=No alarms probe 1. 


A8 = Default operation relay 1. Selection between direct or reverse operation for relay 1. 

A9 = Default operation relay 2. Selection between direct or reverse operation for relay 2. 

P0 = Temperature scale selection. °C. 


P2 = Calibration of probe 2. Calibration of probe 2. Offset degrees to be added to probe 2. 

P3 = Decimal point. If the displayed value of the probes is desired with decimals or not. 

P4 = Probe to be displayed. Probe always on the display. The other probe can be seen pressing the keys SET+UP. 

P5 = Number of probes. If P5=1, there is not ONOFF2 mode. If selected, it will operate as ONOFF1. 

H0 = Reprogramming. Parameter to reprogram the thermostat. 

H1 = Keyboard protection. Yes=Keyboard protected. To change the sets, enter into parameter and exit again. The protection is momentarily released. It switches on again 1 minute after the last key was pressed. No=Keyboard non protected.

Message display

Under normal operation, the temperature of the probe selected by P4 will be displayed, the following messages may also appear: 

-Err Memory reading error. 
-EP Error of the probe not shown on the display. 
-AH1 Minimum temperature alarm, probe 1. 
-AH1 Maximum temperature alarm, probe 1. 
-AH2 Minimum temperature alarm, probe 2. 
-AH2 Maximum temperature alarm, probe 2. 
-Opn/Open=ON. 
-Lo/Inv=OFF. 
-Short Probe. 
-Pressing SET with UP it displays the probe not selected by P4. When the probe not selected by P4 is displayed, it alternates its value with message Sd1 or Sd2 depending if its probe 1 or probe 2. The display shows when waiting for a value confirmation. 

Led indications.

Out1 : indicates relay 1 or Off as per parameter H2. If H2=dir, with relay 1 On, led lit, if H2=inv, with relay 1 On, led off. It blinks when SP1 is displayed. 

Out2: indicates relay 2 or Off as per parameter H3. If H3=dir, with relay 2 On, led lit, if H3=inv, with relay 2 On, led off. It blinks when SP2 is displayed. 

Setting SP1 and SP2.

Press and release SET. The current value of order 1 is displayed. 

P0 = Temperature scale selection. °C. 

P1 = Calibration of probe 1. Offset degrees to be added to probe 1. 

P2 = Calibration of probe 2. Offset degrees to be added to probe 2. 

P3 = Decimal point. 

P4 = Probe to be displayed sd/1 or sd/2. 

P5 = Number of probes. 

P6 = Reprogramming. 

P7 = Keyboard protection. 

P8 = Operation led OUT1. 

P9 = Operation led OUT2. 

H0 = Reprogramming. 

H1 = Keyboard protection. 

H2 = Operation led OUT1. 

H3 = Operation led OUT2. 

H4 = Serial communication address. Address for computer connection. 

H5 = Parameter entry code. Factory set as 0. 

Parameter setup

-Press SET for 8 seconds. Value 0 will blink. 
-With UP and DOWN input the code (factory set as 0).
-Press SET to confirm the code. If correct, the label of the first parameter will be displayed. 
-With UP or DOWN go to the desired parameter in the parameter list. 
-Press SET to see the value. 
-Press UP or DOWN change the value to the new value as desired. 
-Press SET to confirm and exit again to the parameter list. (Also to exit the list of parameter modification). 
-Press SET + DOWN to exit setup or wait for 1 minute. 

Resetting the keyboard code

You can setup to 0 the keyboard code switching the unit off and on while pressing the SET key. 

Buzzer disconnection

Press SET + DOWN turn off the buzzer alarm. The message of alarm continue appearing in the display.