

EHS INC.

**Electric Heating Systems, Inc.
109 North Gold Drive
Robbinsville, NJ 08691
Phone: (609) 259-4116
Fax: (609) 259-4119**

6-Way Fully-Auto Mobile Console

Standard Features Are:

50/73/90 KVA Air Natural Transformer
125 Amp 3 Phase Circuit Breaker
A Shunt Trip Facility in Association with Over Temp. Winding Protection
Primary 3-Phase Input Tapping options of 440/480/575v, 3ph, 60hz.
Secondary Output Voltage 65 & 80 Volt
110 Volt Fused Auxillary supply For Instrumentation, 1KVA
6 Channel ContactORIZED Switching
Individual Neon Indicators per Channel
Eurotherm "3216" Temperature Controllers
Size: 41" high x 33" deep x 23" wide
6" Heavy Duty Casters
4 Eye Hooks (one at each corner for lifting)

Power Console Parts

(1) 73KVA Marelco Transformer	Part # 21407
(1) 125Amp Circuit Breaker	Part # 21235
(1) Shunt Trip for Main Breaker	Part # 21236
(1) Eurotherm "3216" Master Controller	Part # 21429
(5) Eurotherm "3216" Slave Controllers	Part # 21430
(6) 110 Volt Neon Lights	Part # 21332
(3) Fuse Holders (5-Amp Fuses)	Part # 21333
(1) 0-200 Ammeter	Part # 21336
(6) CT Coils	Part # 21337
(12) 300Amp Female Panel Mounts	Part # 24502
(6) Single Female Type "K" T/C Jacks	Part # 21337
(6) Dual Female Type "K" T/C Jacks	Part # 25249
(6) SW200 Albright Contactors	Part # 21250
(1) 110 Volt Ground Fault Outlet	Part # 21332
(4) 6" Wheels	Part # 21238
(1) Replacement Frame	Part # 21256
(1) Left Side Panel	Part # 21370L
(1) Left Side Panel	Part # 21370R
(1) Front Panel	Part # 21374
(1) Rear Panel	Part # 21372
(1) Top	Part # 21371
(4) Eye Hooks	Part # 21380

Parts List Above for 2004-2006 Units

Read Carefully before operating

- 1) Upon receipt of your new Power Console visually inspect it for any damage that might have occurred during shipment. If there are any signs of damage please call EHS Immediately so a damage claim can be processed.
- 2) The Power Console Weighs 960 Pounds. Be very careful when loading and unloading using a fork-lift.
- 3) Never operate the Power Console with the sides or the top removed. Serious electrical shock can occur if care is not taken.
- 4) Always use a Primary Cable of #4 AWG minimum. Do not use anything smaller in size. The cable must be 4-Wire and the Power Console must be grounded at all times during use.
- 5) Make sure the Primary Input Tapings have been placed on the correct locations for the voltage you will be using i.e. 440/480/550 Voltage.
- 6) Make sure the Secondary Tapings have been placed on the correct locations for the heaters you will using i.e. 65/80 Voltage.
- 7) If you should have any questions please call us 24 hours a day 7 days a week at our office # (609) 259-4116

Getting Started set up Procedure


- 1) Make sure that all primary power connections are properly and tightly connected. Make sure that the unit is grounded and that the supply power is connected to the correct input tapings.
- 2) Connect the Triple Cable Sets to the output camlocks, and see that the corresponding thermal-couples are plugged into the proper T.C. jacks.


NOTE !! When attaching the thermal-couples to the workpiece or reattaching a broken thermal-couple, it is very important to temporarily disconnect the T.C. from the Jack on the Console and the Jack on the Recorder. The electrical spark of the TAU may travel through the T.C. wire and cause damage to the recorder or the controller.



- 3) Turn power on to the console.

OPERATING INSTRUCTIONS for the EUROTHERM 3216 MASTER / SLAVE CONTROLLER

There are four keys on the face of the 3216 Controller.

The “  “ key returns the operator to the **HOME** display.

The “  “ key is used to select new parameters.




The  key and the  key increase or decrease a value.

There are **four modes of operation** that can be used with the 3216 controller.

1. **Fully Automatic:** The **Master** controller runs a set program to its own zone and to any **Slave** controller that is set to **Remote**.
2. **Ramp to Set-Point:** The controller **ramps** to a set-point at a set **rate**. The controller is set to **Local, Auto**, with the **Ramp “ON”**.
3. **Straight to Set-Point:** The controller goes straight to the set point as quickly as possible when set to **Local, Auto**, with the **Ramp “OFF”**.
4. **Percentage Timer:** The controller turns on and off according to a set percentage when set to **Local, Manual**, with the **Ramp “OFF”**.

The following page displays a typical Stress program using the **Master** controller in the **Fully Auto** mode. Each **STEP** allows the operator to choose from one of three options or **STYP – Step Types**.


















- a. **StPt (set point) - RAMP (Ramp rate)**
- b. **SOAK (Time-Hours) (Time-Minutes)**
- c. **END (End of Program)**

The “  “ key moves from one option to another and the  and  keys are used to insert numbers for set point, ramp rate, or soak time values.


Scrolling messages appear on the bottom of the controller to give various status, set-up, or alarm information. For example; INPUT SENSOR BROKEN says that the Thermo-Couple is either broken or not plugged in.


Setting up a Program


On powering up the 3216 Controllers the operator will see **S.br** and a scrolling message indicating an open T.C.


1. Press the advance key  to see **rmt** and a scrolling message **L-R** and a scrolling message **“remote setpoint select”**. This indicates that the controller is in the Remote mode.
2. Press the advance key  to see **10** and a scrolling message **WIND**. This indicates that the current HOLD value is set to 10 degrees. At this setting the program will go into a HOLD state when the setpoint gets to 10 degrees over the input value. This number may be changed anytime within the program by using the   arrow keys.
3. Press the advance key  to see **1** and a scrolling message **STEP**. The controller is ready to accept an option for step 1.
4. Press the advance key  to see **StPt** and a scrolling message **STYP**. This is asking the operator to choose one of the following step options... **END (End of Program)** Choose StPt.
StPt (set point)
SOAK
5. Press the advance key  to see **500** and a scrolling message **SP**. This is asking the operator to choose a setpoint. This number may be changed by using the   arrow keys.
6. Press the advance key  to see **600** and a scrolling message **RATE**. This is asking the operator to choose a Ramp Rate. This number may be changed by using the   arrow keys.
7. Press the advance key  to see **2** and a scrolling message **STEP**. The controller is ready to accept an option for step 2.
8. Press the advance key  to see **StPt** and a scrolling message **STYP**. This is asking the operator to choose one of the following step options... **END (End of Program)** Choose StPt.
StPt (set point)
SOAK
9. Press the advance key  to see **1150** and a scrolling message **SP**. This is asking the operator to choose a setpoint. This number may be changed by using the   arrow keys.


10. Press the advance key  to see **250** and a scrolling message
“**RAMP RATE**” This is asking the operator to choose
a Ramp Rate. This number may be changed by using the   arrow keys.




11. Press the advance key  to see **3** and a scrolling message
“**current program step**” The controller is ready to accept an
option for step 3.

12. Press the advance key  to see **SOAK** and a scrolling message
“**STEP TYPE**” This is asking the operator to choose
one of the following step options... **END (End of Program)** Choose SOAK.
StPt (set point)
SOAK


13. Press the advance key  to see **1:30** and a scrolling message
“**SOAK TIME**” This is asking the operator to choose
an amount of time, in hours and minutes, for the program to stay at SOAK temperature.


14. Press the advance key  to see **4** and a scrolling message
“**current program step**” The controller is ready to accept an
option for step 4.

15. Press the advance key  to see **StPt** and a scrolling message
“**STEP TYPE**” This is asking the operator to choose
one of the following step options... **END (End of Program)** Choose StPt.
StPt (set point)
SOAK


16. Press the advance key  to see **500** and a scrolling message
“**END SETPOINT**” This is asking the operator to choose
a setpoint. This number may be changed by using the   arrow keys.


17. Press the advance key  to see **200** and a scrolling message
“**RAMP RATE**” This is asking the operator to choose
a Ramp Rate. This number may be changed by using the   arrow keys.


18. Press the advance key  to see **5** and a scrolling message
“**current program step**” The controller is ready to accept an
option for step 5.

19. Press the advance key  to see **END** and a scrolling message
“**STEP TYPE**” This is asking the operator to choose
one of the following step options... **END (End of Program)** Choose END.
StPt (set point)
SOAK


STARTING A PROGRAM

Press the “” key to see **60** and a scrolling message “*START SETPOINT*”. This is asking the operator **ST.SP.** to choose a setpoint for the program to start at. The default is the ambient temperature of the T.C. input.


Press the “” key to see **1** and a scrolling message “*Current Program Step*”. This is asking the operator **STEP** to choose a Step for the program to start at.

Press the “” key to see **60** and a ramping setpoint below. This ramping setpoint should be seen on **61..** all the slave controllers that are set to Remote.

The program is now running. OP 2 is the controller calling for heat. OP 4 is the controller in HOLD.













Parameters may be changed while running a program by pressing the “” key to see **1** (current step) and using the \triangle ∇ arrow keys to access “**PAUSE**” **STOP**

Change the required parameter value while the controller is in **PAUSE** and start the program running again by changing the **PAUSE** to **RESUME**.



TO STOP THE PROGRAM press the “” key to see **5** (current step) **STOP**

Press the “” key once more to see **500** **OFF** The program is now shut off.


Ramp to Set-Point Mode

1. Press the advance key  to see **rmt** and a scrolling message **“remote setpoint select”** **L-R** This indicates that the controller is in the **Remote** mode.
2. Press the  arrow key to change the **Remote** mode to **Local**. You will see **LoC** **L-R**
3. Press the advance key  to see **OFF** and a scrolling message **“Ramp Enable”**. **RP**
4. Press the  arrow key to change the **OFF** ramp to **ON**. **RP**
5. Press the advance key  to see **number value**. This is asking for a value to be chosen for the **Ramp Rate**. **RATE**
6. Press the  or  arrow keys to change the “number value “ to the desired **Ramp Rate**.
7. Press the advance key  to see **32** and a scrolling message **”TARGET SETPOINT “** **ESP** This is asking for a value to be chosen for the SET-POINT .
8. Press the  or  arrow keys to change the “number value “ to the desired **set point**.
9. Press the advance key  to see **AUTO** and a scrolling message **”LOOP MODE AUTO MANUAL OFF”**. **A-M**
10. Press the advance key  to see **1** and a scrolling message **”ADDRESS”** . **ADDR**


The controller will now start ramping from the input temperature to the target set-point (ESP), at the chosen Ramp Rate. The upper section of the display will begin **flashing** between the input value and **“Rp”**. The lower section of the display will show the ramping set-point.


Values for the Set point or the ramp rate may be changed any time throughout the heating process. The Ramp may also be put into **“pause”** (similar to **hold** in the **Remote Mode**) by pressing the advance key  to see **NO** and a scrolling message **”Ramp Pause”**. Use the  key to change the **PAUSE** NO to YES.

**PLEASE NOTE : You must change the Ramp mode to OFF before returning to the Remote Mode
Straight to Set-Point Mode**


1. Press the advance key  to see

rmt
L-R




 and a scrolling message “*remote setpoint select*” This indicates that the controller is in the **Remote** mode.
2. Press the  arrow key to change the **Remote** mode to **Local**. You will see

LoC
L-R
3. Press the advance key  to see


OFF
RP

 and a scrolling message “*Ramp Enable*”.
4. Press the advance key  to see


32
ESP

 and a scrolling message “*TARGET SETPOINT*” This is asking for a value to be chosen for the SET-POINT .
5. Press the  or  arrow keys to change the “number value “ to the desired **set point**.
6. Press the advance key  to see

AUTO
A-M


 and a scrolling message “*LOOP MODE AUTO MANUAL OFF*”.
7. Press the advance key  to see

1
ADDR


 and a scrolling message “*ADDRESS*” .
8. Press the advance key  to return to the home page. The upper value indicates the input temperature, and the lower value indicates the set-point .


The Op 2 light will show on the controller indicating that the controller is calling for heat, and will stay ON continuously until the input temperature reaches the set-point temperature. In this mode there is no ramping control and care must be taken to avoid over-shooting of the set-point.

Percentage Timer Mode


1. Press the advance key  to see

rmt
L-R




 and a scrolling message “*remote setpoint select*”
This indicates that the controller is in the **Remote** mode.
2. Press the  arrow key to change the **Remote** mode to **Local**. You will see

LoC
L-R
3. Press the advance key  to see



OFF
RP

 and a scrolling message “*Ramp Enable*”.
4. Press the advance key  to see

32
ESP

 and a scrolling message “*TARGET SETPOINT*”
This is asking for a value to be chosen for the SET-POINT .
5. Press the  or  arrow keys to change the “number value “ to the desired **set point**.
6. Press the advance key  to see


AUTO
A-M

 and a scrolling message “*LOOP MODE AUTO MANUAL OFF*”.
5. Press the  or  arrow keys to change the “




AUTO

“ to

mAn

6. Press the advance key  to see

1
ADDR

 and a scrolling message “*ADDRESS*” .
7. Press the advance key  to return to the home page. The upper value indicates the input temperature, and the lower value indicates the percentage of operation. The percentage may be changed at any time using the  or  arrow keys.
For example; if the controller is set to 50% it will cycle on and off approximately every two seconds. If the controller is set to 75% it will cycle on for approximately six seconds and off for about two seconds.