



Innovative
Heat Treatment

TWIN HEAT MODULE



CONTROL SIDE



POWER SIDE

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READ CAREFULLY BEFORE OPERATING

- 1) UPON RECEIPT OF YOUR [PRO-SERIES TWIN HEAT MODULE](#) INSPECT IT FOR ANY DAMAGE THAT MIGHT HAVE OCCURRED DURING SHIPMENT. IF THERE IS [ANY DAMAGE](#), PLEASE CONTACT (403) 980-5213 or email wecare@ihttech.com.
- 2) The Portable Pro-series Twin Heat Module **weights less then 20 lbs.**
- 3) Never operate the Twin Heat Module with the Cover Plate removed. **SERIOUS ELECTRICAL SHOCK CAN OCCUR.**
- 4) Always use a stable 120-volt source. The portable Twin Heat uses less than 5 amps. The portable Pro-Series Twin Heat Module has three-prong plug that must be grounded at all time.
- 5) Make sure the Primary Input & Output Tapping's have been placed on correct locations, ensure connections are tight. The contactors are rated for maximum of 250 amps. We suggest you do not exceed 200 amps.
- 6) If we should have any questions , please call Innovative Heat Treatment office – (403) 980-5213.

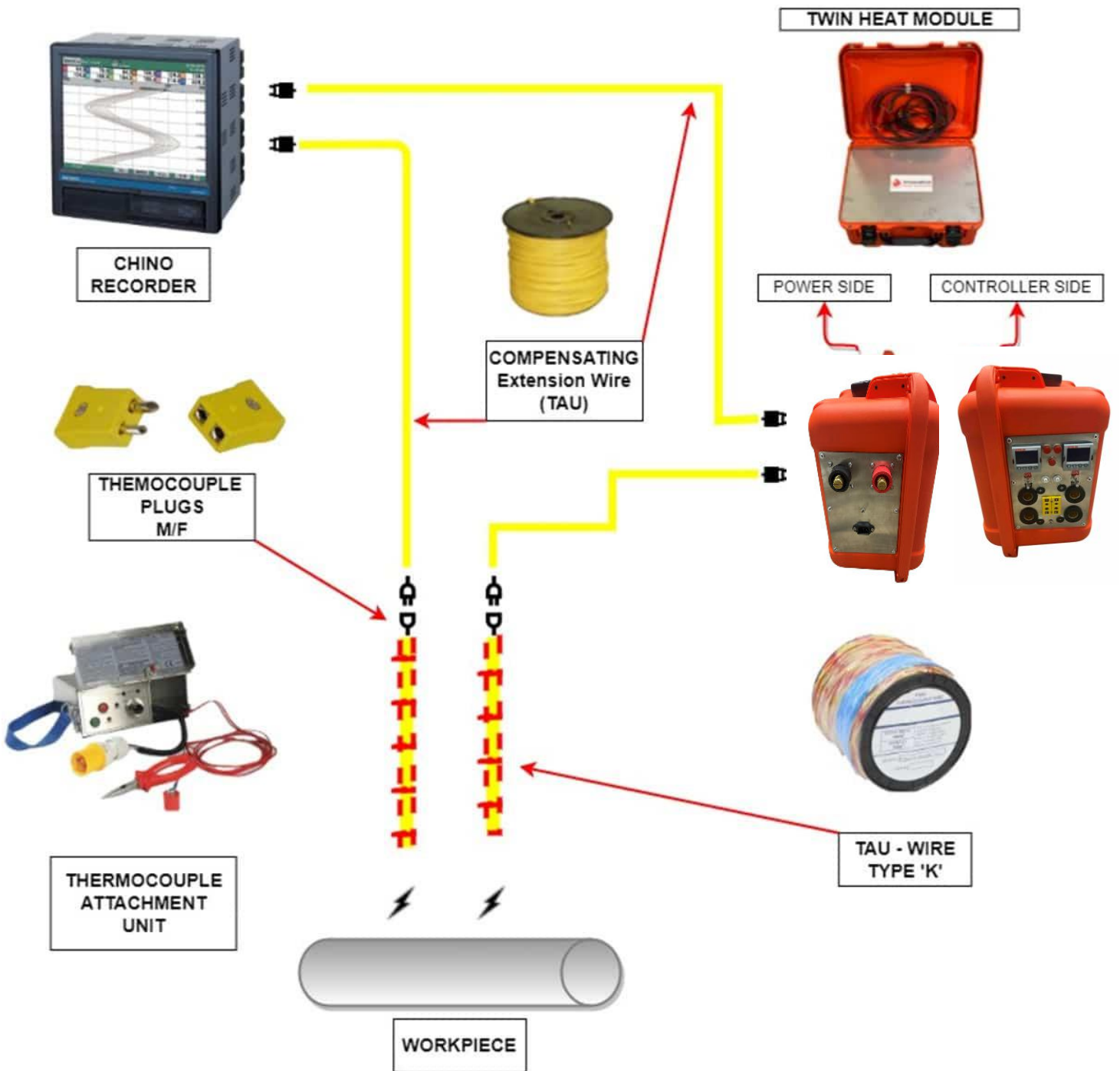
SETUP PROCEDURE:

- 1) Make sure that all primary power connections to the Power Source are properly and tightly connected. Make sure that the unit is grounded and that the supply is connected to the correct Input taps.
- 2) Connect the cable sets to the Input Twist locks (Male) on the back of the unit and the output panel mounts (female) on the front of the unit. Ensure that the corresponding thermocouples are plugged into proper TC jacks on front of the unit.

NOTE:

When attaching the thermocouples to the workpiece or reattaching A broken thermocouple, it is very important to temporarily Disconnect the Male TC plug from the TC jack on the front of the unit. The electrical spark from TAU may travel through the TC wire and cause damage to the Portable Pro-Series Twin Heat Module.

SCHEMATICS



ELECTRICAL SPECIFICATIONS

Title	Value	Unit
Input voltage	100 - 230	Vac
Freq	48 - 62	Hz
Max Current Draw	1	A
Operating Temperature Range	-32F - 120F	Deg F
Thermocouple input type	K	



PLEASE NOTE: The standard Eurotherm controller is programmed to run using Fahrenheit. If you require it to work with Celsius, please let your distributor know.

USER INTERFACE

This section of the manual will run through the all the items on the Twin HEAT. Then the following section will cover the Eurotherm Controller's interface and buttons specifically.



The Twin HEAT unit has two electrical plates on external walls of the case. There is no need to open the lid of the plastic case to run it.

Power connection plate

The power connection plate is shown below. On this plate you can connect the power leads from the welder as well as the 120 Vac control power.



Figure 1: Power connection plate

The welder connection cam locks are 400A cam locks and require the correct mating female connector to get the best results from the unit. The Twin HEAT module ships out with a set of 4ft power cables for connection to the welder and a single 120 Vac cable for control power.

For replacement power cables, please contact your distributor for guidance or parts.

USER INTERFACE

Control Plate

One the opposite side of the Twin HEAT module is the control plate. This plate holds all the controllers, the thermocouple connections and also the connection points for the resistive heating pads.



Figure 2: Control Plate

The control plate has 2 separate channels of control. The control plate limacoid shows the division between channel 1 and 2 using the dotted line in the middle of the plate. The controls on this plate are covered in more detail here, but the interface of the Eurotherm controllers is covered in detail in the following section.

USER INTERFACE

Controllers and the output lights

The image below shows the controllers and the output lights on the Twin HEAT.

- The power light (as indicated in the image) will turn on when the unit has a 110 Vac power connected to it and is supplying it with power. If this light is off, check your power cable to make sure it is still plugged in and not damaged.
- The output lights turn on whenever the specific channel is busy applying power to the heating pad. It is normal for this light to turn on and off continuously while the channel is running its heating cycle.
- The Eurotherm controllers are the controllers that will control the output power based on the measured temperature of the work piece.

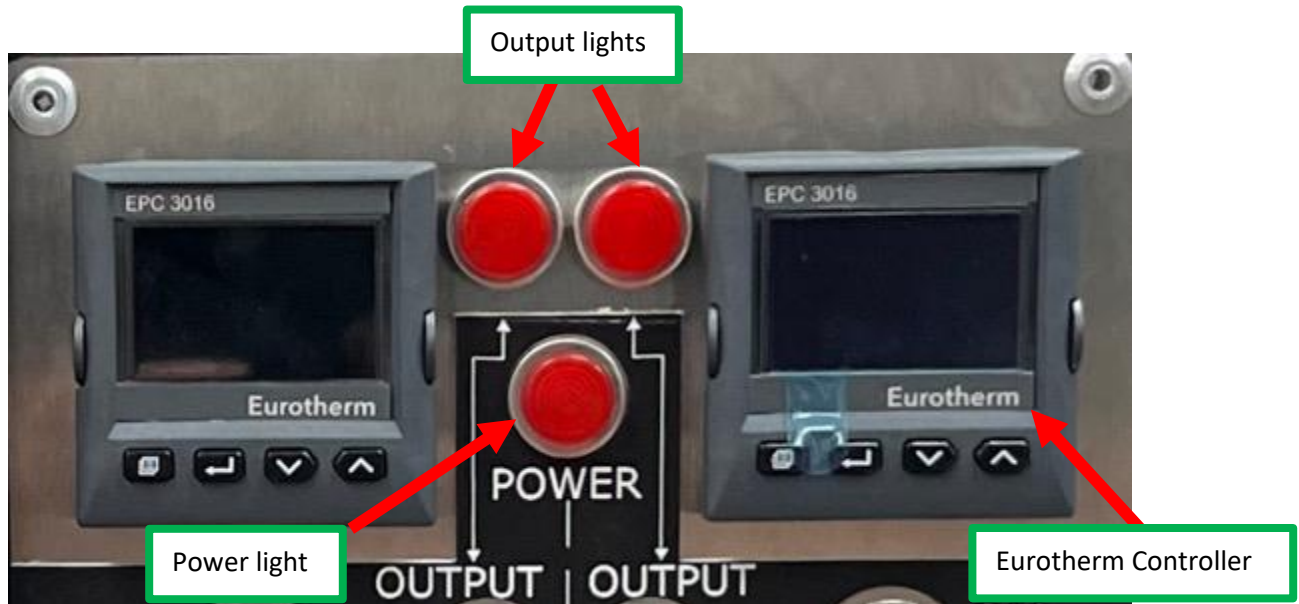


Figure 3: Controllers and output lights on the control plate

USER INTERFACE

Control plate power switches and breakers

The channels control power switches are right below the controllers and are shown in the image below.



Figure 4: Channel controller power switches and breakers.

The image above shows the switches that are required to power on the desired channel. Turning on the switch for the specific channel will power up the controller and allow it to start controlling the temperature of the workpiece. When you are done running a heating cycle, simply turn this switch off to turn off the controller and hence stop any power being applied to the heating pad on the channel.

Next to the power switch is the channels electrical protection breaker. If something gets damaged inside the unit, these breakers will protect the control power for that channel.

If a breaker pops out, please contact your service contract provider to repair the issue.

USER INTERFACE

Heating pad and Thermocouple connections

The lower portion of the plate has the connection points for the thermocouple on the work piece. The heating pad cam lock connection points are for the 300A twist lock connectors. These are shown in the image below.

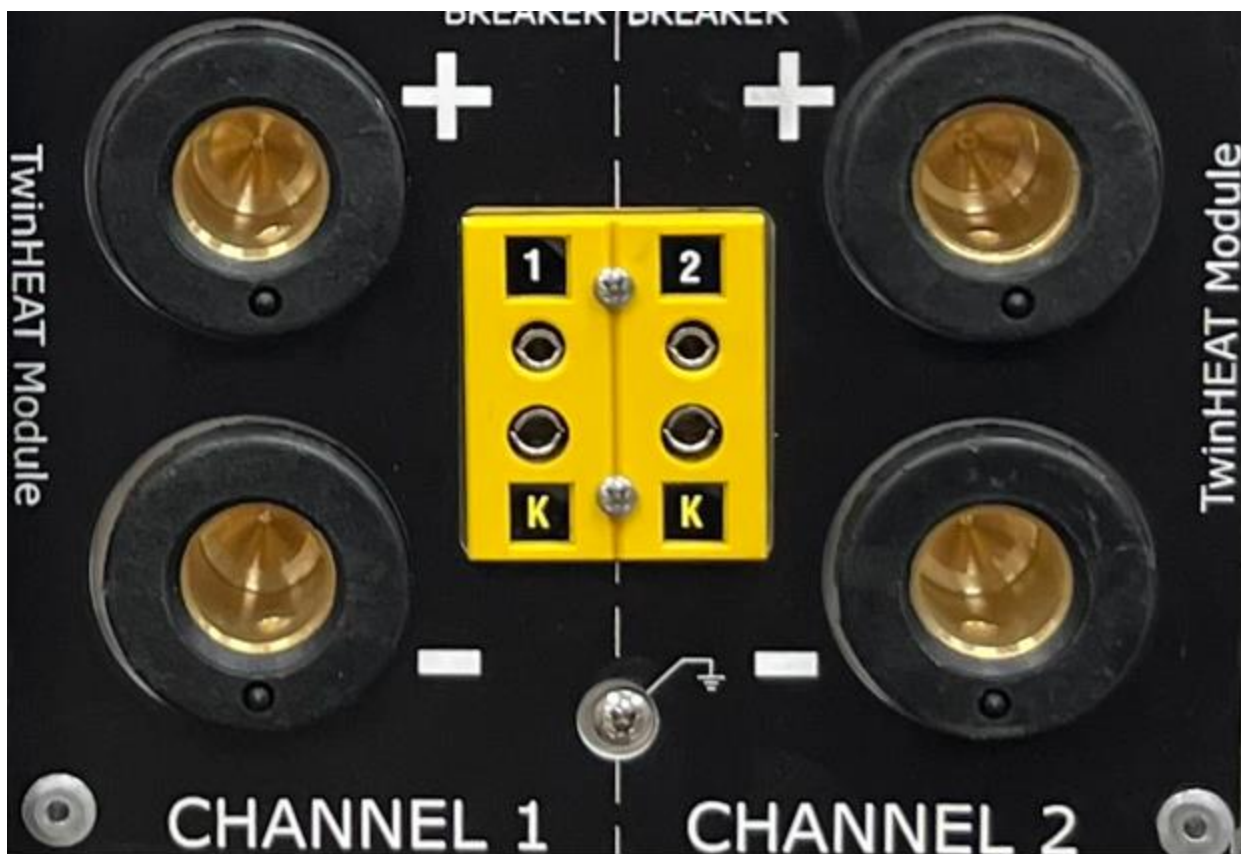


Figure 5: Thermocouple and heating pad connectors

The dual thermocouple block in the middle of the plate. The left of the TC block goes to the left controller and similarly with the right.



The ground connection with the ground symbol is internal to the unit and this screw should never be loosened.

EUROTHERM CONTROLLER

Eurotherm controller

If you have never used the Eurotherm controllers before they are simple and intuitive controllers that have been simplified for the Twin HEAT module. Its interface is covered in detail here.

When you first power up a channel, the Eurotherm will boot up and will look like the image below.

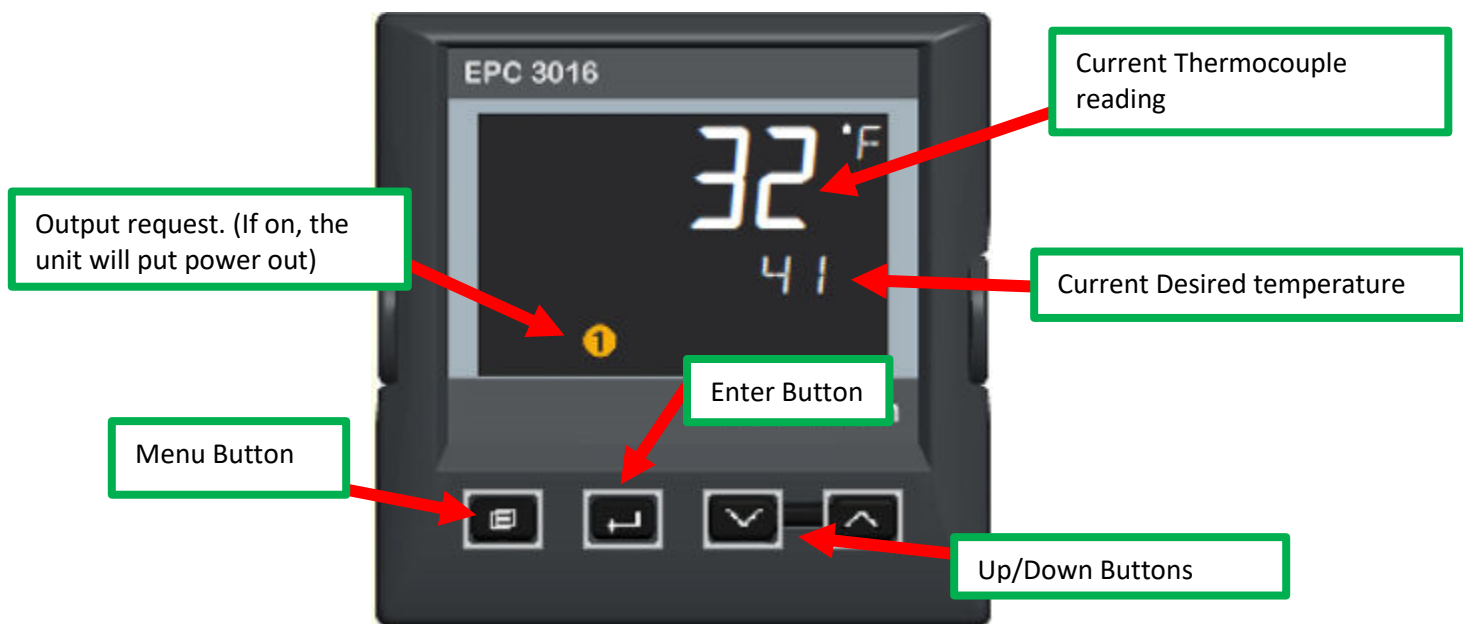


Figure 6: Eurotherm user interface

If a Thermocouple is plugged in, the unit will show the current temperature that the thermocouple is measuring in the top right hand of the screen. The units are programmed to start up in auto mode and to run all the time. So, the system will try and ramp up the temperature of the work piece from initial thermocouple reading to the desired set point.

EUROTHERM CONTROLLER

Changing the running parameters

To control the heating parameters, follow the steps outlined below:

Pause/Run control

Press the 'Enter' button on the front of the controller to scroll through the running parameters until you see the section Pause. The first parameter to come up from the home screen will be the Pause/Run option as shown in "Figure 7: Pause/Run screen in the parameters menu."

If you press the enter button too many times and pass by this option you can simply keep pressing it until you come back to this screen.

When on this menu press the up or down arrow to change the paused state. The state is saved immediately and applied to the system.

When the unit is paused the output power will be turned off the heat cycle will be paused. To get the system running again, simply come back to this parameter and change it from Yes to No.



Figure 7: Pause/Run screen in the parameters menu.

EUROTHERM CONTROLLER

Ramp/Rate parameter

To change the rate at which the workpiece will be heated at to reach the setpoint, simply press the enter button until it reached the "Rate" parameter. Once on this screen you can simply change the rate by press and holding in the up or down arrow to the desired value. The rate is in deg/hour.

This value is applied and stored in the controller as it is changed, so once it is set you can either leave the controller and it will return to its home screen after a few seconds or you can press the enter button until it returns there.



Figure 8: Rate parameter screen.

Setpoint parameter

To change the final setpoint (the temperature the controller will heat the workpiece to and will hold it at), simply press the enter button until you arrive at the screen with the text "ESP". Once there, simply press and hold the up and down arrows to set your desired final temperature.

EUROTHERM CONTROLLER

The setpoint screen is shown in the image below. In the image below the final temperature the workpiece will be held to is 400 degF.

This value is applied and stored in the controller as it is changed, so once it is set you can either leave the controller and it will return to its home screen after a few seconds or you can press the enter button until it returns there.



Figure 9: Setpoint running parameter

Auto/manual mode parameter

To take the controller out of running mode (Auto mode), press the enter button until you see the parameter called A-M. Once on this screen you can use the up and down arrows to change the system from Auto to Manual and back.

This value is applied and stored in the controller as it is changed, so once it is set you can either leave the controller and it will return to its home screen after a few seconds or you can press the enter button until it returns there.

EUROTHERM CONTROLLER



Figure 10 :Auto/Manual parameter

Once the system is in Manual mode, the output will be turned on and off at a constant interval, but the output will remain on for given percentage of time that is shown on the screen. So, looking at the image below, the unit will have the contactor on for 90% of the time and off for 10% of the time, regardless of the temperature of the work piece or even if the thermocouple is plugged in.

A small hand will appear on the screen to indicate this, as shown in the image below.

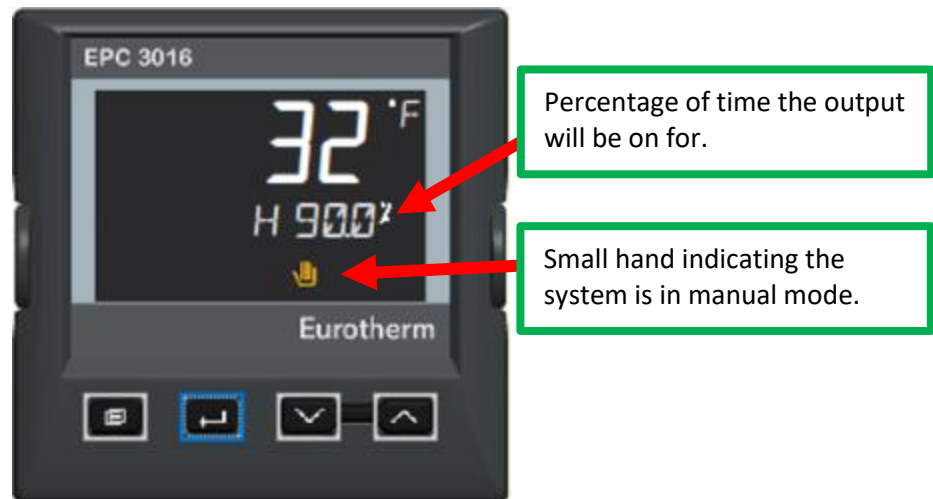


Figure 11: Manual mode hand indicator

TROUBLE SHOOTING

Troubleshooting

This section will try to cover all the items that could potentially go wrong with your Twin HEAT. If you ever find a situation that is not covered in this section and you do not know how to recover from it, please contact your distributor for support.

a. Eurotherm not turning on

If there is text or numbers on the display of the Eurotherm, then it most likely does not have power.

Solution 1: To solve this, make sure that you have a good, undamaged power cord plugged in a 110 Vac power source and that it is securely plugged into the connector shown in “Figure 1: Power connection plate” above. This should make the “Power Light” shown in “Figure 3: Controllers and output lights on the control plate” turn on. If this light does not turn on, you will need to check your power cable or the 110 Vac to make sure that is all good. Once the “Power Light” is on, you can simply turn on the power switch that is just below the controller. This switch is shown in “Figure 4: Channel controller power switches and breakers.” above. If this does not solve the issue, please try the next solution.

Solution 2: If the power switch is on and the Twin HEAT’s power light is on and the Eurotherm is not powering up, you will need to check the pop-out breaker just next to the power switch to make sure the breaker has not tripped. If it has, then try to push it back in. If the breaker will not reset, then contact your distributor for service and support.

If the power light is on, the switch is turned on and the breaker has not popped out and the Eurotherm controller does not boot up and show text and numbers on the screen, then you will need to contact your distributor for support.

TROUBLE SHOOTING

b. TC Open

If you have a message scrolling across the Eurotherm controller that says “TC Open”, then the thermocouple has opened, or it is not securely plugged into the correct TC Port. If this message scrolls across the screen, then the controller will not put any power out to the work piece unless in manual mode.

Solution: To correct this situation, check to make sure the thermocouple is correctly connected to the workpiece if it is welded in place. If it is a thermocouple that is twisted and strapped in place, make sure it is still twisted correctly. You will need to check all your connections and make sure the thermocouple connector is securely pushed into the correct side of the thermocouple jack on the control plate of the Twin HEAT module. Once the thermocouple is closed correctly you will need to wait for 2-3s before the unit will recognize this and will start running again.

c. Everything is powered but the output will not turn on

If everything is connected correctly and the output will not turn on, then it can be one of two items that prevent the output from tuning on.

Solution 1: The controller will only turn on the output if it calculates that heat is needed based on the ramp rate and the final setpoint. If the unit is first turned on, the controller will measure the temperature of the workpiece for a few seconds to determine if it is current heating up by itself or if it needs heat applied to it to start the cycle. So give it a minute or two based when first powered up before expecting the output to turn on (it could start sooner, but when first starting, have patience and it will run).

If the work piece is hotter than the current desired temperature from the controller, the output will not turn on as to not overheat the material. The image below shows where to find the current temperature and the desired temperature on the controller.

TROUBLE SHOOTING

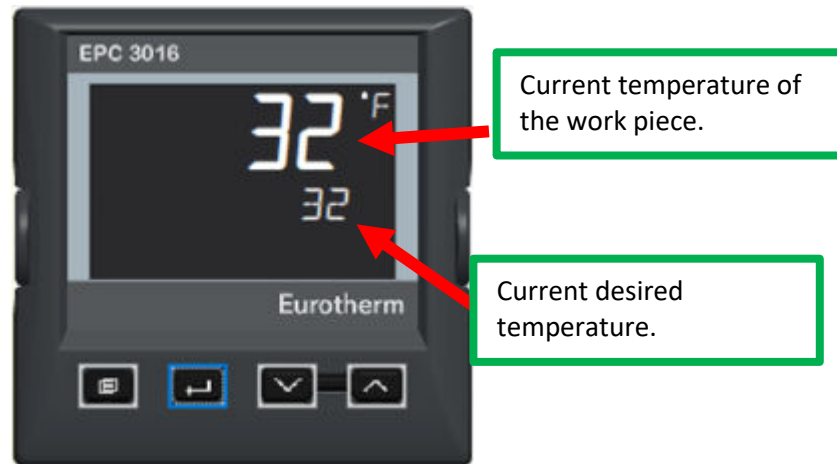


Figure 12: Current temperature vs. the desired temperature on the controller

If the desired temperature is below the value you set for the final setpoint and it is not increasing, then navigate to the “Rate” parameter and increase this to a suitable rate. If it is at the final setpoint temperature it will hold here and the output will not turn on unless the workpiece temperature starts to drop below this value.

Solution 2: The final item that will stop the system from putting power out is if the thermocouple is open. See the previous troubleshooting note on open TC’s to solve this. It will show a message on the screen saying “TC Open” if this is the cause.

d. System is running but the workpiece is not heating up

If everything is connected and the Eurotherm controller is calling for power and after a few minutes (when the workpiece should have started heating) you do not see its temperature rising then the power from your welder is not being applied to the heating pad.

TROUBLE SHOOTING

Solution 1: Make sure that the power cables between your welder and the Twin HEAT module are connected securely and the welder is set to apply power to the Twin HEAT.

Solution 2: Make sure that the heating pad is connected correctly to the channel outputs. The image below shows the correct way to connect a heating pad to Channel 1 on the Twin HEAT.

Solution 3: If connected correctly, make sure that the heating pad is not burnt out and it allows current to flow through it. To check the current flow, use a multimeter and look at the amperage flowing through any of wires going to The heating pad.

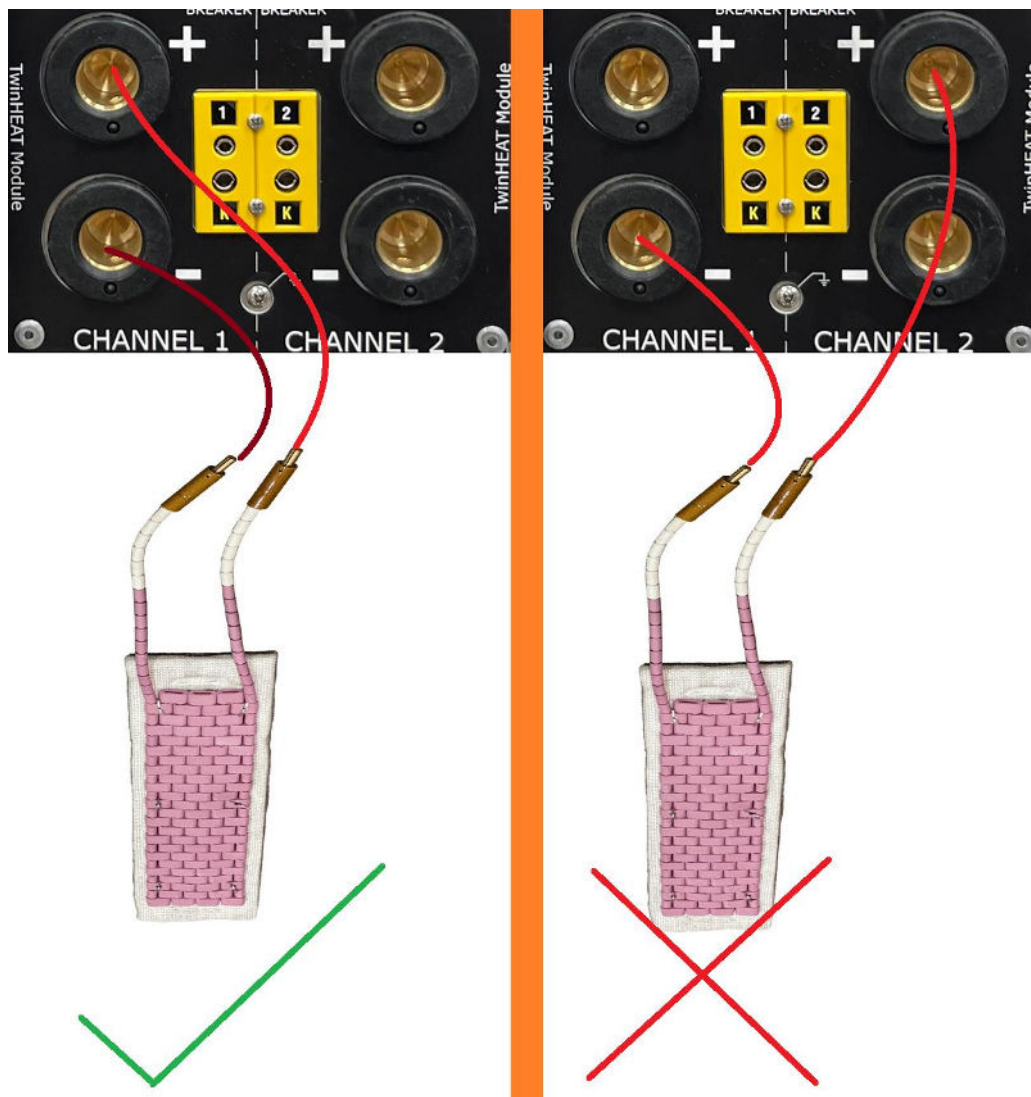


Figure 13: Correct way to connect a heating pad

TROUBLE SHOOTING

Quick guide to your first heat cycle using a Twin HEAT

This section covers the simple steps to setting up your first heat cycle using the Twin HEAT module straight out of the box from the factory.

- 1) Remove the Twin HEAT module from all packaging and place it on a secure flat surface.
- 2) Connect the two power cables to your welder and then connect them to the twist lock connectors on the power plate of the Twin HEAT module.
- 3) Connect the 110 Vac power cable between the Twin HEAT and the wall outlet.
- 4) Connect your heating pad to the control plate of the Twin HEAT unit.
- 5) Connect your Thermocouple line to the workpiece and then to the Twin HEAT unit. Make sure that the Thermocouple and heating pad are connected to the same channel on the control plate of the Twin HEAT module.
- 6) Now that everything is connected, turn on the power switch to the channel's Eurotherm (where the power switches are shown in "Figure 4: Channel controller power switches and breakers.")
- 7) Wait a few seconds for the Eurotherm to power up and show a screen with the 2 temperatures on it (the current measured temperature and also the desired temperature) as shown in "Figure 12: Current temperature vs. the desired temperature on the controller".
- 8) Press the Enter Button on the face of the Eurotherm until you see the text "Rate" as shown in "Figure 8: Rate parameter screen." Then use the up and down arrows to set the rate you want to heat the work piece up at.



Please note that the rate is in deg/hour.

- 9) Now press the Enter button on the face of the Eurotherm controller until you see the text "ESP" and use the up and down arrows to set this temperature to the temperature you want heat the work piece to.
- 10) Finally set your welder to apply its power to the Twin HEAT module and wait for it to heat up your workpiece.

WARRANTY



WARRANTY AND SERVICES:

FIRST YEAR

- 100 PERCENT PARTS & 100 PERCENT LABOR IS COVERED BY INNOVATIVE HEAT TREATMENT INC.

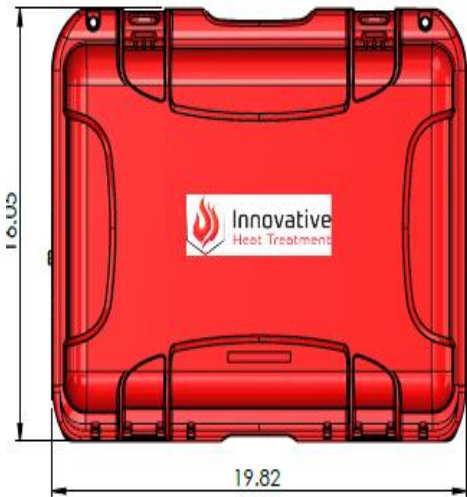
SECOND YEAR

- 50 % OF PARTS & 100 PERCENT LABOR IS COVERED BY INNOVATIVE HEAT TREATMENT INC.

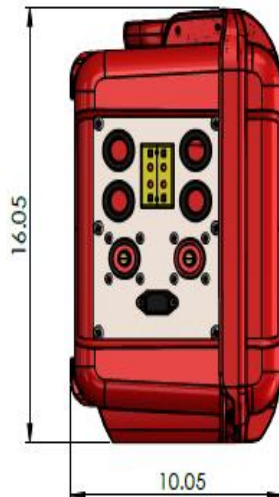
THIRD YEAR

- 50 % OF PARTS & 100 PERCENT LABOR IS COVERED BY INNOVATIVE HEAT TREATMENT INC.

DRAWING



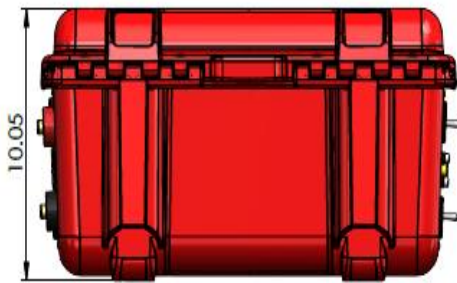
TOP VIEW



LEFT SIDE VIEW



RIGHT SIDE VIEW



BOTTOM VIEW




ISOMETRIC VIEW


**LIGHT WEIGHT - COMMERCIAL -GRADE HARD PLASTIC CASE
- USER FRIENDLY HOOK UP - TWO CONTROLLERS**



INSTRUCTIONS

OPERATING INSTRUCTIONS for the EUROTHERM 3216 RAMP to SET-POINT 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 **three modes of operation** that can be used with the 3216 controller.

1. **Ramp to Set-Point:** The controller **ramps** to a set-point at a set **rate**. The controller is set to **Auto**, with the **Ramp “ON”**.
2. **Straight to Set-Point:** The controller goes straight to the set point as quickly as possible when set to **Auto**, with the **Ramp “OFF”**.
3. **Percentage Timer:** The controller turns on and off according to a set percentage when set to **Manual**, with the **Ramp “OFF”**.















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

INSTRUCTIONS

Ramp to Set-Point Mode


When the 3216 Ramp controller powers on in the **Ramp** mode the top of the display will be **flashing** between **rP** and the **input value**. The lower display value is the **ramping set-point** that shows the programmed set-point climbing at the programmed rate.

1. Press the advance key  to see This is asking if you wish to **pause** the Ramp. Using the  arrow key you can change this to **YES**. Now the controller will maintain the current set point without ramping up.
2. Press the advance key  to see
 This says that the controller is in the Ramp mode.
3. Press the advance key  to see
 and a scrolling message "**RAMP RATE**". This is asking for a value to be chosen for the **Ramp Rate**.
4. Press the  or  arrow keys to change the "number value" to the desired **Ramp Rate**.
5. Press the advance key  to see and a scrolling message "**TARGET SETPOINT**". This is asking for a value to be chosen for the END-SET-POINT.
6. Press the  or  arrow keys to change the "number value" to the desired **set point**.
7. Press the advance key  to see
 and a scrolling message "**LOOP MODE AUTO MANUAL OFF**".
8. Press the advance key  to return to the HOME screen. The controller will be flashing but we must change the **PAUSE** to **NO** to continue ramping. Press the advance key  to see
 Press the  arrow key to change the YES to NO.
9. Press the  key to return to the HOME screen.


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. **If the controller is not flashing, then it is not Ramping !!!** 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 and a scrolling message "**Ramp Pause**". Use the  key to change the NO to YES.

INSTRUCTIONS


Straight to Set-Point Mode

1. Press the advance key  to see




No

 This is asking if you wish to **pause** the Ramp. Using the  arrow key




PAUSE

 you can change this to **YES** . Now the controller will maintain the current set point without ramping up.
2. Press the advance key  to see


ON
RP

 and a scrolling message "*Ramp Enable*".
3. Press the  or  arrow keys to change the "ON " to "OFF".
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*".
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.

INSTRUCTIONS

Percentage Timer Mode

1. Press the advance key  to see

rmt
L-R



 and a scrolling message “*remote setpoint select*”
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

mA

6. Press the advance key  to see

1
ADD

 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.

TECHNICAL SHOTS

CONTROL SIDE



POWER SIDE



TOP VIEW CASE



OPEN CASE



EQUIPMENT LIST - INCLUDED

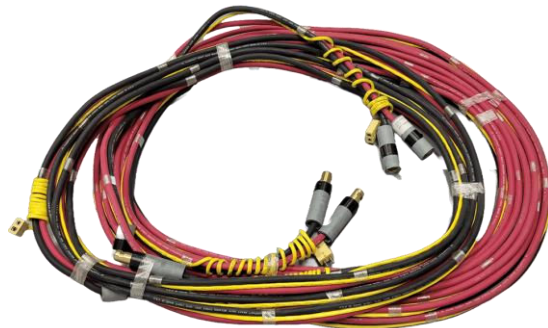
110 VOLT 10' CABLE QTY = (1)

POWER TO WELDING MACHINE QTY= (1)



TRIPLE SPLITTERS QTY = (4)

50' TRIPLE CABLE SET QTY = (2)



TRIPLE SPLITTERS QTY = (1)



**PRO- SERIES
TWIN HEAT MODULE**

**EUROTHERM
CONTROLLER**

EQUIPMENT LIST – SEPARATE

THERMOCOUPLE WIRE QTY = (1)



THERMOCOUPLE PLUGS QTY= (4 EACH)



FEMALE

MALE

FLEXIBLE-CERAMIC PADS QTY = (6)



INSULATION QTY= (4 BOXES)

