



# Innovative Heat Treatment

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# 2021

## Twin Module Programmer/Controller



“The  
Heat Is  
On”



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# Specifications

## **Power Input:-**

- 110/115 VAC @ 50/60 Hz.
- 230/240 VAC @ 50/60 Hz  
(Factory Preset)

## **Relay Output (PI control loop):-**

- Input Feed; max 240 VAC @ 50/60 Hz
- Output: max 3 Amp rating  
(Contacts suppressed internally)

## **Thermocouple Input:-**

- Type K (NiCr/NiAl) to BS4937-30: 1993
- Range: 0 to 1200° C ( 0 to 2200° F)
- Measurement Accuracy = 0.3° C (0.6° F)
- Linearity: Better than +/- 0.5° C (1° F) at any point  
(Thermocouple Break Protection, deflects above full-scale)

## **Calibration Accuracy (Span/Zero adjust to display):-**

- +/- 1 display digit  
(Uncertainty: 1 display digit)

## **Proportional-Band Settings:-**

- +/- 5°C (10° F), +/- 10°C (20° F), +/- 20°C (40° F) and +/- 40°C (80° F)

## **Hold-Back Settings:-**

- 10°C (20°F), 20°C (40° F), 40°C (80°F) and 60°C (120° F)

## **Display:-**

- Digital

## **The following values can be Programmed:-**

- Start temperature
- Rate of rise
- Soak temperature
- Soak time
- Rate of fall
- Off temperature

## **Environmental/Safety:-**

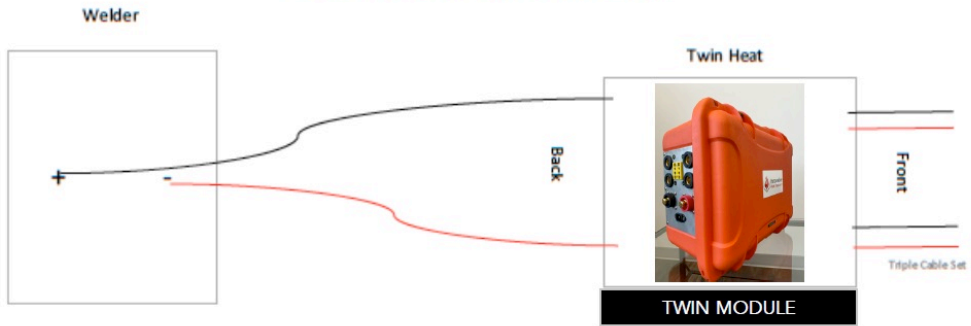
- Operating Temperature: 0 to 55° C ( Storage: -20 to 80° C)
- Ambient humidity: 10 to 90% rel. hum.
- **CE** compliance (EMC: EN 61326: 1998, LVD: EN 61010-1: 2001)
- **WEEE** compliant

## **Dimensions:-**

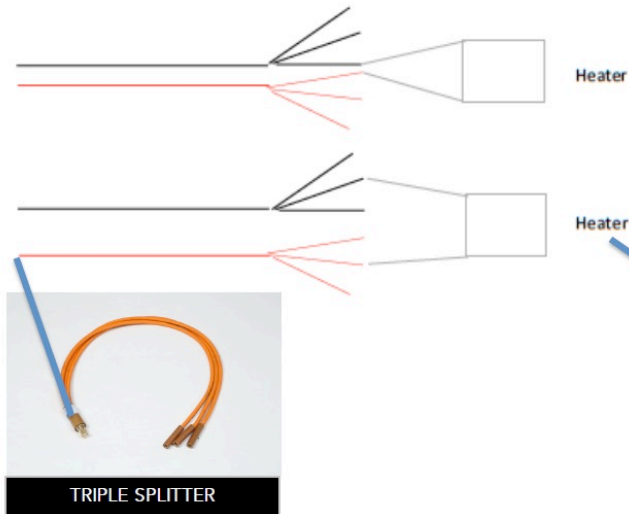
- Case style: - DIN 43700 (96 x 48)
- Front frame: - 52mm x 100mm, 11mm high.
- Installation depth: - 120mm.
- Approx weight: - 0.375 kg.
- Enclosure:- Front IP 64
- Rear:- IP 20
- Panel Cut-out:- 45mm (+0.6) x 92mm (+0.8)

# SCHEMATICS

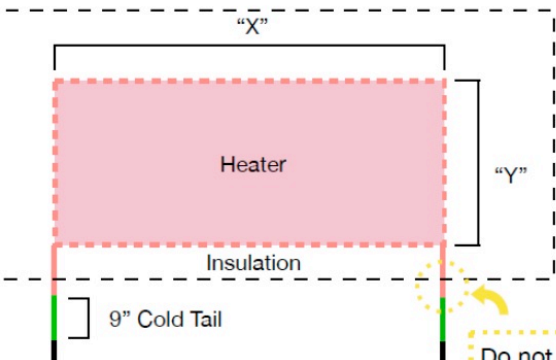
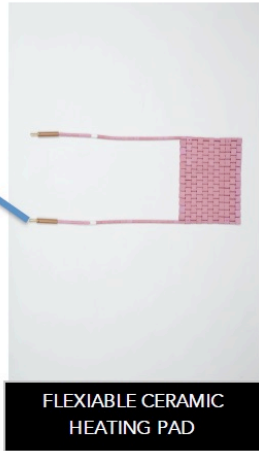
## Twin Heat Module Connection



## Triple Cable Set & Splitter Setup



You must supply a minimum of 40 amp and a maximum of 45 amps to each heater



Do not insulate over the hot to cold junction or the cold tail.

### US & CANADA PAD SIZES

**80 VOLT CERAMIC PAD HEATERS  
@ 45 AMPS - 3.6 kW**

CODES	dimensions in inches	
	X	Y
CP3	3	3.9
CP4	4	2.9
CP6	6	19.5
CP8	8	14.5
CP10	10	12.5
CP12	12	9.75
CP15	15	8
CP18	18	6.5
CP21	21	5.75
CP24	24	5
CP29	29	4
CP36	36	3.25

# DIAGRAM



CERAMIC HEATER  
INDICATION LIGHT (L/R)

ADVANTAGE ONE ( 1 )  
CONTROLLERS

110 V INDICATOR LIGHT

CONTROLLER TOGGLE  
SWITCH

FIVE (5) AMP FUSE

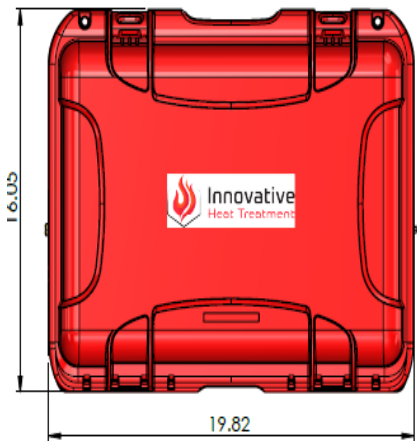
300 AMP FEMALE CAMLOCKS  
(POLARITY NOT RELEVANT)

TC JACK  
L FOR L-CAMLOCK,  
R FOR R CAMLOCK

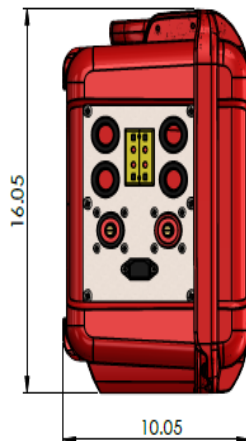
WELDING POWER



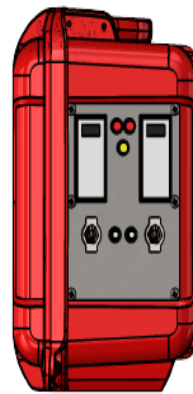
# DRAWING



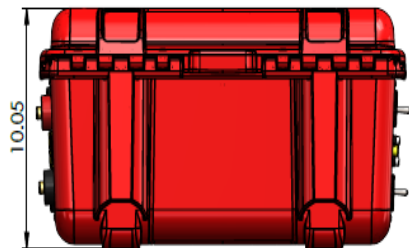
TOP VIEW



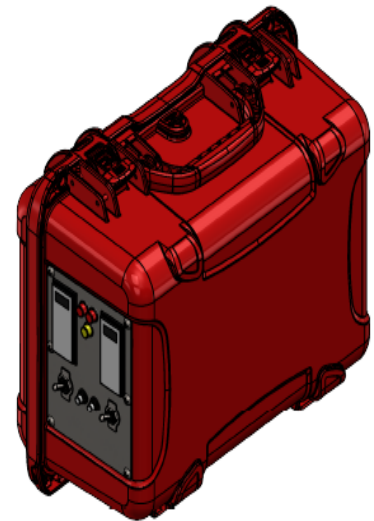
LEFT SIDE VIEW



RIGHT SIDE VIEW



BOTTOM VIEW



ISOMETRIC VIEW

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



# 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.

# INSTRUCTIONS

## Setting up procedure

At switch on all the LEDS are off and the display shows the load temperature. The only exception is if it has been switched off while running a programme. It is then necessary to push RESET twice.

## Start temperature

Push the SET button. The START LED will come on and the display will flash, showing the previously entered start temperature. If this is the required value it is only necessary to push the ENTER button. If a different value is needed, push the SET button. The thousands digit will flash and the SET button can be used to set this digit to the required value. Push the ENTER button. The hundreds digit will now flash and again use the SET button to get the required value. It is worth noting that if the SET switch is held down then the digit will continuously go from 0 to 9 and it can be released when the required number is shown. It is preferable not to make the switch operations too rapidly. The tens and units are set in the same manner.

After the units digit has been entered all four digits will flash. Check that this value is correct and push ENTER. However if the value is incorrect push RESET and the display will show all zeroes with the thousands digit flashing and the start temperature can be corrected.

Do not enter a temperature greater than 1250°C.

## Up rate

When the correct value for the start temperature has been entered the UP LED will come on and the display will flash showing the previously entered value for the up rate in degrees/hour. The SET and ENTER buttons are used in the same way as above to give the required value, but in this case the entry is limited to 3 digits with a maximum setting of 999°C/hour.

## Soak temperature

After the up rate has been entered, the SOAK LED will come on and the soak temperature is entered in exactly the same way as described above for the start temperature.

## Soak time

When the soak temperature has been entered the SOAK LED remains on and the soak time can be entered. The entry is in hours and minutes with a decimal point separating the two.

## Down rate

When the DOWN LED is on the entry is made in the same way as for the up rate.

## Off temperature

When the OFF LED is on the entry is made in the same way as for the start temperature.

## Running the programme

After the off temperature has been entered the display will show 'run'. Pushing the RUN button starts the programme.

When the programme is started the load will rise uncontrolled to the start temperature. The up ramp will not start until the load temperature gets within 15°C of the start temperature. During this phase the up LED will be on and the display will flash between 'Hold' and the load temperature. When the load gets within 15°C of the start temperature it will ramp up at the set rate. The 'Hold' feature also applies during the up ramp, so that if the setpoint exceeds the load temperature by 15°C or more the up ramp will hold.

When the soak temperature is reached it will remain there for the set time. During the soak time the display will flash between the load temperature and the elapsed time. When the elapsed time is shown a decimal point separates the hours and minutes. It will then ramp down at the set rate until the off temperature setting is reached when it switches off, which is shown by all LEDS being off.



# INSTRUCTIONS

## Showing the setpoint value

During the temperature cycle, pushing the SP button displays the setpoint temperature instead of the load temperature. Also the UP, SOAK or DOWN LEDs will show which segment of the cycle is being done.

If it is required to terminate the programme at any time, pushing the RESET button shows 'rst' in the display and the RESET button must be pushed again while this is being shown. The display will then show the load temperature and all LEDs will be off.

## Repeating a programme

When a programme has been run it is quite simple to run the same programme again. Push the SET button and the start temperature will flash. Push the ENTER button, the up rate will flash, push the Enter button again until all settings have been re-entered and 'run' is displayed.

## Open circuit and reverse thermocouple protection

If the temperature exceeds 1250°C the display will show 'HIGH' and the output will be off.

If the thermocouple is inadvertently reversed then as the load is heated the displayed temperature will go down. It will then display '-tc' to show that the thermocouple is reversed. When the temperature reaches a value of about 80°C the output is switched off and the display shows 'HIGH'.

## Proportional band setting

The proportional band can be set to  $\pm 10^\circ\text{C}$ ,  $\pm 20^\circ\text{C}$  or  $\pm 40^\circ\text{C}$ . This can only be done when the instrument is in the off condition. Push the ENTER and RUN buttons together. On release the display will show Pb10, Pb20 or Pb40. Pushing the SET button will change the display between these three. Push ENTER when the required is shown. The best control is achieved by using the smallest value but if the controlled temperature tends to swing either side of the setpoint then a higher proportional band setting must be used.

## Power fail operation

If the power fails during a programme, then when the supply is restored the programme will continue from the segment it was in when the power failed.

## Controller output

The output is via relay contacts rated at 7A at 250VAC and the action is time proportional plus integral with an overall cycle time of about 25 seconds.

## Dimensions

Height 96mm. Width 48mm. Depth including connector 127mm. Panel cut out 92mm x 45mm.

## Supply voltage

230VAC or 115VAC internally set.

## Thermocouple type

Type K (NiCr/Ni/Al) range 0 to 1250°C