



# INVERTER FOR ELECTRICAL RESISTANCE HEATING

THERMAL SYSTEMS

## INTRODUCTION

This versatile, lightweight and compact inverter power source has been designed specifically for electrical resistance heating. It is a valuable addition to the range of power sources available from Thermal Hire but differs in terms of its portability and applicability to a wide range of smaller scale operations including preheat and post weld heat treatment of pipe work butt welds. It is therefore extremely useful for 'fast reaction' services and where there is restricted access to the work.

A connected load of up to 10.8 kW is possible, which is equivalent to four standard heater pads rated at 2.7 kW, 60V. The output voltage may be varied between 0 to 60V and the output current 180A maximum. This provides a high degree of flexibility in the design of heater pads or coils to suit the geometry of an application with accuracy.

The unit has an integrated fully automatic control system with 20 programmes that may be edited by the operator.

## KEY FEATURES

- The inverter power source is a 10.8 kW, **3-in-1** unit that combines power, automatic programmable control and temperature recording. The unit weighs only 17 kg and measures 170x370x405mm high. This renders the unit highly transportable – even on a passenger seat.
- The inverter is readily connected to a 3-phase, 400V, ( $\pm 15\%$ ), 50-60Hz, 32A **electrical supply**.
- The **power output** is controlled as a single continuously adjustable circuit rated at 0-60V and up 180A. The circuit may comprise up to four parallel-connected standard ceramic pads heaters, designed for operation at 60V. Alternatively, it may comprise pad or coil heaters designed for operation at a voltage below 60V corresponding to the maximum current of 180A. The unit may also be used for connecting channel heaters up to 60V rating within the current rating of the inverter.

The unit operates with a **Type K thermocouple** (nickel-chromium / nickelaluminium). This is the most common thermocouple in use for weld preheat and post weld heat treatment applications. Accordingly, a standard input socket is made available on the front panel. A faulty thermocouple connection will be detected.

- The option for automatic or manual **temperature control** is built-in to the unit. Automatic control offers 20 time-temperature profiles each with up to 9 segments for rates of heating, holds at specific temperatures including a final soak condition and cooling rates. Specific editable temperature cycles are available for preheating and PWHT. The continuous supply of controlled power to the heating elements avoids power cycling by switching, so



improving heater life and power demand. The manual mode is available as Programme 0 – this gives the operator the option to set the power level. The resulting temperature will be displayed. It is possible to introduce manual control and restore programme control during a temperature cycle.

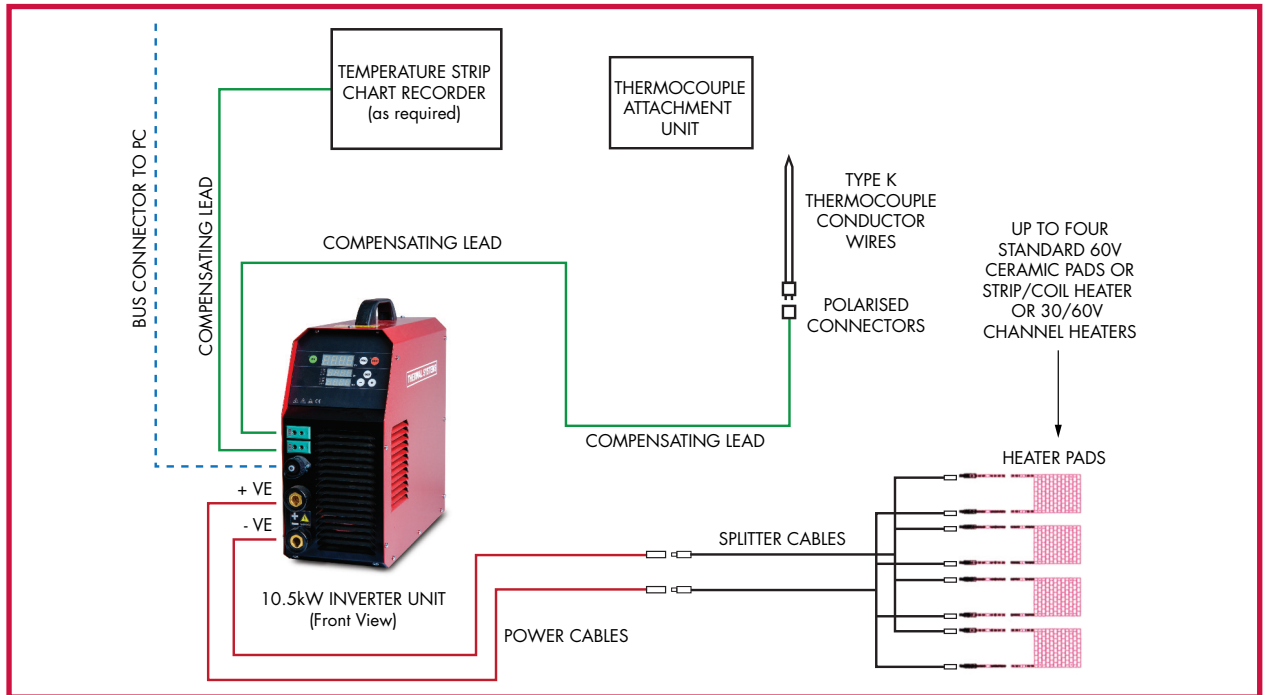
- The unit operates as a single zone of control. The introduction of additional units facilitates **multi-zone control**. Up to nine supplementary units can, if desired, be linked as slave units to permit control to the base profile or can be individually programmed. The unit has an additional facility to adjust the PID control settings.
- 3 user-defined **alarms** can be pre-set. These include the temperature tolerance from the set value as well as 'high' and 'low' alarms.
- The unit has a digital **temperature recording** facility, which provides continuous recording of the desired set temperature and the actual temperature. The time interval can be set for a value between 1s and 10s. Recording for up to 1400 hours for one channel and 198 hours for a multi-zone heat treatment is possible for an interval of 10s.
- Connecting the unit to a PC, using the USB cable supplied, enables the **download** of recorded data. The file can then be downloaded from the start menu.



# INVERTER FOR ELECTRICAL RESISTANCE HEATING

THERMAL SYSTEMS

## DIAGRAMMATIC ARRANGEMENT



## SPECIFICATION

<b>Dimensions</b>	170mmWx370mmD x405mmH	<b>Zone Function</b>	Included
<b>Weight</b>	17 kg	<b>Power Boost Function</b>	Included
<b>Power Rating</b>	10.8 kW	<b>Data Recording</b>	Built-in temperature, voltage & error flags
<b>Primary Voltage</b>	3-phase 400V, 50/60Hz $\pm 15\%$ , 23A	<b>Recording Capacity</b>	19hr 50m up to 1400h
<b>Supply Cable</b>	2.5mm <sup>2</sup>	<b>Data Protection</b>	In event of power failure
<b>Output Voltage</b>	24-65 V	<b>Data Download</b>	USB, ASCII file
<b>Output Current</b>	0-18A	<b>Unit Protection Class</b>	I
<b>Temperature Sensor</b>	Type K Thermocouple	<b>Overvoltage Category</b>	II
<b>Temperature Range</b>	-40 to 1350°C	<b>Class of Protection</b>	IP23S
<b>Temperature Control</b>	Automatic and Manual (current)	<b>Operating Temperature</b>	-20°C to +40°C
<b>Automatic Control</b>	PID, user adjustable	<b>Storage Temperature</b>	-20°C to +85°C
<b>Alarm</b>	Temperature Band, High & Low	<b>Humidity</b>	Max 80% RH, condensated
<b>Audible Siren</b>	Included		
<b>Multiple Link Connection</b>	9 units maximum		

Thermal Hire Ltd.  
 Unit 12 Pagefield Industrial Estate, Miry Lane, Wigan, WN6 7LA, UK.  
 Tel: +44 (0) 1942 620062 Fax: +44 (0) 1942 620156  
 Email: sales@thermalhire.com Website: www.thermalhire.com