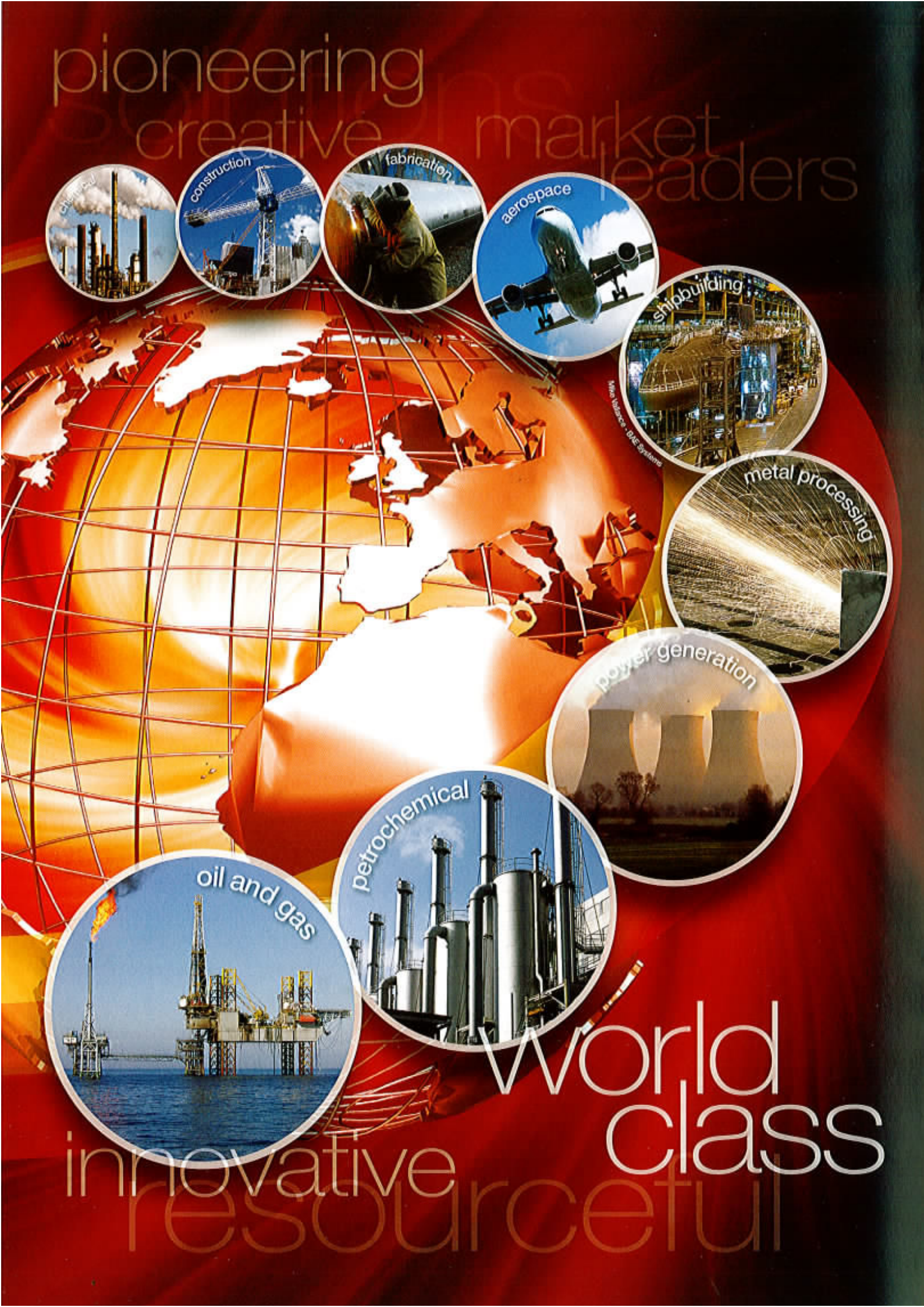
Cooperheat Advantage 3 programmer / controller
Stock No 548-055

Operating Manual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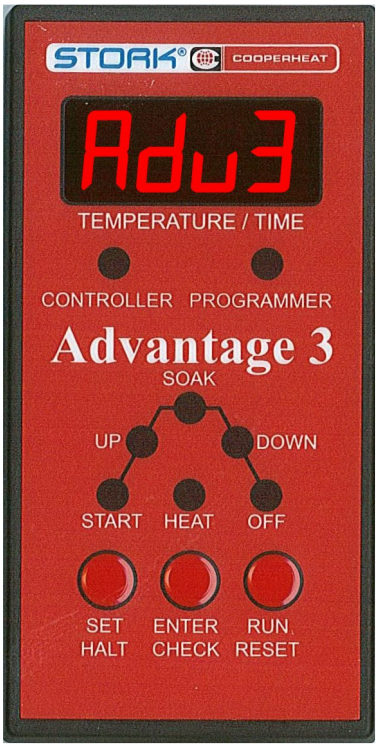
Specifications Advantage 3

Power Input		
Voltage		110/115 Vac Factory Preset 230/240 Vac Optional
Frequency		50/60 Hz
Output		
Type		Relay
Maximum Voltage		240 Vac
Maximum Current		3 Amps
		Contacts suppressed internally
Signal Input		
Type		Thermocouple Type K (NiCr/NiAl) to BS4937-30:1993
Range		0 to 1200°C (0 to 2200°F)
Accuracy		
Measurement		± 0.3°C (0.6°F)
Linearity		Better than ± 0.5°C (1°F) at any point
Calibration		± 1 display digit (Uncertainty : 1 display digit)
Control		
Proportional Band		± 5°C (10°F) ± 10°C (20°F) ± 20°C (40°F) ± 40°C (80°F)
Hold Back Setting		10°C (20°F) 20°C (40°F) 40°C (80°F) 60°C (120°F)
Programmable Values		
		Start Temperature Rate of Rise Soak Temperature Soak Time Rate of Fall Off Temperature
Environmental / Safety		
Normal Operating Temperature		-10 to 55°C
Storage Temperature		-20 to 80°C
Ambient Humidity		10 to 90% Relative Humidity
CE Compliance	EMC	EN 61326 : 1998
	LVD	EN 61010-1 : 2001
Control Features		WEEE compliant
Dimensions		
Case Style		DIN 43700 (96 x 48mm)
Front Bezel		100 x 52mm ; 11mm depth
Depth Behind Panel		120mm
Weight		0.375kg
Enclosure	Front	IP 64
	Rear	IP 20
Panel Cutout		45mm +0.6 x 92mm +0.8
NOTE : ALL STATED VALUES ARE NOMINAL		

INTRODUCTION

The Advantage 3 temperature programmer / controller is based on 50 years experience and has been developed to meet the real needs of industry.



The Advantage 3 has 3 modes of operation ;

- OFF (Indicator Only)
- PROGRAMMER
- CONTROLLER

OFF MODE

When the unit is first powered on (assuming it correctly finished its last program) then it will be in the OFF Mode.

In this mode the display alternates between the thermocouple load temperature reading and OFF.

The heat output remains off (no control action).

The previous operation as a Programmer or Controller is indicated by the relevant LED.

If the previous mode was as a Controller then any Set Point received on S.P.In connector (from the Programmer) is re-transmitted on S.P.Out connector to the next unit.

CONTROLLER MODE

To select this mode from the OFF mode, press the **SET** button to toggle the display to show **Cont**. . . . .

then push **ENTER** button to select.

The unit is now set in Controller mode with the display continuously showing load temperature.

The unit will now receive the incoming set point from the Programmer unit; this value can be viewed by holding down the **CHECK** button.

If the Set Point is **0000** then no control action is performed.

Once the unit receives a Set Point signal then control action commences.

Relay output On/Off action is indicated by the **HEAT** LED.

Perform a **MANUAL RESET** operation to end the Controller action and return to **OFF** mode. (See later)

Following the Manual Reset the unit will continue to pass the incoming Set Point value to the next controller until the program is ended.

PROGRAMMER MODE

To select this mode from the OFF mode, press the **SET** button to toggle the display to show **ProG**. . . . .

then push the **ENTER** button to select.

The **START** LED will then be lit with the previous Start Temperature value flashing on the display.

To keep this value push the **ENTER** button or to change this value push the **SET** button.

The value is changed one digit at a time by pressing the **SET** button to increment a digit . . . .

and **ENTER** to move to the next digit.

After entering the final digit the whole value flashes.

This value can be set to **0000** by pressing the **RESET** button, then setting a new value digit by digit.

Once the correct value is flashing press the **ENTER** button again to store this setting.

The **UP** LED will then be lit asking for the Up Rate to be entered in the same way.

Continue this procedure to enter new values for **UP** rate, **SOAK** temperature, **SOAK** time, **DOWN** rate and **OFF** temperature.

Once the **OFF** temperature is stored, the display shows **run.**

To commence the program cycle, press the RUN button.

The Programmer unit now runs the stored program and transmits the Set Point value to the additional Controllers with the current program segment LED lit and the **HEAT** LED showing the output relay condition.

The display will show the actual load temperature, but will flash **HELD** if this unit's temperature or any linked Controller's temperature is lower than the Set Point by a value greater than the stored **Hold-Back** value.

When the program cycle is complete, the Programmer and Controller units switch to the OFF mode.

VIEWING SET POINT VALUE DURING PROGRAM CYCLE

To show the set point on a Programmer Unit , press the **CHECK** button once.

The display will flash the set point value 5 times (alternating between **SP** and value).

For a Controller Unit press and hold the **CHECK** button. The set point value is displayed until the button is released.

PROGRAM CHECK / ALTER

While viewing the set point on a Programmer Unit, further presses of the **CHECK** button will display each program segment value in turn ; i.e. **START**, **UP**, **SOAK**, **TIME**, **DOWN**, **OFF**, **Units** (C/F), **Pb** and **H**.

While any value is flashing (except **START**, **Units**, **Pb** and **H**) pressing the SET button allows the value to be altered.

Firstly, the value flashes (fast) along with the **PROGRAMMER** LED to indicate **ALTER** mode.

During this stage the program is paused with all channels controlling at the present set point.

To change the value, use the **SET** and **ENTER** routine.

To ignore **ALTER** and resume the program cycle press **ENTER**.

PROGRAM HALT

The program can be paused at any time using the **HALT** function.

This is set by pressing the HALT button for 3 seconds (the display shows - - - -) until the display flashes **HALT**.

To end the HALT function press the HALT button once.

UNITS (C/F), PROP BAND AND HOLD BACK SETTING

With the unit in OFF mode press the ENTER and RUN buttons together until the display blanks.

Upon release the display will show the previously set **UNITS** i.e. C or F.

Press the **SET** button to toggle the value.

Press **ENTER** to store.

Pb (Proportional Band) setting is now displayed.

Use **SET** button to select values; **5**, **10**, **20** or **40**.

Pressing **ENTER** stores the desired value.

Display now shows **H** (Hold Back) setting.

Use **SET** button to select; **10**, **20**, **40** or **60**.

Pressing **ENTER** will store the desired value.

Unit will now revert to the **OFF** mode.

RESET FUNCTION

To exit the PROGRAMMER or CONTROLLER mode press the RESET button once . . . . .

Then while the display is showing rst press and hold the RESET button and release when the display blanks.

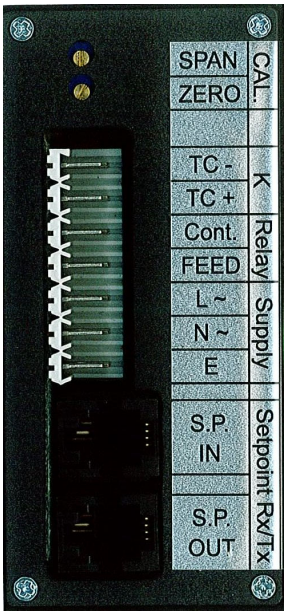
This procedure ensures that the program is not ended accidentally.

CALIBRATION

Calibration is simply achieved by connecting a thermocouple simulator (e.g. VA710 Stock Number 41511) to the thermocouple input.

Ensure that the Advantage 3 is set to the same units as the simulator (i.e. C or F).

Check and adjust the display using the Span and Zero potentiometers on the rear of the instrument.



Adjust at both low (ZERO) and high (SPAN) values e.g. 100 and 1000 Deg.C.

NOTE : Any inputs higher than 1200 Deg.C. or an Open Circuit Thermocouple will display HIGH.

Allow 30 mins warm up time before adjustment.

Zero pot turn anti-clockwise to increase.

Span pot turn clockwise to increase.

Repeat Span and Zero until no further adjustment is needed.

Unit should rarely require adjustment. An annual check is recommended.