



Cooper 8 - Heat Treatment Management System

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Specifications

Voltage	110 Vac
Frequency	50/60Hz
Power Consumption	Nominal 600 Watts max.
Maximum Current	5 Amperes
Operating Temperature	0 to 50° C
Ambient Humidity	10 to 90% Relative Humidity
Storage Temperature	-20 to 60° C
Input	Type K thermocouple
Output	Relay as per supply voltage
Temperature Control range	0 to 1200° C (0 to 2200° F)
Calibration	± 0.1% of span ± 1 °C
Temperature Stability	± 0.1° C/°C rise in ambient max
Control	PID Control
Channels	6 that control and record 6 that record only
Languages	English
External Dimensions (mm)	430mm Long 325mm Wide 260mm High
Weight	13kg
Environmental protection	Front IP65 Rear IP20

Safety Instructions



Do not use for any other purpose than that described in this manual



Do not use in a damp or wet environment



Protect from moisture when not in use



Inspect the unit's power cord and plug for damage before use



Repair as necessary



Carry the unit using the handle



Ensure the unit cannot fall from its operation position.



Plug into an earthed outlet

Overview

The Cooper 8 is a combined controller and recorder; it is designed to work in conjunction with standard heat treatment units. The controls of the Cooper 8 are intuitive and are based on fifty years of company experience.



Basic Operation

Assumptions

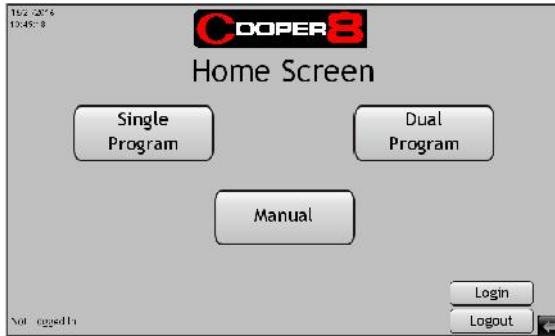
- Thermocouples connected
- Outputs connected
- Operator is familiar with the heat treatment application
- Profile checked (from trend screen page 7)

When the unit is initially powered up the screen below will appear



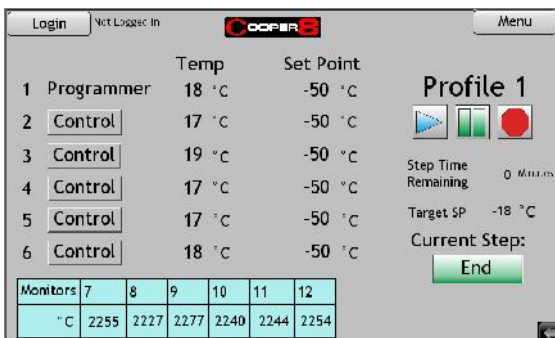
Overview of Profile Screens

Use the Home Screen, below to Log in/out or select either single, dual program, manual or to data.



Menu, Home Screen returns to the Home Screen.

Single program - means all six outputs are controlled from a common Programmer (Prog)

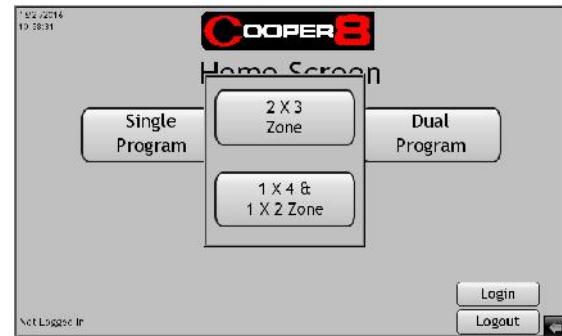


'Monitors' display the channels that record only

Any of the channels under the Prog can work independently.

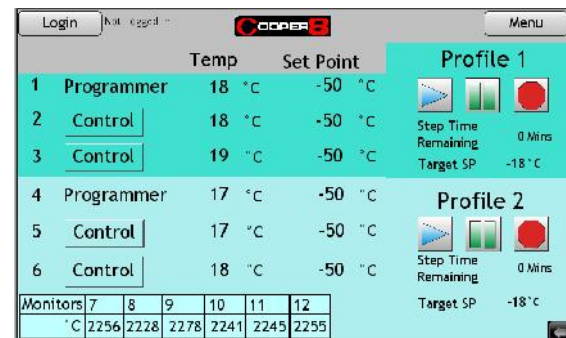
'Remote user attached' shows that a remote user is logged on. (See page 8)

Dual Program

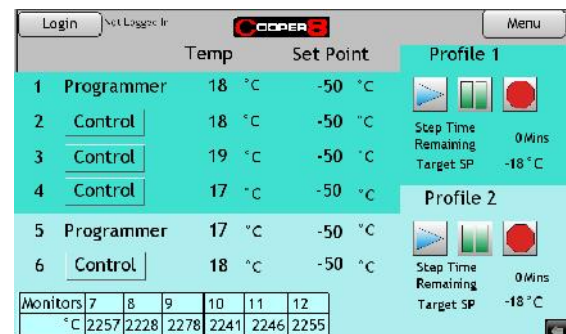


Dual program - means that either:-

1. Two sets of three channels can be controlled from two Progs.



2. Two sets that have four channels and two channels that can be controlled from two Progs



The buttons below will start, pause or stop a profile



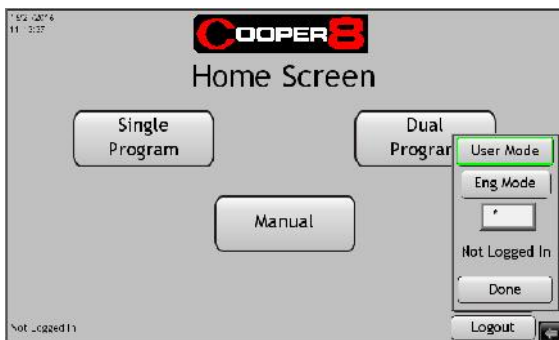
Manual – means six channels can be controlled independently.

	Temperature	Actual	Set	
1 Independent	18 °C	-50 °C	On	
2 Independent	18 °C	-50 °C	On	
3 Independent	19 °C	-50 °C	On	
4 Independent	17 °C	-50 °C	On	
5 Independent	17 °C	-50 °C	On	
6 Independent	18 °C	-50 °C	On	

When a channel is calling for heat, the corresponding light will illuminate.

Login (Security)

To run a preprogrammed profile, logging in is not required.



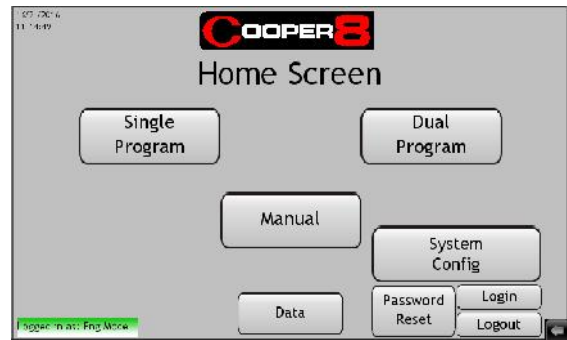
There are two security levels

Level 1 (User) = Alter Profiles - the default password is 1234

Level 2 (Eng (engineer)) = Change parameters - default password is 5678

To enter level 1 or 2, press login then select User Mode or Eng Mode, enter the code, then press Done.

The passwords can be changed if logged into level 2



The passwords can be restored to default; by powering down the unit, shorting terminal Z1 and D1 on module 3, then powering up the unit. The unit should then be powered down and the short removed

Configuration

If system config is pressed the following screen will appear.



From this screen the following parameters can be altered

- Degrees C to Degrees F
- Operating Language
- Profile Entry Type
- Holdback (Default setting 10)
- Overtemp (Default setting 999)

Holdback – If any channel is lagging behind the programmer set point, the programmer will hold all channels until that channel catches up, this ensures the soak or ramp is within the holdback value. This feature can extend process times.

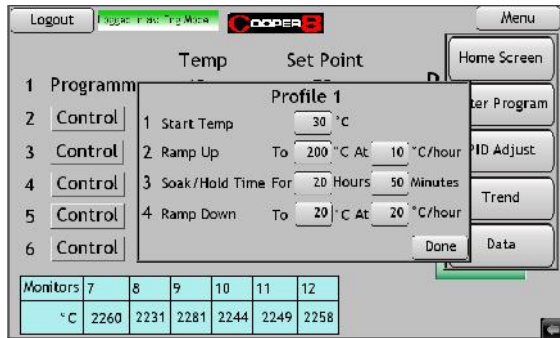
Channels 'Held' are enclosed with a blue box.

Overtemp – If any channel exceeds this temperature, then a red ring will circle that specific channel. An option for an alarm relay is also available.

Control Screens/Alter profiles

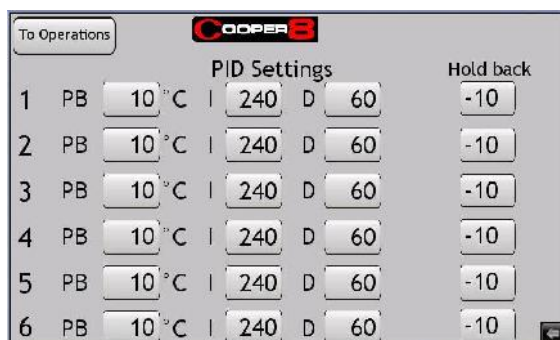
Either one of the profile screens will be active depending on which program entry type is selected; the screen below shows a profile that can be edited, by touching the area for alteration.

Pressing Done on the screen will display or close the Profile screen.

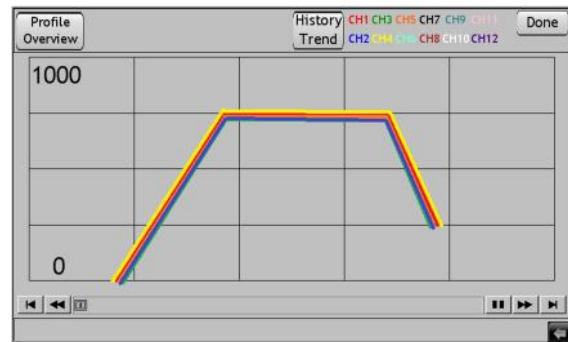


Pressing Menu will display or close a drop down menu. The following actions are available in the drop down screen.

- Home Screen, returns back to the Home Screen.
- Enter Program/Simple Profile 1 or 2 allows the checking or creation of a new profile, if logged in
- To PID adjust, allows the control setting of the controller output to be adjusted, if logged in. Only skilled persons should alter this screen.



- To Trend allows real-time viewing of the current thermocouple inputs.



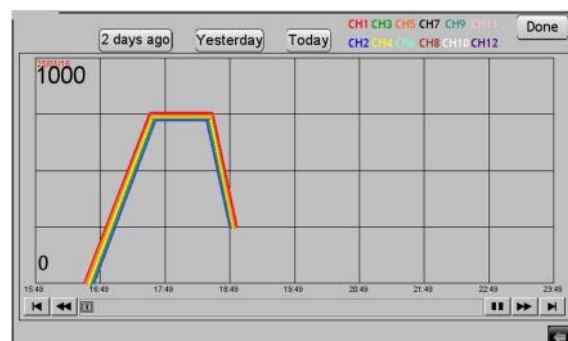
From the above Trend Screen, profile overview, history trend can be accessed.

Press Profile overview, to check Profile or Profiles.

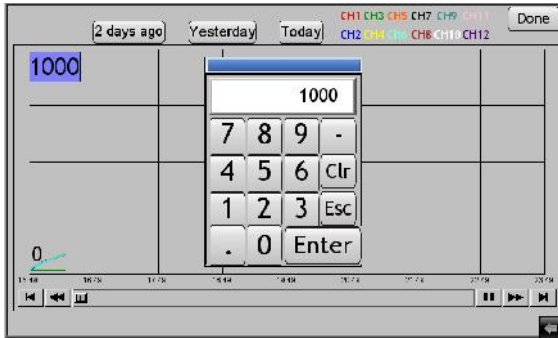
The screenshot shows the 'Profile Overview' screen with a table of profile steps:

Start/Step	Goto	To	At	Mins
1 Start/Step	30	°C	0	Mins
2 Ramp	To 200	°C At 10	°C/hour	
3 Soak	For 20	Hours 50	Mins	
4 Ramp	To 20	°C At 20	°C/hour	
5 End				

Press History Trend to check history



Touch the scale value to alter scale and enter.



Copying Data to USB

From the Home Page or the drop down menu, Data allows existing data to be copied or deleted

To copy data insert a USB memory stick into USB 1 Memory Stick socket. After the acceptance message, press Download to USB.



To delete any stored data, press delete data, a pop up window will ask for confirmation, pressing yes will delete all stored data

Done, returns back to the previous page.

Remote Viewing/Control

Optional upgrade, a 3G/4G dongle can be plugged into the USB2 GSM port.

Connect using a smart phone or tablet or other type of wireless device.

Search for wireless networks; connect to the one that shows the serial number of the Cooper8.

The password is also the serial number, and is case sensitive.

Control the Cooper 8 remotely using a wireless device. To do this, it is necessary to install a VNC viewer to the viewing device and connect to the Cooper8.

After a period of inactivity, the remote VNC connection is logged off.

Extend the aerials fully for best reception. The expected wireless range can be up to 100 meters; this is subject to local conditions.

Ethernet Connections

Multiple users are possible over the WAN and LAN outlets.

VNC start screen

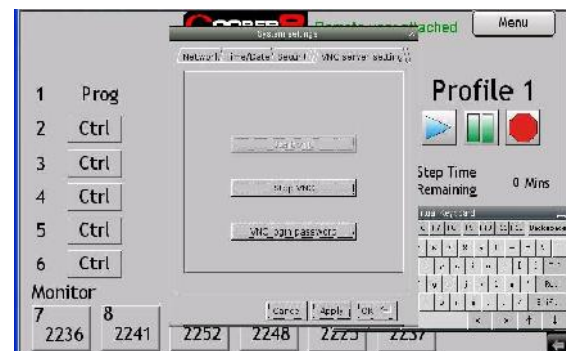


Chart Generation

The cooper 8 is designed to work with a note pad computer and printer



A separate manual details how to generate charts.

Frequently Asked Questions

Question	Answer
The heater is too hot, or one is too cold.	The Thermocouple is not connected to the correct input
Unable to connect wirelessly	Check VNC is 'on' Check Passwords or Too many users online
The profile was stopped and started, now the Set-point is much lower than the actual Temperature	Alter the profile start up temperature, to a figure below but close to the actual temperature
Keeps losing Wireless signal	Buildings and other obstacles can weaken the wireless signal, try and ensure a clean line of site

Parts list

Item	Description
33009	3Mx3C Temp Cont/Prog Lead Mk2
504-250	WLAN Antenna RP-SMA Male to Female Ext Cable 29cm
504-251	CAT5e Patch Lead 0.5m
504-252	2 Core Screened Cable 0.22mm 25mtrs
514-401	3xPID module c/w Relay
514-403	8xUNIV 6xDIG Module
514-410	7" HMI Panel - Dark Grey
514-430	TP-Link TL-MR3420 Router
514-431	TP-Link TL-ANT2408CL Antenna
516-041	16A 110V 2P&E Plug
516-101	3 Pin P/M Female
516-125	T/C Socket P/M Type 'K'
516-500	Harting Adaptor USB A-A 0.5m
516-501	Harting RJ45 Panel Adaptor
516-502	Harting Cover
516-503	Connector D-sub 9 pin Male
530-001	P/M Fuse Holder 1-1/4"
530-053	5A glass Fuse 1-1/4" x 1/4"
532-018	20mm Plas. Gland&Nut-10Pk Blk
536-017	Black Handles Plastic
536-020	Crash Bar 120mm
536-055	Push In Rubber Feet 24Dia RS 220-901
538-036	110V Neon Indicator - Amber
540-017	Tracopower 24V Power Supply 25W 1A
540-019	Tracopower 12V Power Supply 25W 2A
SUN200	Stork USB Memory Stick

Contact Information

Stork Technical Services (RBG) Ltd
Units 21-24 Slaidburn Crescent
Southport
Merseyside
United Kingdom

Tel (00) 44 (0)1704 215600
Email: info@storkcooperheat.com