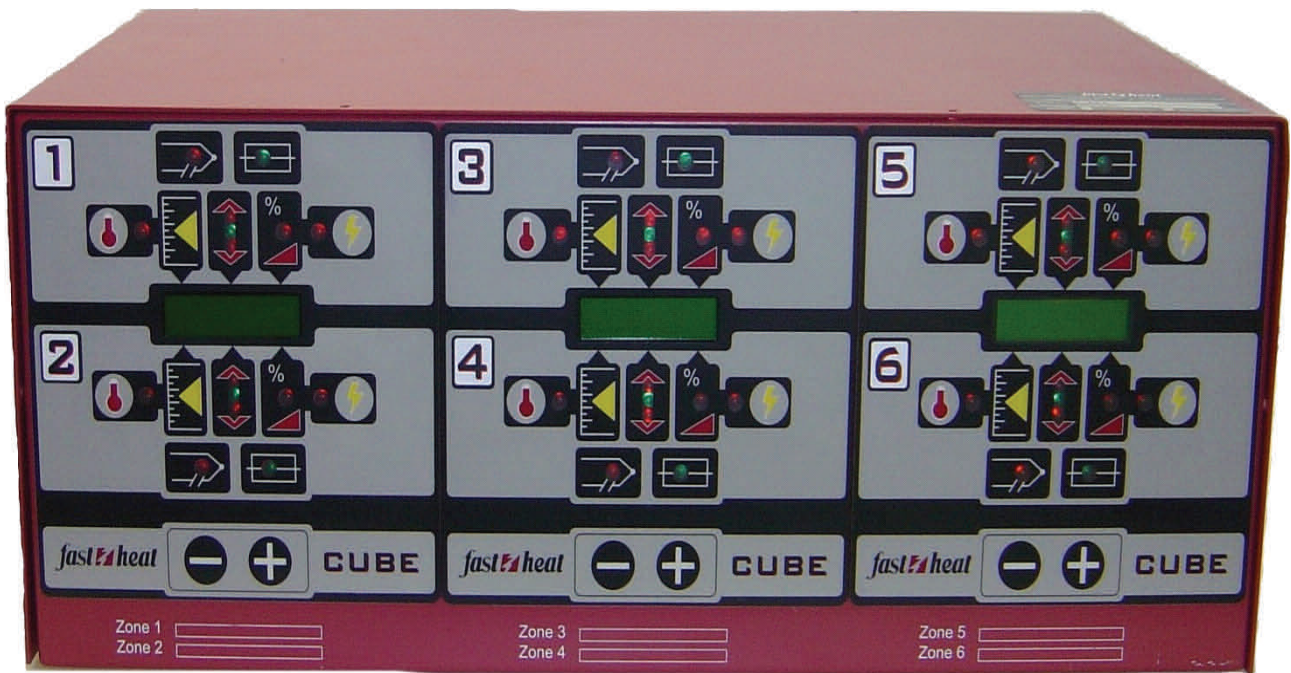


CUBE



4 & 6 Zone 20A Controller

Installation And Operating Manual

fast  *heat*

Introduction

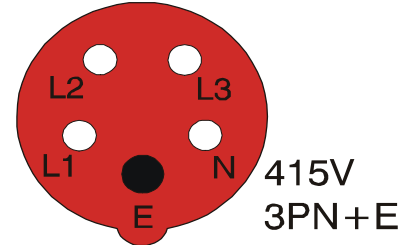
Thank you for purchasing this Cube 4 or 6 controller.

Whilst the Cube has been designed to be as simple as possible to install and operate, please take your time to read this manual before using the unit for the first time.

As well as this manual and the Cube 4 & 6 controller, the package should also include 2 mating plugs for connection to the application.

Wiring Detail

The power cable fitted to the Cube 4/6 controller is a 3 phase 415V 32A braided cable and should be wired to the appropriate 3 phase 5 pin red plug type connector.



The details for the wiring of the load connector is detailed opposite.

We recommend that the cable is also earthed using the earth terminal on the connector.

The HBE16 male connector is the socket used for the heater wiring and the HA16 female connector is the plug used for the thermocouple wiring. The HA16 connector is the smaller connector of the 2 connectors fitted.

The mating connectors are supplied.

NOTE: ALL TOOL END CONNECTORS MUST BE EARTHED

Wiring Detail

	Heater	Thermocouple
Zone1	1/9	+1/-9
Zone2	2/10	+2/-10
Zone3	3/11	+3/-11
Zone4	4/12	+4/-12
Zone5	5/13	+5/-13
Zone6	6/14	+6/-14

Controller Details

- Recessed Handles For Ease Of Lifting
- Rated Up To 20A Per Zone
- Internal High Speed Semi-Conductor Fusing
- Load Via 25A Solid State Relays Mounted On Heat Sinks
- Individual Switching For Each PCB Via Contactors
- 63A Circuit Breaker Fitted For Complete Mains Isolation
- Cooling Fan Fitted To Assist Increased Life Of Internal Components
- 4 Zone Controller Can Be Easily Converted To 6 Zone At A Later Date If required

Fuse Replacement

The details outlined here are how to access the correct fuse holder in the event of a blown fuse. The fuse holders are din rail mounted and house the 10.3X38 20A semiconductor fuses and are located within the cabinet in pairs between the switching contactor and the solid state relays. This should only be carried out by a qualified electrician as access is required into the cabinet. Ensure the correct fuse type is used when replacing.

Ensure the cabinet is completely isolated before commencing.

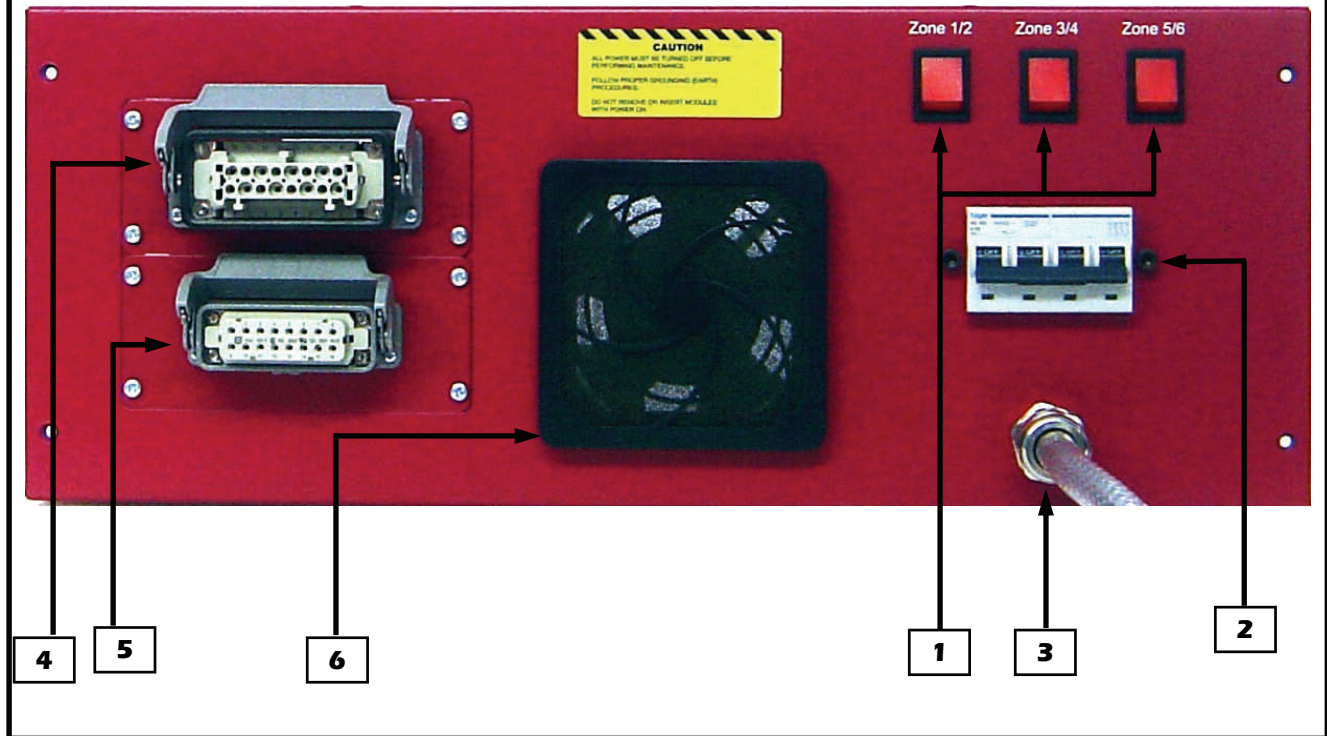
1. Remove all 12 of the cabinet fixing screws.
2. Locate the blown fuse. (All fuse holders are labelled per their corresponding zone)
3. Lift the required fuse holder cover and remove the blown fuse.
4. Replace and ensure the fuse cover is completely pushed back down into place.
5. Re-fit the cover of the controller.

Only when the cabinet cover has been re-fitted should the power be switched back on to the controller.

Rear Panel Detail

- 1 Individually Switched PCB's**
- 2 Power Isolation Circuit Breaker**
- 3 Power Cable Entry Gland**
- 4 HBE16 Heater Connector**
- 5 HA16 Thermocouple Connector**
- 6 Cooling Fan With Filter**

Switching Via 20A Contactors for safety when switching off under load
63A 4 Pole Over Current Protection
Braid Terminated Within Gland
Harting 16 Way Female Insert With Single Lever Panel Mount Base
Harting 16 Way Male Insert With Single Lever Panel mount Base
120mm X 120mm Fan With Replaceable Filter



Front Panel Details

Zones 1, 3 & 5

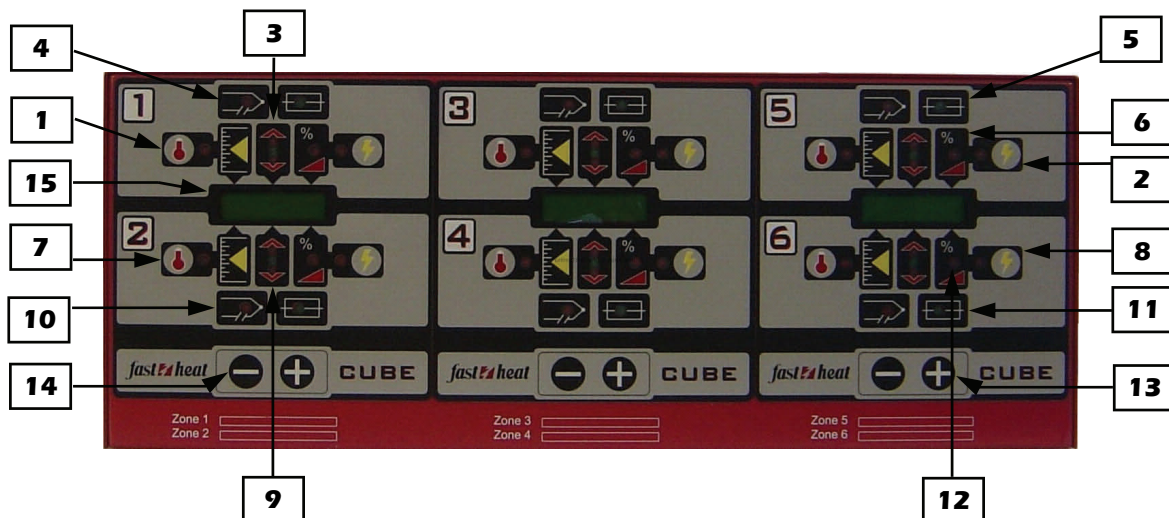
1	Setpoint button	Press to select Automatic operation of Zone 1. Red LED will be on to indicate Automatic mode of Zone 1. Red LED will flash for 5 seconds to enable changes to parameter value.
2	Manual Power button	Press to select Manual operation of Zone 1. Red LED will be on to indicate Manual mode of Zone 1. Red LED will flash for 5 seconds to enable change to parameter value.
3	Temperature deviation meter	Green LED will illuminate when measured value is same as setpoint +/- 5 degrees. Upper Red LED will illuminate when measured value is above setpoint by 6–15 degrees and will flash when the error is +15 degrees or more. Lower Red LED will illuminate when measured value is below setpoint. By 6–15 degrees and will flash when the error is -15 degrees or more.
4	Thermocouple failure LED	LED will light when thermocouple is open or reversed
5	Heater fuse failure LED	LED will extinguish when fuse has failed.
6	Output Power LED	Red LED will flash in proportion to amount of output power.

Zones 2, 4 & 6

7	Setpoint button	Press to select Automatic operation of Zone 2. Red LED will be on to indicate Automatic mode of Zone 2. Red LED will flash for 5 seconds to enable changes to parameter value.
8	Manual Power button	Press to select Manual operation of Zone 2. Red LED will be on to indicate Manual mode of Zone 2. Red LED will flash for 5 seconds to enable change to parameter value.
9	Temperature deviation meter	Green LED will illuminate when the measured value is same as setpoint +/- 5 degrees. The Upper Red LED will illuminate when measured value is above setpoint by 6–15 degrees and will flash when the error is +15 degrees or more. Lower Red LED will illuminate when measured value is below setpoint by 6–15 degrees and will flash when the error is -15 degrees or more.
10	Thermocouple failure LED	LED will light when thermocouple is open or reversed.
11	Heater fuse failure LED	LED will extinguish when fuse has failed.
12	Output Power LED	Red LED will flash in proportion to amount of output power.

GENERAL OPERATION

13	Increase value button	Will increase value of parameter indicated by flashing Red LED
14	Decrease value button	Will decrease value of parameter indicated by flashing Red LED.
15	Parameter display	See pages 5–7 for further details.

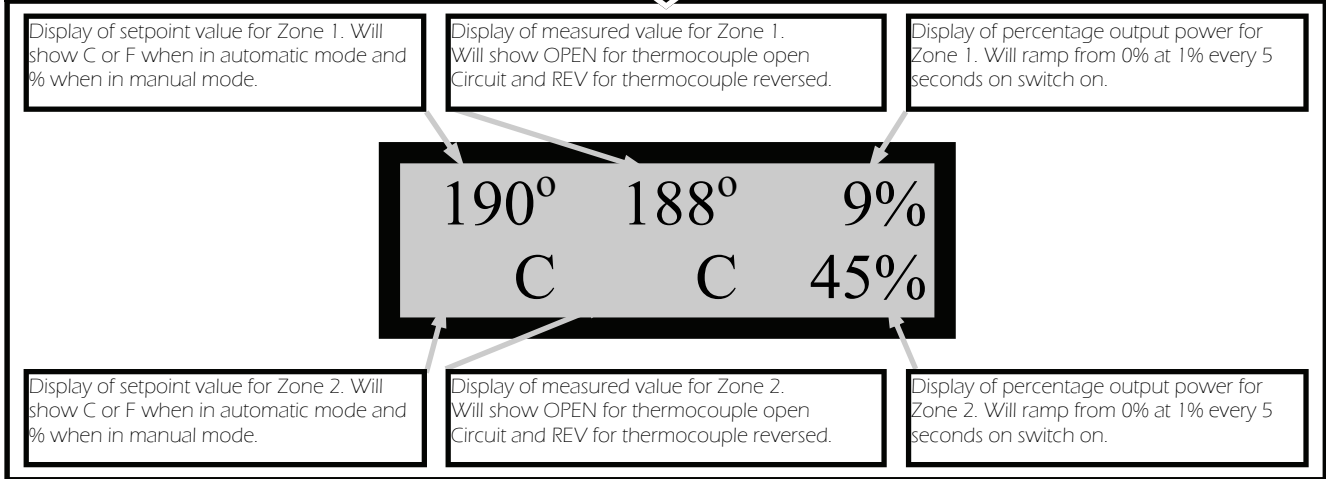


Normal Power On

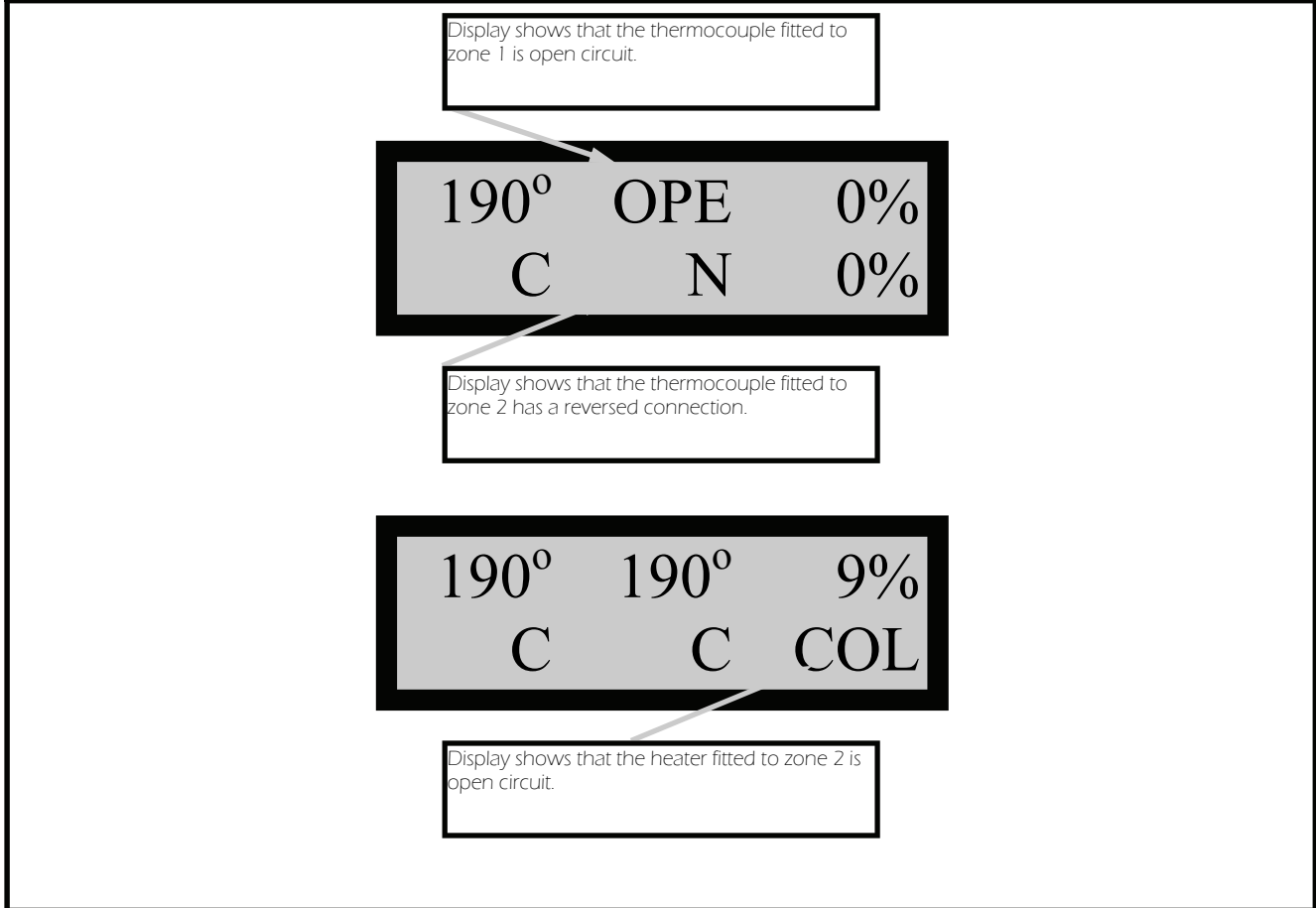
Power On Screen



Main Screen



Error Screen



Configuration

Power On Screen

This screen appears when the controller is switched on. You can also activate this screen by pressing the Zone 1 setpoint and manual buttons together. This will force the controller back to this screen and allow the user to enter the configuration screens without switching the controller off. Please note this will stop controlling until the main screen is selected.

FASTHEAT CUBE
V00.49A 26/10/05

Software version.

Date of release of software.

Configuration Screen 1

Type J thermocouple input currently selected.

Press Manual Power button 2 to select Type K thermocouple.

Press setpoint button 1 to select Type J thermocouple.

J< TC:J K
C< TYPE °F

To activate, press the + key once within 5 seconds of the Power On Screen appearing on the display.

Press setpoint button 7 to select Degrees C.

Degrees C display currently selected.

Press Manual Power button 8 to select degrees F.

Configuration Screen 2

When selecting Slow, Medium or Fast PID, use the following information for guidance only. Slow = Low Wattage Load (Below 200Watts), Medium Load = Average Wattage Load (200Watts-1000Watts), Fast = High Wattage Load (Above 1000Watts)

Press Manual Power button 2 to select either Manual, Slow Medium or Fast PID.

Press setpoint button 1 to select maximum output power %.

100% Max /U Fast
500° / PID L Man

To activate, press the + key once while the controller is in Configuration Screen 1 mode.

Press setpoint button 7 to select maximum setpoint temperature.

Press Manual Power button 8 to select either Manual, Slow Medium or Fast PID.

Configuration Screen 3

Press setpoint button 1 to change zone 1 control Band Width. (only while in Manual (MAN) mode)

Upper Zone

Press Manual Power button 2 to change zone 1 PID Time Constant. (Only while in manual (MAN) mode)

16 B (U T 25
16 B MED) T 25

To activate, press the + key once while the controller is in Configuration Screen 2 mode.

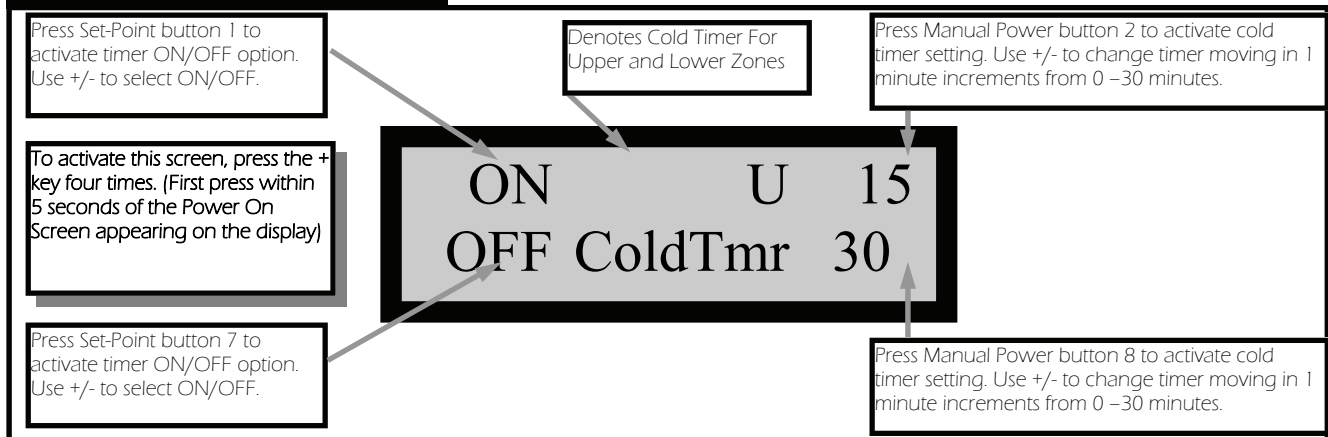
Press setpoint button 7 to change zone 2 control Band Width. (Only while in manual (MAN) mode)

Lower Zone

Press Manual Power button 8 to change zone 2 PID Time Constant. (Only while in manual (MAN) mode)

Configuration

Configuration Screen 4



Cold Timer Function

This function is used to determine whether or not the heater that is connected to the controller is Open Circuit. The term 'COLD' was used to identify a 'Heater Open' as the term 'OPEN' on this controller refers to the thermocouple circuit. This should assist in avoiding confusion.

The 'COLD' function works on a timer basis. When the controller is switched on, it immediately starts in a ramp mode, the temperature increasing at 1 Degree per 5 second intervals, until the controller either reaches 100% power or set-point, whichever is quickest. Once the ramp mode has finished, the 'COLD' timer starts. The timer can be set between 0 minutes and 30 minutes. If the controller does not see a reasonable increase in temperature, it will assume there is a heater open circuit, or 'COLD'.

If the load the Cube is trying to heat up is a large load, that would normally take a while to heat up, set the timer to 30 minutes. This should be enough time for the controller to recognise a sensible increase in temperature.

On smaller loads, the timer can be decreased accordingly.

The timer function can be set from 0 minutes to 30 minutes and time increases in 1 minute increments. This function can also be turned off.

Technical Specification

Size (mm) (HxWxD)	225 x 575 x 380	Number Of Zones	4 or 6
Weight (kg)	19.25	Thermocouple Error	Rev, Open (LED)
Power Consumption (VA)	<5	Heater Error	Fuse Failure LED, COLD
Operating voltage	415V	Soft Start Ramp Rate	1 degree C per 5 seconds
Isolation	63A Circuit Breaker	Loop Update Time	100mS
Protection	20A Semiconductor Fuses	Input Type	J or K Thermocouple
Display	2 x 16 character, backlit LCD	Input Sensor Accuracy	<0.2%
Output Rating Per Zone	230V at 20A*	Display Type	Degrees C or F
		Control Type	Automatic / Manual
Maximum Total Load *	120A	CJC	< 1 Deg C
		Display Temp Range	0C–499C (32F–930F)
		Display Accuracy	1 digit

Warranty

Fast Heat guarantees its Hot Runner Temperature Control products to be free of defects in materials and workmanship. If a unit should malfunction, it must be returned to the factory for evaluation. Upon examination by Fast Heat, if the unit is found to be defective, it will be repaired or replaced, at our option, at no charge.

However, this warranty is void if the unit shows evidence of having been tampered with or has been abused, contaminated, improperly installed or misapplied. This warranty does not cover abnormal wear and tear on lead wires caused by resins, electrical or non-electrical accessories.

This warranty does not include electrical contact points and fuses.

Specific Warranty Periods: 1 year: Service, Parts and Labour 2 years: Parts Only

Liability

Fast Heat accepts no responsibility or liability for the APPLICATION by the customer of Hot Runner Temperature Controllers. The customer assumes this liability. Upon inspection, if our products meet our warranty requirements, the customer may be subject to a reasonable charge for troubleshooting, including travel.

There are no warranties, expressed or implied, for Hot Runner Temperature Controllers except as stated herein. In no event shall Fast Heat be liable for consequential, incidental, or special damages. The buyer's sole remedy for any breach of this agreement by Fast Heat shall not exceed the purchase price paid by the buyer to Fast Heat.

All product specifications are subject to change without notification.



fast heat



Unit 7, Alder Close, Eastbourne, East Sussex, BN23 6QF

T: 01323 647375 F: 01323 410355 E: sales@fastheatuk.com I: www.fastheatuk.com

FHD256V1-0506