24246

Powder Coating Curing Oven

T-MECH

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Specification

Product Description

This oven is used in the production process of powder curing. Place the powder coated work piece inside the oven to achieve a perfectly coated finish. With 2 shelves and 2 rails per shelf, there's plenty of room for hanging your powder coated metal work to cure.

This product can be wired onto a 32AMP plug.

We at Monster Group UK understand that it is a new and exciting purchase, and although it is tempting to get stuck in, please CAREFULLY read the instructions and safe working practices before you start using the machine.

Please Note: The T-Mech Powder Coating Oven is designed to be used by a competent person. It should not be used or stored in wet or damp conditions. Personal Protective Equipment (PPE) must be worn by the operator of this equipment.

Please refer to and read Safety Advice, Safe Working Practice to ensure prevention of injury or damage to the device before starting.

Technical Information

Voltage:	250V
Power:	9.25kW
Insulation Plate:	100mm thick
Warm Up Time:	25- 30 minutes (180°C)
Temperature Stability:	< ±5°C
Temperature Range:	0-230°C

Includes a soak control system and an 8 segment ramp.

Product Specifics

External Measurements: 2005mm H x 1205mm W x 1045mm D
Internal Measurements: 1600mm H x 845mm W x 845mm D
Weight: 350kg

Specification

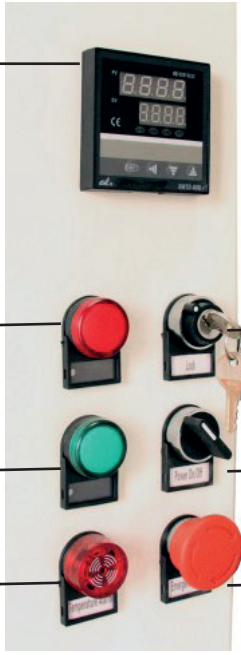
Monster Guarantee

If you wish to return a product in perfect working order, we provide a 30 day returns policy as long as the item is unopened and in a resalable condition.

A 12 month warranty applies to all of our electrical products; we will cover the cost of labour and parts. Our policy is to try and repair the item before arranging an exchange or refund.

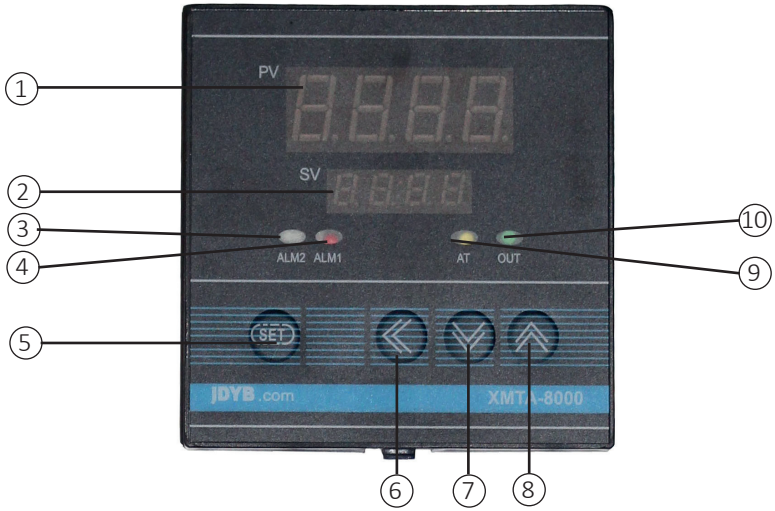
If for any reason a part is missing please get in touch with us within 7 days on receipt of your order. You can contact our friendly and helpful Customer Support Team via email or call. For full terms and conditions contact our Support Department via the details on the Contact Us page.

Product Features



Specification

Display Features



1. PV- Measured Value Indicator
2. SV- Set Value Indicator
3. ALM1- Alarm Indicator
4. ALM2- Alarm Indicator
5. SET- Function Button
6. Left arrow key
7. Down arrow key
8. Up arrow key
9. AT- Manual Indicator
10. OUT- Output Indicator

Safety Advice

Safe Working Practice

Please read through the safe working practice to ensure prevention of injury or damage to the device.

This oven must be installed on a dry and level solid ground.

The area must be clean and well ventilated.

Do not install in a damp environment or in an area with high humidity.

Do not install outdoors or in an area without sufficient cover.

Do not install in an area exposed to flammable or corrosive gases.

The ambient temperature of the area must be between 0 and 40°C.

The oven should be installed at least 1 metre away from any wall in order to provide sufficient ventilation.

Entering the oven whilst it is turned on WILL cause death or serious injury. DO NOT enter the oven.

It is advised that you do not operate the oven on your own. Have at least 2 people working with it.

Even with 2 people working with the oven we recommend carrying out 15 minute interval checks to the working area to ensure that the personnel and environment are safe.

You must wear a Tyvek suit or appropriate coveralls to protect your skin, as the powder material/paint can cause irritation. Check individual safety recommendations of product you are using.

You must wear gloves and sufficient eye protection at all times, as the powder material/paint can cause irritation. Check individual safety recommendations of the product you are using.

You must wear a dust mask at all times whilst using and working around the oven.

Safety Advice

Safe Working Practice

Please read through the safe working practice to ensure prevention of injury or damage to the device.

Ensure regular maintenance is carried out on the Powder Coating Oven by appropriately trained personnel.

Make sure the work piece can fit in the oven prior to turning the oven on and coating the piece.

Do not use the powder curing oven for food. The fumes from the powder coating can be toxic. Each time the oven gets turned on, the paint's fumes get reintroduced. Make sure you wear a dust mask.

Make sure the work piece has properly cooled before handling.

Do not operate an open flame in your powder coating area. Powder Coating powders can be explosive. Clean the area thoroughly between uses.

Make sure the door is securely closed before curing begins, this will prevent the hot air from injuring the operator.

When servicing, you must turn off the power supply.

The maximum furnace temperature is 250°C. Use above this temperature is strictly prohibited.

Do not put fingers through the vents on the oven as the elements can be hot.

When the oven is not in use, ensure that it is correctly turned off and allowed to cool sufficiently before closing up the vented area.

This oven is extremely heavy. Do not attempt to move the oven by hand. Use the appropriate machinery as confirmed in any workplace Health and Safety processes.

User Guide

General Powder Coating

1. Powder Coating should be undertaken by an experienced and competent person. This is in no way an exhaustive and complete guide of how to Powder Coat/Cure.
2. You should wear a Tyvek suit/coveralls and gloves to protect your hands and skin. Eye protection should be worn at all times. A dust mask will protect you from inhaling any paint. Electrostatic paint can dry out your skin and cause irritation.
3. Determine the type of material you are going to powder coat and select a suitable powder for the finish.
4. Dismantle all threaded or lubricated interfaces before you begin, including anything you don't want coated. The powder coat you apply will adhere to everything on your rig, this will make clamps, bolts and nuts useless after blasting. A high temperature masking tape can be placed on the parts you don't want powder coated, and it can be left on while in the oven, but it will need to be removed quickly afterwards.
5. Clean the base metal thoroughly. Remove any rust or debris from the metal.
6. Apply the powder to the object to be powder coated. This is done using a spray gun or a compressed air sprayer which charges the powder material so that it sticks to the base metal object receiving the coating. After applying the powder, be careful not to brush or blow on the powder coat, as the powder could fall off and leave you with a less precise finish.
7. Cure the metal at an appropriate temperature for the powder material you are using. Normally the object is heated to 175 to 190°C (350 to 375°F) for about 10 to 15 minutes, and allowed to cool. The curing oven raises the product mass and coated material to a specified temperature for a set time.

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1. Place the work piece on the rails and shut the door. Make sure the door is securely closed using the handle.
2. Turn the switch into the ON Position. The temperature control display will turn on.
3. Turn the heating switch to ON on the control panel. The Heating Indicator will light up.
4. Turn the fan switch to the ON position on the control panel. The Fan Indicator will light up.
5. The temperature and time you need to cure will depend on the item and its thickness. This will be set on the Timer/Controller as per the instructions on the following pages.
6. Allow the work piece to cool before handling. You will need high temperature gloves and a suit to remove the part from the oven.

PLEASE NOTE:
When the oven is not in use, ensure that it is correctly turned off and allowed to cool sufficiently before closing up the vented area to prevent damage to the cooling fan.

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Operation Instructions

Before first use, please ensure that the temperature controller settings are set as required.

The temperature controller uses Proportional Integral Derivative (PID) controls to calculate error values. These controls can be set manually by an appropriately trained person through the parameter menu, accessing the I, P and D parameter settings, or automatically using the At function. Please ensure the oven is loaded with items to be cured when tuning, as an empty oven will require different PID parameters than a loaded oven.

To enter into the parameter menu, press the ‘set’ button and hold for 3 seconds. To switch between parameters, press ‘set’ until you find the required parameter.

To automatically tune the device, set At to 1. Once successfully tuned, the At will be set to 3.

On the main display, press and hold left until the bottom display alternates between set temperature and ‘At’. After 2 – 3 uses, the PID parameters will be set.

Ramp, Step and Soak settings will not work when auto tuning.

To stop tuning early, press and hold left when on main display until bottom display no longer alternates ‘At’.

Settings will vary depending on items to be cured and the powder they are coated with.

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Temperature Display Operation Instructions

General
Press the Left arrow to open programming menu
Press and hold the Up arrow to stop the program
Press and hold the Down arrow to run the program

When setting a program, press and hold the left arrow to enter the programming menu. Use the up and down arrows to select the required temperature, then press 'set' to access the timer. Again, use the up and down arrows to set the timer. Press set to access the next program. Leave for 10 seconds to return to the main display once you have set your program. Once on the main display, press and hold down to run your program.

When any changes are made to the program you must stop the program by pressing the Up arrow and then press the Down arrow for the change to take effect.

This will now restart the program from the beginning.

C is the program temperature in °C – you can set up to 99 different temperature programs
T - a positive value is time in minutes. A negative value is the corresponding program – e.g.-4 would put the program to C004.

To set a constant temperature -
e.g 160°C.
Press left to enter program menu.
Set C001 to 160, then press 'set' to set T001 to 0.

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To set a Ramp - Example below -
To set a ramp from 160 to 170°C over 15 minutes and then hold at 170°C you should enter:
C001 = 160
T001 = 15
C002 = 170
T002 = 0

To set a Step - Example below -
To set a 15 minute ramp from 160 to 170°C followed by a step to 180°C and hold at 180°C you should enter the following:
C001 = 160
T001 = 15
C002 = 170
T002 =-3
C003 = 180
C003 =-0

To set a Soak - Example Below -
To set a 15 minute ramp from 160 to 170°C followed by 15 minute soak followed by 10 minute ramp back to 160°C and hold you should enter the below:
C001 = 160
T001 = 15
C002 = 170
T002 = 15
C003 = 170
T003 = 15
C004 = 160
C004 = 0

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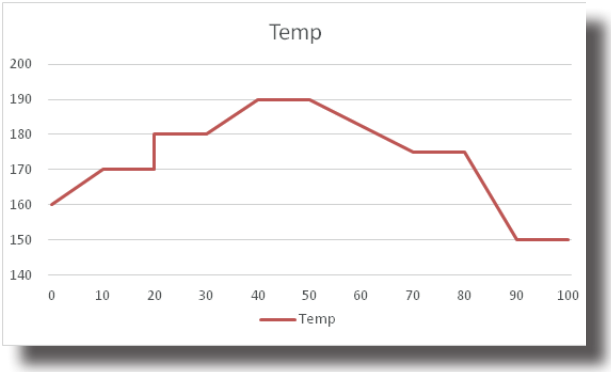
EXAMPLE
To create the graph below follow these settings:

C001 = 160
T001 = 10
C002 = 170
T002 = 10
C003 = 170
T003 =-4
C004 = 180
T004 = 10
C005 = 180
T005 = 10
C006 = 190
T006 = 10
C007 = 190
T007 = 20
C008 = 175
T008 = 10
C009 = 175
T009 = 10
C010 = 150
C015 = 0



This can be manipulated to your own required times and temperatures.

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Temperature Alarm Settings

This product also includes temperature limit and deviation alarms.

To set the temperature alarm limits, enter the parameters menu. You will see 'ALM1' in the PV display bar. The SV display bar will show the current temperature alarm limit.

Use the up and down arrows to set to the desired temperature in °C. The left arrow will allow you to select the column you wish to amend for quicker amendment of large values (e.g. tens digits, hundreds digits or thousands digits).

If your oven exceeds the temperature alarm limit, plus the set dead band/fluctuation allowance (HY function), the ALM1 light will light up and an alarm will sound. For high precision, set the HY function low.

In the parameter menu, 'ALM2' refers to low temperature alarm, which will not sound, but will light ALM2 light; 'HY-1' refers to positive deviation alarm, which will not sound; and 'HY-2' refers to negative deviation alarm, which will not sound, but will light ALM2 light. These alarms can be set in the same way as the ALM1 alarm.

To disable the alarms, set as follows:
ALM1: 9999
ALM2:-1999
HY-1: 9999
HY-2: 9999

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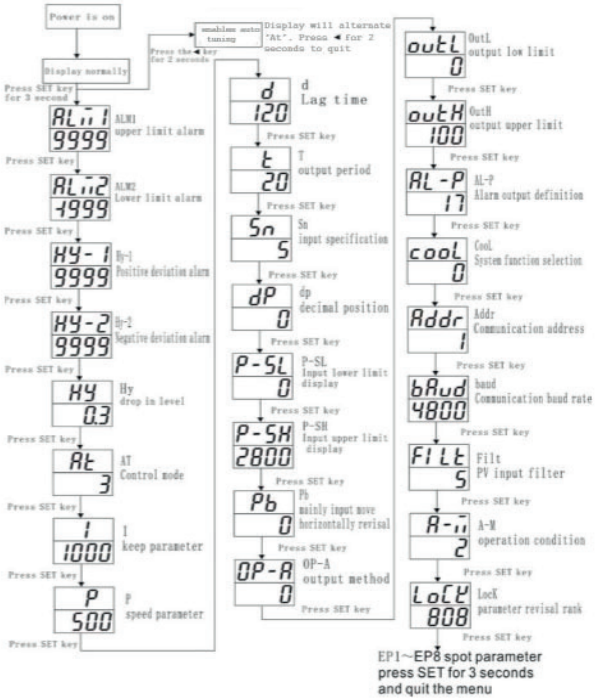
For all other parameter options, see the below diagram.



Parameters should only be adjusted by competent and trained persons.

This product can be used with RS485 controllers. Set the bAud parameter to a unique channel in the parameters menu and set up as per your RS485 software instructions.

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Parameter Key

Code	Meaning	Description	Setting Range	Factory Setting
ALM 1	High Limit Alarm	When the Measured Value (PV) is more than ALM1+Hy, an alarm will sound. When the PV is less than ALM1-Hy, the alarm will stop.	-1999 - +9999°C or 1 unit	9999°C
ALM 2	Low Limit Alarm	When the PV is less than ALM2-Hy, the alarm function will be enabled. When the PV is more than ALM2+Hy, the alarm function is disabled.	-1999 - +9999°C or 1 unit	-1999°C
HY-1	Positive Deviation Alarm	When the deviation (PV - SV) ＞ Hy-1+Hy, the positive deviation alarm will be enabled. When the deviation is less than Hy-1-Hy, the alarm will be disabled. When using ON/OFF adjustment, Hy-1 and Hy-2 are the second upper limit and lower limit absolute value alarm.	0 - 9999°C or 1 unit	9999°C
HY-2	Negative Deviation Alarm	When the negative deviation (SV - PV) ＞ Hy-2+Hy, the negative deviation alarm will be enabled. When the negative deviation (SV - PV) ＜Hy-2-Hy, the alarm will be disabled.	0 - 9999°C or 1 unit	9999°C
Hy	Dead Band	Hy is set to allow adjustment of high switching frequencies caused by input fluctuation. (1) When the PVis more than (SV+Hy), the output will turn off. (2) When the PV is less than (SV-Hy), the output will switch on and start heating again.	0-2000 °C	0.5
At	PID Control Method	At=0, ON/OFF control, suitable when high precision is not required. At=1, artificial intelligence/PID control, allows auto tuning to be set from main display. At=2, start-up auto tuning function, after auto tuning finishes, it will set At to 3. At=3, artificial intelligence control. After auto tuning finishes, the meter automatically enters this setting. This setting prevents auto tuning from main display.	0 – 3	1
I	Hold Parameter	I is defined as measurement variation after output is changed. Generally I parameter of the same system will change with PV, and so I parameter should be configured with PV around the operation point. When the I value is smaller, the calculus function is stronger. When I=0, the system will cancel the calculus function and artificial intelligence adjustment function.	0 – 9999	500
P	Rating Parameter	P is in reverse proportion to measurement variations caused by output changes of 100% in one second. When At=1 or 3, then P=1000÷measurement elevation value per second, the unit is 0.1°C or 1 defined unit.	1 – 9999	100
d	Lag Time	Parameter “d” is defined as follows: time needed for electric furnace, from the beginning of elevating temperature, to reach 63.5% of SV, provided there is no heat loss. The longer the	0 – 2000 seconds	100

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Operation Instructions

<table>
<tr><td></td><td></td><td>system lag time, the more difficult it is to get ideal control effect. Decreasing parameter “d” will strengthen proportional and integral function and weaken differential function.</td><td></td><td></td></tr>
<tr><td>t</td><td>Output Period</td><td>Parameter can be set between 0.5 to 125s. It represents the instrument calculation speed. If d=100, then t is set to 0.5 or 10s. This is irrelevant when using ON/OFF function.</td><td>0 – 120s</td><td>20</td></tr>
<tr><td>Sn</td><td>Input Specification</td><td>
<table>
<tr><th>Sn</th><th>Input Spec</th><th>Sn</th><th>Input Spec</th></tr>
<tr><td>0</td><td>K</td><td>1</td><td>S</td></tr>
<tr><td>2</td><td>WRe</td><td>3</td><td>T</td></tr>
<tr><td>4</td><td>E</td><td>5</td><td>J</td></tr>
<tr><td>6</td><td>B</td><td>7</td><td>N</td></tr>
<tr><td>8-9</td><td>Special Thermocouple</td><td>10</td><td></td></tr>
<tr><td>11-19</td><td>Special Thermocouple</td><td>20</td><td>CU50</td></tr>
<tr><td>21</td><td>PT100</td><td>22-25</td><td>Special Thermal Resistance</td></tr>
<tr><td>26</td><td>0-80 Ω resistance input</td><td>27</td><td>0-400 Ω resistance input</td></tr>
<tr><td>28</td><td>0-20mV voltage input</td><td>29</td><td>0-100mV voltage input</td></tr>
<tr><td>30</td><td>0-60Mv voltage input</td><td>32</td><td>0.2-1V voltage input</td></tr>
<tr><td>33</td><td>1-5V voltage input or 4-20mA current input</td><td>34</td><td>0-5V voltage input</td></tr>
<tr><td>35</td><td>-20-+20mV (0-10V)</td><td>36</td><td>-100-+100mV or 2-20V voltage input</td></tr>
<tr><td>37</td><td>-5V-+5V (0-50V)</td><td></td><td></td></tr>
</table>
</td><td>0-37</td><td>0</td></tr>
<tr><td>dP</td><td>Decimal Point Position</td><td>Will set decimal point position based on user preference. This does not affect control or measurement precision.
dP=0, display pattern is 0000, decimal point not displayed.
dP=1, display pattern is 000.0.
dP=2, display pattern is 00.00.
dP=3, display pattern is 0.000.</td><td>0 – 3</td><td>0</td></tr>
<tr><td>P-SK</td><td>Input Lower Limit</td><td>(1) When the linear input defines a single lower limit value, use P-SL to set correct limits.
(2) When using thermal resistance, thermocouple input defines lower limit appointed value.</td><td>-1999 - +9999°C</td><td>0</td></tr>
<tr><td>P-SH</td><td>Input Upper Limit</td><td>When linear input defines single upper limit value, use with P-SL.</td><td>-1999 - +9999°C</td><td>2000</td></tr>
</table>

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Pb	Input Shift	Parameter Pb is used to shift input capacity to compensate the error produced by either the sensor or the input signal itself. For thermocouple input, parameter Pb is used to correct reference junction compensation error.	199.9 - +199.9 °C	0
oP-A	Output Mode	Op-A denotes output signal mode, and must conform to the module type installed as the main output. Op-A=0, the mode of main output is time-proportional output (for artificial intelligence control) or ON/OFF mode. If output modules such as SSR voltage output or relay contact discrete output, this should be set to Op-A=0. Op-A=1, any specification linear current continuum output. Op-A=2, time proportional output.	0 – 2	0
outL	Output Lower Limit	Limits minimum value of output adjustment.	0 – 110%	0
outH	Output Upper Limit	Limits maximum value of output adjustment.	0 – 110%	100
AL-P	Alarm Output Definition	AL-P is used to define ALM1, ALM2, Hy-1 and Hy-2 alarm output locality. Its function is determined by the following formula: AL-P = A x 1 + B x 2 + C x 4 + D x 8 + E x 16 A=0: upper limit alarm linked to relay 2 output A=1: upper limit alarm linked to relay 1 output B=0: lower limit alarm linked to relay 2 output B=1: lower limit alarm linked to relay 1 output C=0: positive deviation alarm linked to relay 2 output C=1: positive deviation alarm linked to relay 1 output D=0: negative deviation alarm by the relay 2 output D=1: negative deviation alarm by the relay 1 output E=0: alarm type will be displayed alternately in the lower display window when alarm occurs.	0 – 31	17
CooL	System Function	COOL is used to select some system functions: CooL=A×1+B×2 A=0, reaction control mode, if the input is increased, the output will decrease. A=1, direct action control mode, if input is increased, output will also increase. B=0, no alarm function when the power is on or SV changed. B=1, alarm function enabled when power is on, but function disabled when the SV is changed.	0 – 7	2
Addr	Communication Address	When the instrument uses RS485, Addr can be configured between 0 and 256. Each instrument	0 – 256	0

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		using the RS485 device requires its own unique communication address.		
bAud	Communication Baud Rate	When using a communication interface, bAud parameter is the communication baud rate. The range is 300-19200bit/s (19.2K).	-	9600
FILt	PV Input Filter	When the FILt value is set high, the PV is stabilised but the response time is longer.	0 – 20	0
A-M	Operation Condition	A-M defines manual/automatic control state A-M=0, manual control state A-M=1, automatic control state A-M=2, automatic control state, in this state manual operation is prohibited. If using the RS485 to control the instrument, this can be amended on the computer.	0 – 2	1
LocK	Lock	Lock=0, can set locale parameter and SV. Lock=1, can display and view the locale parameter, but cannot amend. The SV can be set. Lock=2, can display and view the locale parameter, but the locale parameter and SV cannot be amended. Lock=808, all parameters and SV can be set.	0 – 9999	808
EP1 – EP8	Field Parameter Definition	EP1-EP8 defines 1-8 locale parameters for operators' user in parameter table.	-	None

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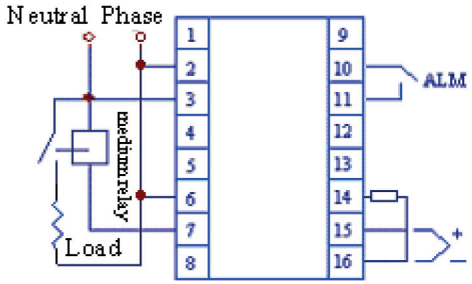
Wiring Diagram



Maintenance Instructions

When performing maintenance on the Electric Curing Oven, you must cut off the power supply beforehand.

1. Keep the oven clean and the fan clear.
2. Lubricate the mounting bearings regularly.
3. Repair or maintenance of inside the control box should only be carried out by skilled electricians.

Troubleshooting

Resolution Guide

Please read through the guide below if you have any issues or faults with your device. The information covers and resolves the majority of frequently asked questions.

Q: There are parts missing from my order.
A: If there appears to be any part missing from your package contact our Customer Support team via the details on the Contact Us page within 7 days of receipt.

Q: The oven and/or temperature control will not turn on.
A: The power supply may not meet the requirements of the specification. Check that you have the correct power supply, and that it is supplying the correct voltage. Check that the power cord plug has not become loose.

Q: The switch is not on but the temperature keeps rising in the oven.
A: The heating AC contactor may be bonded together. You will need to replace the AC contactor. Seek professional advice if unsure.

Q: The temperature is unusually high.
A: The thermocouple may not be working and may need to be replaced. Alternatively, the work piece may not be placed in the oven correctly or the door may not be shut tight. You can easily move the work piece, but make sure the machine is turned off first. Ensure the oven is turned off when opening and re-closing the door also.

Q: There appears to be an electrical fault.
A: Do not touch or tamper with any of the wires or components. Repair or maintenance of inside the control box should only be carried out by skilled electricians.

For all other issues please contact our Customer Support department via the details on the Contact page.

Contact Us

Sales Department

For information regarding this device or other products from our Monster divisions please use the following details below.

Tel: 01347 878888
Email: hello@monstershop.co.uk

Support Department

For queries about this device, warranty, returns or reporting faults please use the following details below.

Tel: 01347 878887
Email: help@monstershop.co.uk

Website

To view our product range and fantastic offers in the Monster Chef division please visit our website

www.monstershop.co.uk

Address

To visit our office Monster House and view our products, send postal correspondence or return items our address is provided below.

Monster House, Alan Farnaby Way, Sheriff Hutton Industrial Estate, Sheriff Hutton, York YO60 6PG

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