VISIONS 3000 OPERATING MANUAL

Valid For Software Version: 2.330

International Temperature Control, Inc.
5384 E. Huron, P.O. Box 805,
Au Gres, Michigan 48703 USA
Tel: +1 (989) 976-8075 Fax: +1 (989) 876-6640
Web: www.itc-controls.com
E-mail: sales@itc-controls.com

ATTENTION! RISK OF ELECTRIC SHOCK.

This equipment is not to be used with any of the access covers open or removed.

INTRODUCTION

Thank you for purchasing the VISIONS 3000 Hot Runner Controller. We are sure that this equipment will give you many years of high performance, mould tool temperature control. However, in order to get the maximum performance out of the VISIONS 3000 controller, we recommend that you read this manual to familiarise yourself with its many advanced features.

Please note that this manual is based on the features and functions of the 2.32* series of Top Box software. You are advised that if you are using a previous version of software, not all functions and features will be available and/or operate in the same manner to the versions discussed in this manual.

TABLE OF CONTENTS

Log on to our website for: -

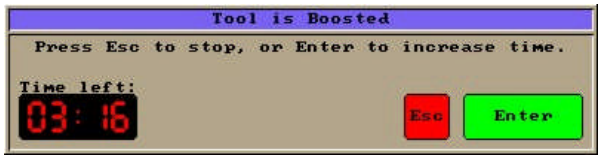
- The latest information on all our products.
- Operating manuals for all our products.
- Additional support information.
- Useful Links.
- Software release history.
- Worldwide support network.

WHAT'S NEW IN 2.330?

Version 2.320 continues the design philosophy of ITC of making the VISIONS 3000 controller easy to use, while incorporating market leading features.

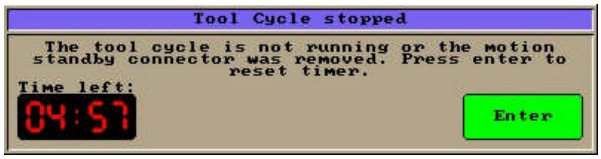
New features include: -

Boost Countdown Improvements



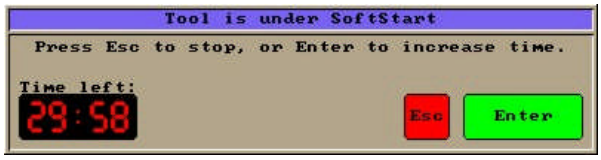
The display of the countdown timer for the Boost function has been improved to show a large digital display of the remaining time in Boost mode. This enables the user to clearly see the status of this function.
Full details are available on Page 21.

Motion Standby Improvements



The display of the countdown timer for the Motion Standby function has been improved to show a large digital display of the remaining time before System Standby is activated. In addition, the countdown clock is now displayed immediately after the 1 minute sample time.
Full details are available on Page 22.

Soft Start Improvement

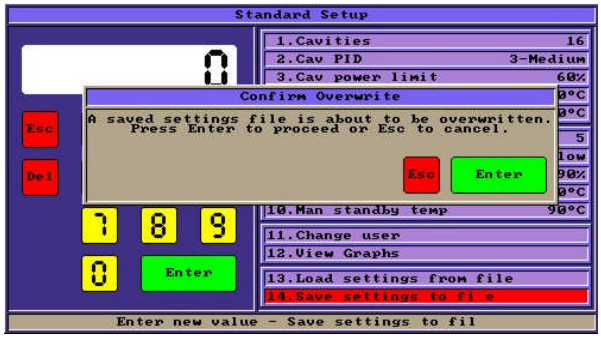


The same large digital display used on the Boost and Motion Standby functions mentioned above, has also been incorporated into the Soft Start function. This larger display enables the user to clearly see the remaining time when in manual Soft Start.

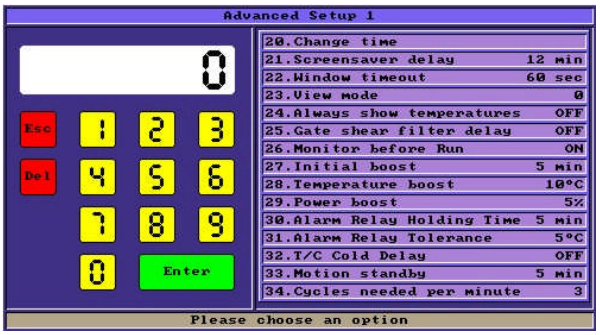
Communications Icon

The serial communications interface has been updated to include new functions, see separate communications manual. In addition, a small icon has been added to the main screen display to indicate whether the communications is active or not. Note that this interface has been specifically designed to work with suitably modified Demag moulding machines. Please contact ITC for further details.

Toolset Overwrite Confirmation



To prevent inadvertent overwriting of named toolsets, when saving a toolset with a name that is already in existence, a dialog box will appear requesting confirmation of the action.



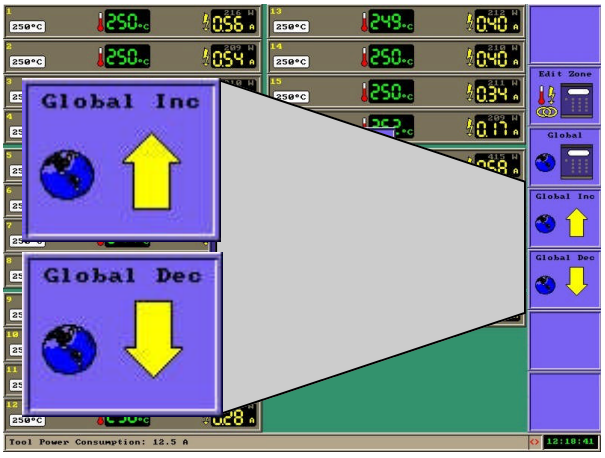
Gate Shear Filter Delay

Parameter 25

This parameter adds a software input filter to the measured value of zones that are affected by heat generated by gate shear. This filter has a variable time constant set by the user.

Total Power Display Improvement

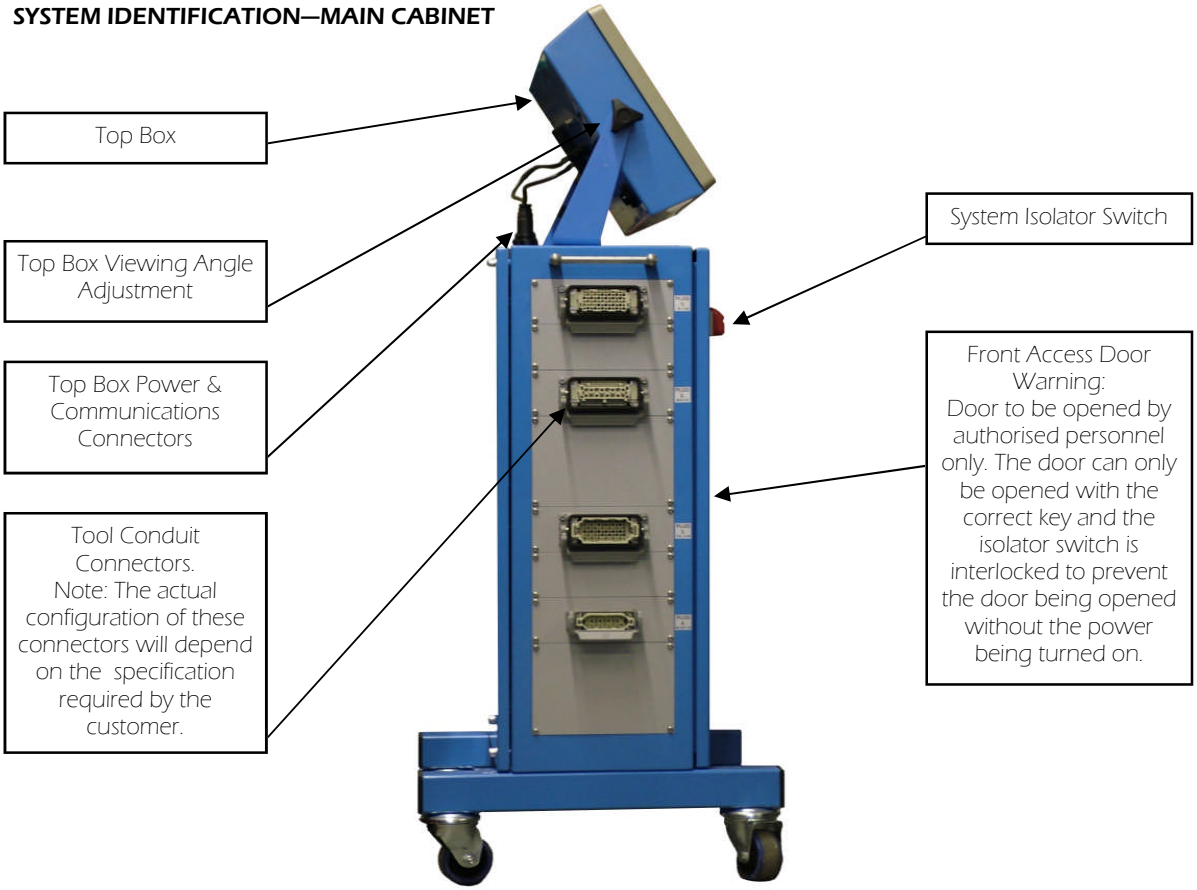
The total power taken by the tool is now displayed in a more readable, digital clock format.

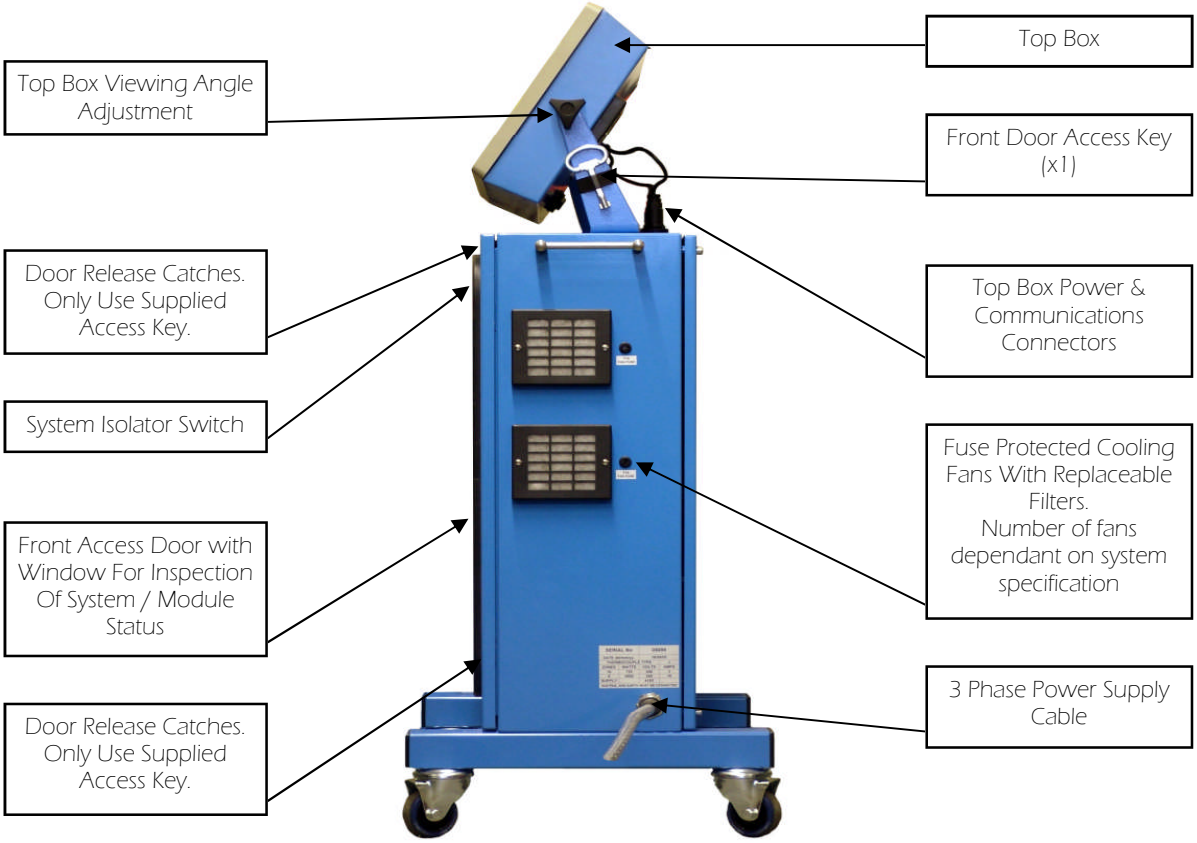


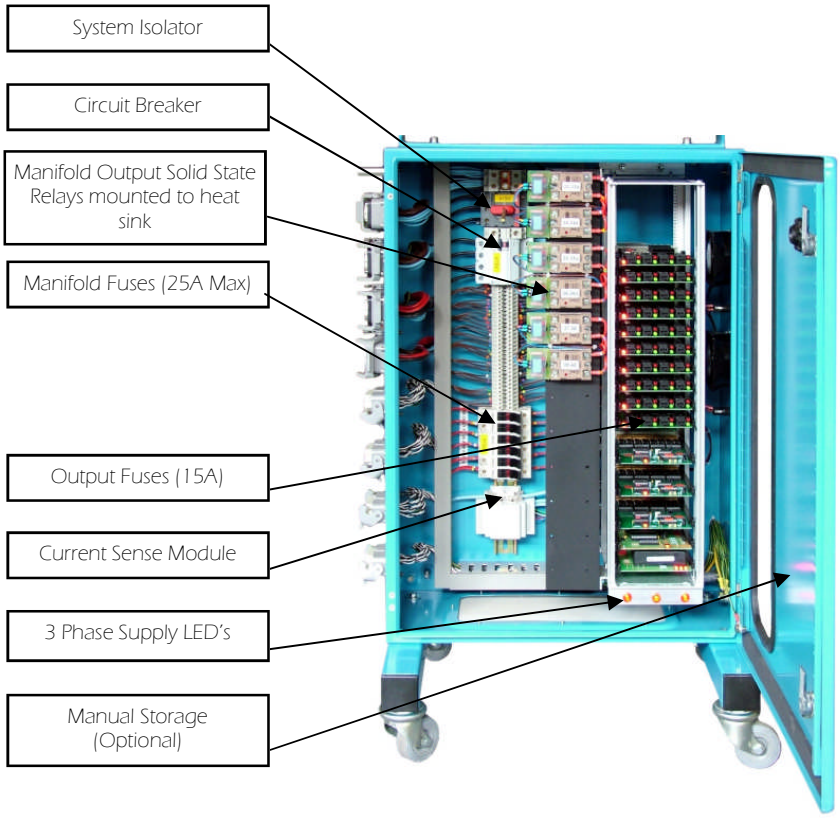
Global Edit Increment & Decrement

In addition to being able to apply a specific value to a range of zones, you can now increment or decrement the specified range of zones by a value of up to 50C. This enables any temperature/power profile that has been set up to be maintained.

SYSTEM IDENTIFICATION—MAIN CABINET



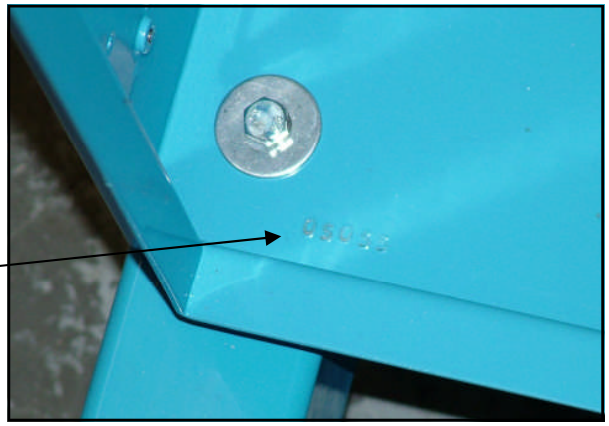




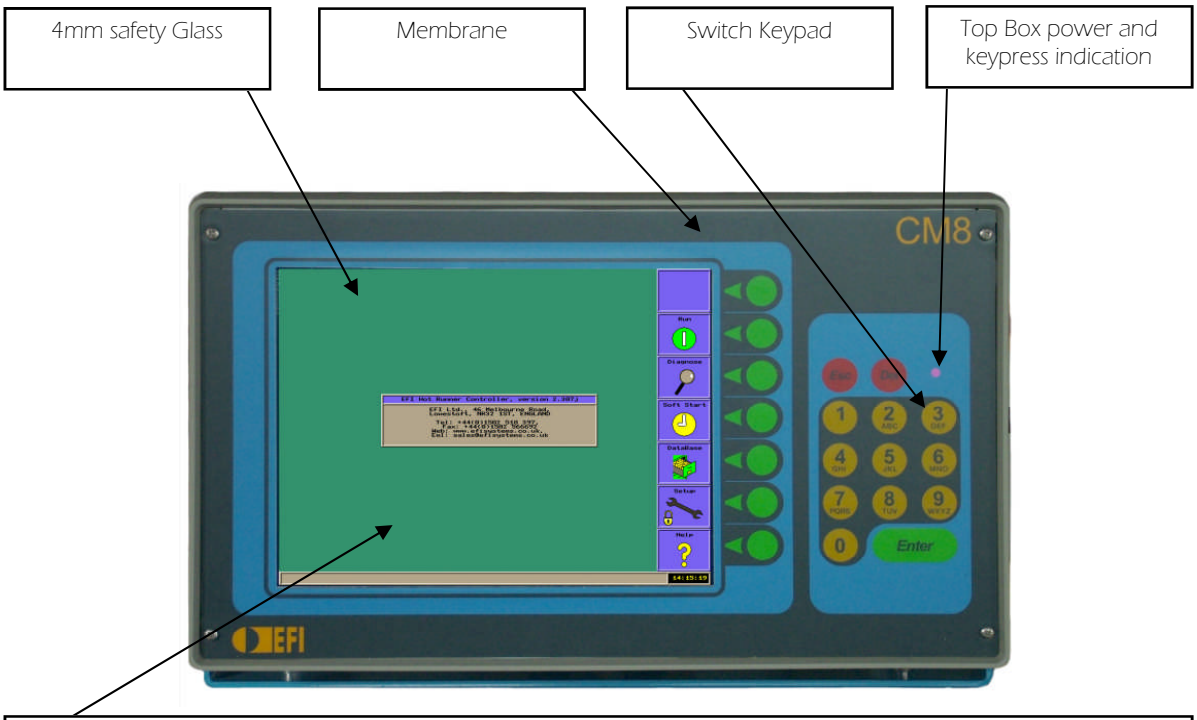
SERIAL NUMBER LOCATION

All controllers are identified by a unique serial number from which the full specification can be determined. When contacting ITC about any aspect of a particular controller it is useful to have both the serial number and the version of software to hand.
The serial number can be found on the silver label fitted to the side of the cabinet, above the power cord inlet. Alternatively, the serial number can be found stamped into the metalwork in the bottom left hand corner of the base, which can clearly be seen with the front door open.
Warning: Isolate the system before opening the front door.

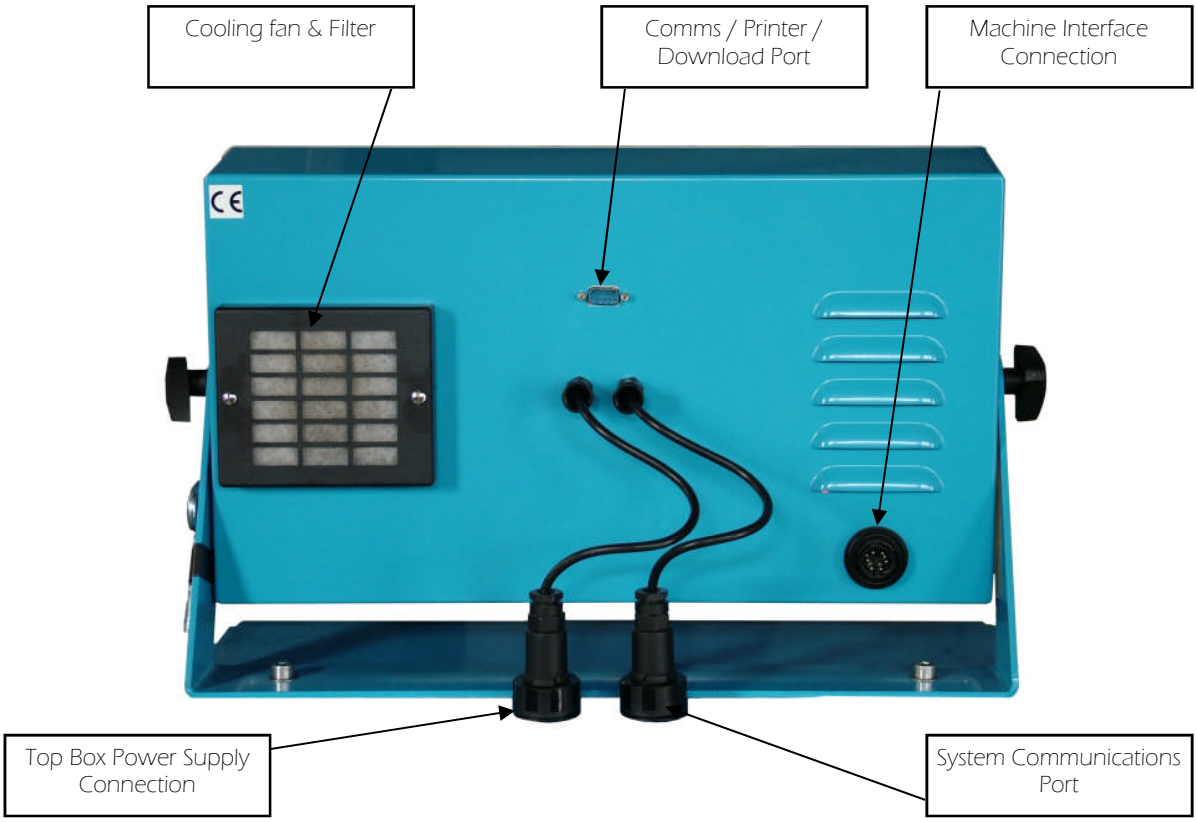
Serial Number Location

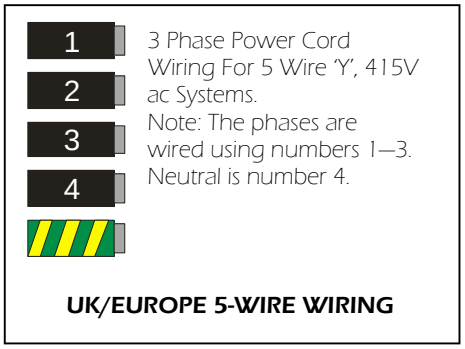


SYSTEM IDENTIFICATION—TOP BOX



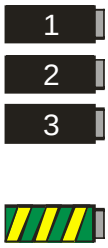
Note that to preserve the life of the backlight, the backlight for the LCD will switch off automatically after 12 minutes if no key is pressed. Pressing any key will re-activate the backlight although it is recommended that the ESC key is used. A second key press will then activate the required function. Note also that when the LCD backlight operates, the VISIONS 3000 automatically returns to the USER operating level, locking users out of the SETUP area. This will be seen on the screen by the SETUP hotkey padlock changing from unlocked to locked.





3 Phase Power Cord Wiring For 5 Wire 'Y', 415V ac Systems.
Note: The phases are wired using numbers 1—3. Neutral is number 4.

UK/EUROPE 5-WIRE WIRING



3 Phase Power Cord Wiring For 4 Wire 'Delta' Systems.
Note: The phases are wired using numbers 1—3. Neutral (number 4) is not used and terminated internally for safety.

US 4-WIRE WIRING

POWER CONNECTION

Connect the power cord to a suitably rated power connector using the wiring details contained in the tables above.

With the VISIONS 3000 turned off, connect the wired power cord to an outlet with a suitable current rating.

TOOL CONNECTION

Connect the tool conduits to the VISIONS 3000 and the tool. Ensure that the conduits are undamaged, connected to the correct socket and are the correct way round.

Note: Swapping power and thermocouple conduits can lead to tool and controller damager.

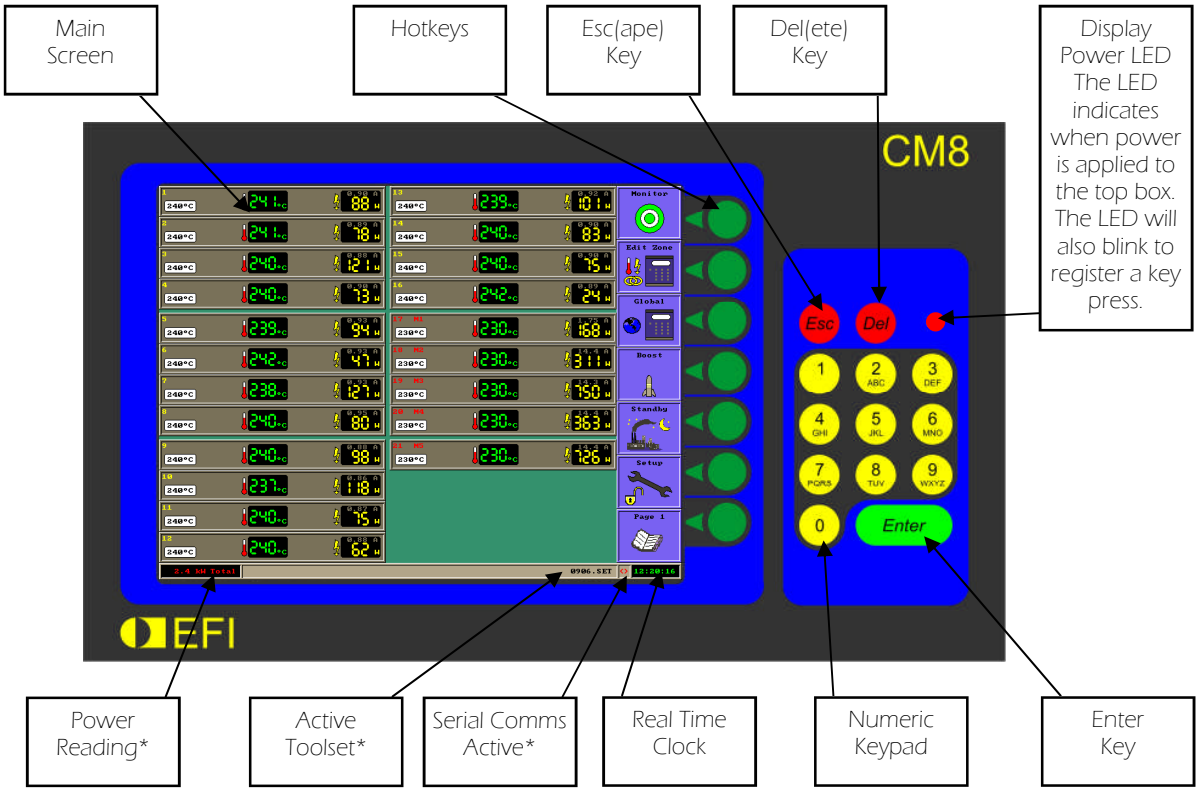
POWER ON

Switch on the VISIONS 3000 using the Isolator mounted to the front door, after approximately 30 seconds the log on screen will appear.

TOP BOX

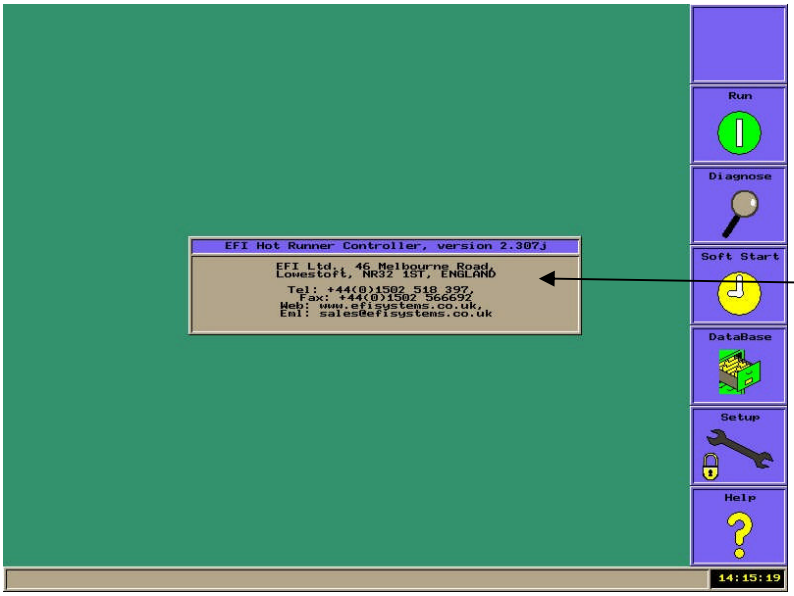
The Top Box permits the user to control the VISIONS 3000 system, view the information from the tool and alter parameters.

The main sections of the display are as follows: -



On-screen messages marked with an '*' will depend on the system specification and parameter setup.

STOP MODE



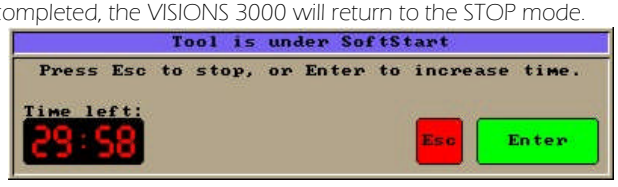
Software Version
When in STOP mode, the version of software currently running on the VISIONS 3000 will be shown along with support contact

Service Hotkey: For use by ITC approved personnel only. Requires password.

Run Hotkey: Puts the VISIONS 3000 into RUN mode and changes the display to the RUN screen.

Diagnose Hotkey: Changes the display to the DIAGNOSE screen and activates the VISIONS 3000 tool diagnose function.

Soft Start Hotkey: Activates the VISIONS 3000 Manual Soft Start function. This applies a constant power of 5% to cavity zones and 10% to the manifold zones for the time duration indicated on the Soft Start dialogue box (default = 30 minutes). Press the [ENTER] key to increase the soft start time in steps of 1 minute up to a maximum of 99:59. Press the [ESC] key to cancel soft start and return to the STOP menu.
Note: Once completed, the VISIONS 3000 will return to the STOP mode.



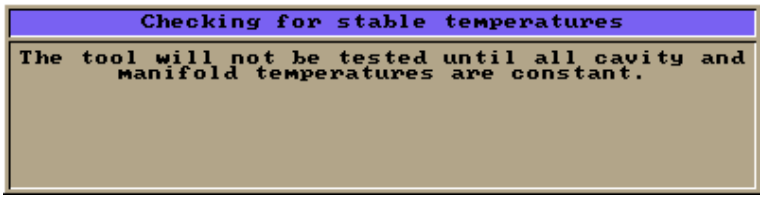
Database Hotkey: Enables the loading and saving of all the data currently active within the system. This includes zone modes, set points, setup parameters.

Setup Hotkey: Activates the VISIONS 3000 Setup enabling the setting of system parameters. The padlock symbol indicates whether the current access level enables full editing of setup parameters.

Help Hotkey: Activates the VISIONS 3000 help screens. Use the Hotkeys to select further information on the features and functions of the VISIONS 3000.

DIAGNOSE SCREEN / TOOL VALIDATION

On selecting the Diagnose function, the VISIONS 3000 will display a dialog box to indicate that it is waiting for the cavity and manifold zones to stabilise i.e. no measured temperature values to change by more than 1 degree C in 10 seconds, before performing the Diagnose function.



When stability has been reached, which may not be ambient temperature, the Diagnose function will apply power (see table) to Zone 1 and monitor the response to determine its status before moving onto Zone 2, Zone 3 etc. The results of the tests are displayed on-screen.

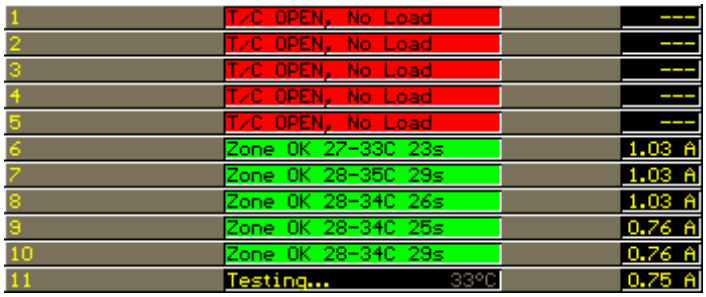
Note: All zones are tested irrespective of whether they have been turned off or not.

Zone Type	Power Applied	Time Applied	Temp Increase Expected
Cavity	20%	1 Minute	>5C
Manifold	100%	3 Minutes	>5C

After each zone has been tested, the result is displayed on-screen.

Zones that report an error are shown in red. Zones that pass the tests are shown in green.

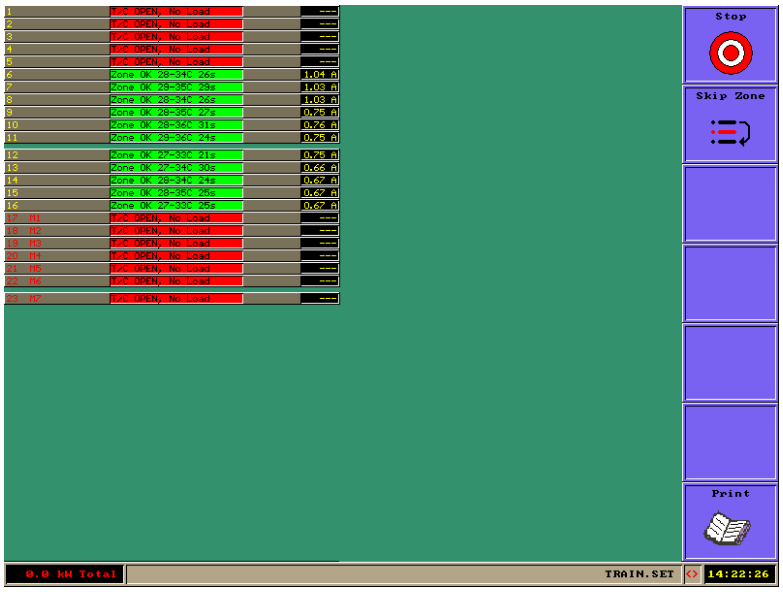
The screen below shows that zones 1—5 have an Open T/C and No Load, which would suggest that either there is no zone in that position, that the tool connection cable has not been connected or that there are wiring errors in the tool.



Zones 6—10 passed the tests and the temperature increase and the time it took to achieve this increase are shown on the screen.

This information can be useful in diagnosing unbalanced tools as zones which are similar in performance, i.e. use the same bushing, should return results very similar to each other. Widely differing times would indicate that the bushings had different amounts of work to perform, perhaps as a result of differing water cooling or material flow.

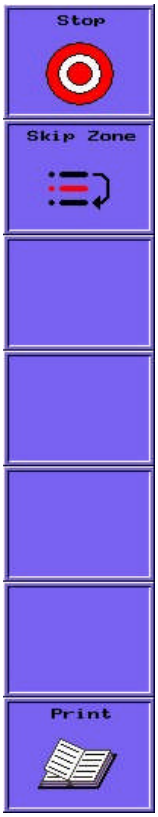
The right hand column of the display shows the load of the heater fitted to the zone. The display in the screen above is in Amps. However, this value will reflect the setting of parameter 62, Load Display and can be set to Ohms, Wattage or Current.



The completed tool diagnosis report can be printed, via the RS232 port on the rear of the Top Box, to a suitable printer. i.e. a printer fitted with an RS232 port. EPSON dot matrix printers have been found to be suitable for this application.

The printer must be setup as follows: Baud Rate = 19200bps, Parity = None, Data Length = 8 bits, Auto CR = Off.

The printout includes the following: Zone Number, Zone Name, T/C Status, Load Status—which includes Wattage, Current, Resistance, Test temperature increase and time to perform the increase, Overall Zone Status.



Stop Hotkey: At any time during the Tool Diagnose function, pressing this key will stop the diagnose function and return the VISIONS 3000 to the STOP mode menu.

Skip Zone Hotkey: Skips the zone currently being diagnosed for faults and moves onto the next zone.

Print Hotkey: Prints a table of the results determined during the diagnose function. Note: A correctly configured serial printer must be connected to the RS232 port on the rear of the Top Box to enable a printout to be undertaken.

Tool Diagnosis: Error Messages

Error Message	Explanation	Possible Causes
No Response	Even though current is being drawn by the heater in the zone under test, and the associated thermocouple sensor is responding with a valid temperature, the change in the measured value of the temperature is not within the limits of the diagnosis test. Cavity zones: The expected response is an increase in temperature of 5 degrees within 1 minute. Manifold zones: The expected response is an increase in temperature of 5 degrees within 3 minutes.	A 'No Response' error message can be displayed if the number of manifold zones is incorrect due to the wrong value being setup (parameter numbers: 1 & 6). If the number of cavity zones is too large, some manifold zones will incorrectly be assigned as cavities. These zones will not increase in temperature by the required amount in the time allotted and will, therefore, report a 'No Response' error. If the thermocouple cable for the tested zone is trapped, forming a secondary junction, any increase in temperature for that zone is not measured by the corresponding thermocouple resulting in a 'No Response' error.
Zone Skipped	Message shown when the user has pressed the [Skip Zone] hotkey.	
Thermocouple Open	Error message reported when there is no signal from sensor assigned to the zone under test	Faulty sensor cable. Faulty sensor.
Thermocouple Reversed	Error message reported when the measured sensor value decreases in response to power being put into the zone under test.	Faulty sensor cable. Incorrect wiring of the sensor.
Zone * Up	The sensor on another zone increases in temperature in response to power being put into the heater of the zone under test. The sensor connected to the zone under test fails to respond.	The sensor connected to the zone under test has been swapped with the sensor indicated in the error message
Zone * Down	The sensor on another zone decreases in temperature in response to power being put into the heater of the zone under test. The sensor connected to the zone under test fails to respond.	The sensor connected to the zone under test has been swapped with the sensor indicated in the error message and has been connected with the leads reversed.
No Load	No current being drawn by the heater connected to the zone under test.	Blown fuse in output card. Faulty power cable. Faulty heater. No heater connected.

Tool Diagnosis: Printout

The table below is a typical printout obtained from a tool diagnosis:

ITC Diagnosis:

Tool : TRAIN.SET

(24 cavs, 7 mans)_____

Performed by:_____on ___/___/___ at 17:26

Zone:		T/C	Load			Result
1	:	OK	176W	0.8A	300R	23->30°C, 18s: Zone OK
2	:	OK	176W	0.8A	300R	22->22°C, 19s: Zone 7 up (22 -> 30°C)
3	:	OK	178W	0.8A	298R	22->30°C, 16s: Zone OK
4	:	OK	178W	0.8A	298R	22->29°C, 19s: Zone OK
5	:	OK	200W	0.9A	264R	22->29°C, 19S: Zone OK
6	:	OK	198W	0.9A	268R	22->29°C, 19s: Zone OK
7	:	OK	202W	0.9A	262R	XX->XX°C, 19s: Zone 2 up (22 -> 28°C)
8	:	OK	202W	0.9A	262R	21->29°C, 17s: Zone OK
9	:	OK	178W	0.8A	298R	22->29°C, 17s: Zone OK
10	:	OK	175W	0.8A	302R	21->28°C, 17s: Zone OK
11	:	OK	176W	0.8A	300R	22->28°C, 20s: Zone OK
12	:	OK	179W	0.8A	295R	25->18°C, 20s: T/C REV
13	:	OK	181W	0.8A	293R	21->28°C, 19s: Zone OK
14	:	OK	176W	0.8A	300R	23->30°C, 18s: Zone OK
15	:	OK	176W	0.8A	300R	22->29°C, 18s: Zone OK
16	:	OK	178W	0.8A	298R	21->28°C, 18s: Zone OK
17	:	OK	202W	0.9A	262R	19->26°C, 19s: Zone OK
18	:	OK	199W	0.9A	266R	20->27°C, 17s: Zone OK
19	:	OK	200W	0.9A	264R	19->27°C, 21s: Zone OK
20	:	OK	200W	0.9A	264R	25->25°C, 16s: Zone 21 down (25 -> 17°C)
21	:	OK	174W	0.8A	305R	XX->XX°C, 17s: Zone 20 down (25 -> 17°C)
22	:	OK	175W	0.8A	302R	20->26°C, 16s: Zone OK
23	:	OK	179W	0.8A	295R	19->27°C, 17s: Zone OK
24	:	OK	179W	0.8A	295R	20->26°C, 17s: Zone OK
25	M1:	OK	1758W	7.3A	32.9R	21->30°C, 8s: Zone OK
26	M2:	OK	1775W	7.4A	32.4R	21->31°C, 8s: Zone OK
27	M3:	OK	656W	2.7A	88.9R	21->30°C, 8s: Zone OK
28	M4:	OK	649W	2.7A	88.9R	21->32°C, 7s: Zone OK
29	M5:	OK	1756W	7.4A	32.4R	21->32°C, 8s: Zone OK
30	M6:	OK	1760W	7.4A	32.4R	23->30°C, 7s: Zone OK
31	M7:	OK	502W	2.1A	114R	20->31°C, 7s: Zone OK

DATABASE FUNCTION

The database function enables the user to delete, load or save a tool setting. The tool setting, or toolset, contains the value of every parameter, including: all Setup parameter values, all zone modes and their associated parameter values. i.e. whether the zone is off, linked, in manual or automatic mode and the value for each.

The name of the currently active toolset is displayed at the bottom of the screen, next to the clock, and has the extension ."SET".

When the database screen is entered, the main area resumes display of the zone data. Please note that the system is still in STOP MODE and the zone data is being displayed to enable the operator to examine the changes to the system caused by the editing of a tool set.

Back Hotkey: Returns the VISIONS 3000 to the STOP menu.

Load Hotkey: Permits the loading of a previously saved tool setting.

Save Hotkey: Permits the saving of the current settings as a tool set. Names can be assigned using the numeric keypad and names can have up to 8 characters. You can use the arrow keys to over-write the current settings over an older tool set.

Delete Hotkey: Permits the deletion of a previously saved tool set. Use the arrow keys to select the tool set to be deleted. Please note that care should be taken when deleting toolsets as there is no confirmation of the delete process.

Page Hotkey: Pages through the main zone display so that it is possible for the user to inspect the changes made by loading a new tool set.

RUN MODE

This is the main screen and displays active zone information.

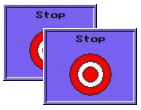
Common Terminology:

In-The-Green: When a measured value is within the alarm tolerance band of the set point, it is commonly referred to as being in-the-green due to the fact that the measured value is displayed in this color.

In-The-Blue: Similar to above, but the measured value is below the alarm tolerance band of the set point, and is displayed in blue.

In-The-Red: Similar to above, but the measured value is above the alarm tolerance band of the set point and is displayed in red.

Special Stop Function



Pressing the STOP function key twice quickly whilst in RUN mode will turn off each active zone whilst continuing to display the measured value. Note: This function does not operate if Monitor Mode is active.

Stop Hotkey: Stops the VISIONS 3000 from controlling when in RUN mode. The VISIONS 3000 changes to the STOP mode and displays the STOP screen.

Edit Zone Hotkey: Permits the editing of the set point, output power or linking of the output from the selected zone to the sensor input from another zone, for each zone in the system.

Global Edit Hotkey: Permits the editing of the set point, output power or linking of the output from the selected zone to the sensor input from another zone, for a defined group of zones in the system.

Boost Hotkey: When in RUN mode, pressing this Hotkey will temporarily increase the set points of the cavity zones. The Boost parameters are defined in the Setup menus.

Standby Hotkey: When in RUN mode, pressing this Hotkey will immediately put all the active zones on the VISIONS 3000 into Standby mode. The Standby parameters are defined in the Setup menus.

Setup Hotkey: Used to enter the SETUP mode. When in SETUP mode, pressing the Setup Hotkey will page through the various setup menus. The padlock symbol indicates whether the current access level permits editing of all setup parameters.

Page Hotkey: Use to page through the zone information pages when there are more zones than can be displayed on a single screen. The number of displayed zones is dependant upon the system configuration and the screen mode selected.

MONITOR MODE

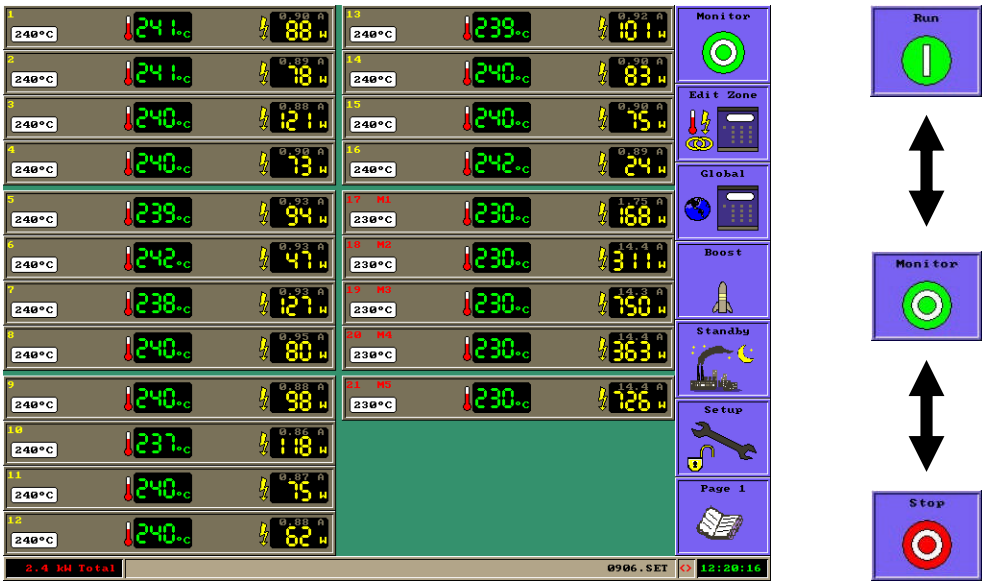
This optional feature is activated using parameter 26 from the setup configuration.

When active, monitor mode shows a modified RUN screen where it is possible to alter setpoints, link zones, change from closed loop to open loop mode, view the measured values of all the zones, all without applying power to the load.

From the monitor mode it is possible to return to RUN or STOP modes where the monitor hotkey replaces the STOP or RUN hotkeys.

The background to the setpoint value is shown in blue to indicate that no power is applied to the load.

All error reporting is active as is the display of measured value along with any current /power/percentage value for each zone.



Stop Hotkey: Stops the VISIONS 3000 from controlling when in Monitor mode. The VISIONS 3000 changes to the STOP mode and displays the STOP screen.

Run Hotkey: Changes the system from monitor mode to RUN mode.

Edit Hotkey: Permits the editing of the setpoint, output power or linking of the output from the select zone to the sensor input from another zones, for the defined zone.

Global Edit Hotkey: Permits the editing of the setpoint, output power or linking of the output from the selected zone to the sensor input from another zone, for a defined group of zones in the system

Setup Hotkey: Used to enter the SETUP mode. When in SETUP mode, pressing the Setup Hotkey will page through the various setup menus. The padlock symbol indicates whether the current access level permits editing of all setup parameters.

Page Hotkey: Use to page through the zone information pages when there are more zones than can be displayed on a single screen. The number of displayed zones is dependant upon the system configuration and the screen mode selected.

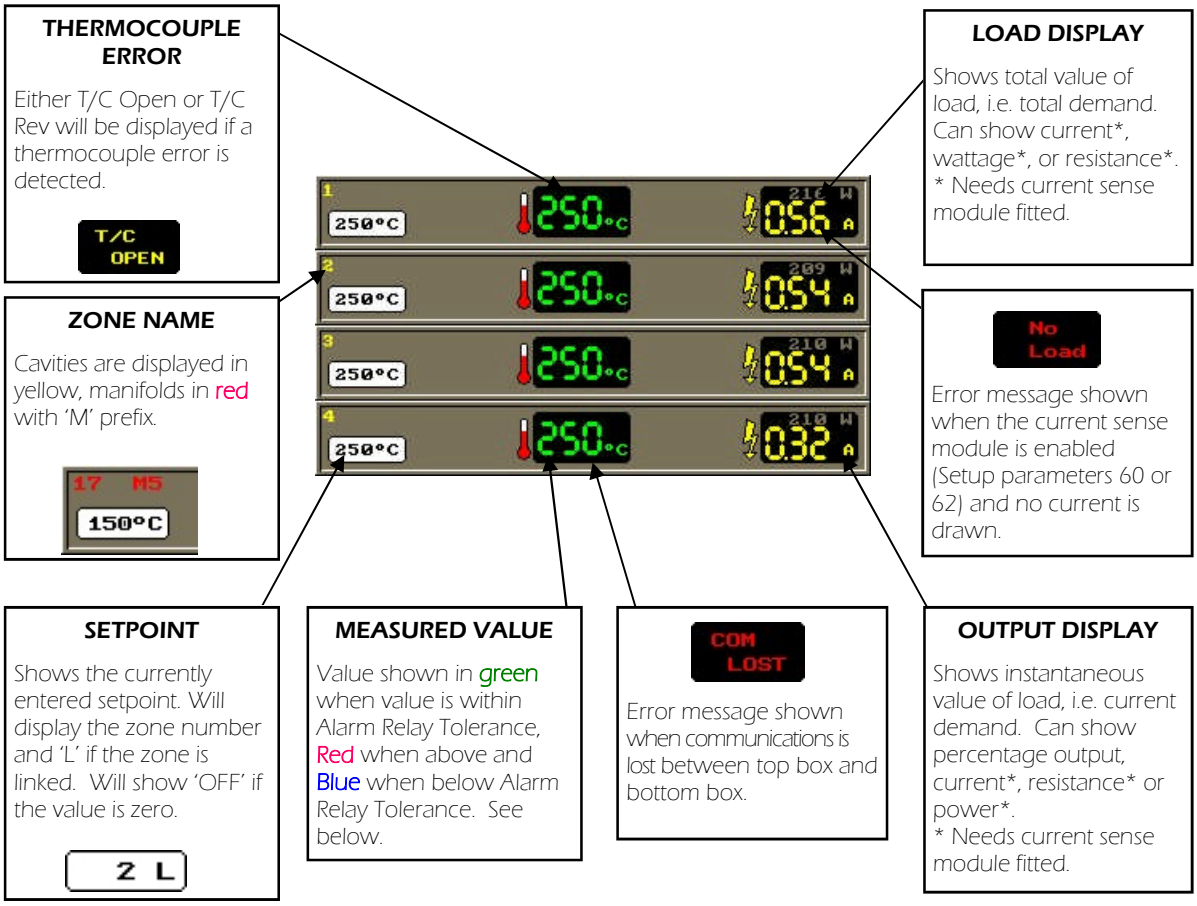
RUN MODE DISPLAYS

The format of the display in the RUN MODE is set by SETUP parameters 23 (View Mode), 60 (Power Display), 61 (Total Power Display) and 62 (Load Display).

Display Mode 0 = Medium

This is the standard mode of display and shows the most important information for each displayed zone.

In this mode, with systems up to 24 zones, two columns of 12 zones are displayed. For systems between 25 and 36 zones, three columns of 12 zones are displayed.

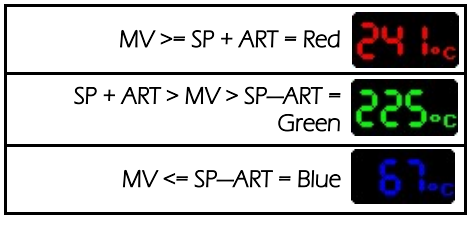


MEASURED VALUE DISPLAY

Any Measured Value (MV) temperature that is within the Alarm Relay Tolerance (ART) (Setup Parameter 31) will be shown in green.

Any value that exceeds the Setpoint (SP) plus the alarm relay tolerance will be shown in red (hot).

Any value that exceeds the setpoint minus the alarm relay tolerance will be shown in blue (cold).

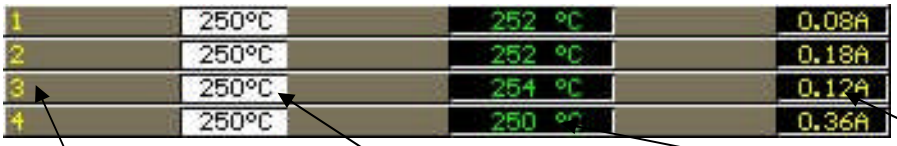


ALWAYS SHOW TEMPERATURES (PARAMETER 24)

When a Zone is turned OFF, but the function ALWAYS SHOW TEMPERATURES (Setup parameter 24) set to ON, the measured value will be displayed in grey. Thermocouple errors are shown as normal.

Display Mode 1 = High Density

This mode provides a higher density display, with the minimum of information for each zone.
In this mode two columns of 42 zones are displayed.



ZONE NAME

Cavities are displayed in yellow, manifolds in red with 'M' prefix.

SETPOINT

Shows the currently entered setpoint. Will display the zone number and 'L' if the zone is linked. Will show 'OFF' if the value is zero.

MEASURED VALUE

Value shown in green when value is within Alarm Relay Tolerance (Setup Parameter 29), Red when above and Blue when below Alarm Relay Tolerance.

POWER DISPLAY

Can show percentage output, resistance*, current* or power*.
* Need current sense module fitted.

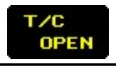
Display Mode 2 = Low Density

This display mode enables an expanded view of data for each displayed zone - including time line graphs of the measured value and output power over the previous 20 minutes.

In this mode, up to 18 zones will displayed as three columns of six zones.

THERMOCOUPLE ERROR

Either T/C Open or T/C Rev will be displayed if a thermocouple error is detected.



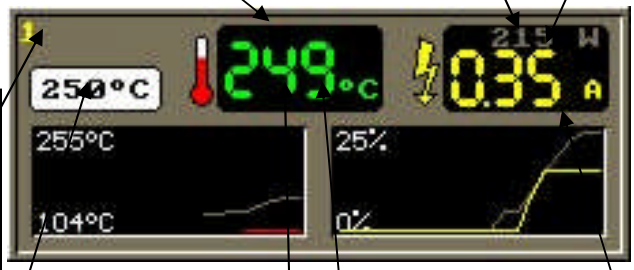
LOAD DISPLAY

Can show load resistance*, current* or power*.
* Needs current sense module fitted.

Error message shown when the current sense module is enabled (Setup parameters 60 or 62) and no current is drawn due a fault.

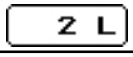
ZONE NAME

Cavities are displayed in yellow, manifolds in red with 'M' prefix.



SETPOINT

Shows the currently entered setpoint. Will display the zone number and 'L' if the zone is linked. Will show 'OFF' if the value is zero.



MEASURED VALUE

Value shown in green when value is within Alarm Relay Tolerance (Setup Parameter 29), Red when above and Blue when below Alarm Relay Tolerance.

Error message shown when communications is lost between top box and bottom box.

OUTPUT DISPLAY

Can show percentage output, current*, resistance* or power*.
* Needs current sense module fitted.

MEASURED VALUE GRAPH

The display shows a graph of the measured value over the previous 20 minutes. The actual value is shown in red, whilst the average value is shown in grey. The average value is the instantaneous average of all the cavity or manifold zones, depending on the zone definition.
The vertical scale is automatically re-calculated and the data updated once per minute.

OUTPUT POWER GRAPH

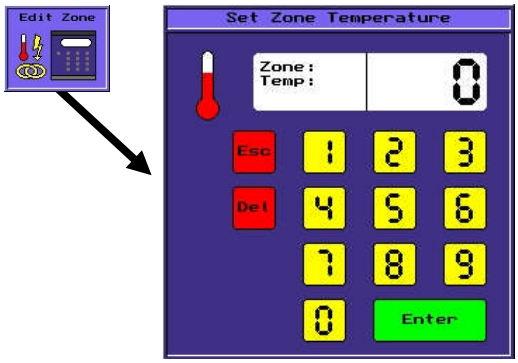
The display shows a graph of the output power over the previous 20 minutes. The actual value is shown in yellow, while the average value is shown in grey. The average value is the instantaneous average of all the cavity or manifold zones, depending on the zone definition.
The vertical scale is automatically re-calculated and the data updated once per minute.

EDIT ZONE MODE

This dialogue box is displayed when the VISIONS 3000 is in RUN MODE and the EDIT ZONE Hotkey is pressed.

From the EDIT ZONE dialogue boxes, it is possible to alter the setpoint (which automatically puts the selected zone into automatic /closed loop mode), output power (which automatically puts the selected zone into manual /open loop mode), or link the output power of the selected zone to that of another active zone.

Pressing the Global Edit Mode hotkey will automatically switch to global editing of the zone setpoints, output powers or linked zones.



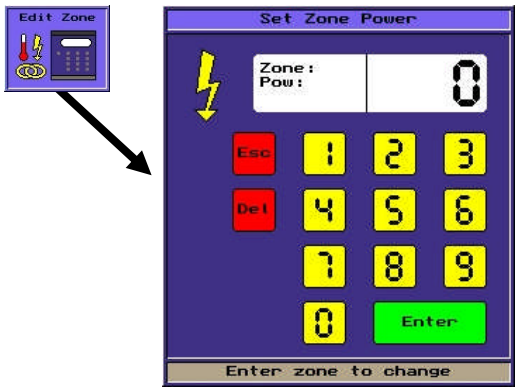
Changing The Zone Setpoint (Automatic Mode)

Press the Edit Zone Hotkey to bring up the Set Zone Temperature dialogue box.

Use the numeric keypad to enter the zone whose setpoint you wish to change and press the ENTER key. Then enter the new setpoint and press the ENTER key again.

Entering a new setpoint will place the zone into automatic/closed loop mode.

Entering a setpoint value of zero will turn the zone off.



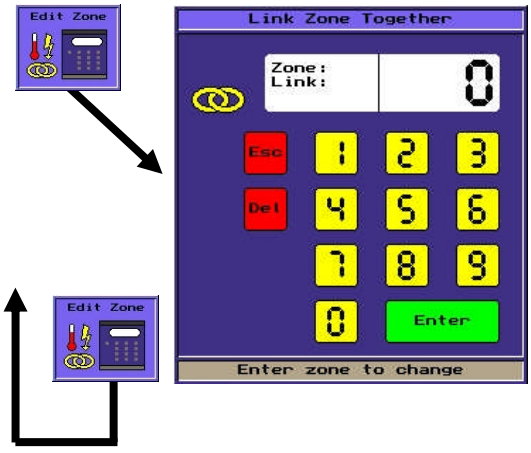
Changing The Zone Output Power (Manual Mode)

Press the Edit Zone Hotkey again to bring up the Set Zone Power dialogue box.

Use the numeric keypad to enter the number of the zone you wish to change and then press the [ENTER] key. Then use the numeric keypad to enter the value of the output power (0 to 100) and press the [ENTER] key again.

Entering a new output power will place the zone into manual/open loop mode.

Entering an output power of zero will turn the zone off.



Linking/Slaving Two Zones Together

Press the Edit Zone Hotkey again to bring up the Link Zone Together dialogue box.

This mode will link the output power of the first defined zone to the output power of the second defined zone.

To unlink a zone, enter a setpoint or output power value.

With a successfully linked zone, the zone measured value box will show the zone to which this zone is linked, follow by an 'L' e.g. 2L, the measured value will blank and the output power will track that of the master, linked zone.

GLOBAL EDIT MODE

This dialogue box is displayed when the VISIONS 3000 is in RUN MODE and the GLOBAL Hotkey is pressed.

From the GLOBAL EDIT ZONE dialogue boxes, it is possible to alter the setpoint (which automatically puts the selected zones into automatic/closed loop mode), output power (which automatically puts the selected zones into manual/open loop mode), or link the output power of the selected zones to that of another active zone.

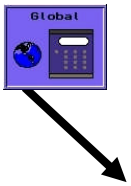
Pressing the Edit Zone hotkey will automatically switch to single zone edit mode of setpoint, output power or linked zone.

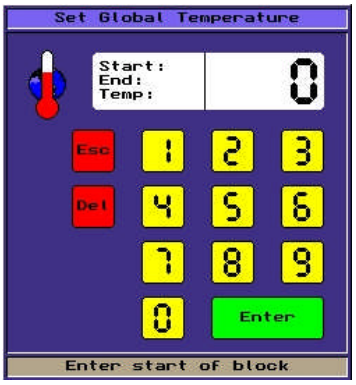
Edit Hotkey: Permits the editing of the setpoint, output power or linking of the output from the select zone to the sensor input from another zones, for the defined zone.

Global Edit Hotkey: Permits the editing of the setpoint, output power or linking of the output from the selected zone to the sensor input from another zone, for a defined group of zones in the system.

Global Inc(rement) Hotkey: Permits the increment of the setpoint or output power of a range of zones. The value of the increase in value is set by the value entered for Delta. The maximum value of increment is 100 degrees C or F.

Global Dec(rement) Hotkey; Permits the decrement of the setpoint or output power of a range of zones. The value of the decrease in value is set by the value entered for Delta. The maximum value of decrement is 100 degrees. C or F





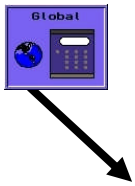
Setting The Setpoint For A Range Of Zones

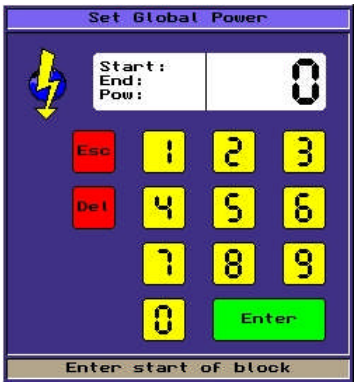
Press the Global Hotkey to bring up the Set Global Temperature dialogue box.

Use the numeric keypad to enter the zone number at the start of the block of zones that you wish to change the setpoint of and press the ENTER key. Then enter the zone number at the end of the block of zones that you wish to change the setpoint of and press the ENTER key. Finally, enter the new setpoint for this block of zones and press the ENTER key again.

Entering a new setpoint will automatically change all the selected zones to automatic/closed loop mode.

Entering a setpoint of zero will turn the selected zones to off.





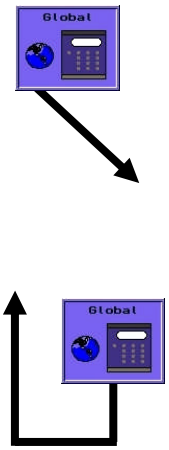
Setting The Output Power For A Range Of Zones

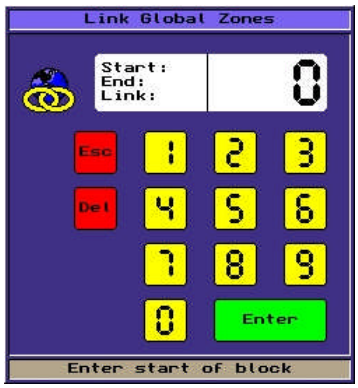
Press the Global Hotkey again to bring up the Set Zone Power dialogue box.

Use the numeric keypad to enter the zone number at the start of the block of zones that you wish to change the output power of and press the ENTER key. Then enter the zone number at the end of the block of zones that you wish to change the output power of and press the ENTER key. Finally, enter the new output power for this block of zones and press the ENTER key again.

Entering a new output power will automatically change all the selected zones to manual mode.

Entering an output power of zero will turn the selected zones to off.





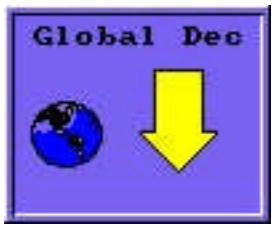
Linking/Slaving A Range Of Zones

Press the Global Hotkey again to bring up the Link Zone Together dialogue box.

This mode will link the output power of the defined zones to the output power of the second defined zone.

Entering a link zone of zero will turn the selected zones to off.

To unlink a zone, enter a setpoint or output power.



GLOBAL INCREMENT / DECREMENT

An extension to the GLOBAL EDIT feature described previously, it is possible to increment or decrement the setpoint or output power of a range of zones by a defined amount.

The GLOBAL INCREMENT / DECREMENT feature maintains the profile of the setpoints or output powers set for the selected zones.

When Incrementing or Decrementing the setpoint of a range of zones that includes zones in manual mode, i.e. output power, these zones are ignored and changes are only made to the values of the setpoints.

Similarly, when Incrementing or Decrementing the output power of a range of zones that includes zones in automatic mode, i.e. setpoint, these zones are ignored and changes are only made to the values of the output powers.

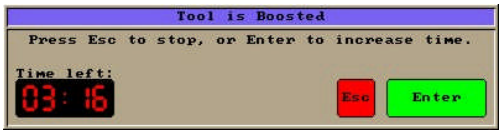
The absolute maximum value of setpoint or output power is limited, the values being defined by SETUP parameters #3, #4, #8 & #9,

The maximum increment or decrement value is 100.

BOOST MODE

The BOOST MODE enables the operator to introduce a temporary increase in the setpoints (or output power if in manual mode) of the cavity zones. This is typically used during initial stages of production to reduce the viscosity of the material and, hence, increase the flow of the material through the cavities.

When in RUN MODE, pressing the BOOST Hotkey will display the Confirm Tool Boost dialog box. Press [ENTER] to confirm or [Esc] to cancel.



On pressing [ENTER], the 'Tool is Boosted' dialog box will be displayed. This box will show the remaining boost time. This can be increased by repeatedly pressing the [ENTER] key up to a maximum time of 99:59 minutes.

The performance of the BOOST feature can be changed using the following SETUP parameters, as follows :-

#26: Initial Boost—Initial time BOOST is applied to cavities.

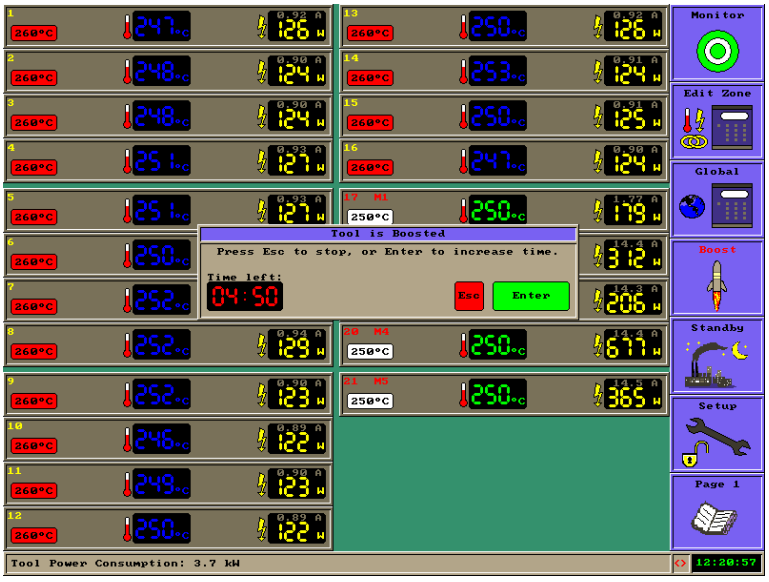
#27: Boost Increment—The increase to the Boost time every time the [ENTER] key is pressed.

#28: Temperature Boost: - The increase in temperature applied to the cavities during the boost process if the zone is in automatic power mode. This temperature is an offset. i.e. this temperature is added to the existing setpoint for each cavity zone. The maximum amount of boost in automatic mode is 30C (30 F).

#29: Power Boost—The increase in power applied to the cavities during the boost process if the zone is in manual power mode. This power is an offset i.e. this power is added to the existing preset power output for each cavity zone.

The maximum amount of boost in manual mode is 20%.

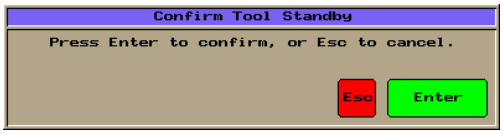
RED
Once entering the BOOST function has been confirmed, the background to the setpoint values all turn red, thus clearly indicating that the controller is in BOOST mode.



STANDBY MODE

Standby Mode enables the operator to temporarily drop the temperatures of all the cavities and the manifolds within the tool. This is frequently required during a brief halt in production when to continue to maintain the temperature within the tool at production temperatures will degrade the material as well as consume unnecessary amounts of energy.

When in RUN MODE, pressing the STANDBY Hotkey will display the Confirm Tool Standby dialog box. Press [ENTER] to confirm or [Esc] to cancel.



On pressing [ENTER], the 'Tool is on Standby' dialog box will be displayed. This box will remain, with the system in Standby Mode, until the [ENTER] key is pressed.

The performance of the STANDBY feature can be changed using the following SETUP parameters: -

#5: Cavity Standby Temperatures — Sets the setpoint applied to the cavity zones during Standby Mode.

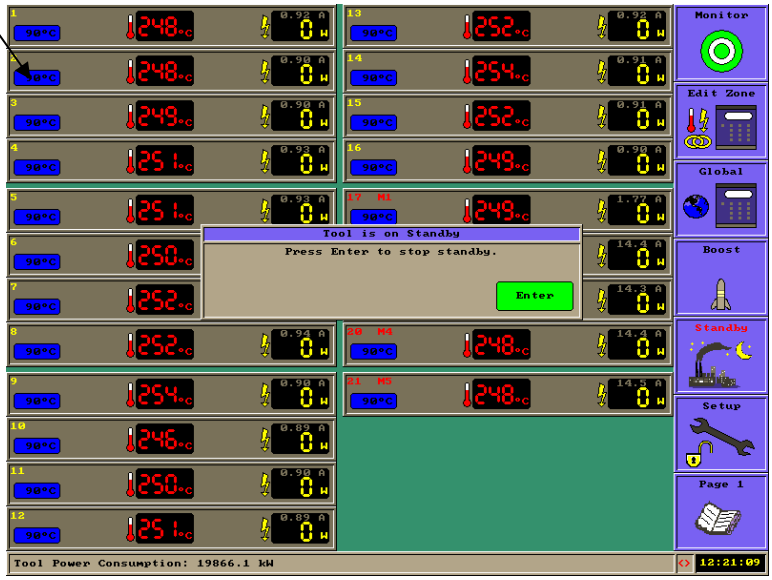
#10: Manifold Standby Temperatures — Sets the setpoint applied to the Manifold zones during Standby Mode.

Note:

Only zones working in closed-loop mode, i.e. from the thermocouple, will be put into Standby mode. Zones in manual mode, i.e. working in percentage power, will be turned to OFF during Standby. Linked zones will follow the operation of the master zone to which the zone is linked.

Zones which have a setpoint below the Standby temperature will be ignored and continue to operate at their designated setpoint.

BLUE
Once entering the STANDBY function has been confirmed, the background to the setpoint values all turn blue thus clearly indicating that the controller is in STANDBY mode.



VIEW GRAPHS

Parameter #12 of the Setup menu allows the user access to the View Graphs function where the data obtained from the tool can be displayed in two ways.

Trend: Displays the measured temperature and power output of up to 8 zones displayed on separate, simultaneous trend graphs.

Surface: Displays the setpoint value (C or F), measured temperature (C or F), output power (%) or output power (W) on a three-dimensional, user-defined grid.

To swap between the two graph types, select the Trend or Surface hotkey.

Setup data for both graph types are store in the toolset.

TREND GRAPHS

The Edit Graph Hotkey enables the user to select the function of the 8 graph traces. For Comparison numbers 1 to 8, enter the zone number that you wish to be displayed for that trace.

Entering a number for the zone of #141 will display the average temperature for all cavity zones. Entering #142 will display the average temperature for all manifold zones, while #143 will display the average for all zones.

Values from zones with thermocouple errors are ignored in the calculation of the average measured value and output power.

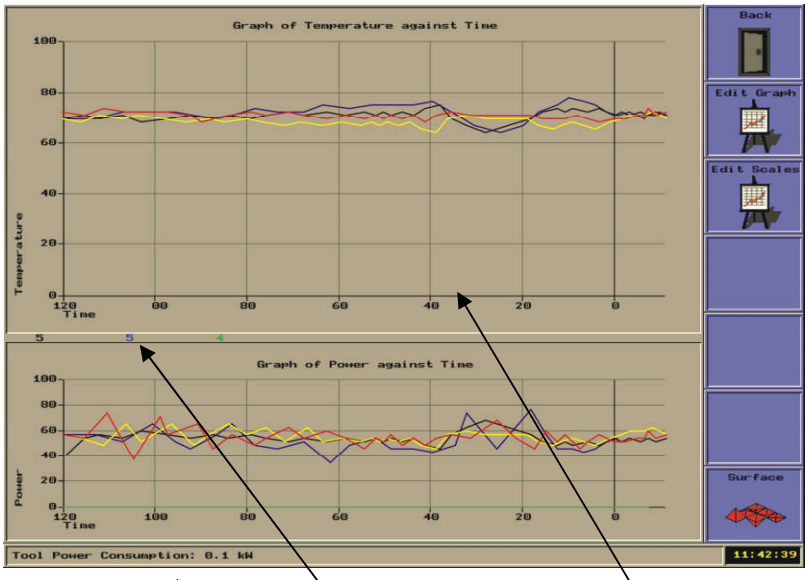
The Edit Scale Hotkey enables the user to change the vertical and horizontal scales for the measured value and power graphs.

The Division Line Position parameter allows the user to change the position of the dividing line between the two graphs. Position 1 is the highest and 8 the lowest. The default is position 6, as seen in the screenshot below.

The data to the right of the 0 line is updated approximately every second. At the end of one minute, the values for that display trace are averaged and plotted on the historical trend, to the left of the 0 line.

The historical data for all zones is stored for a maximum of two hours and is only cleared when the VISIONS 3000 is turned off. In this way, it is possible to display the historical trend for a zone not currently displayed on the screen simply by using the Edit Graph Hotkey to change the Comparison value.

The division line between the two graphs shows the zone number, or average function, and the color of the trace it is associated with.



These figures show the zones being traced along with the colours of each trace.

The horizontal datum line can be moved up or down the screen by changing the value of parameter #19.

SURFACE GRAPHS

Surface graphs enable the operator to display values from the active zones in a three-dimensional form that will clearly show up errors on the tool.

The Surface Setup dialog box permits the selection of display ranges, parameter being displayed and the update time. It is also possible to edit a grid of up to16 by 16 cells to layout out the display to closely mimic the layout of the heaters within the tool.

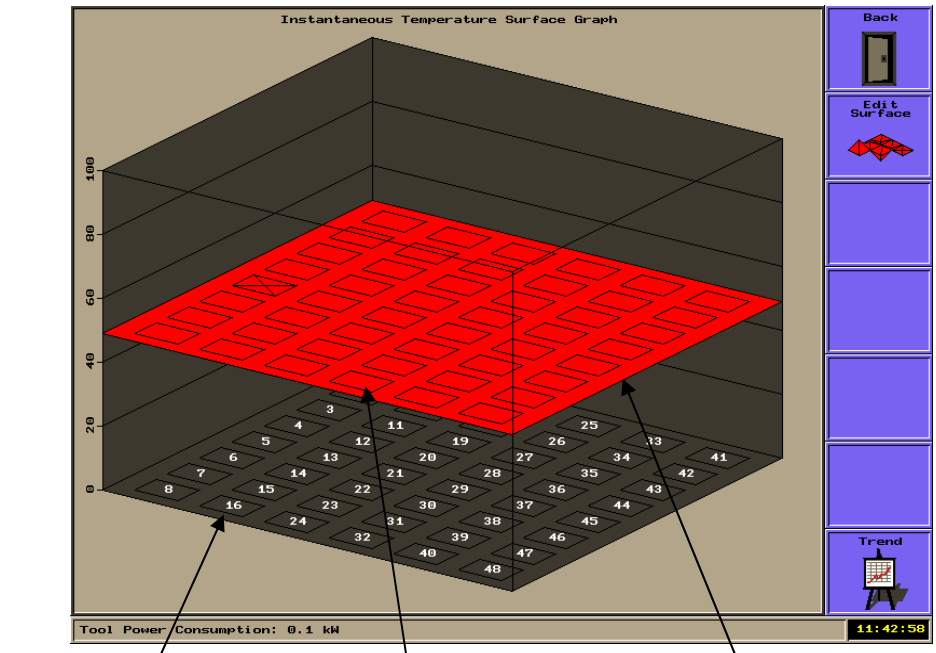
One of four measured parameters can be selected to be shown. These are: -

0: Temperature Setpoint (C or F) —Shown in blue

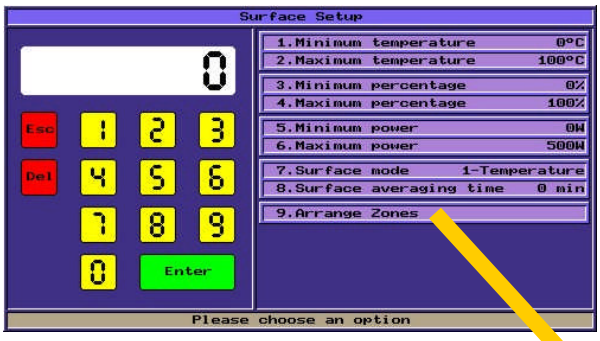
1: Temperature Measured Value (C or F) —Shown in red

2: Percentage Power (%) —Shown in orange

3: Actual Power (Watts) - Shown in yellow

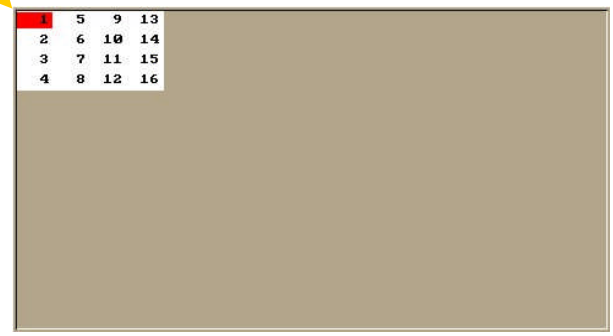


Use the Edit Surface Hotkey to edit the scales for each of the display parameters, select the currently displayed parameter edit the layout of the zones on the grid.



Whilst the data can be updated in real-time (0 min), this can lead to a flickering display. It is recommended that for normal operation, an update time of 1 minute is selected.

The zones can be laid out in any order in a grid of up to 16 x 16 zones.



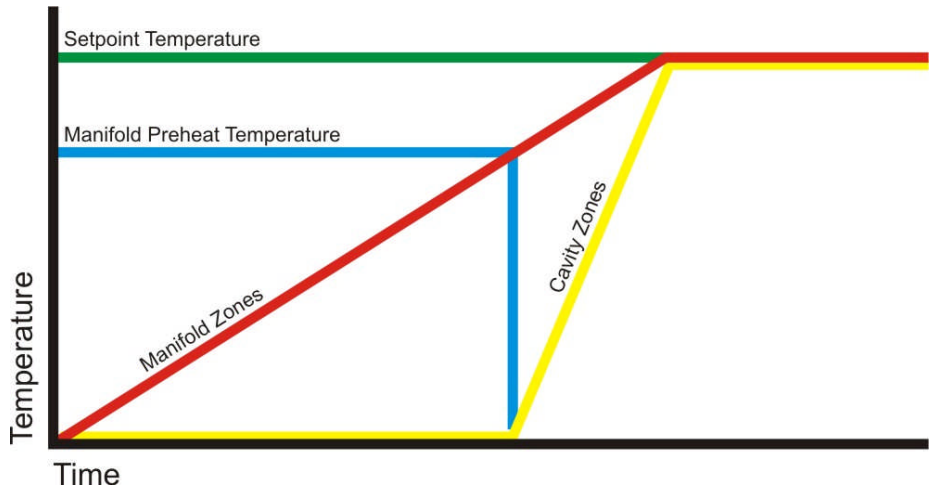
MANIFOLD PREHEAT

It is recommended by most toolmakers that, when heating a tool from cold, the manifold zones are heated up first before the cavity zones. This enables the cavity heaters to seal into their locations better and can prevent leaks in the tool.

The VISIONS 3000 comes with a software function called MANIFOLD PREHEAT. This is available from the SETUP menu, parameter #40, which enables the user to set a trigger temperature for the cavity zones. On pressing the RUN hotkey, the power is ramped into the manifold zones until all of them reach the preset trigger temperature when power will start to be ramped into the cavity zones.

Given the, typically, fast response of cavity heaters, the time taken to reach operating temperature is not delayed by using this feature.

Zones set to OFF and with faulty thermocouples are ignored. Zones with trapped thermocouples can be detected and subsequently ignored using the T/C COLD parameter.



TOOLGUARD

Exclusive to controllers from ITC, Toolguard is an advanced feature designed to prevent damage to the mould tool due to poor dissipation of heat from the tool caused by insufficient or failed mould tool water flow.

Toolguard monitors the performance of the tool and determines whether, as a result of reducing power levels to maintain the same temperatures, the water has been turned off or ceased to flow on the tool, and, as a result, will automatically place the controller into standby mode.

In order for Toolguard to operate correctly, it must be setup using parameters #41 to #46 in the Setup dialogue screens.

41: Toolguard: On / Off. Select setup option 41 and set Toolguard to ON.

42: When the system is put into RUN mode on a cold tool, there will be a period of time during which the tool will warm up and the temperatures will increase until they stabilise at the individual zone setpoints. Operating Toolguard during this period will result in incorrect operation. Therefore, the 'TG hold off time' parameter is used to set an initial period of time from entering RUN mode, during which the Toolguard function is deactivated. This value is set to 15 minutes by default, however, a value between 1 and 60 minutes can be set.

43: In order for Toolguard to operate, the average power being applied to the zones is monitored over a period of time. If the power varies by a pre-determined amount within this time, Toolguard is applied. Toolguard can either operate in relative or absolute mode. In Relative mode, the trigger band is a percentage of the current output power. If the average power changes slowly over time, or from tool to tool, in relative mode, the Toolguard trigger band will automatically move with the new setpoint. In absolute mode, the percentage power deviation required to trigger Toolguard is fixed. We recommend that Toolguard is used in relative mode which requires that this parameter is kept in the ON value.

44: If Toolguard is used in Absolute mode, this is the percentage deviation in power that will trigger Toolguard. Increasing the value will reduce the incidence of Toolguard being triggered due to the more extreme triggering condition. Decreasing this value will increase the incidence of Toolguard being triggered due to the less extreme triggering condition.

45: If Toolguard is used in Relative mode, this is the percentage deviation in power from the average determined in RUN mode that will trigger Toolguard. Increasing the value will reduce the incidence of Toolguard being triggered due to the more extreme triggering condition. Decreasing this value will increase the incidence of Toolguard being triggered due to the less extreme triggering condition.

46: TG Change time (rel). When Toolguard is operating in relative mode, the system will monitor the average output power and if this deviates from the average power by the amount set in parameter 45, within the time set by this parameter, Toolguard will operate. Reducing the value will reduce the likelihood of Toolguard being triggered due to the reduced time during which a change in average output power has to occur. Increasing the value will increase the likelihood of Toolguard being triggered due to the increased time during which a change in average output power has to occur.

ZONE TUNING

The VISIONS 3000 is a precision temperature controller, capable of maintaining the measured value for each controlled zone within +/- 1 degree of the setpoint. In order to do this, the VISIONS 3000 uses a 3-term (Proportional, Integral, Derivative) algorithm to calculate the appropriate power for the load.

The VISIONS 3000 is pre-programmed with 5 sets of parameters for both the cavity and manifold zones. Within the VISIONS 3000, the proportional term is referred to as Bandwidth (BW) and the Integral term is referred to as Time Constant (TC). The Derivative term is automatically calculated from the TC setting.

The preset values for the BW and TC for the cavities and manifolds are as follows: -

Parameter Number	2	Cavity Zone P.I.D.

Setting	Name	B(and) W(idth)	Parameter Number	T(ime) C(onstant)	Parameter Number	
1	Very Slow	4	100	16	105	
2	Slow	8	101	8	106	
3	Medium	16	102	4	107	Default
4	Fast	32	103	2	108	
5	Very Fast	64	104	2	109	

Parameter Number	7	Manifold Zone P.I.D.

Setting	Name	B(and) W(idth)	Parameter Number	T(ime) C(onstant)	Parameter Number	
1	Very Slow	2	110	32	115	
2	Slow	4	111	16	116	Default
3	Medium	8	112	8	117	
4	Fast	16	113	4	118	
5	Very Fast	32	114	2	119	

Under normal circumstances, the default settings will enable the system to control the load without further adjustment. However, if the measured values for the cavity or manifold zones remain unstable, i.e. the temperatures oscillate about the setpoint, it is advised that the PID setting be increased in speed. E.g. Change the cavity setting from 3 (medium) to 4 (fast).

If necessary, if the zones remain unstable, repeat the previous procedure to set the PID setting to 5 (very fast) for either the cavity or manifold zones.

With certain types of bushings, even with the cavity PID setting at 5 (very fast), some oscillation remains. In these circumstances, using the setup menu, it is possible to manually adjust the preset values for both the cavity and manifold zones. During normal operation, it is not necessary, nor recommended, that these values be altered. However, if severe oscillation of the measured value, usually on the cavities, remains, adjusting the TC value for the very fast setting from 2 to 8 should produce steady control of these bushings.

If the oscillation reduces but remains, double to TC value to 16 and observe the change in control. If oscillation still remains, repeat the doubling of the TC value until the oscillation is removed.

If oscillation remains with a BW of 64 and a TC of 64, it is probable that the problem is within the tool.

Please note that this function requires ITC user access to the Setup menus.

SETUP MODE

The SETUP screen permits access to the system configuration parameters.

The SETUP screen is accessed by pressing either the SETUP hotkey on the RUN menu or the SETUP hotkey on the STOP menu. When this hotkey is pressed, the password dialog box is shown. The password entered will determine the access level obtained and the parameters that can be edited.

After entry of the password, and the pressing of the ENTER key, the SETUP screen dialogue box will appear in the centre of the main screen.

Full and partial access will be indicated by an open padlock on the Setup hotkey. Minimal access will be indicated with a locked padlock on the Setup hotkey.

We recommend that SETUP mode is accessed when the system is in STOP mode as the alteration of some parameters while the system is in RUN mode may lead to incorrect control of the process and could lead to a reduction in the quality of the molded part.

The SETUP parameters are grouped together in pages. To access the next SETUP page, press the SETUP hotkey. Once the last SETUP page has been reached, pressing the SETUP hotkey will cycle back to the first page.

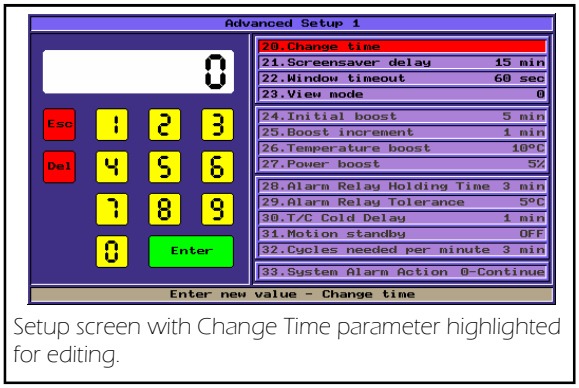
Parameters that are accessible at the current access level are shown in black.

Parameters that are not permitted at the current access level are shown in grey.

Use parameter #11 (Change User) to change the current access level.

Full functional control of the system is maintained during the SETUP process.

To change a parameter value, enter the parameter number on the numeric keypad and press [ENTER]. If the parameter is accessible at the current security level and correctly selected, the background colour behind the description in the Setup list will change to red. Enter the desired value and press [ENTER] again.



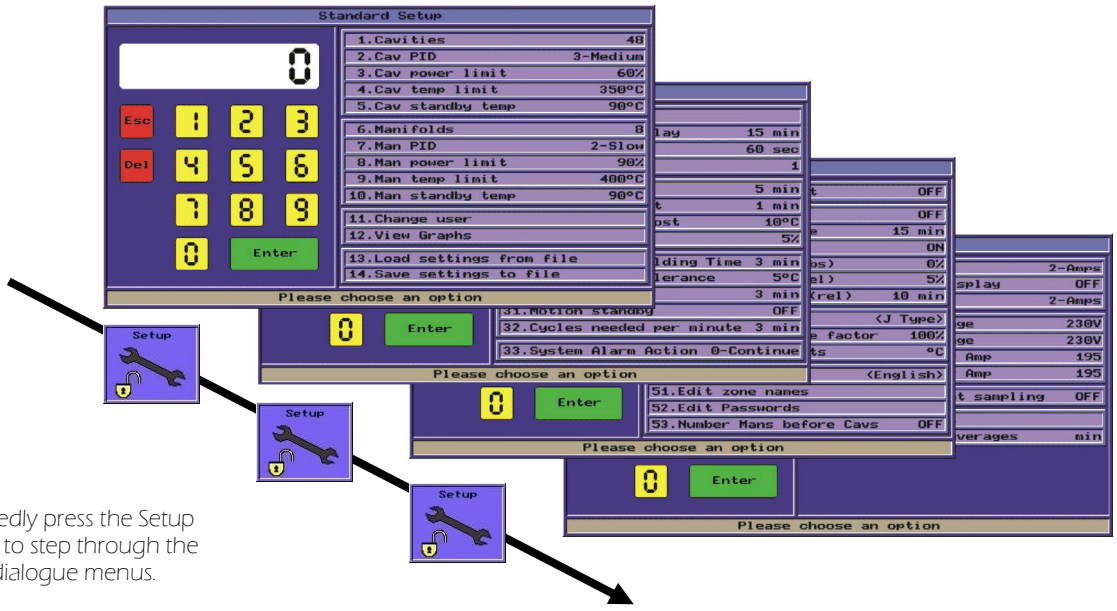
Setup screen with Change Time parameter highlighted for editing.

Entering no value and pressing the [ENTER] key again automatically enters 0 (or OFF) for the value of that parameter.

It is possible to enter the parameter number of the parameter to be changed from any of the SETUP screens.

See the SETUP tables later in this manual for a complete list of the parameters and the options available for each.

Press the [ESC] key to cancel the SETUP mode.



Repeatedly press the Setup Hotkey to step through the Setup dialogue menus.

PASSWORDS

There are three levels of access available for editing the parameter values in the setup menus: -

1. User
2. Super User
3. ITC User.

To change the access level, press the Setup hotkey from the STOP or MAIN screens. Alternatively, when in Setup, entering Parameter #11 enables the user to change the current access level by entering a new password. In each case, a password entry dialog box will be shown into which a password is entered. After pressing the numeric pad to enter the password, the characters will appear as asterisks in the password window, press [ENTER] to enter the password.

Except for 6 zero's, a password can be any numeric string up to 6 characters.

When a valid password for Super User or ITC User is entered, the setup hotkey on the main screen will show that the system is unlocked, see pictures below.

System Locked

System Unlocked

If access is unlocked, to either Super User Level or ITC User Level, and no password is entered into the Password dialog box, i.e. the [Enter] key is pressed directly, the user will access the Setup screens at the same unlocked user access level.

This function prevents the need to continually re-enter the password during commission. However, to prevent unauthorised entry, it is recommended that the system is returned to the locked or User Level by entering an incorrect password. In any event, the system will automatically return to the User Level after the screensaver timeout has expired, after approximately 12 minutes.

User Level

This level is the normal operating level and does not require a password.

The system defaults to this level and will timeout back to this level when the screensaver becomes active. The screensaver has a default of 12 minutes.

This level provides a minimal number of setup parameters for editing.

Entering an incorrect password will automatically default to this access level.

Super User Level

This level has the default password of: 123456.

This level provides access to all setup parameters relevant to operation of the VISIONS 3000 by supervisors and managers.

In this mode, setup parameter #52 permits this password to be changed to another. A dialog box will be shown requesting the old (existing) password, then the new password. Following the re-entry of the new password, a confirmation screen will be shown and the new password will become active. For security reasons, please ensure that you make a note of the new password.

If there is no keyboard activity, after a pre-defined period of time, the screensaver will become active and the VISIONS

3000 will automatically lock itself and revert to the User level. The default time period for the operation of the screensaver is 12 minutes.

ITC User

This level is for use by ITC personnel only. The password to this level permits access to all setup parameters along with the ability to assign the level of setup parameter access of the other two levels.

If there is no keyboard activity, after a pre-defined period of time, the screensaver will become active and the VISIONS 3000 will automatically lock itself and revert to the User level. The default time period for the operation of the screensaver is 12 minutes.

Additional Passwords

Additional passwords may have been set up to enable access to features on special systems.

Using the drop down menu, enter a new password and assign the features that will be accessible with this password.

ALARMS

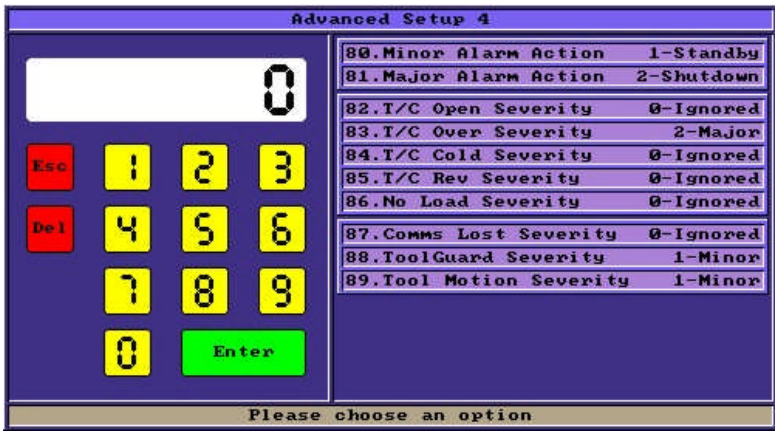
The VISIONS 3000 offers a comprehensive alarm strategy using a combination of alarm trigger parameters and the ability to program the resultant system response.

For each of the alarm trigger, a separate action parameter exists, using parameters #82—89. For each alarm trigger, the corresponding system action can be set to: -

0: Ignored. The individual zone will be turned off but no system action will be taken.

1: Minor. The system will perform the function defined by Setup parameter #80.

2: Major. The system will perform the function defined by Setup parameter #81.



For both Setup parameter 80, Minor Alarm Action, and Setup parameter #81, Major Alarm Action, the system action can be set to: -

0: Continue. The zone will be shutdown and the system will continue to RUN.

1: Standby. The zone will be shutdown and the system will be placed into STANDBY mode. The temperatures on all the active zones will be reduced to the Standby temperatures (Cavities = parameter #5, Manifolds = parameter #10).

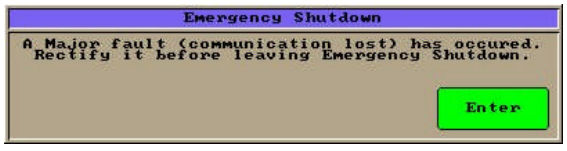
2: Shutdown. The system will be shutdown will power to all zones turned off.

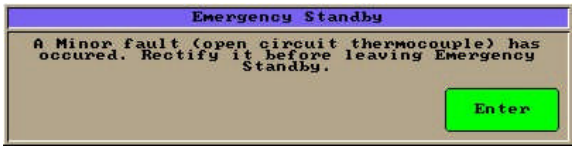
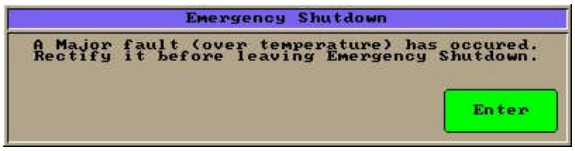
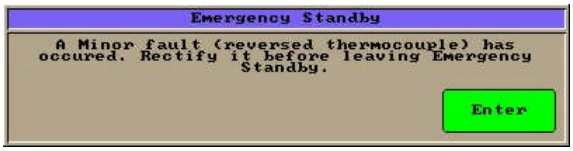
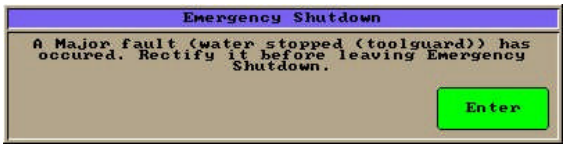
All alarms settings are saved with the toolset.

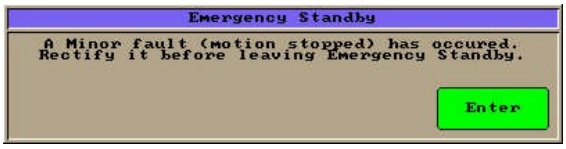
ALARM TYPES / MESSAGES

The table below shows the various alarms within the VISIONS 3000 and the messages and actions that will occur.

Note that the display of the error message will either refer to Shutdown or Standby depending upon the value set to parameters #80—#89 in SETUP.

Icon	Name	Description
	Comms Lost	The top box has lost communication with the bottom box. This is most likely to be caused by an unplugged top box and the error will appear on all zones. If this error is shown, the main control cabinet will automatically enter STOP mode after 1 minute. 
	Comms Off	This message will appear is when the system is in Database Mode or when an alarm has been setup to trigger a system shutdown. Note: if there is a problem with communications with the bottom box, the Com Lost error will appear.

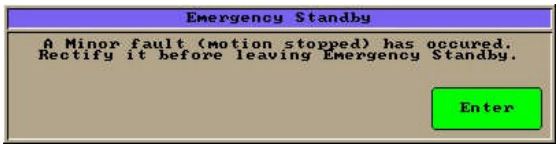
Icon	Name	Description
	T/C Open	If the connection to the thermocouple sensor is broken for any given zone, this error message will appear. 
	T/C Over	If the measured value for any given zone is over the system limit, the screen will show a thermocouple over error and end process control of the entire tool. 
	T/C Rev	If the sensor wiring for any given zone is reversed, the measured temperature will decrease for an increase in power and will result in a Thermocouple Reversed error. 
	T/C Cold	If the measured value of any given zone fails to increase in value to be within the alarm relay tolerance within the specified time, it is reported as a T/C cold error. 
	No Load	A No Load error will be displayed either if current measuring functions are turned on and the VISIONS 3000 does not have a current module fitted, or if the VISIONS 3000 is fitted with a current module, current measuring functions are turned on, but no current is being drawn by the load. A No Load error can also be shown if the number of Cavity and Manifold zones set in SETUP differs from the actual hardware specification of the VISIONS 3000. 
N/A	Toolguard	If the Toolguard function is turned on and the system detects the necessary power reduction required, the system will automatically be placed in standby with the relevant error dialogue message box displayed. 

Icon	Name	Description
N/A	Motion Standby	If the Motion Standby function is turned on and the system detects the failure of the necessary input signal, the system will automatically be placed in standby with the relevant error dialogue message box displayed. 

MOTION STANDBY

The VISIONS 3000 offers the user the ability to detect when production has stopped and take the appropriate system action. The function has three stages: -

1. Detection of the stopping of production. This is achieved by the monitoring of the Motion Standby input on the rear of the top box. Either a simple detection of a failed signal can be detected (Setup parameter #34 set to OFF) or a number of production cycles can be detected (Setup parameter #34 set to the number of machine cycles).
2. Display of a time countdown during which it is possible for production to be re-started.. The time is determined by Setup parameter #33.
3. Either the system will shutdown or be placed into Standby. This is determined by Setup parameter #89.



Note that the monitoring of the Motion Standby input does not begin until all the zones are at temperature, In-The-Green, and the real time clock has changed from yellow to green.

It is possible to monitor the state of the Motion Standby input by the border color of the real time clock. When there is no Motion Standby input, the real time clock border will be the same grey as the rest of the bottom border. If there is a Motion Standby input, the real time clock border will change to dark grey.

No Motion Standby Input

Motion Standby Input

SETUP PARAMETER LIST

The following is a comprehensive list of all the parameters contained within the setup menus.

Access to parameters depends upon the security level, which is dependant on the password entered.

Parameters that are not accessible for editing are greyed out.

To alter a parameter value, enter the parameter number to access that parameter and then enter the desired parameter value.

Warning: Setup parameters must only be altered by trained personnel. ITC accepts no responsibility for incorrect configuration of the VISIONS 3000 controller.

#1	Number Of Cavity Zones

Options	Description
0—140	Assigns the number of cavity zones in the system. The maximum is 140 less the number of Manifold zones. Note: The number of manifolds will automatically be reduced to achieve a maximum number of zones of 140. Note: If the number of cavity zones set in SETUP differs from the actual hardware configuration of the system, No Load errors may result.

#2	Cavity Zone P.I.D.

Options	Name	Description
1	Very Slow	Used for cavities with a very slow temperature response.
2	Slow	Used for cavities with a slow temperature response.
3	Medium	Used for cavities with a medium temperature response. (Default)
4	Fast	Used for cavities with a fast temperature response.
5	Very Fast	Used for cavities with a very fast temperature response.

#3	Cavity Zones Power Limit

Options	Description
10—100	Enters the maximum amount of power, as a percentage that will be applied to zones defined as Cavities. (Default = 60%)

#4		Cavity Temperature Limit

Options	Name	Description
20—471C (20—880F)	C (F)	This is the maximum permitted setpoint allowed for Cavity zones. For a system defined as displaying degrees C, the range is 0—471. For a system defined as displaying degrees F the range is 20—880.

#5		Cavity Zone Standby Temperature

Option No	Description
20—471C (20—880F)	Defines the temperature applied to the Cavity zones when Standby mode is activated.

#6		Number Of Manifold Zones

Option No	Description
0-140	Assigns the number of Manifold zones in the system. Maximum number is 140 less the number of cavity zones. Note: If the number of Manifold zones set in SETUP differs from the actual hardware specification of the controller, No Load errors may result.

#7		Manifold Zone P.I.D.

Options	Name	Description
1	Very Slow	Used for manifolds with a very slow temperature response.
2	Slow	Used for manifolds with a slow temperature response.
3	Medium	Used for manifolds with medium temperature response. (Default)
4	Fast	Used for manifolds with a fast temperature response.
5	Very Fast	Used for manifolds with a very fast temperature response.

#8		Manifold Zone Power Limit

Options	Description
10—100	Enters the maximum amount of power, as a percentage that will be applied to zones defined as Manifolds. (Default = 100%)

#9		Manifold Zone Temperature Limit

Options	Name	Description
20—471C (20—880F)	C (F)	This is the maximum permitted setpoint allowed for Manifold zones. For a system defined as displaying degrees C, the range is 20—471. For a system defined as displaying degrees F the range is 20—880.

#10	Manifold Zone Standby Temperature

Option No	Description
20—471C (20—880F)	Defines the temperature applied to the Manifold zones when Standby mode is activated.

#11	Change User

Description
Defines the operator password and access level. See separate section on Passwords.

#12	View Graph

Description
Allows viewing of trend or 3D surface graphs for tool analysis. See separate section on graphs.

#13	Load Settings From File

Description
Allows the user to select a file from the database to be entered into the system as the active toolsert file. When selected, a dropdown list of files will be shown and the Hotkeys will change function to allow up / down selection of the desired file. All files have the extension .SET Selection of a file will automatically load the settings and the VISIONS 3000 will change to using these parameters. The name of the currently loaded file will be shown at the bottom of the main screen.

#14	Save Settings To File

Description
Allows the user to save the current parameters to a file. When selected, a dropdown list of files will be shown and the Hotkeys will change function to allow up / down selection of the desired file. All files have the extension .SET Use the numeric keypad to enter a unique name for the file. This can have a maximum of 8 letters (A—Z). Trying to save a Toolset with an existing name will result in a confirmation dialog box being shown.

#20	Change Time

Description
Allows the use to set the time of the internal clock. Enter the time as four numbers in the format: HHMM. For example 1645 is 4:45 pm.

#21	Screensaver Delay

Options	Description
1—30	Default = 12 minutes. The time delay between no key being pressed and the system automatically reverting to user security level. This is visible on the main screen by the padlock changing from unlocked to locked. Once this timeout has operated, an initial keypress is required before a second keypress activates the required function. This first keypress is to re-activate the LCD backlight. The second then carries out the relevant function. For this reason, it is recommended that the value of this parameter is kept at 12 minutes —t he same as the built-in timer value for the LCD backlight. This parameter maintains backwards compatibility with older systems that did not have a built-in backlight timer and required this function to be performed by the VISIONS 3000 in order to switch off the LCD backlight. Note: The LCD backlight is switched off to preserve the life of the backlight. The LCD backlight typically has a life of around 20,000 hours, less than 2.5 years when operating 24 hours per day. Automatically switching off the LCD backlight dramatically increases the life of this component. Note: While pressing any key will bring the backlight back on, the preferred method is to press the [ESC] key. Note: While the screensaver is active, the VISIONS 3000 is fully operational.

#22	Window Timeout

Options	Description
30—120	The time delay between no key being pressed and the currently open dialogue window closing and the system returning to the main screen. The value entered is in seconds and can be any value between 30 and 120. 30 seconds is the default value.

#23	View Mode

Option No	Name	Description
0	Standard	> 24 Zones: Displays the RUN screen as three columns of 12 zones. <= 24 Zones: Displays the RUN screen as two columns of 12 zones.
1	High Density	Displays an overview of each zone in two columns of 42 parameters each.
2	Expanded	Displays an expanded view of each zone in 3 columns of 6 zones.

#24	Always Show Temperatures

Options	Description
On / Off	Activates / Deactivates the Always Show Temperatures function. When deactivated, the measured value box for the zone will either remain empty or show the relevant zone error message. When activated, this function will continue to show the measured value of the zone if the zone has been set to manual mode (open loop control), or T/C Open if there is no sensor connected or it is faulty.

#25	Gate Shear Filter Delay

Options	Description
Off, 1—10	Value in minutes. Default value = 0 (Off). This function adds a software filter to dampen oscillating inputs caused by heat generated by gate shear of the plastic being moulded.

#26	Monitor Before Run

Options	Description
On / Off	Activates / Deactivates the Monitor function. See Page 15

#27	Initial Boost

Options	Description
1—15	Default = 5 minutes. When the VISIONS 3000 is in RUN MODE and the BOOST Hotkey is pressed, this parameter sets the initial period of time during which the setpoints of the cavity zones are increased (boosted).

#28	Temperature Boost

Options	Description
0—30C (0—30F)	Default = 10 Degrees C (18 Degrees F). When the VISIONS 3000 is in RUN MODE and the BOOST Hotkey is pressed, this parameter sets the increase (boost) in temperature applied to the cavity zones. This boost in temperatures will apply to all cavity zones operating in closed loop mode with active thermocouples.

#29	Power Boost

Options	Description
0—20%	Default = 5%. When the VISIONS 3000 is in RUN MODE and the BOOST Hotkey is pressed, this parameter sets the increase (boost) in percentage power applied to the cavity zones. This boost in temperature power will apply to all cavity zones operating in open loop (Manual) mode.

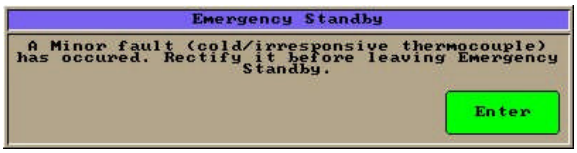
#30	Alarm Relay Holding Time

Options	Description
0—10	Default = 3 minutes. When the setpoint of a zone is changed, for example by BOOST or STANDBY modes being activated, or a zone setpoint being manually changed, for a short period of time, the error between the setpoint and the measured value exceeds the Alarm Relay Tolerance and is thus, not in-the-green. Normally, this would mean that the alarm hold relay output would open, which, if it is linked to the moulding machine, can terminate production. To prevent this happening, an Alarm Relay Holding Time is set. This function delays the operation of the alarm relay because of zones not being 'in-the-green' for the set time, allowing altered zones time to re-enter the Alarm Relay Tolerance (be in-the-green). This prevents nuisance triggering of this alarm.

#31	Alarm Relay Tolerance

Options	Description
0—30	Default = 5 Degrees C. This parameter defines the difference between the measured value and setpoint at which the alarm relay operates. While the measured value of the zone is within the Alarm Relay Tolerance, the value will be shown in green — known as being in-the-green. If the measured value is greater than the zone setpoint plus the alarm relay tolerance, the value will be displayed in Red (in-the-red). If the measured value is less than the zone setpoint minus the alarm relay tolerance, the value will be shown in blue (in-the-blue).

#32	T/C Cold Delay

Options	Description
Off, 1—45 	Default = 15 minutes. On initial start-up, all active zones will increase their measured value as the power is ramped to each zone. If, after the time set by this parameter, any zone is still 'in-the-blue', i.e. still under temperature, the zone measured value will show as T/C Cold and the zone will be deactivated. If the alarm setup parameter (#84) has been set to Minor or Major, and the T/C Cold alarm occurs, then a message, shown below, will appear on screen. 

#33	Motion Standby

Options	Description
Off,1—15	Needs (OPTIONAL) Interface PCB to be fitted. When this option is turned on, the VISIONS 3000 will monitor the Motion Standby input to ensure that an oscillating signal is being received. If no signal is detected for a period of time, the system is automatically placed into standby. Default = 10 minutes. Works in conjunction with Option #34, Tool cycles per minute.

#34	Cycles Needed Per Minute

Option No	Description
Off, 1—60	Default = 3. This is the number of complete mould production cycles that is required to reset the Motion Standby clock. If the required number of complete cycles is not received, the countdown clock begins. If this clock exceeds the setting of the Motion Standby Delay, the VISIONS 3000 automatically goes into standby mode. The value can be set to zero so that any failure of the Motion Standby input signal will be used to start the Motion Standby countdown timer.

#40	Manifold Preheat

Options	Description
Off, 1—471C 1—879F	Default = Off. This parameter is used to ensure even expansion of the components of the mould tool by applying power to the Manifold zones first. With this parameter set to a temperature and the VISIONS 3000 is put into RUN MODE, the power ramp is applied to only the Manifold zones until all of them exceed the preset Manifold Preheat temperature or are at setpoint temperature (in-the-green). At this point, the power ramp is the also applied to the Cavity zones. With this parameter set to OFF and the VISIONS 3000 is put into RUN MODE, power is applied to all zones at the same time. The value of the Manifold Preheat parameter cannot exceed the maximum Cavity Setpoint value (parameter #4) or the maximum Manifold Setpoint value (parameter #9).

#41	Toolguard

Options	Description
On Off	Default = Off. Use this parameter to activate the Toolguard function. See section on Toolguard for further details.

#42	TG hold off time

Options	Description
1—60	Default = 15 minutes. This parameter defines the period of time from the powering up of the VISIONS 3000 until Toolguard is activated.

#43	TG use relative

Options	Description
On Off	Default = On. With this parameter set to ON, The average output power deviation used to trigger Toolguard is relative to the current setpoint and is determined by parameter #46 (TG Threshold—rel). With this parameter set to OFF, the average output power used to trigger the Toolguard is absolute.

$44	TG threshold (abs)

Options	Description
0—100	Default = 0%. When Toolguard is activated (parameter #42) and set to absolute (parameter #44), this parameter determines the absolute average output power required to trigger Toolguard.

#45	TG threshold (rel)

Options	Description
0—30	Default = 5%. When Toolguard is activated (parameter #42) and set to relative (parameter #44), this parameter determines the relative average output power required to trigger Toolguard.

#46	TG change time (rel)

Options	Description
2—30	Default = 7 minutes. If the Toolguard function is turned on (parameter #42), and the TG hold off time has elapsed, this parameter sets the sample time over which the output power must alter by the defined amount (absolute or relative) before triggering Toolguard.

#47	T/C Type

Options	Description
J Type K Type	Default = J Type. This parameter selects the line arising table used to scale the thermocouple inputs.

#48	Cavity T/C Scale Factor

Options	Description
50—250 (%)	Default = 80%. Primarily used with Type K thermocouples, this parameter scales the measured value of the cavity zones to compensate for discrepancies.

#49	Temperature Units

Options	Description
C F	Default = Degrees C. C = 0 to 472C. F = 32 to 880F

#50	Language

Options	Description
English Danish Deutsch Italian	Default = <English>. This parameter defines the language used for the display text. The <English> selection uses the built-in English text. The ENGLISH file is an external file and it is not usually required to be used. Additional languages can be added. Please speak to EFI for details.

#51	Edit Zone Names

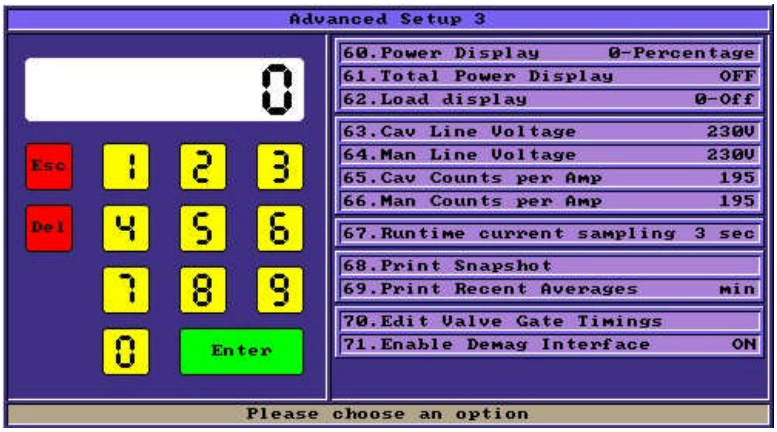
Options	Description
	Default = Zone Number. This parameter allows the user to change the text label for each zone. As default, the text label for each zone is the zone number. The user can add an additional 4 characters using the numeric keypad. The text will always appear in yellow for cavity zones and red for manifold zones. The zone names are stored as part of the toolset.

#52	Edit Passwords

Options	Description
	Permits the user to edit / add additional passwords for the User and Super User access levels. Note: User level, no editing is permitted. Super User level the Super User password can be changed. ITC User level the passwords and screens that these access can be edited. See section on Passwords.

#53	Number Manifolds Before Cavities

Options	Description
On/Off	Default = Off. When set to On, the Manifolds zones will appear before the cavity zones on the display. When set to Off, the Manifold zones will appear after the cavity zones on the display.



#60	Power Display

Option No	Name	Description
0	Percentage	Displays percentage output power for each zone on the RUN screen. Does not require current feedback hardware.
1	Watts	Displays amount of power being drawn by load on each zone as Watts. Requires operational current feedback hardware to be fitted.
2	Amps	Displays amount of current being drawn by load on each zone as Amps. Requires operational current feedback hardware to be fitted.

#61	Total Power Display

Option No	Name	Description
Off		No display shown 
On		Displays at the bottom of the display the total amount of power or current being drawn by the load . The parameter being displayed is dependant on the setting of parameter #60. The total power (kW) will be shown if parameter #60 is set to 0 or 1. The total current (A) will be shown if parameter #60 is set to 2 (Amps) Requires operational current feedback hardware to be fitted to be operational. 

#62	Load Display

Option No	Name	Description
0	Percentage	Displays percentage output power for each zone on RUN screen. Does not require current feedback hardware.
1	Watts	Displays amount of power being supplied by each on zone as Watts. Requires operational current feedback hardware to be fitted.
2	Amps	Displays amount of current being supplied by each zone as Amps. Requires operational current feedback hardware to be fitted.
3	Ohms	Displays the resistance of the load on each zone as Ohms. Requires operational current feedback hardware to be fitted.

#63	Cavity Line Voltage

Options	Description
10—999	Default = 230V ac. Used to calibrate the feedback from the current sensing module. This parameter must be set by qualified personnel only.

#64	Manifold Line Voltage

Options	Description
10—999	Default = 230V ac. Used to calibrate the feedback from the current sensing module. This parameter must be set by qualified personnel only.

#65	Cavity Counts Per Amp

Options	Description
10—1999	Default = 195. Used to calibrate the feedback from the current sensing module. The parameter must be set by qualified personnel only.

#66	Manifold Counts Per Amp

Options	Description
10—1999	Default = 195. Used to calibrate the feedback from the current sensing module. The parameter must be set by qualified personnel only.

#67	Run Time Current Sampling

Options	Description
Off, 1—60	Default = 3 Secs. When this parameter is set to OFF, no reading, or display, of the current consumption is undertaken. With this parameter set to ON, the value of the current consumption of each active zone is undertaken and displayed. This parameter is only active if the current sensing module is fitted.

#68	Print Snapshot

Options	Description
	Provides a printout of the setpoint, measured value, current, and wattage for each zone. Needs a compatible printer to be connected to the serial socket on the top box.

#69	Print Recent Averages

Options	Description
1—180	Prints a snapshot of the average setpoint, measured value, current and wattage for each zone over the entered time, in minutes. Needs a compatible printer to be connected to the serial socket on the top box. S ee table below for typical printout.

```
1 minute averages:

Tool : BACKUP.SET
(16 cavs, 5 mans)_____________________________________________________________

Performed by:_____________________________________on ___/___/___ at 14:08

Zone:     Set:    Temp:              Pow:                    Peak:
1    :    150°C   150.0°C     20.0%     8W    0.0A     207W   0.9A   256R
2    :    150°C   150.0°C     17.0%     6W    0.0A     208W   0.9A   254R
3    :    150°C   150.0°C     19.4%     8W    0.0A     209W   0.9A   253R
4    :    150°C   150.0°C     23.2%    11W    0.0A     208W   0.9A   254R
5    :    150°C   149.9°C     19.3%     8W    0.0A     206W   0.9A   257R
6    :    150°C   150.0°C     17.4%     6W    0.0A     209W   0.9A   253R
7    :    150°C   150.0°C     19.3%     8W    0.0A     206W   0.9A   257R
8    :    150°C   150.0°C     21.2%     9W    0.0A     202W   0.9A   262R
9    :    150°C   150.0°C     20.3%     8W    0.0A     206W   0.9A   257R
10   :    150°C   150.0°C     18.3%     7W    0.0A     209W   0.9A   253R
11   :    150°C   150.0°C     20.2%     8W    0.0A     205W   0.9A   258R
12   :    150°C   150.0°C     21.2%     9W    0.0A     207W   0.9A   256R
13   :    150°C   150.0°C     20.9%     9W    0.0A     207W   0.9A   256R
14   :    150°C   150.0°C     20.8%     9W    0.0A     204W   0.9A   260R
15   :    150°C   150.0°C     19.6%     8W    0.0A     207W   0.9A   256R
16   :    150°C   150.0°C     22.5%    10W    0.0A     204W   0.9A   260R
17   M1:  150°C   150.0°C     10.6%     4W    0.0A     372W   1.6A   142R
18   M2:  150°C   151.7°C      2.6%     1W    0.0A    1060W   4.6A    50R
19   M3:  150°C   149.3°C     34.8%   128W    0.6A    1051W   4.6A    50R
20   M4:  150°C   149.9°C     31.6%   107W    0.5A    1067W   4.6A    50R
21   M5:  150°C   150.3°C     32.7%   114W    0.5A    1061W   4.6A    50R
```

#70	Edit Valve Gate Timings

Options	Description
	Allows the user to edit the timings for the Valve gate sequencing software built into the VISIONS 3000. See section in this manual on Valve Gates.

#71	Enable Demag Interface

Options	Description
Off (Default) On	When the serial communications interface for the Demag molding machine is connected, it is desirable for control to be passed to the Demag and editing of parameters on the VISIONS 3000 screen be disabled. Parameters can be viewed but not edited. This is the default mode with this parameter to set to OFF. If this parameter is set to ON, editing of parameters is permitted without the need to disconnect the communications cable or use the Demag user interface. Note: That if zone setpoints are altered, the Demag may overwrite these values when communications is restored.

#80	Minor Alarm Action

Options	Description
0 = Continue 1 = Standby 2 = Shutdown	*This function defines the system response to any alarm defined as being minor. Continue = system does nothing additional to the normal alarm function, Standby = the system places all zones into standby mode, Shutdown = the system goes into STOP mode.*

#81	Major Alarm Function

Options	Description
0 = Continue 1 = Standby 2 = Shutdwn	*This function defines the system response to any alarm defined as being major. Continue = system does nothing additional to the normal alarm function, Standby = the system places all zones into standby mode, Shutdown = the system goes into STOP mode.*

#82	T/C Open Severity

Options	Description
0 = Ignored 1 = Minor 2 = Major	*This function defines the system response to a T/C Open error. 0 = Ignored, 1 = Minor, 2 = Major. Default = 0 (Ignored)*

#83	T/C Over Severity

Options	Description
0 = Ignored 1 = Minor 2 = Major	*This function defines the system response to a T/C Over error. 0 = Ignored, 1 = Minor, 2 = Major. Default = 2 (Major)*

#84	T/C Cold Severity

Options	Description
0 = Ignored 1 = Minor 2 = Major	This function defines the system response to a T/C Cold error. 0 = Ignored, 1 = Minor, 2 = Major. Default = 0 (Ignored)

#85	T/C Rev Severity

Options	Description
0 = Ignored 1 = Minor 2 = Major	This function defines the system response to a T/C Rev error. 0 = Ignored, 1 = Minor, 2 = Major. Default = 0 (Ignored)

#86	No Load Severity

Options	Description
0 = Ignored 1 = Minor, 2 = Major	This function defines the system response to a No Load error. 0 = Ignored, 1 = Minor, 2 = Major. Default = 0 = (Ignored)

#87	Comms Lost Severity

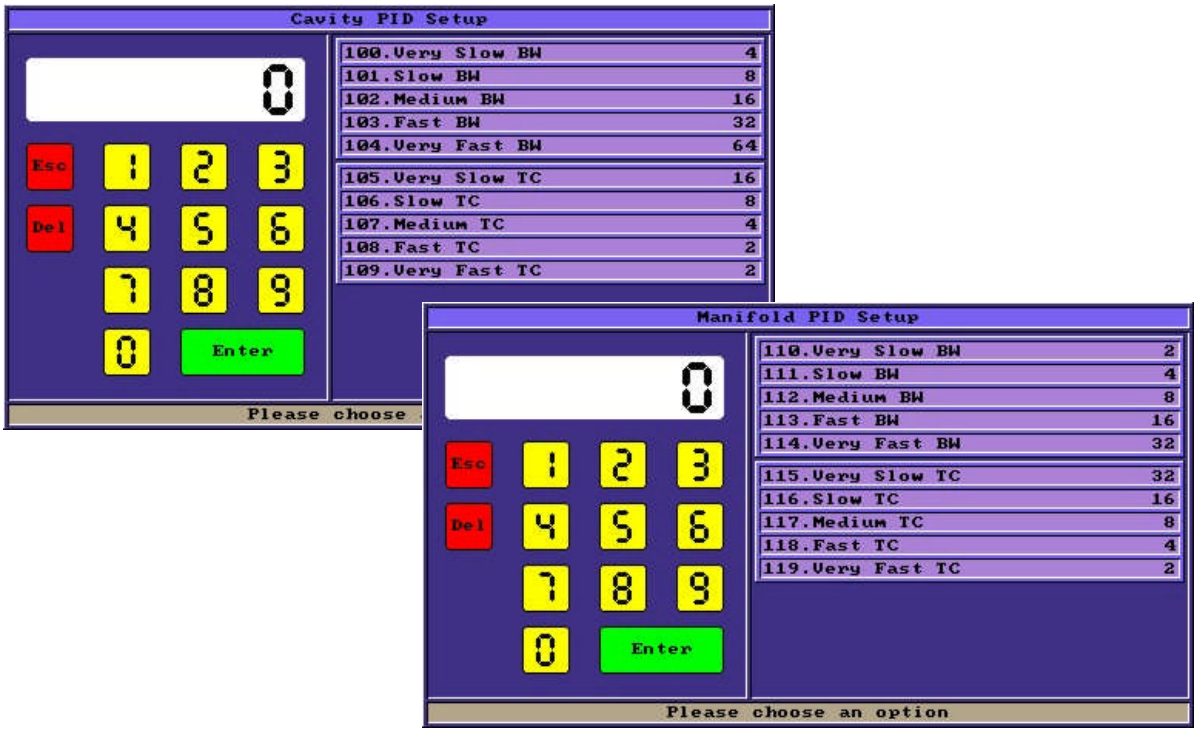
Options	Description
0 = Ignored 1 = Minor 2 = Major	This function defines the system response to a Comms Lost Error. 0 = Ignored, 1 = Minor, 2 = Major. Default = 0 (Ignored)

#88	Toolguard Severity

Options	Description
0 = Ignored 1 = Minor 2 = Major	This function defines the system response to a Toolguard error. 0 = Ignored, 1 = Minor, 2 = Major. Default =1 (Minor)

#89	Tool Motion Severity

Options	Description
0 = Ignored 1 = Minor 2 = Major	This function defines the system response to a Tool Motion Standby error. 0 = Ignored, 1 = Minor, 2 = Major. Default = 1 (Minor)



Options	Default	Cavity PID Setup
100	4	Very Slow BW
101	8	Slow BW
102	16	Medium BW
103	32	Fast BW
104	64	Very Fast BW
105	16	Very Slow TC
106	8	Slow TC
107	4	Medium TC
108	2	Fast TC
109	2	Very Fast TC
		Manifold PID Setup
110	2	Very Slow BW
111	4	Slow BW
112	8	Medium BW
113	16	Fast BW
114	32	Very Fast BW
115	32	Very Slow TC
116	16	Slow TC
117	8	Fast TC
118	4	Very Fast TC

HARDWARE

TOP BOX

The Top Box contains the processor which communicates with the main 'bottom' box to obtain values which are displayed on the screen.

The screen is backlit for maximum visibility. To preserve the life of the backlight, a screen saver function turns off the backlight after a preset period of time. This screensaver function is available from the Setup menu.

The numeric keypad is used to enter and control all the system functions.

FAN & FILTER

Replace/Clean filter at least every 6 months.

SERIAL PORT

Used for software upgrade, machine comms connection and printer interface.

VENTS

Ensure air vents are clear and away from potential blockages.

FIXING BRACKET

Fitted to the bottom cabinet using 2 x 8mm diameter fixing bolts.

POWER CABLE

3 pole male power connector.

COMMS CABLE

4 pole female communications cable.

INTERFACE

6 pole male interface connector

BOTTOM CABINET

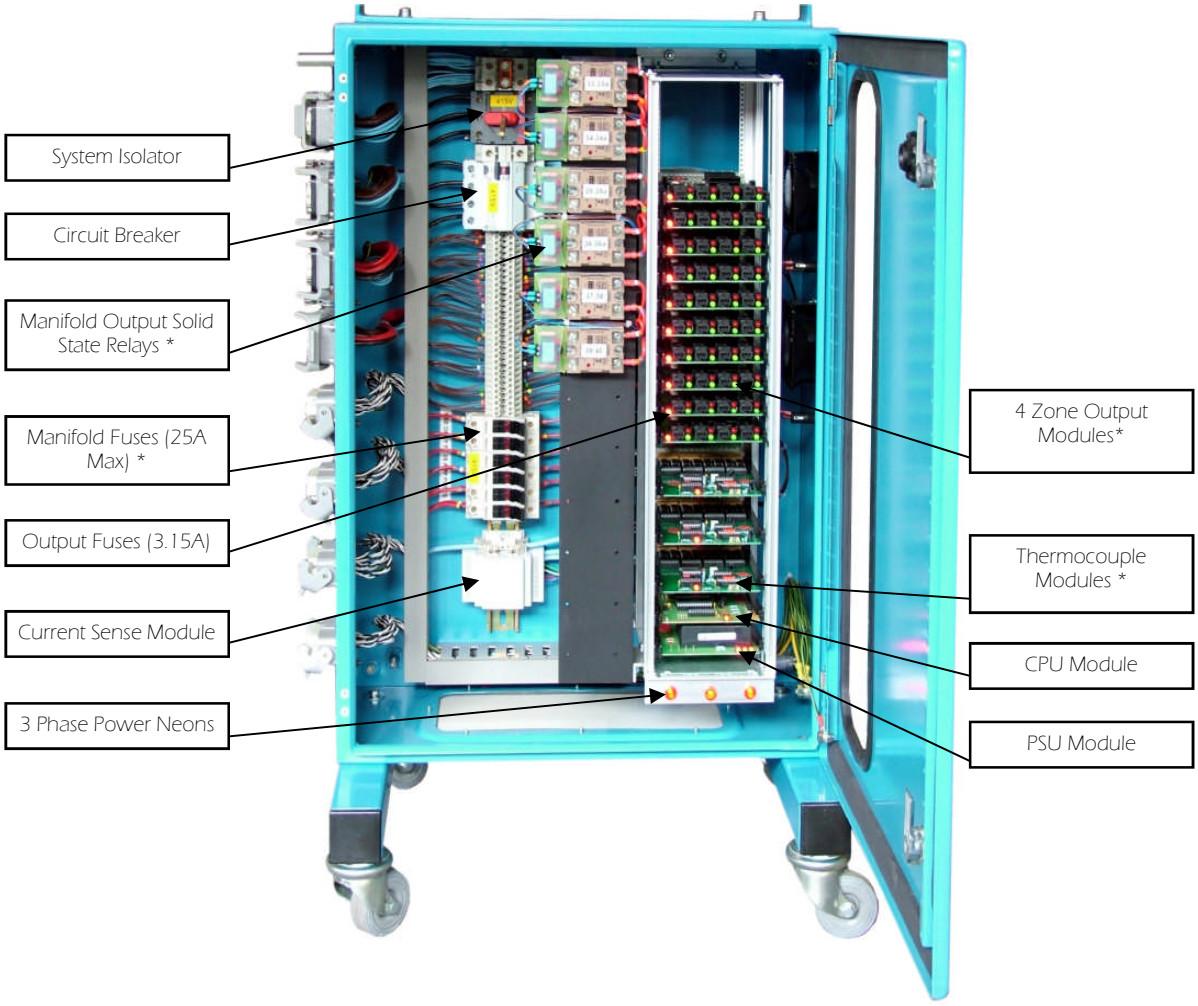
Within the main cabinet, a euro card rack is used to house the modules used within the VISIONS 3000 system.

All the modules within the rack have exclusive connectors such that modules cannot be inserted into the incorrect slot.

All the modules also have front panel mounted LED's which are visible through the access window on the front door of the cabinet. These indicate the system status and can be used to diagnose faults within the system.

When the system is on, operational and in RUN mode, it is possible to view a clear ripple on the red communications LED's of each module as the CPU module communicates with each module in turn.

The number and location of those parts marked with an * in the picture below will vary with the specification of the controller.

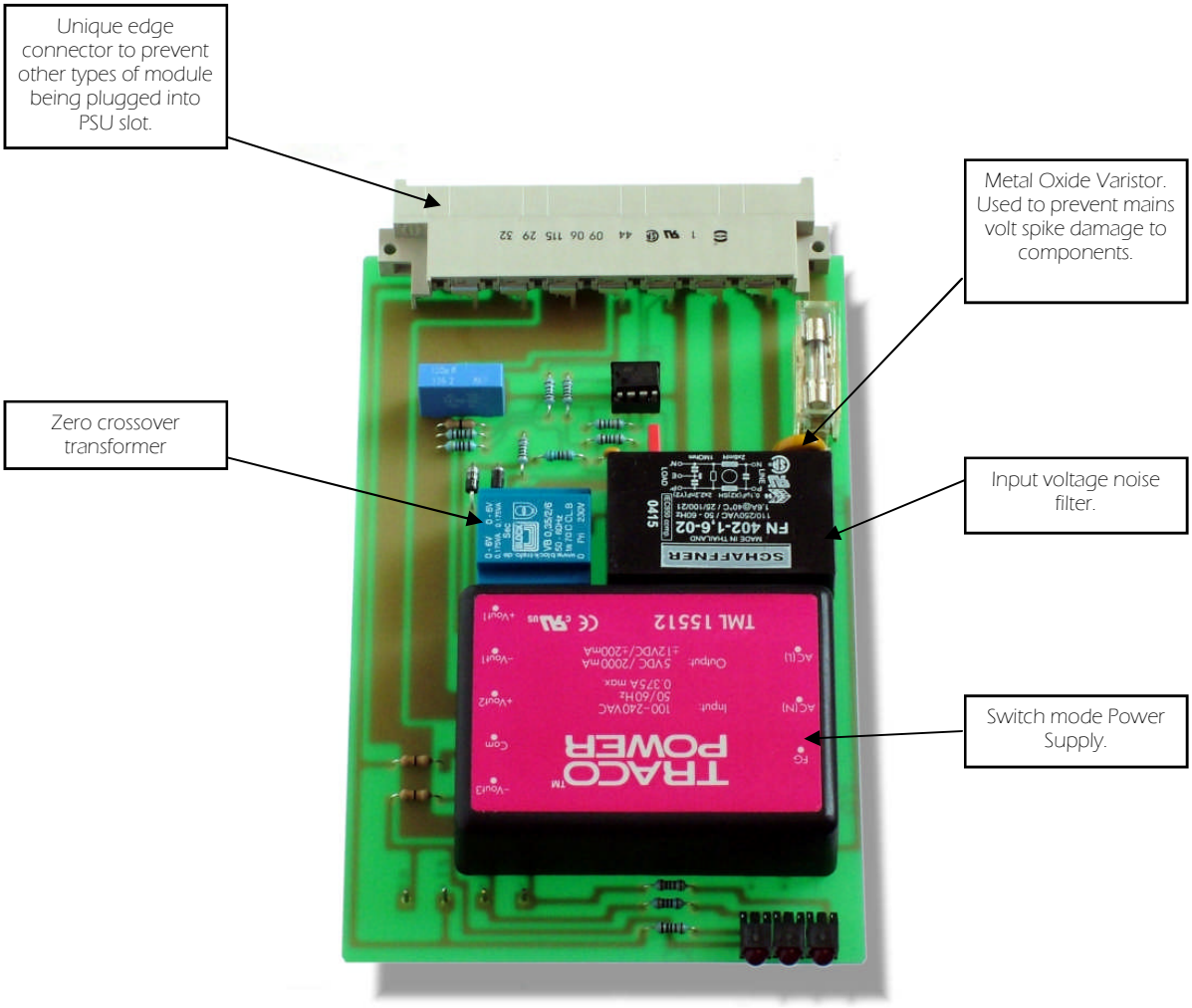


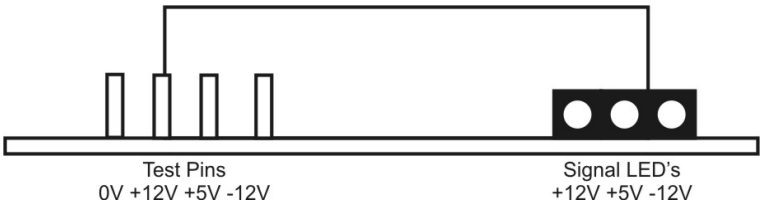
PSU MODULE

A single PSU module is fitted to each rack and is located in the lowest slot. This module provides the necessary voltage supplies for all the other modules and also supplies the 240V ac supply, to the Top Box.

The module provides spike suppression and fusing of the input supply via varistors, noise suppression module and a 2 Amp fuse. The cleaned main power supply is provided to the 'Top Box' as well as supplying the on-board switch mode power supply unit.

The front panel LED's indicate that the +12V, -12V and +5V voltages are present.





CPU MODULE

A single CPU module is fitted to each rack, located immediately above the PSU module.

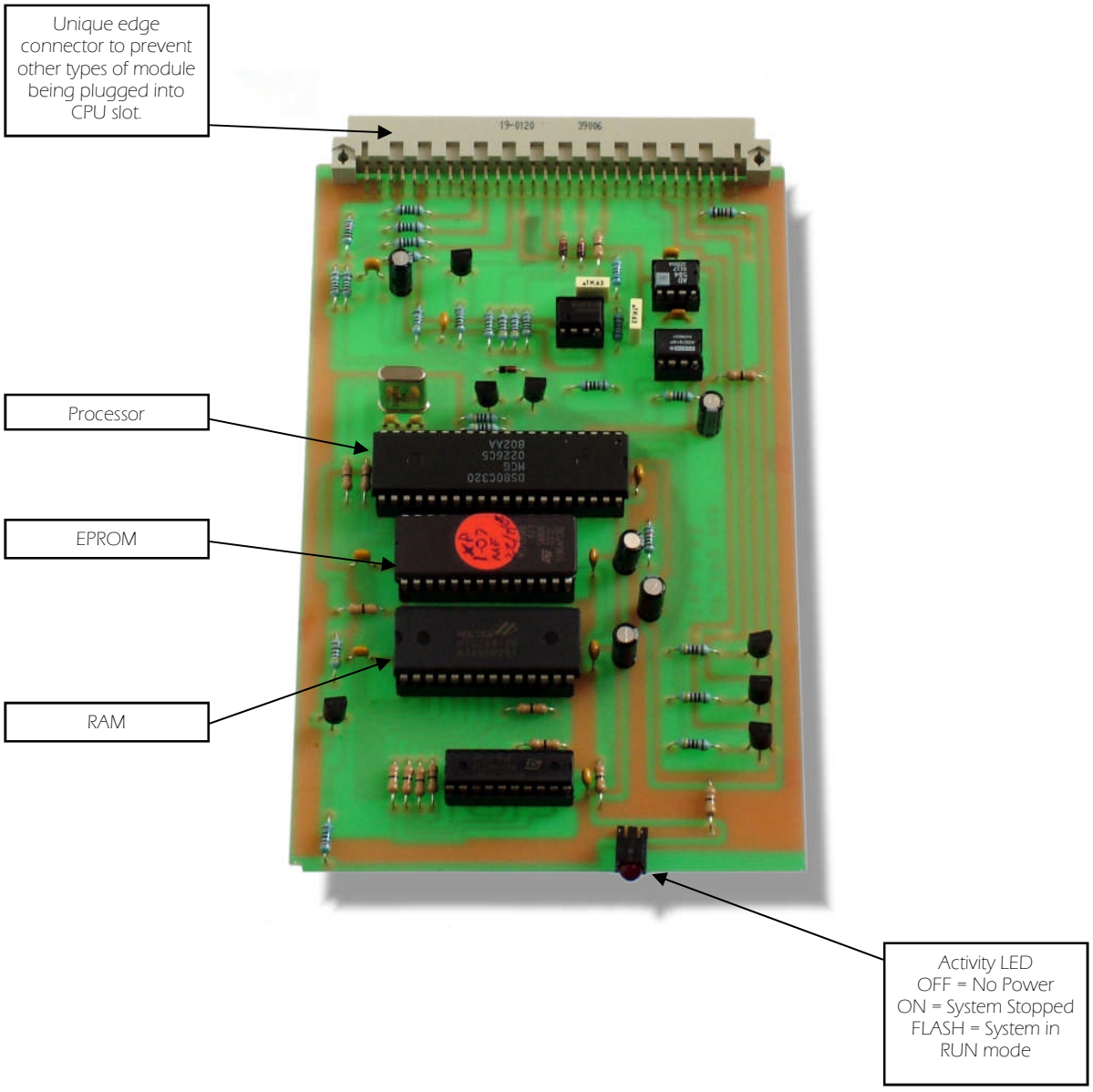
The CPU module interrogates the thermocouple modules to obtain input values, communicates with the top box to obtain user preferences and supplies output signals to the various output modules.

The single front panel mounted LED has three modes:-

Off: With no power applied to the controller, or power is applied but the system is switched off via the red isolating switch on the front door of the cabinet, the power LED on the CPU module will be off. However, if 3-phase power is applied to the cabinet, the system is turned on and the CPU led is off, this would indicate that the PSU module is faulty, most probably the fuse has failed.

On: The CPU LED will be On when the system is correctly power up and is in Stop mode.

Flashing: The system is in Run mode and communicating with both the Top Box and the other modules.



THERMOCOUPLE MODULE

Each thermocouple module handles up to 16 thermocouple inputs. Therefore, the number of thermocouple modules fitted to you system will depend on the total number of zones. Standard accommodate up to four modules, giving a rack capacity of 64 zones. Larger systems accommodate larger numbers of thermocouple modules by extending the rack.

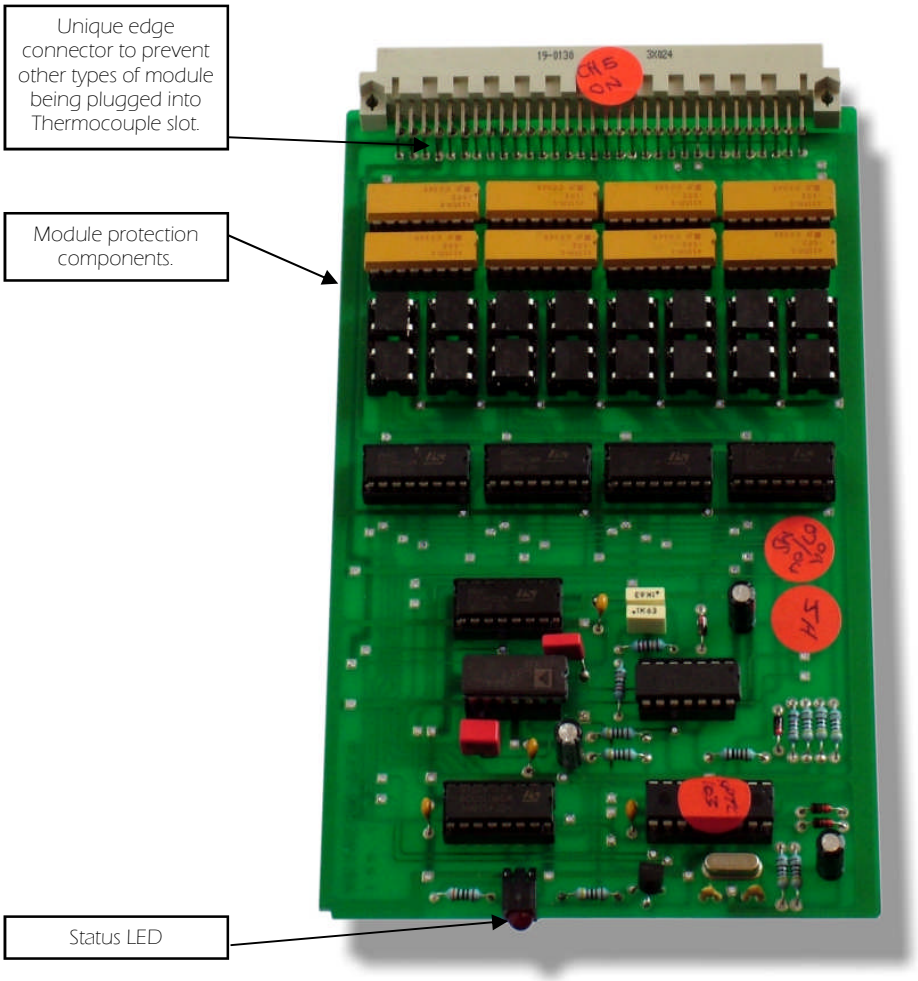
The single front panel LED indicates communication status and has three modes: -

Off: If 3-phase power is applied to the cabinet and the system is turned on, and the Thermocouple Module led is off, this would indicate either that the PSU module is faulty, most probably the fuse has blown or, if the PSU red LED's are operational, that the CPU module is faulty.

On: The Thermocouple module LED will be On when the system is in Stop mode.

Flashing: The system is in Run mode and the module is communicating with the CPU module.

There are no coding pins, DIP switches or other form of address coding on the Thermocouple module. Address coding for all the thermocouple modules present in any given system is handled by the backplane.



1 ZONE OUTPUT MODULE

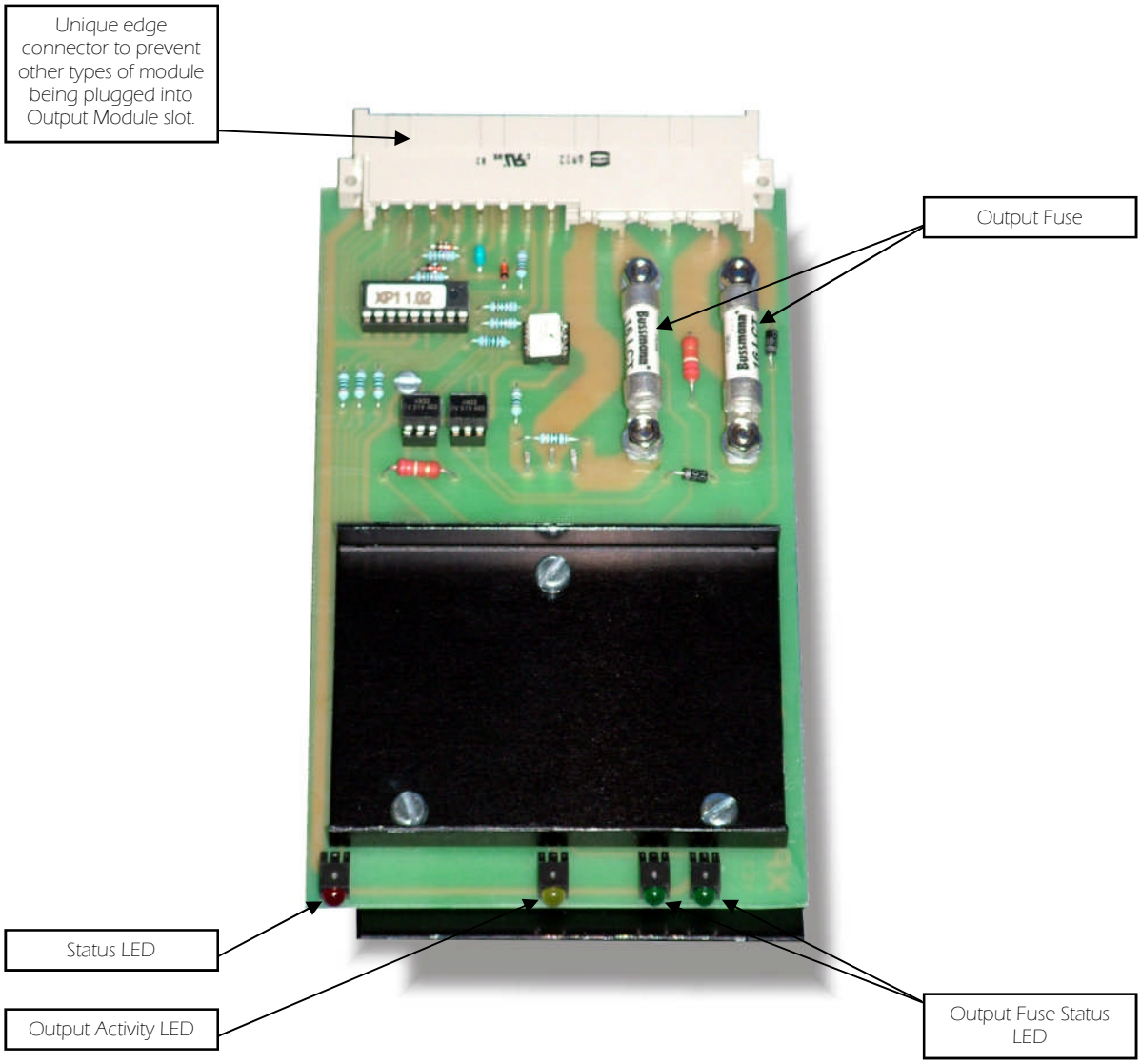
The Single Output module contains a single zone rated at 16 Amps at 240V a.c. and is suitable for applications requiring maximum flexibility from the controller to connect to a wide range of tools.

Front panel LED's indicate communication from the CPU module (red LED), output fuse operational for each side of the output (green LED) and output power level (yellow LED).

For maximum protection on systems wired for US 4-wire, Delta type, 3 phase operation, each side of the output is fused using a 16 Amp FF type fuse.

There are no coding pins, DIP switches or other form of address coding on the output module. Address coding for all the output modules present in any given system is handled by the backplane.

This output module is used in most North American systems where output requirements. With this module, higher current requirement of manifold zones can be provided by using the output from this card to drive an off-board Solid State Relay (SSR).

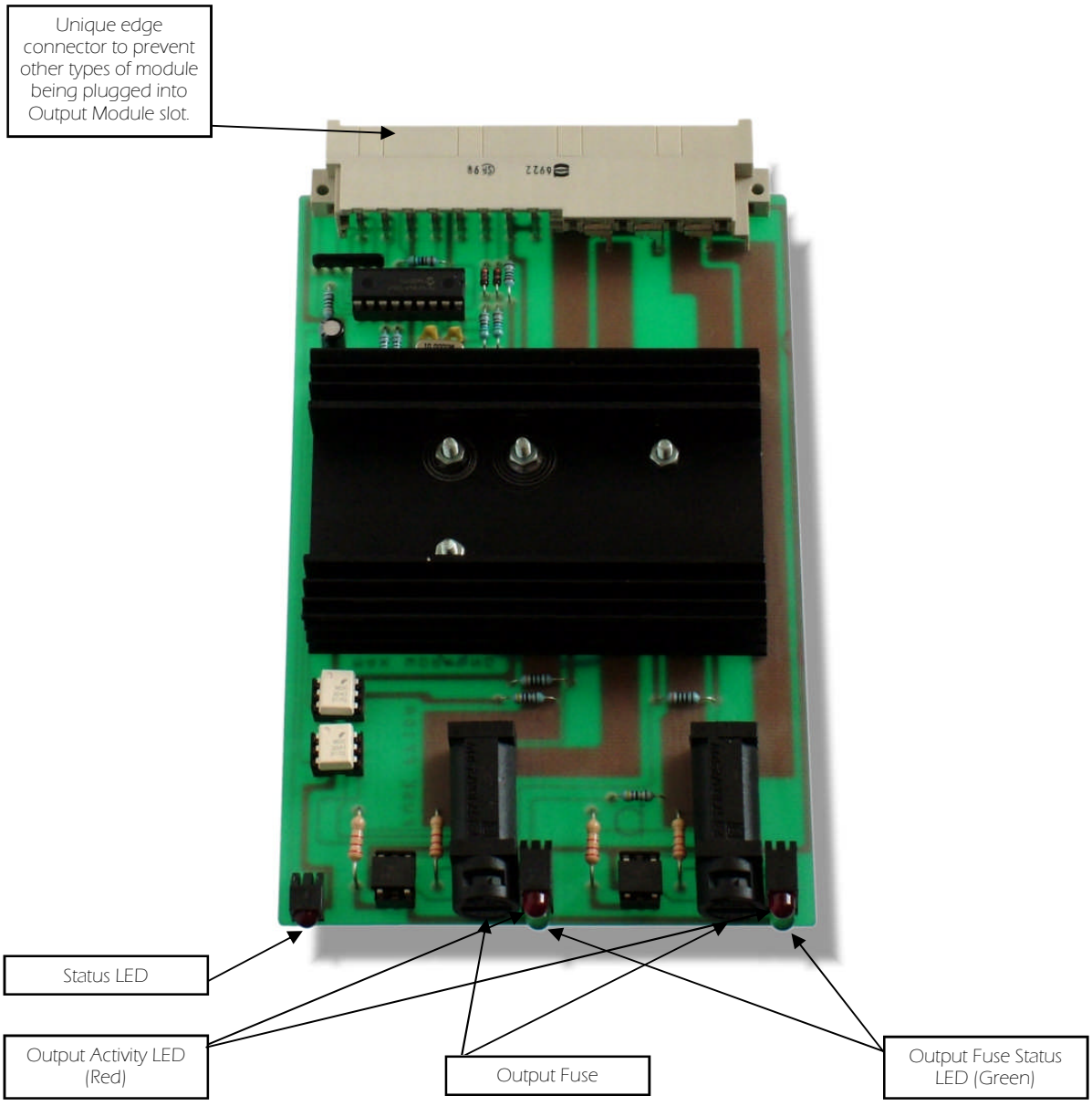


2 ZONE OUTPUT MODULE

The Dual Output module contains two zones rated at 7.5 Amps at 50V ac., suitable for use with low voltage (24V) hot runner systems e.g. Plasthing, Mold Master. Each output zone is fused with Fast Blow FF fuses.

Front panel LED's indicate communication from the CPU module (red LED), output fuse operational for each zone (green LED) and output activity for each zone (red LED).

There are no coding pins, DIP switches or other form of address coding on the output module. Address coding for all the output modules present in any given system is handled by the backplane.



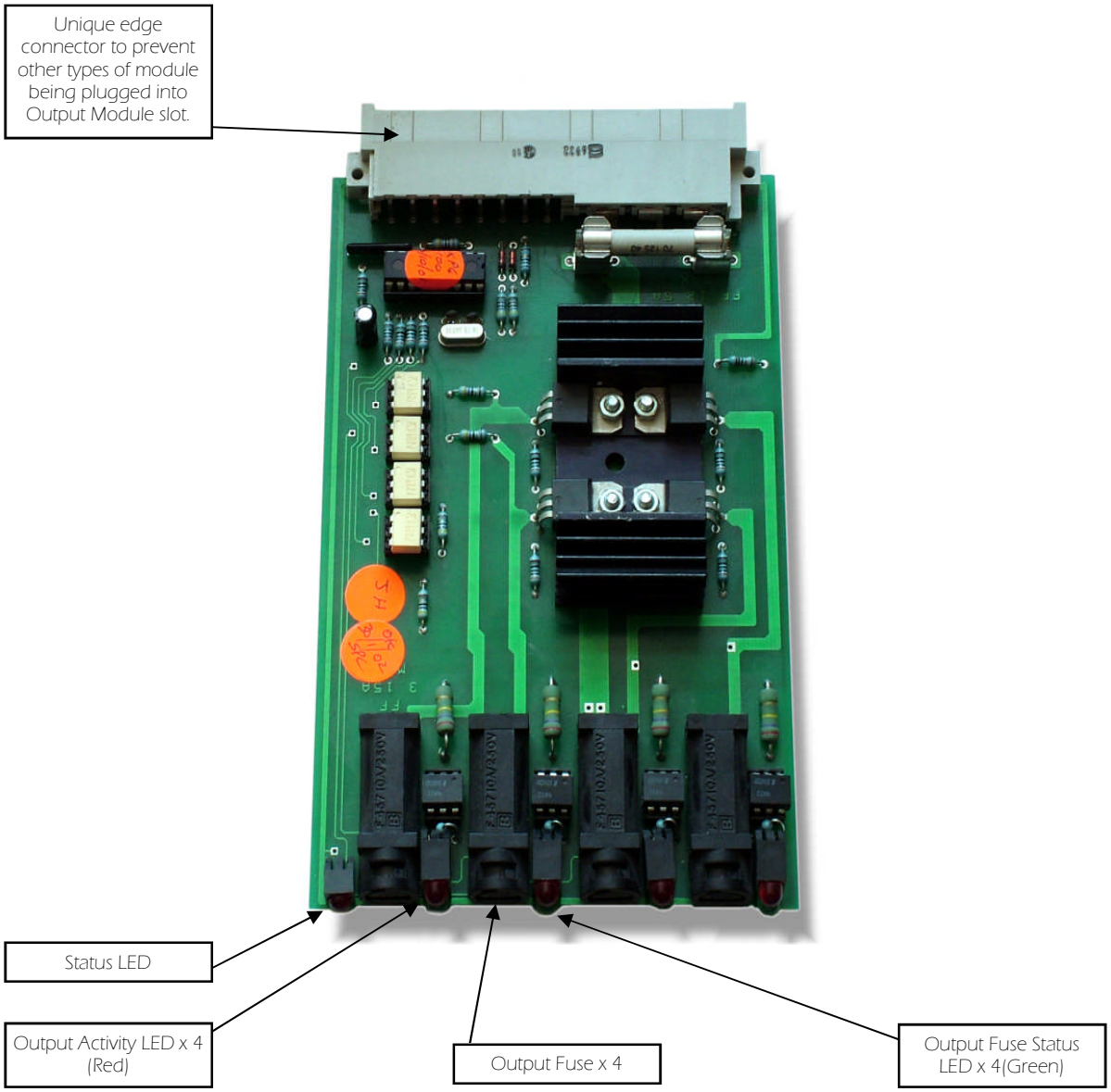
4 ZONE OUTPUT MODULE

The Quad Output module contains four zones rated at 3.15 Amps at 240V ac. Each output zone is fused with Fast Blow FF fuses.

This output module is used in systems where output requirements are very low. With this module, higher current requirement of manifold zones is provided by using the output from this card to drive an off-board Solid State Relay (SSR).

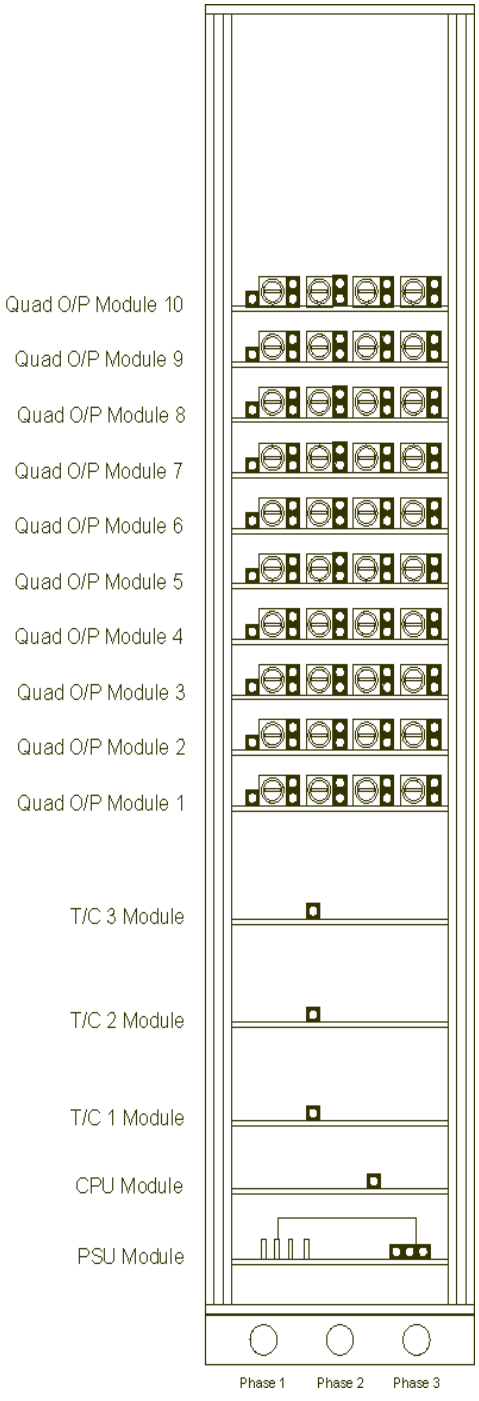
Front panel LED's indicate communication from the CPU module (red LED), output fuse operational for each zone (green LED) and output activity for each zone (red LED).

There are no coding pins, DIP switches or other form of address coding on the output module. Address coding for all the output modules present in any given system is handled by the backplane.



TROUBLESHOOTING

The diagram below shows the LED's on each of the standard modules within the VISIONS 3000 and their normal operation.



Troubleshooting the VISIONS 3000 is best performed by working up from the bottom of the rack.

Check that the power cord is correctly inserted into the power outlet and that the VISIONS 3000 is turned on with the Red / Yellow isolator on the front door of the cabinet.

All three red Phase LED's should be lit. If all three are off, check that there is power at the outlet. If one is not lit, this would tend to indicate a failed phase and is probably a fuse or tripped circuit breaker.

With all three Phase LED's operating, the red LED's on the PSU should , be operating. These indicate. from left to right, +12V, +5V and –12V. If all three LED's are off, check that Neutral is properly connected. The PSU module fuse should also be checked and replaced, if faulty. If one LED is off, this would indicate a fault with the PSU module or an Input / Output card is faulty and pulling the voltage down. To determine which module is at fault, switch the VISIONS 3000 off and slide out all the modules except the PSU. Switch the VISIONS 3000 back on and determine whether the three LED's have lit. If they have not, there is a fault with the PSU module. If the three LED's are on, switch the VISIONS 3000 off and slide back in the CPU module and switch back on the VISIONS 3000. Determine whether the three PSU LED's come on. If not, then it is the CPU module that is faulty. If the LED's come on, switch off the VISIONS 3000 and slide the first Thermocouple module back into the rack. Repeat this process module by module until the card pulling down the voltage is found.

If the PSU module is operating correctly, the display should also be operational. If the display is blank, check that the communications and power leads are correctly connected at the top of the control circuit.

If the PSU module is operational, the CPU red LED should also be on. In STOP mode, this LED will be on continuously. In RUN mode, the LED will blink as the CPU module communicates with the display. If the LED Is on and not blinking while the VISIONS 3000 is in RUN mode, this would indicate a faulty CPU module. This will also be indicated by the TOP BOX being unable to obtain any values and show 'COMMS ERROR' on each zone.

If the CPU module is operational and the front edge red LED is blinking, a sequence will be seen as the input and output modules respond in turn. The sequence will illuminate only one communications led on one module at a time. Therefore, if two communications led are lit at the same time, this would indicate that two modules are communicating on the same address on the VISIONS 3000 backplane, which is incorrect and will result in errors.

If the red LED on the thermocouple modules do not operate, this would indicate an error with the thermocouple module.

On the output modules (2 and 4 zone), the left side red LED indicates communication with the CPU module. The other red LED's flash in proportion to the amount of power being applied by that zone. i.e. as the zone approaches 100%, the LED will be on more than off. T he green LED for each zone indicates that protection fuse for that zone is functional. If the green LED for a given zone is off, this indicates that the fuse has blown and should be replaced with a fuse of the same current and speed rating.

If such a fault condition has occurred, it is recommended that the tool is checked for faulty heaters, ground faults and any other earthing condition that would have caused the output fuse to blow in the first place.

TROUBLESHOOTING

Should a fault occur on your VISIONS 3000 controller, please read the following table to determine whether the fault is listed and repair is possible.

Please note that repair of the VISIONS 3000 controller should be carried out by qualified personnel only and unauthorised tampering of the internal workings of the controller may invalidate the warranty.

FAULT	CAUSE & REMEDY
Output remains on all the time even though screen shows zero output power.	If this is a manifold zone, it is probable that the associated SSR has gone short circuit. All the SSR's are labelled with their zone. Switch the system off and measure the resistance across the output terminals of the relevant SSR. If faulty, replace with a compatible unit.
All the outputs from a given output module do not provide power.	It is probable that the master 12.5A fuse has blown on the module. Check the fuse and replace with an identical type.
The Top Box does not power up.	Check that the controller is connected to 3-phase power, then check that the VISIONS 3000 is turned on and that the 3 phase LED's at the base of the rack are lit. If one of the LED's is out, the associated phase is not operational and the PSU for the Top Box is on this phase. Switch off the VISIONS 3000, rectify the power supply fault and try again. If all the 3 phase LED's are on and the Bottom Box rack appears to be powered up correctly, check that the Top Box is correctly connected to the Bottom Box using the connector on the top. If this is correct, it is possible that the fuse on the PSU within the Top Box has failed. Please notify the factory.
Different results every time Tool Diagnostics is run. Particularly, thermocouple open and swapped errors.	The most likely cause of this problem is a faulty thermocouple module and it should be replaced. If the system has more than one thermocouple module, the faulty module can cause erratic readings from the other modules. Therefore, a systematic approach should be used to determine which module is at fault.

FAULT	CAUSE & REMEDY
Output remains on all the time even though screen shows zero output power.	If this is a manifold zone, it is probable that the associated SSR has gone short circuit. All the SSR's are labelled with their zone. Switch the system off and measure the resistance across the output terminals of the relevant SSR. If faulty, replace with a compatible unit.
All the outputs from a given output module do not provide power.	It is probable that the master 12.5A fuse has blown on the module. Check the fuse and replace with an identical type.
The Top Box does not power up.	Check that the controller is connected to the 3-phase power, then check that the VISIONS 3000 is turned on and that the 3 phase LED's at the base of the rack are lit. If one of the LED's is out, the associated phase is not operational and the PSU for the Top Box is on this phase. Switch off the VISIONS 3000, rectify the supply fault and try again. If all the 3 phase LED's are on and the Bottom Box rack appears to be powered up correctly, check that the Top Box is correctly connected to the Bottom Box using the connector on the top. If this is correct, it is possible that the fuse on the PSU within the Top Box has failed. Please notify the factory.
Different results every time Tool Diagnostics is run. Particularly, thermocouple open and swapped errors.	The most likely cause of this problem is a faulty thermocouple module and it should be replaced. If the system has more than one thermocouple module, the faulty module can cause erratic readings from the other modules. Therefore, a systematic approach should be used to determine which module is at fault.

SOFTWARE RELEASE HISTORY

ITC offer a free upgrade to the latest version of software. However, this offer does not include the cost of any additional hardware that may be necessary, for example, interface card or current sense module.
Please contact the factory for further details.

VERSION	RELEASE DATE	DESCRIPTION
2.140	January 2004	
2.207	October 2004	Added new icons, stop screen logo bitmap. Removed error in graph trend plotting when no measured value. Added leading manifold option. Removed global edit global copy dialogue as it is now redundant. Added coloured setpoints for boost (red) and standby (blue).
2.219	January 2005	Over temperature shutdown can be switch off for cavities and / or manifolds. Coloured setting boxes now implemented in Mode 1 T / C cold alarm implemented for slow / failed zones on start up.
2.305	February 2005	Minor feature release and operational tidy up.
2.309	August 2005	Surface graphs added.
2.311	February 2006	Monitor Mode added. Global Increment / Decrement added.
2.315	March 2006	'Always Show Temperatures' function added.
2.318	August 2006	Toolset overwrite message. Large countdown clocks implemented.
2.330	October 2006	Update to Demag communications. Graphical change to total power display. Improvement to Motion Standby operation.

MAINTENANCE

It is recommended that regular maintenance be carried out on the VISIONS 3000 controller to ensure that it operates without failure. In general, we would recommend a 6 monthly check of all the screws, connectors and filters to ensure that they are tight and undamaged and clean.

Particular attention should be given to the following: -

Calibration:

Due to its design, the VISIONS 3000 has no adjustable components which can affect the calibration of the unit. Either the unit is in calibration, or, due to a fault, it is not.

Therefore, whilst we recommend a 12 monthly check be made to determine that the unit is still within the specified calibration tolerance, if the unit is found to be outside of this tolerance, the unit is faulty and you should contact the factory for further information.

Fuses:

By far the most common fault found within the VISIONS 3000 are caused by the fitting of incorrect fuses, either in rating or failure characteristic. Please ensure that fuses are replaced with the items of the same rating and blow characteristic — refer to the spare parts table below for further information.

Filters:

The VISIONS 3000 is fitted with fan filters to ensure that the introduction of dust and dirt to the inside of the VISIONS 3000 cabinet is kept to a minimum to ensure maximum reliability. Please ensure that the filters are regularly checked to ensure that: they are fitted, that they are clean and that they are of the correct type.

Please note that fitting fan filters of the incorrect material or size substantially reduces the effectiveness of the filter and can lead to overheating, and subsequent failure, of the VISIONS 3000 cabinet. Please refer to the table below for the correct filter.

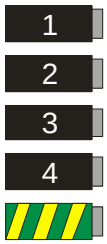
Spare Parts

Description	Part Number
PSU Module	PCB-ASS-PSU
CPU Module	CPU Module
Thermocouple Module	PCB-ASS-TC
Single Zone Output Module	PCB-ASS-OP1
Dual Zone Output Module	PCB-ASS-OP2
Quad Zone Output Module	PCB-ASS-OP4
40A Solid State Relay	SSR-40A
Fan Filter Material	FAN-FILTER-SPARE
PSU, 2A, Time Delay, 20 x 5mm, Glass Fuse	FUSE-2A
Single O/P Module, 15A, Ultra Rapid, Ceramic Fuse	FUSE-15A
Quad O/P Module, 3.15A, Ultra Rapid, 20 x 5mm, Ceramic Fuse	FUSE-3.15A
Quad O/P Module, 12.5A, Ultra Rapid, 20 x 5mm, Ceramic Fuse	FUSE-12.5A
Dual O/P , 10A, Ultra Rapid, 20 x 5mm, Ceramic Fuse	FUSE-10A
Main Cabinet, 16A, HBC Cartridge Fuse, 38 x 10mm, gR Type Fuse	FUSE-16A
Main Cabinet, 25A, HBC Cartridge Fuse, 38 x 10mm, gR Type Fuse	FUSE-25A

WIRING DIAGRAMS

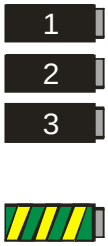
System Power

The VISIONS 3000 is available wired to two main international standards. UK / Europe and US.



3 Phase Power Cord Wiring For 5 Wire 'Y', 415V ac Systems.
Note: The phases are wired using numbers 1—3. Neutral is number 4.

UK/EUROPE 5-WIRE WIRING



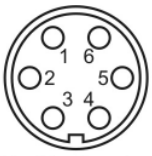
3 Phase Power Cord Wiring For 4 Wire 'Delta' Systems.
Note: The phases are wired using numbers 1—3. Neutral (number 4) is not used and terminated internally for safety.

US 4-WIRE WIRING

'Top Box' Connectors

Communications
Male Connector
(Connector polarity as seen from outside of 'Top Box')

'Top Box' Power
Female Connector



Machine Interface
Male Connector
(Connector polarity as seen from outside of 'Top Box')

Power Connector

Pin Number	Function	Colour
L	Live	Brown
N	Neutral	Blue
E	Earth	Green/Yellow

Communications

Pin Number	Function	Colour	Colour (2)
1	TX	Red	Brown
2	RX	Blue	Blue
3	Common	Green	Yellow/Green
4	Common	Yellow	

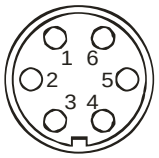
Machine Interface

Pin Number	Function	Colour
1	Run Hold	Red
2	Run Hold	Blue
3	Motion Standby	Green
4	24V	Yellow
5	Not Used	Not Used
6	Not Used	Not Used

WIRING DIAGRAMS

Machine Interface (Standard)

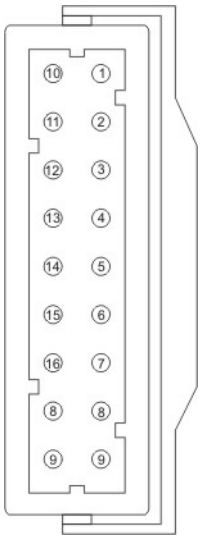
Pin Number	Function	Colour
1	Run Hold off	Red
2	Run Hold off	Blue
3	Motion Standby	Green
4	Motion Standby	Yellow
5	Not Used	Not Used
6	Not Used	Not Used



Machine Interface
Male Connector
(Connector polarity as seen
from outside of 'Top Box')

Machine Interface (Extended)

Pin Number	Function
1	Motion Standby Input
2	Remote Stop Input
3	Remote Run Input
4	Remote Standby Input
5	Remote Boost Input
6	Run Hold off Output
7	Alarm 1 Output
8	Alarm 2 Output
9	Motion Standby Common
10	Remote Stop Common
11	Remote Run Input
12	Remote Standby Input
13	Remote Boost Input
14	Run Hold off Common
15	Alarm 1 Common
16	Alarm 2 Common



Run Hold-off:

This is a signal fed from the VISIONS 3000 to indicate control status. The output is in the form of a volts-free contact that becomes a short circuit when all active zones are 'in-the-green'. i.e. all active zones are within their alarm tolerance and the measured value is shown in green.

This enables the VISIONS 3000 to be connected to the Injection Molding machine such that the VISIONS 3000 will indicate to the machine when all zones are within control tolerance and that it is now safe to commence operation. If any active zone drops in temperature (becomes blue) or increases in temperature (becomes red), the contact will be opened indicating that there is a problem.

If the BOOST function is activated, the cavity zones will temporarily drop below the set-point band as the set-point has been increased by the BOOST function. In order to prevent the Run Hold-off relay opening due to the cavity zones being 'in-the=blue', a delay is enabled. If any of the active cavity zones fails to reach the BOOST set-point within the Alarm Relay Holding Time (setup parameter 28), the Run Hold-off relay will open indicating an error.

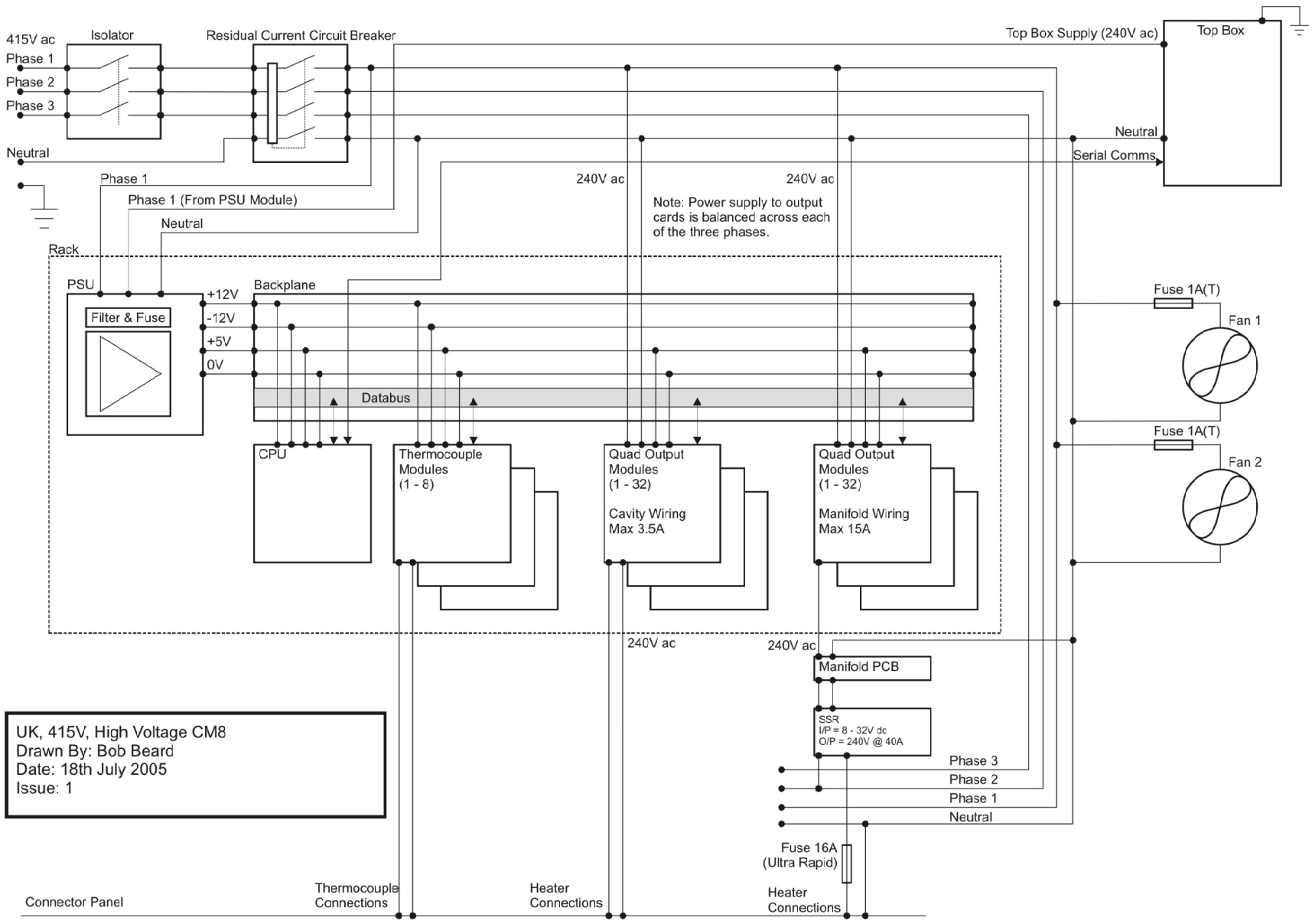
Motion Standby:

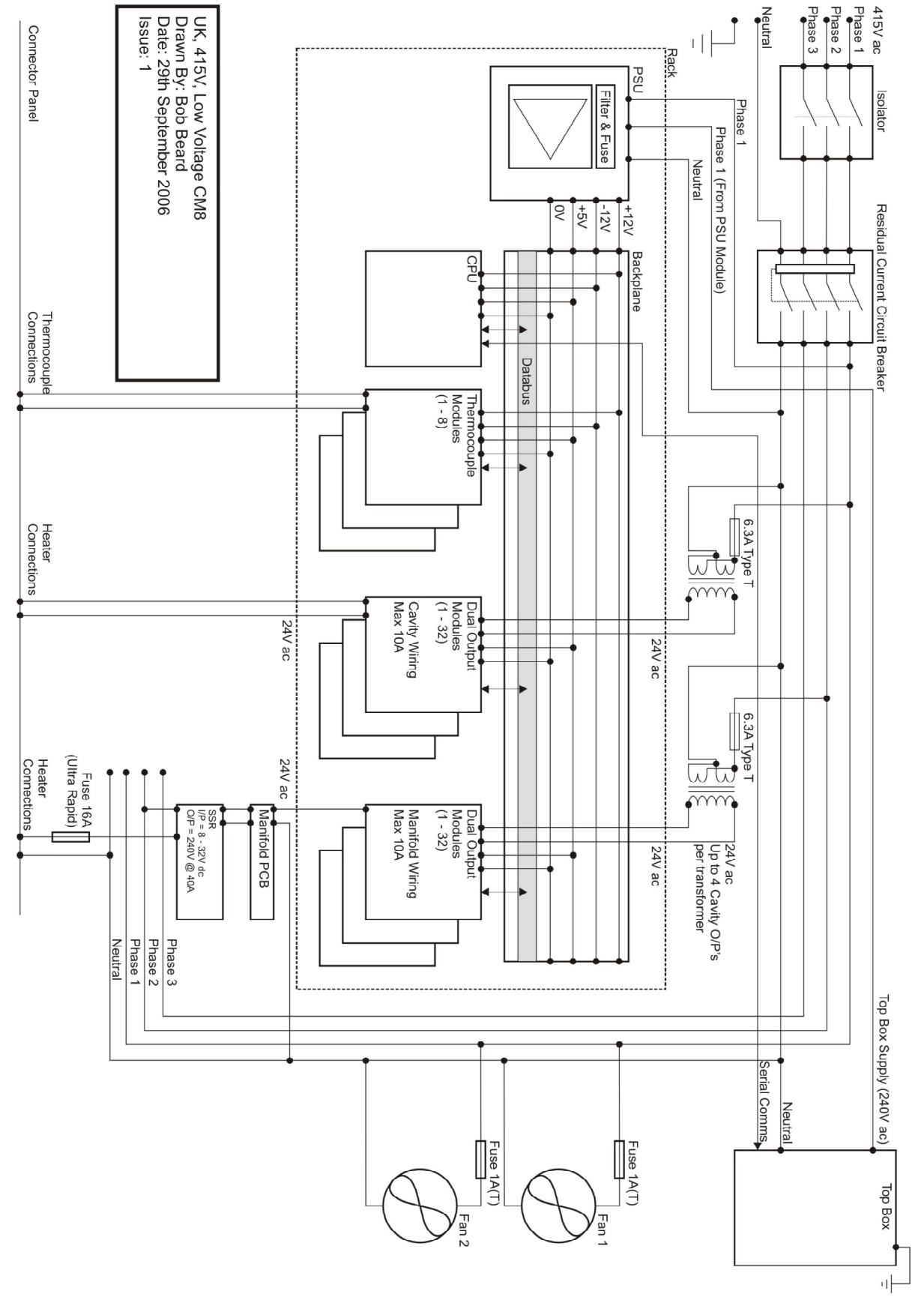
This is a signal received by the VISIONS 3000 from an external source that indicates that the injection molding machine is in production. If the signal fails, the VISIONS 3000 will automatically enter standby mode.

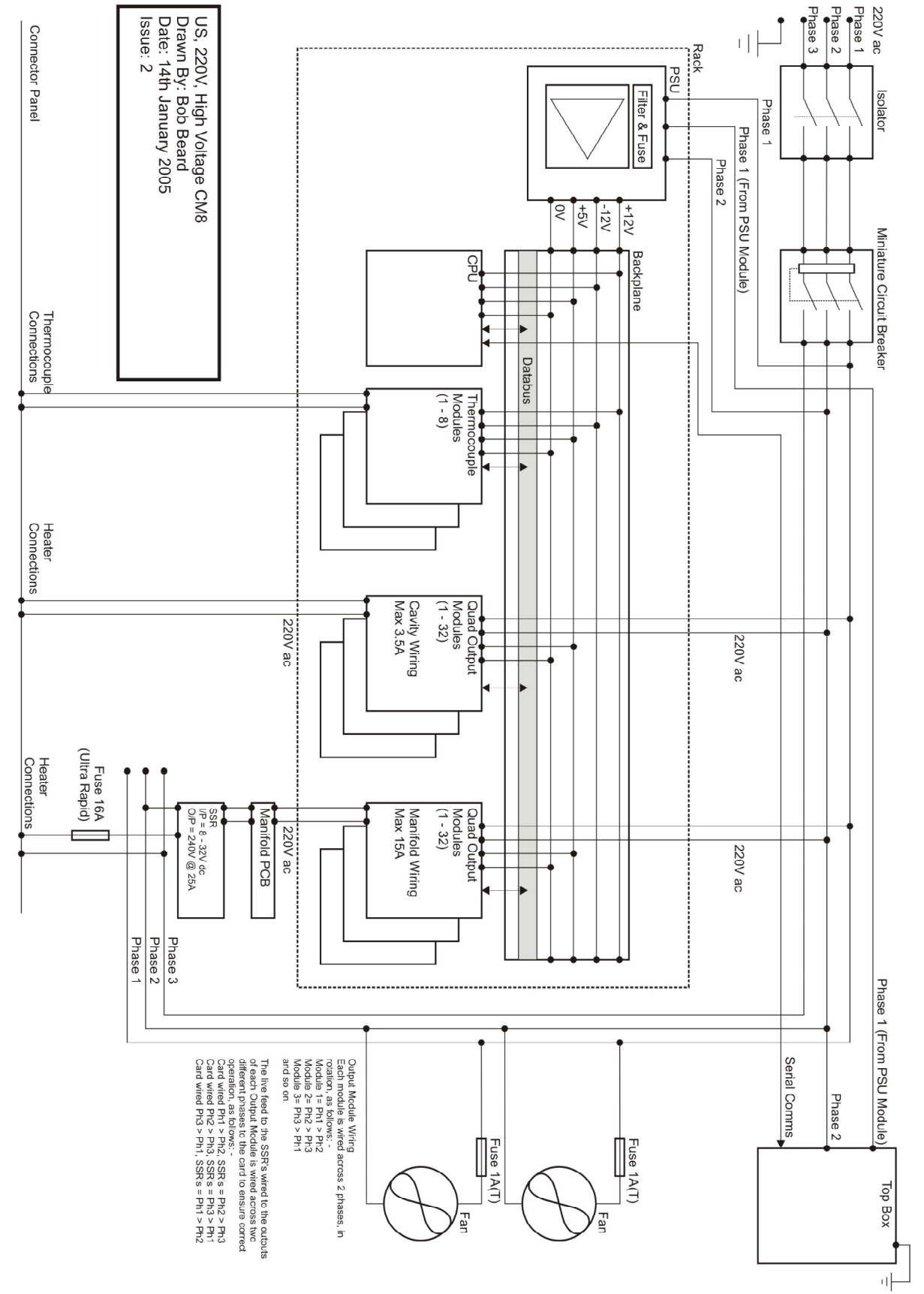
In order that production is correctly monitored an oscillating on/off signal is expected. In this way, the system will fail safe if the cable if broken for any reason.

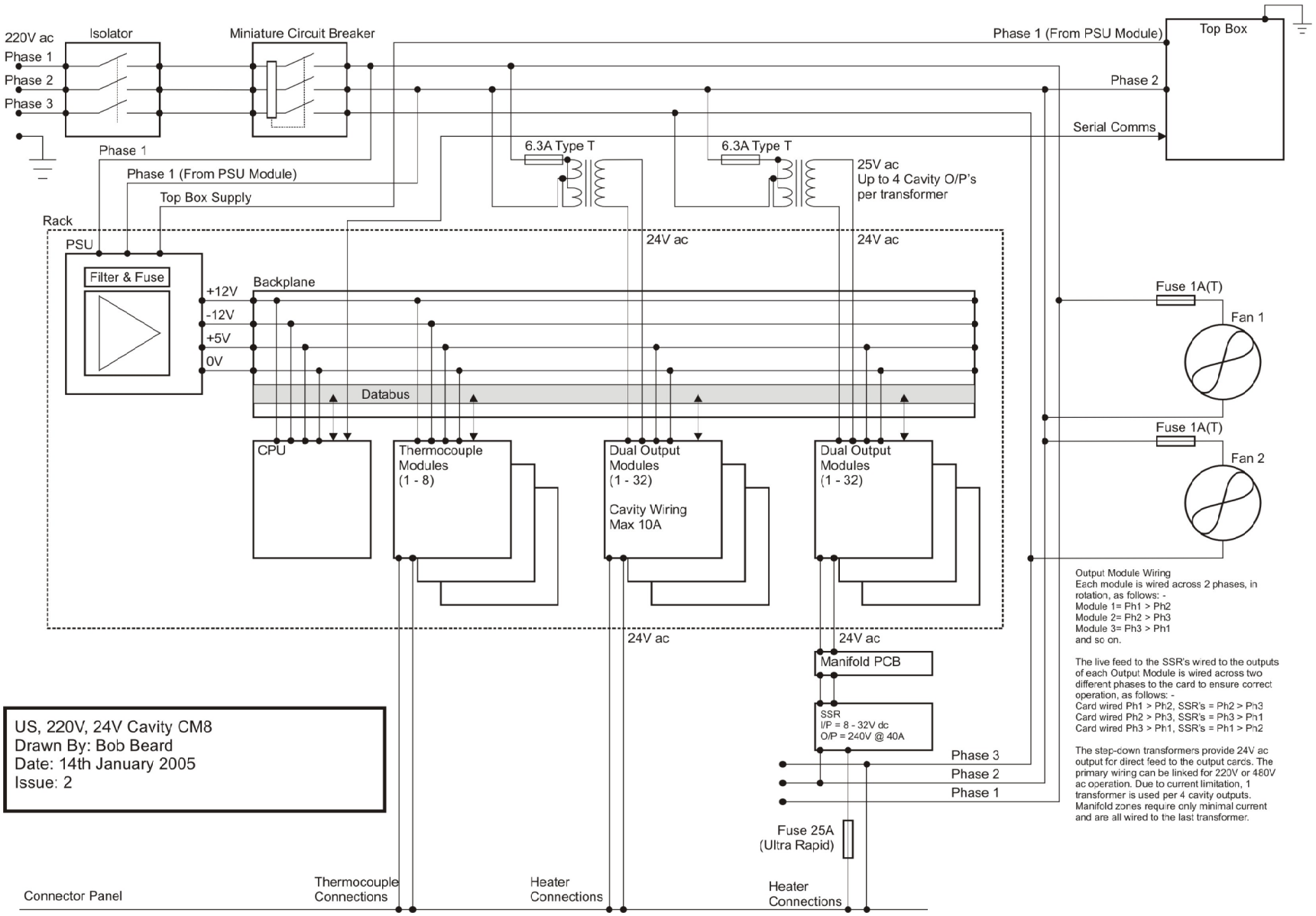
Alarm 1 & 2:

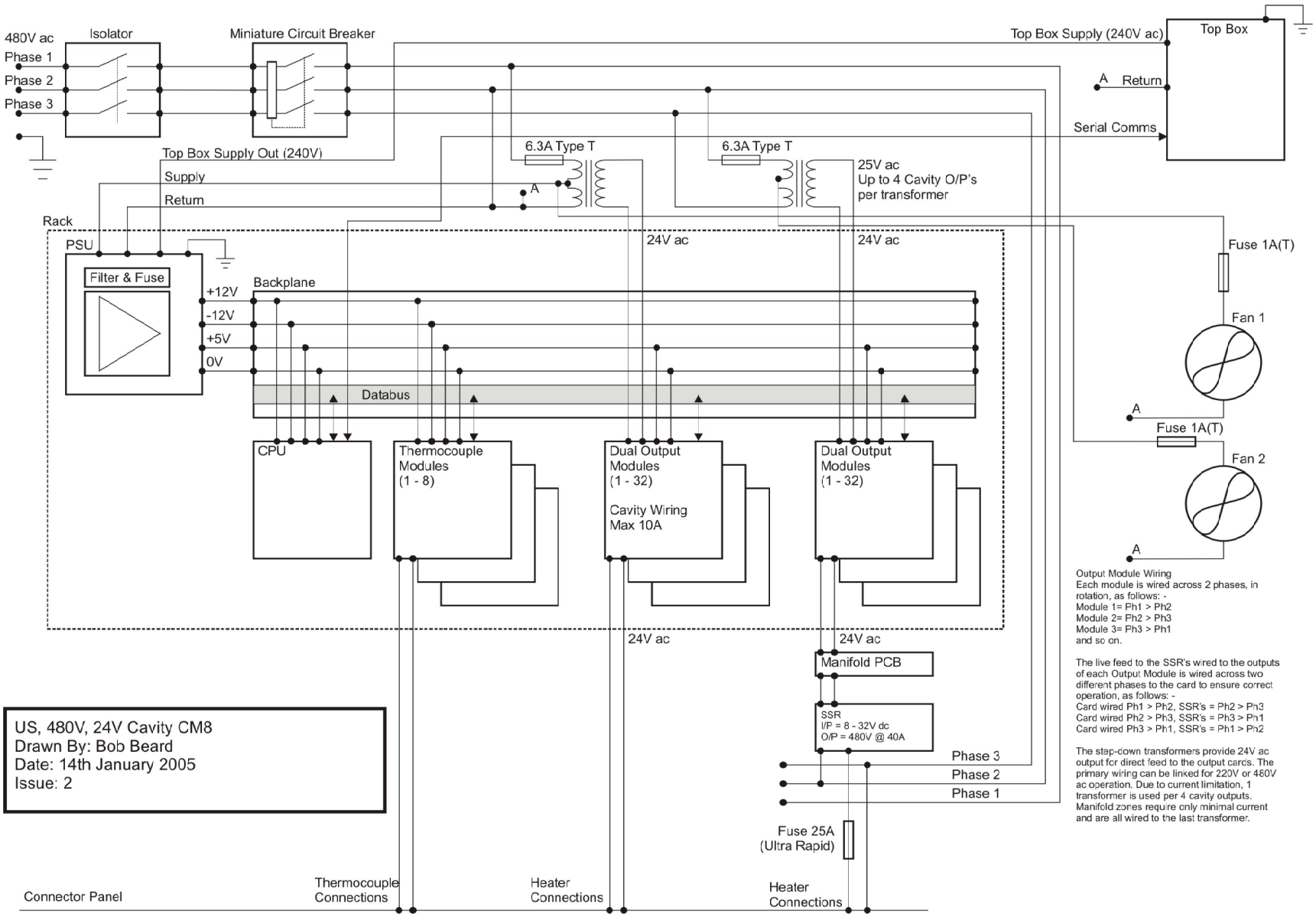
On the extended Machine Interface, two alarm outputs are provided. These are isolated from each other and are both volt-free contacts rated at 2A at 240V. The isolation enables one alarm to be used, for example, to feed a 24V signal to the molding machine to inform it of the controller status, while the other alarm can safely be used to trigger a 240V ac sounder or beacon.


415V ac
Phase 1
Phase 2
Phase 3
Neutral
Isolator
Residual Current Circuit Breaker
Top Box Supply (240V ac)
Top Box
Neutral
Serial Comms
Phase 1
Phase 1 (From PSU Module)
Neutral
240V ac
240V ac
Note: Power supply to output cards is balanced across each of the three phases.
Rack
PSU
Filter & Fuse
+12V
-12V
+5V
0V
Backplane
Databus
CPU
Thermocouple Modules (1 - 8)
Quad Output Modules (1 - 32)
Cavity Wiring Max 3.5A
Quad Output Modules (1 - 32)
Manifold Wiring Max 15A
Fuse 1A(T)
Fan 1
Fuse 1A(T)
Fan 2
240V ac
240V ac
Manifold PCB
SSR
I/P = 8 - 32V dc
O/P = 240V @ 40A
Phase 3
Phase 2
Phase 1
Neutral
Fuse 16A (Ultra Rapid)
Heater Connections
Connector Panel
Thermocouple Connections
Heater Connections
UK, 415V, High Voltage CM8
Drawn By: Bob Beard
Date: 18th July 2005
Issue: 1


UK, 415V, Low Voltage CM8
Drawn By: Bob Beard
Date: 29th September 2006
Issue: 1
415V ac
Phase 1
Phase 2
Phase 3
Neutral
Isolator
Residual Current Circuit Breaker
Rack
PSU
Filter & Fuse
Phase 1
Phase 1 (From PSU Module)
Neutral
+12V
-12V
+5V
0V
Backplane
Databus
CPU
Thermocouple Modules (1 - 8)
Thermocouple Connections
Connector Panel
Heater Connections
Dual Output Modules (1 - 32)
Cavity Wiring Max 10A
24V ac
6.3A Type T
24V ac Up to 4 Cavity O/P's per transformer
Manifold Wiring Max 10A
Manifold PCB
SSR I/P = 8 - 32V dc O/P = 240V @ 40A
Fuse 16A (Ultra Rapid)
Heater Connections
Phase 3
Phase 2
Phase 1
Neutral
Top Box Supply (240V ac)
Neutral
Serial Comms
Top Box
Fuse 1A(T)
Fan 1
Fuse 1A(T)
Fan 2


US, 220V, High Voltage CM8
Drawn By: Bob Beard
Date: 14th January 2005
Issue: 2
220V ac
Phase 1
Phase 2
Phase 3
Isolator
Miniature Circuit Breaker
Phase 1
Phase 1 (From PSU Module)
Phase 2
Rack
PSU
Filter & Fuse
+12V
-12V
+5V
0V
Backplane
CPU
Databus
Thermocouple Modules (1 - 8)
Quad Output Modules (1 - 32)
Cavity Wiring Max 3.5A
Quad Output Modules (1 - 32)
Manifold Wiring Max 15A
220V ac
220V ac
220V ac
Thermocouple Connections
Heater Connections
Heater Connections
Connector Panel
Manifold PCB
SSR
I/P = 8 - 32V dc
O/P = 240V @ 25A
Fuse 16A (Ultra Rapid)
Phase 1
Phase 2
Phase 3
Output Module Wiring
Each module is wired across 2 phases, in rotation, as follows: -
Module 1= Ph1 > Ph2
Module 2= Ph2 > Ph3
Module 3= Ph3 > Ph1
and so on.
The live feed to the SSR's wired to the outputs of each Output Module is wired across two different phases to the card to ensure correct operation, as follows: -
Card wired Ph1 > Ph2, SSR's = Ph2 > Ph3
Card wired Ph2 > Ph3, SSR's = Ph3 > Ph1
Card wired Ph3 > Ph1, SSR's = Ph1 > Ph2
Fuse 1A(T)
Fan
Fuse 1A(T)
Fan
Phase 1 (From PSU Module)
Phase 2
Serial Comms
Top Box


220V ac
Phase 1
Phase 2
Phase 3
Isolator
Miniature Circuit Breaker
Phase 1 (From PSU Module)
Top Box
Phase 2
Serial Comms
Phase 1
Phase 1 (From PSU Module)
Top Box Supply
6.3A Type T
6.3A Type T
25V ac
Up to 4 Cavity O/P's
per transformer
Rack
PSU
24V ac
24V ac
Filter & Fuse
+12V
-12V
+5V
0V
Backplane
Databus
Fuse 1A(T)
Fan 1
Fuse 1A(T)
Fan 2
CPU
Thermocouple
Modules
(1 - 8)
Dual Output
Modules
(1 - 32)
Cavity Wiring
Max 10A
Dual Output
Modules
(1 - 32)
24V ac
24V ac
Manifold PCB
SSR
I/P = 8 - 32V dc
O/P = 240V @ 40A
Phase 3
Phase 2
Phase 1
Fuse 25A
(Ultra Rapid)
Connector Panel
Thermocouple
Connections
Heater
Connections
Heater
Connections
US, 220V, 24V Cavity CM8
Drawn By: Bob Beard
Date: 14th January 2005
Issue: 2
Output Module Wiring
Each module is wired across 2 phases, in rotation, as follows: -
Module 1= Ph1 > Ph2
Module 2= Ph2 > Ph3
Module 3= Ph3 > Ph1
and so on.
The live feed to the SSR's wired to the outputs of each Output Module is wired across two different phases to the card to ensure correct operation, as follows: -
Card wired Ph1 > Ph2, SSR's = Ph2 > Ph3
Card wired Ph2 > Ph3, SSR's = Ph3 > Ph1
Card wired Ph3 > Ph1, SSR's = Ph1 > Ph2
The step-down transformers provide 24V ac output for direct feed to the output cards. The primary wiring can be linked for 220V or 480V ac operation. Due to current limitation, 1 transformer is used per 4 cavity outputs. Manifold zones require only minimal current and are all wired to the last transformer.


480V ac
Phase 1
Phase 2
Phase 3
Isolator
Miniature Circuit Breaker
Top Box Supply (240V ac)
Top Box
A
Return
Serial Comms
Top Box Supply Out (240V)
Supply
Return
6.3A Type T
6.3A Type T
25V ac
Up to 4 Cavity O/P's
per transformer
Rack
PSU
Filter & Fuse
+12V
-12V
+5V
0V
Backplane
Databus
24V ac
24V ac
Fuse 1A(T)
Fan 1
Fuse 1A(T)
Fan 2
CPU
Thermocouple
Modules
(1 - 8)
Dual Output
Modules
(1 - 32)
Cavity Wiring
Max 10A
Dual Output
Modules
(1 - 32)
24V ac
24V ac
Manifold PCB
SSR
I/P = 8 - 32V dc
O/P = 480V @ 40A
Phase 3
Phase 2
Phase 1
Fuse 25A
(Ultra Rapid)
Connector Panel
Thermocouple
Connections
Heater
Connections
Heater
Connections
US, 480V, 24V Cavity CM8
Drawn By: Bob Beard
Date: 14th January 2005
Issue: 2
Output Module Wiring
Each module is wired across 2 phases, in rotation, as follows: -
Module 1= Ph1 > Ph2
Module 2= Ph2 > Ph3
Module 3= Ph3 > Ph1
and so on.
The live feed to the SSR's wired to the outputs of each Output Module is wired across two different phases to the card to ensure correct operation, as follows: -
Card wired Ph1 > Ph2, SSR's = Ph2 > Ph3
Card wired Ph2 > Ph3, SSR's = Ph3 > Ph1
Card wired Ph3 > Ph1, SSR's = Ph1 > Ph2
The step-down transformers provide 24V ac output for direct feed to the output cards. The primary wiring can be linked for 220V or 480V ac operation. Due to current limitation, 1 transformer is used per 4 cavity outputs. Manifold zones require only minimal current and are all wired to the last transformer.

TECHNICAL SPECIFICATION

Size	Size 1: 24" x 49" x 18" inches (w x h x d) (609 x 1244 x 457 mm) Size 2: 24" x 55" x 18" inches (w x h x d) (609 x 1397 x 457 mm) Size 3: 24" x 61" x 18" inches (w x h x d) (609 x 1549 x 457 mm) Size 4: 24" x 67" x 24" inches (w x h x d) (609 x 1701 x 609 mm) Size 5: 24" x 73" x 24" inches (w x h x d) (609 x 1815 x 609 mm) Size 6: 24" x 79" x 24" inches (w x h x d) (609 x 2006 x 609 mm) All sizes are approximate and given for indication only.
Weight	Size 1: 220 lbs. (120 kG) Size 2: 240 lbs. (130 kG) Size 3: 260 lbs. (141 kG) Size 4: 285 lbs. (155 kG) Size 5: 310 lbs. (169 kG) Size 6: 345 lbs. (188 kG) All weights are approximate and will depend on the specification of the system.
Cabinet Material	Enamel coated 14Ga. mild steel
Cabinet IP Rating	IP54. Solids Protection = 5 (protected against dust). Liquid Protection = 4 (Proected against sprays from all directions)
Number Of Zones	Size 1: 1 to 64 Zones (using single zone 15 A output cards) Size 2: 64 to 80 Zones (using single zone 15 A output cards) Size 3: 81 to 96 Zones (using single zone 15 A output cards) Size 4: 97 tp 112 Zones (using single zone 15 A output cards) Size 5: 113 to 128 Zones (using single zone 15 A output cards) Size 6: 129 to 144 Zones (using single zone 15 A output cards) • The maximum number of zones shown is for the identified cabinet size and requires the use of 1 zone / 16a output cards. • The use of 4 zone / 3A output cards will increase the maximum number of zones for any given cabinet size, as 1 output card will be used for 4 zones (requiring 1 rack slots) in the place of one output card per zone . • System has a software limit of 256 zones.
Operating Temperature	32° to 104°F (0° to 40°C)
Storage Temperature	-4° to 140°F (-20°C to 60°C)
Humidity	0 to 95% RH, non-condensing
Input Power	• 3-Ph + N + E (5 wire, 3 phases, neutral & earth) 380/415 VAC • 3-Ph + E (4 wire, 3phase and earth) 200/240 VAC • Other voltages require an input supply transformer
Frequency Range	50/60 Hz, +/- 5%
System Power Isolation	• Front door mounted isolator rated for system. • Front door interlock prevents door opening without isolating power from system first.
System Over Current Protection	• RCCB (Residual Current Circuit Breaker) fitted to system, rated according to system specification. • MCB (Miniature Circuit Breaker) fitted to US systems, rated according to system specification.
Module Mode Indication	Red LED indication of module status: Stop, Run, Communicating

TECHNICAL SPECIFICATION

Module Protection	• All modules keyed to prevent insertion into incorrect slot. • All modules capable of being removed and replaced while under power. • All modules are fully fuse protected as follows: • PSU Module - Power input & output • Thermocouple Module - All inputs protected for over voltage • 1 Zone Output Module - Both legs of the output individually fused. Card protected against over current. • 2 Zone Output Module - All outputs individually protected. Card protected against over current. • 4 Zone Output Module - All outputs individually protected. Card protected against over current.
Measurement Accuracy	• ±0.5°C (1.0°F) for the range Control: ± 0.5% • Updated every 100mS for fast response to fast loads. • Calibration: < 0.2% Of Full Scale 0°C to 500°C (32°C to 500°C)
Calibration	Standard (using a NIST traceable thermocouple source)
Cold Junction Error	±0.5°C (1.0°F) @ 25°C (77°C) typically
Temperature Stability	±0.5°C (1.0°F) / °C (°F) from ambient
Control Stability	±1 digit - under steady state conditions
Zone Setting	• Zones are split into 2 groups, Cavity and Manifold, to enable optimum control of each type of load. • Each zone can be uniquely identified using a 4 digit label and can have a unique setpoint. • Each zone can be set to operate in automatic mode (close loop using a thermocouple input), manual mode (open loop requiring the operator to enter the output power) or link mode (output power linked to that of another zone). • Cavity Zones: Separate PID setting to Manifold. Affected by Boost function. • Manifold Zones: Separate PID setting to Cavities. Not affected by Boost function.
Tuning Method	• Full 3-Term, P I D control for stable control of temperature over a wide range of loads. • 5 preset values for Cavity and Manifold zones • Password protected user adjustable values allow for user adjustment to the PID settings to enable stable control of the most unusual or unstable loads.
Thermocouple Inputs	• Grounded or Ungrounded Type J (Fe/CuNi) or Type K (NiCr/NiAL), software selectable. • Type J standard (Others optional) • Sensor break and reverse detection with on-screen error display and user-selectable alarm activation. • Upscale failure mode automatically turns off output power on thermocouple failure.
Thermocouple Input Protection	Over voltage protection on all thermocouple inputs—See module protection
Thermocouple Isolation	Zone to Zone
Measurement Display	Paged display on LCD screen of zone information for all zones including: measured value, setpoint, output power, input or output error.
Display Units	Degrees C or F, user selectable with automatic scaling between units

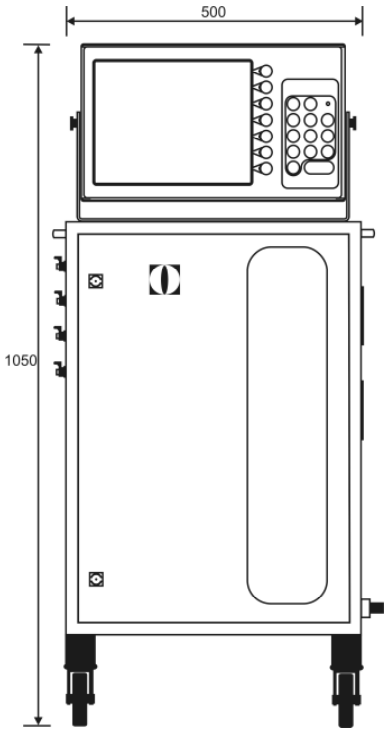
TECHNICAL SPECIFICATION

Heater Outputs	• Zero cross over ensures minimal electrical noise generation for increased temperature measurement accuracy. • Proportional power switching reduces temperature oscillation in the load, improving control accuracy and heater life. • 220 - 240V ac (Low voltage outputs available on request) • Cavity zones rated at 3.5 to 16 Amps depending on output card. • Manifold zones rated at 16 Amps
Heater Output Protection	• Cavity Zones: 3.15A FF Fuse in edge mounted fuse holder • Manifold Zones: 16A FF Fuse in DIN rail mounted fuse holder • 16A Output Cards: 16A FF Fuse on each output leg (Dual fusing for US)
Heater Output Indication	Red LED indication of output power for each zone. LED flashes in proportion to power applied to output. Off = 0%. On = 100%.
Heater Fuse Failure Indication	Green LED indication of operational fuse for each zone. On = Fuse operational. Off = Fuse failure.
Output Display	Display on LCD of output percentage/power/current — User selectable
Load Display	Display on LCD of load resistance, power, current — User selectable
Display Type	800 x 600 (SVGA), Full Colour, 12" LCD Display with backlight
Display Protection	LCD protected by toughened glass to prevent damage during industrial operation.
Display Backlight	Automatic backlight switch off to increase lamp life. Pressing any button will reactivate lamp.
Keypad Type	Membrane over switched keypad for maximum reliability. Keypad switches can be easily replaced
Soft Start	• Manual Bake out with reduced power for 30 minutes. Manual cancel available. • Automatic Ramp of power on selecting RUN mode. Increases reliability of element heaters and reduces power required to bring tool to temperature.
Boost	User selectable boost of cavity zones with settable time, temperature/power increase.
Standby	User selectable standby of complete system with settable temperature/power
Security	User settable passwords with three levels of access and automatic timed lockout
Graphs	• 2D display of up to 8 selected zones with user adjustable scales • 3D display of up to 64 selected zones with user adjustable scales and selected zones
Date Storage	• All settings stored in Toolsets. • Storage of over 100 toolsets with user selectable names. • Toolsets stored on memory chip to increase speed and reliability.
Tool Connection Conduits	• Wired to customer specification and supplied using high visibility, fireproof, chemical resistance outer casing. • Cable glands are fully 360 degree swivel action and have zero pull out glands
Calibration Period	Recommended every 12 Months
Warranty	2 Years

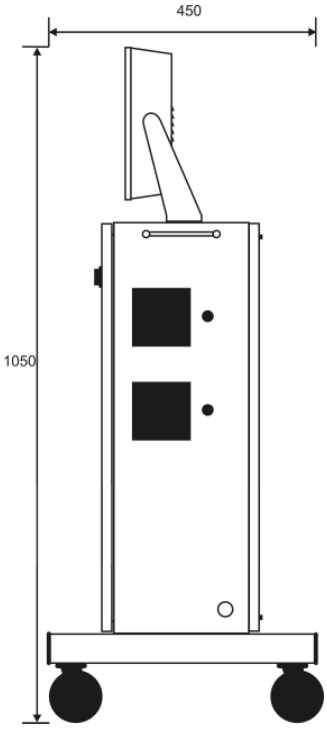
CABINET SIZES

700 Series Cabinet

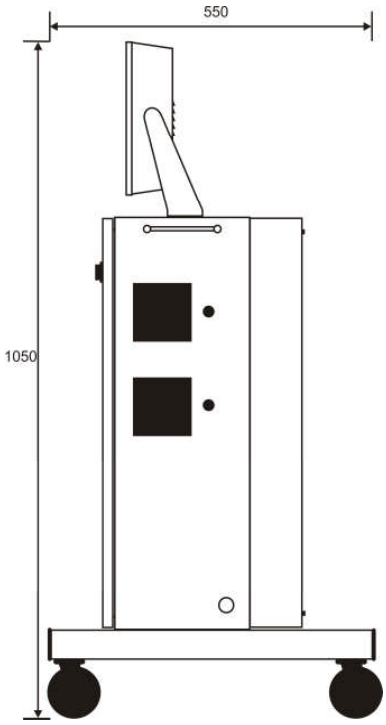
Front View



Side View—Standard Back

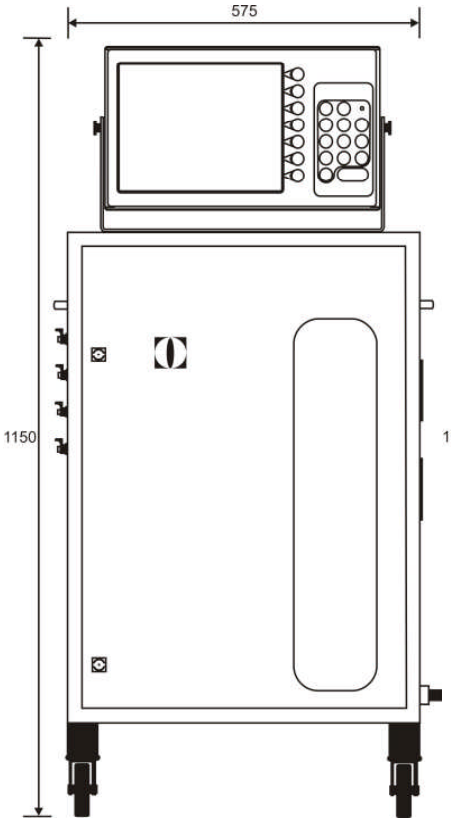


Side View—Deep Back
(As used on low voltage systems)

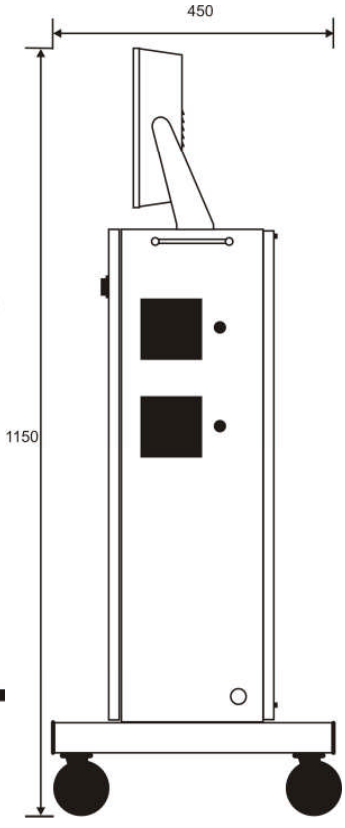


800 Series Cabinet

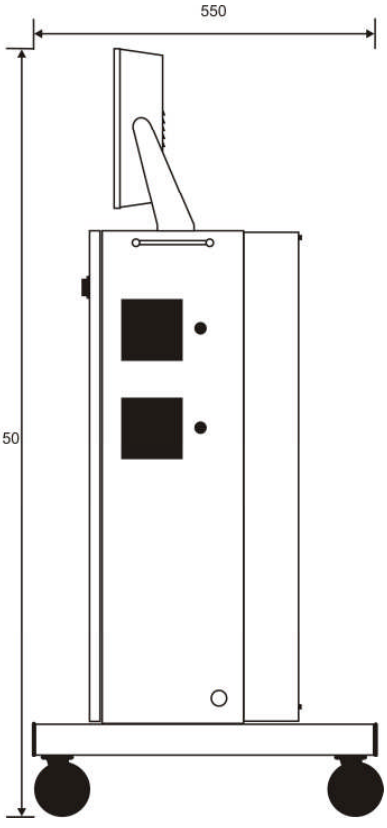
Front View



Side View—Standard Back

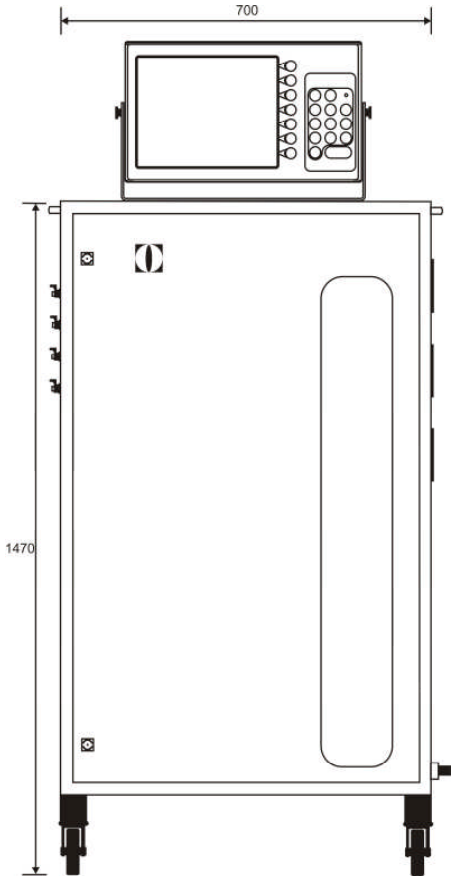


Side View—Deep Back

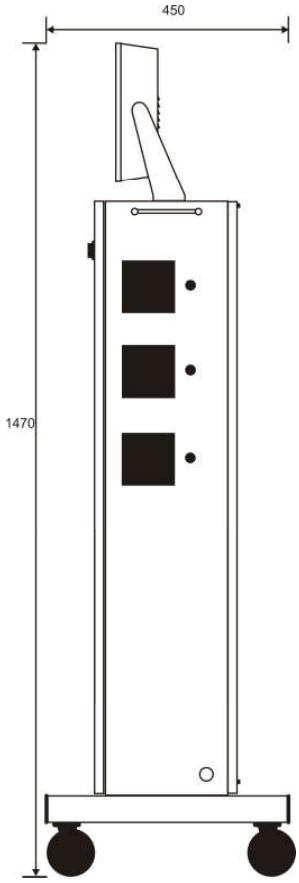


1120 Series Cabinet

Front View



Side View—Standard Back



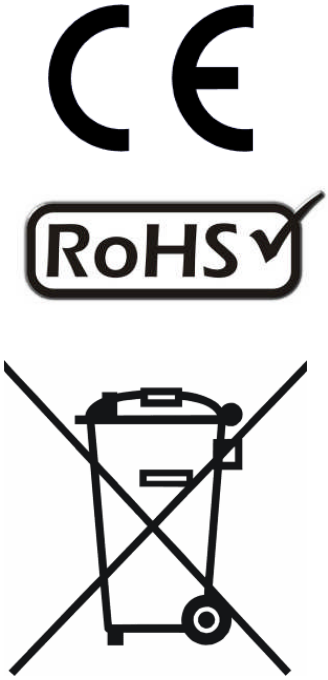
COMPLIANCES

All ITC products conform to the requirements of the following European Directives:

- 89/223/EEC (EMC)
- 73/23/EEC (LVD)

All ITC products are RoHS compliant (2002/95/EC).

In compliance with the WEEE directive, ITC offers a free of charge pick up and recycling service for all redundant ITC products.



INTERNATIONAL TEMPERATURE CONTOL, INC.
2415 E. Huron Rd. P.O. 805 Au Gres, MI 48703 USA
Tel: (989) 876-8075 Fax: (989) 876-6640
Web: www.itc-controls.com
E-mail: sales@itc-controls.com

DOC002-V8-0407