VISIONS 3000 OPERATING MANUAL

Valid For Software (Linux Version: 2.52a)
Configured to Accept *Waterflo* Option

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Affective Date = August 1, 2014

This manual is designed to maximize the benefits and features of the VISIONS 3000 version 2.12a; 2.52a

GENERAL SAFETY

Safety and Maintenance procedures of this unit remain the sole responsibility of the operating company and their employees. Failure to comply with proper safety procedures can result in serious injury or death.

General Safety:

- Hot runner systems include electrical elements, molten plastic at elevated pressure and high temperatures. To protect the operator in the work place, ensure that all safety devices are in stalled on the machine, and that safety procedures are in place and followed.
- Be aware of all warning labels attached to the mold and machine.
- Refer to the machine & auxiliary user manuals for safety procedures not included here in the hot runner specific manual.

System Start-up:

- Only licensed electricians should install and maintain the system.
- Only persons with a through knowledge of the equipment should operate the system.
- Read all instructions prior to connection power to the system and turning it on.
- Use only the specified input supply voltage indicated on the identification label.
- Improper voltage or grounding can result in electrical shock. Use only with proper voltage and a proper earth ground.

System Operation:

- Ensure that extreme caution is practiced in the operation and maintenance of the hot runner system, the injection molding machine, and all other equipment in the area.
- There must be a proper ground present between the mold and the temperature control system or damage may occur to the temperature control system, thermocouples, etc. Ensure there is solid contact between the nozzle, mold and machine platens to establish a path to ground.
- Do not operate the equipment with unconfined long hair, loose clothing or jewelry, including, neckties, etc. These may get caught by moving mechanisms and can cause death or serious injury.
- Never disable or bypass a safety device.

- Do not operate equipment with covers or panels removed or open.
- It is highly recommended that all operators wear face shields, use heat resistant gloves when working around the feed throat, purging the machine or cleaning the gates of the mold.
- Check frequently for possible oil leaks/water leaks. Water and or hydraulic fluid on the mold may be in close proximity to electrical connections and equipment. Water leakage may cause an electrical short circuit. Hydraulic fluid leakage may cause a fire hazard. Always keep water and /or hydraulic hoses and fittings in good condition to avoid leaks.
- Remove purging's from the machine immediately.

System Operation:

- Unplug and lockout the controller before performing any maintenance work.
- Electric power must be shut off prior to installing or removing any cables.
- All maintenance should only be performed by properly trained personnel, and based on local law and regulations.

- Use only original fuses with the prescribed amperage
- Electrical equipment may not be grounded when they are moved from their normal operating state. Ensure proper grounding of all electrical items before performing any type of maintenance to avoid potential risk of electrical shock.

Operating the Mold

- ◊ Check the condition of all coolant, hydraulic and electrical cables for wear or damage.
- ◊ Ensure that they will not interfere with moving parts.
- ◊ The cables must be of sufficient length so that they will not be under any strain or become pinched when the mold opens or closes.
- ◊ Do not connect temperature sensors to mold power cables. Doing so will damage the sensor, and can cause fire, severe injury.

Heater Element

- ◊ Always replace pinched or damaged heater wires.
- ◊ To maximize heater life, proper control of power to the heater must be maintained using ITC's Advanced Thermal Control Technology.
- ◊ Temperature must be controlled and within safe operating limits. This should be only done by controlling each heating element separately.
- ◊ Moisture must be evacuated from the heaters using ITC's soft-start feature.
- ◊ Always operate the system using correctly installed thermocouples.
- ◊ Operating the system in "Manual" mode for long periods of time can damage heaters. Use only minimum heat to avoid overheating and damage.
- ◊ When controlling more than one heater from a single thermocouple, make sure the heaters are of the same type, size and style and that they are controlling cavities with similar characteristics.

Thermocouple Sensor

- ◊ Always replace pinched or damaged thermocouple wires.
- ◊ To maximize thermocouple sensitivity make sure wire leads are of the same metal as the thermocouple, that the leads are as short as possible, with as few junction points between as possible.
- ◊ Ensure that temperature controller is set for the type of thermocouple being used.
- ◊ Operating the system in "Manual" mode for long periods of time can damage heaters. Use only minimum heat to avoid overheating and damage.
- ◊ When controlling more than one heater from a single thermocouple, make sure the heaters are the same type and size and that they are controlling cavities with similar characteristics.

Grounding

- ◊ Never operate the Hot Runner Control with out it being grounded
- ◊ Verify by use of a multimeter between the temperature control ground and the manifold ground. Measured resistance should be zero Ω.
- ◊ Heaters may accumulate moisture which could reduce the resistance value to between 100kΩ and 10MΩ.

ATTENTION! RISK OF ELECTRIC SHOCK.

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

Always user Lock-Out procedures prior to working on unit.

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, 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 2.12a and 2.52a (WaterFlo Monitor) series of Top Box software. Much of this manual will also be applicable to other versions of the software. If you using a previous version not all functions and features will be available nor operate in the same manner.

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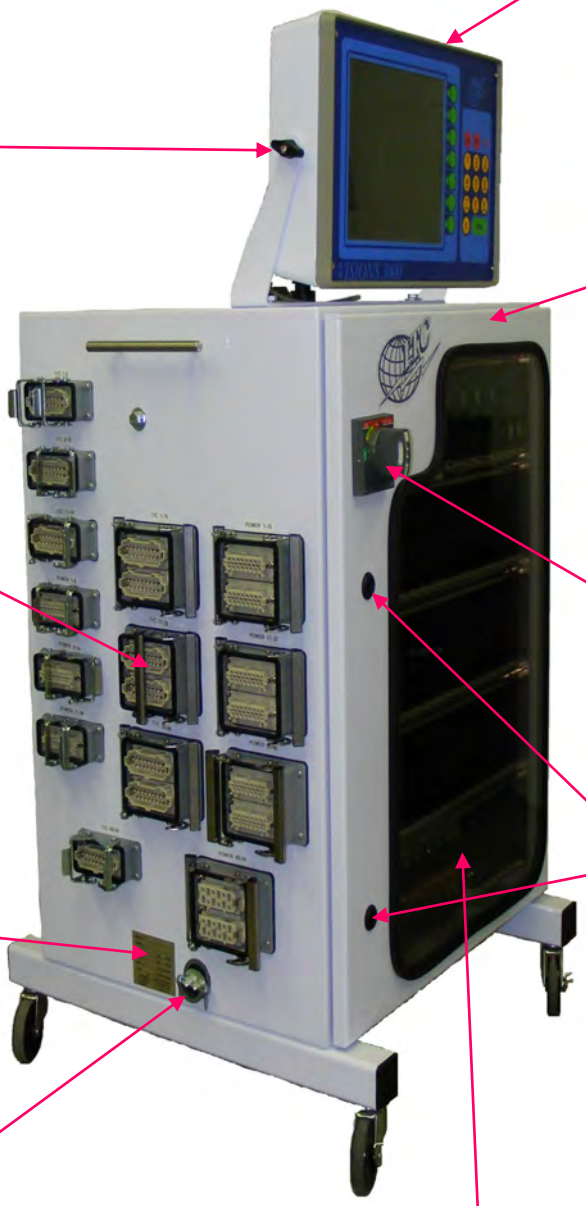
TABLE OF CONTENTS:

SYSTEM IDENTIFICATION



Top Box

Top Box Viewing Angle Adjustment

Front Access Door

Warning:
Door to be opened by authorised personnel only. The door can only be opened when the isolator breaker switch is turned off to prevent the door being opened without the power being turned off.

Tool Cable Power & Thermocouple Connectors.

Note: The actual configuration of these connectors will depend on the customers specification

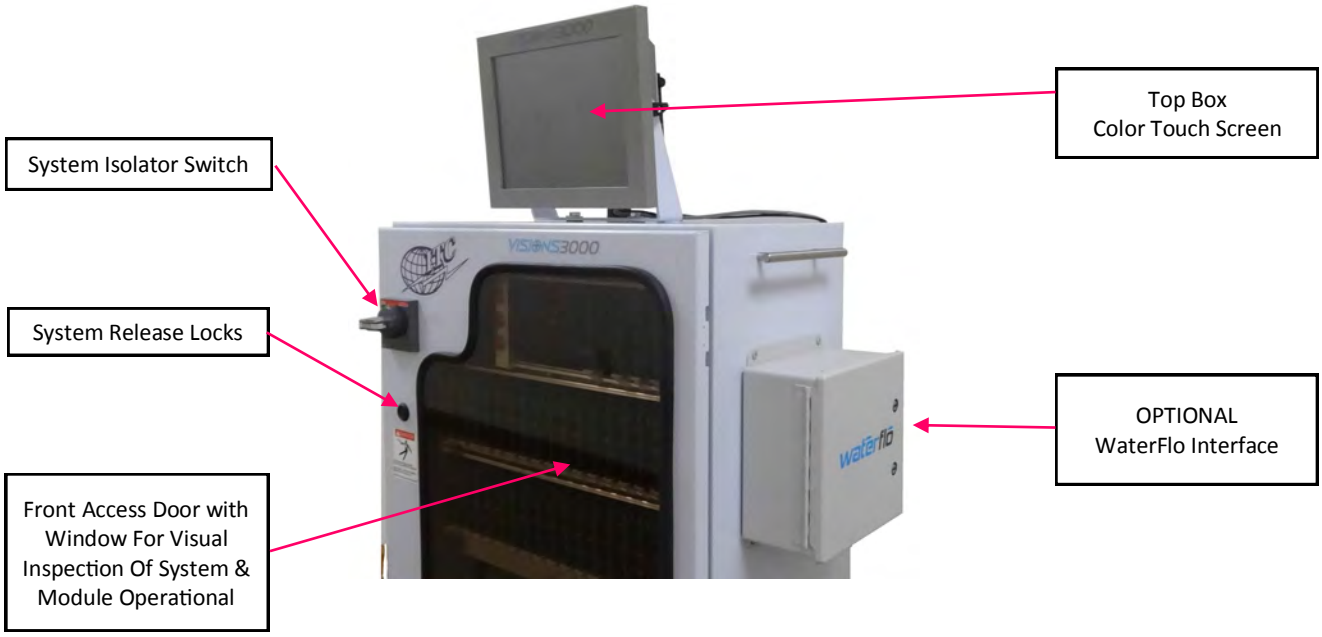
System Isolator Switch

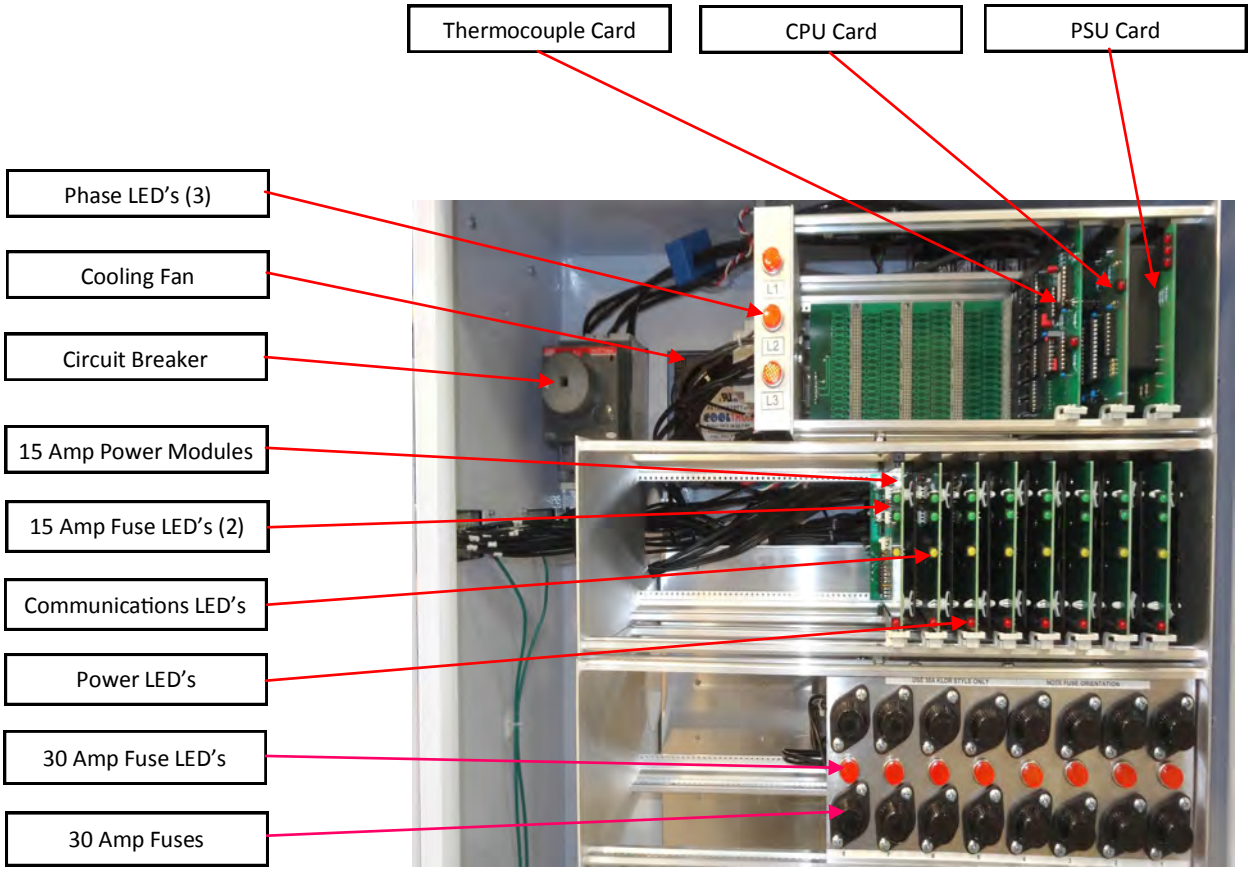
Front Door Access Lock s

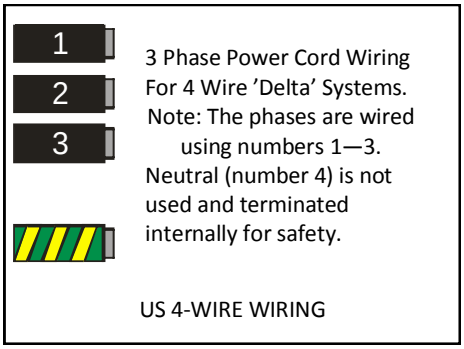
Serial Number Tag

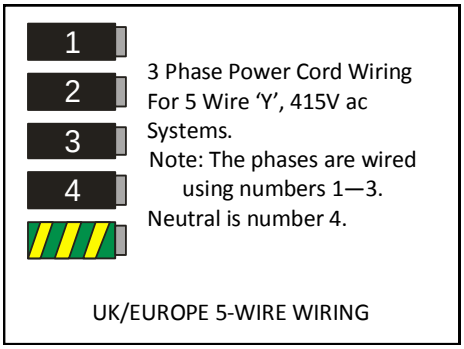
3 Phase Power Supply

Front Access Door with Window For Inspection Of System / Module


Top Box
Color Touch Screen
System Isolator Switch
System Release Locks
Front Access Door with Window For Visual Inspection Of System & Module Operational
OPTIONAL
WaterFlo Interface


Thermocouple Card
CPU Card
PSU Card
Phase LED's (3)
Cooling Fan
Circuit Breaker
15 Amp Power Modules
15 Amp Fuse LED's (2)
Communications LED's
Power LED's
30 Amp Fuse LED's
30 Amp Fuses





POWER CONNECTION:

Connect the power cord to a suitably rated power connector using the wiring details 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 damage.

POWER ON:

Switch on the VISIONS 3000 using the Isolator mounted to the front door. After approximately 1 minute the Information Screen will appear.

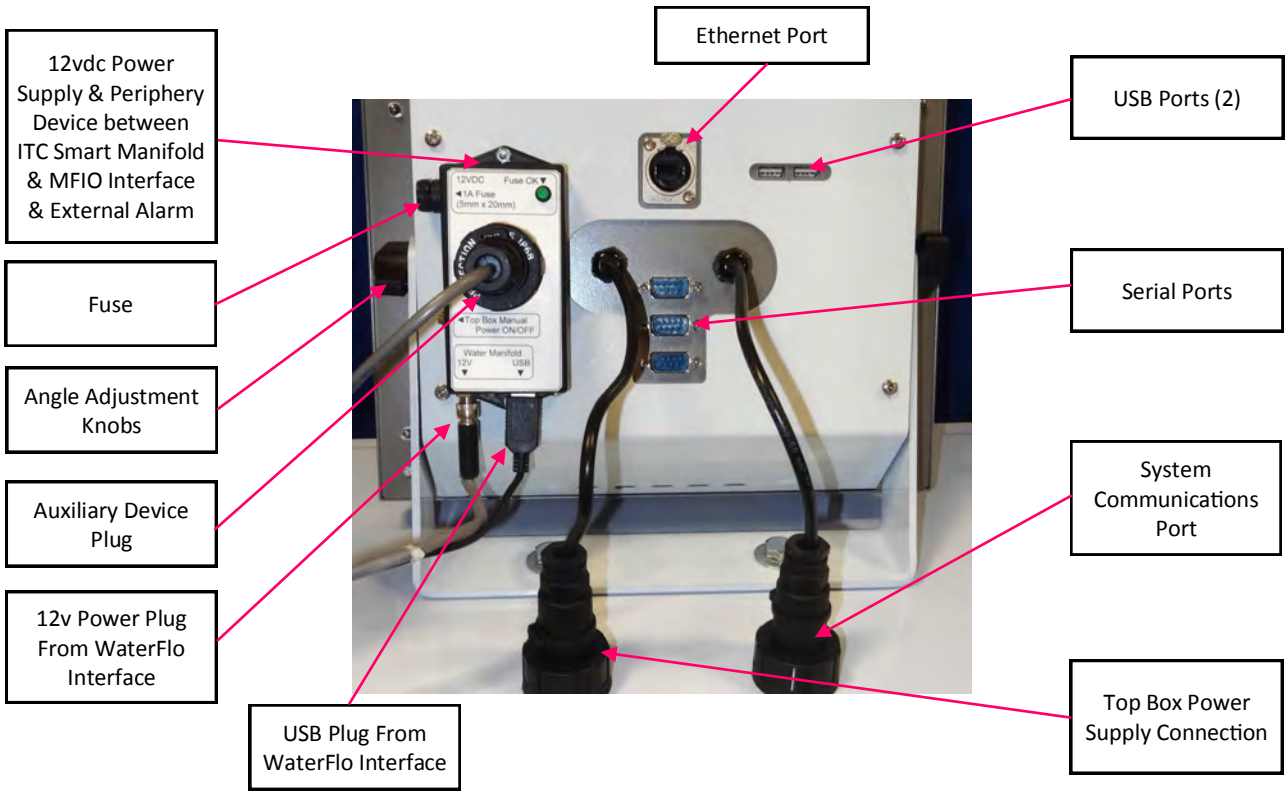
TOP BOX:

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

The software is touch-controlled. Use your finger to interact with controls visible on-screen, such as buttons, sliders, tick-boxes and other screen widgets.

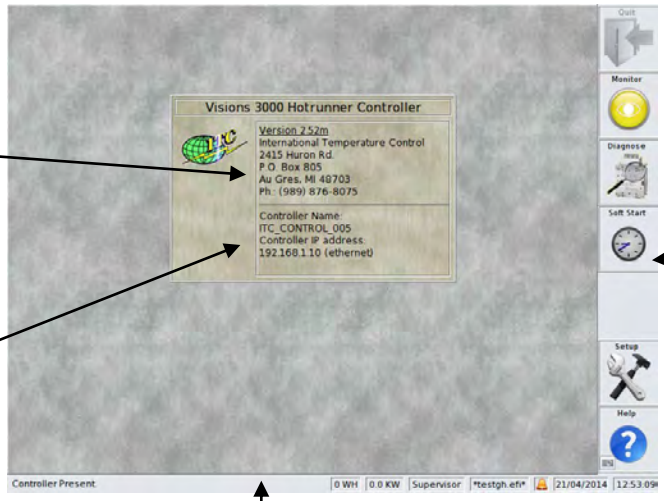
The major functions of the controller are accessed by touching the main controls located in a vertical strip along the right-hand edge of the screen. These button controls all have an icon and descriptive text..

When accessing complex settings, entering text or when the software needs a response, you will interact with the software via a dialog.



STOP MODE

The Information Page appears after the main power switch-on or when the back button is pressed when in run-mode.



Software Version
On start-up, the version of software on the VISIONS 3000 will be shown along with support contact details.

Networking Details
The controller name and IP address details can be set by the user

Main Controls
The main functions of the controller are accessed via these 7 buttons.
The icon and descriptive text are used in this manual to help you find information on the function you need.

The controller has an inter-active help system built in which you can access from this page, or from the setup dialog.

Status bar
Important or useful information messages appear here. Also listed: the current user; the currently loaded setup file; the alarm relay indicator and the date and time.

Quit

This function will only be available to an ITC engineer. For other users it will always be 'greyed-out', as in the image above.

Monitor

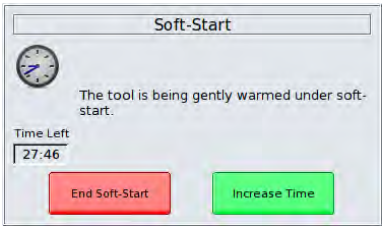
If the VISIONS 3000 has been configured to monitor zones before run-mode, this icon will be displayed. Selecting it will display the run-screen, but zones will be monitored, not placed into temperature-control.
The button will be replaced by the "Run" icon if "Monitor Before Run" is not selected in the controller setup.

Diagnose

Starts the VISIONS 3000 tool diagnostics function.

Soft Start

Activates the VISIONS 3000 Soft Start function. This applies a constant power of 5% to cavity zones and 10% to the mani-fold zones for the time duration indicated on the Soft Start dialog box (default = 30 minutes).
Zones are not under temperature-control and are not monitored.



This function is useful for baking-out a new tool. Once completed, the VISIONS 3000 will return to the Stop-mode.

Setup

Access this function to enter the Setup dialog, where you can change the settings for the controller, perform file and net-working operations and access the data and event logs.

Help

The VISIONS 3000 has an interactive help system which covers most of the common controller tasks. You can also access the help system from the Setup dialog.

DIAGNOSTICS / TOOL VALIDATION:

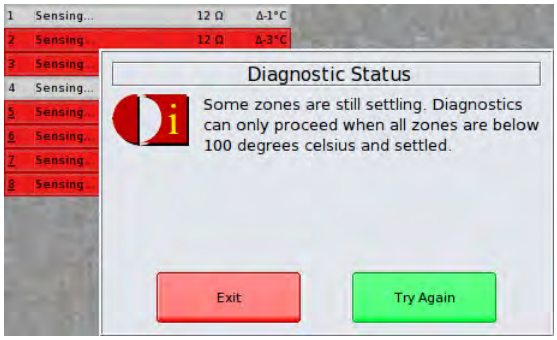
This function is useful for fault-checking new tools. Once you have configured the controller for the new tool (i.e.: set the number of cavities and manifolds) the diagnostics function can be used to check that the new tool is wired correctly.
The diagnostics function will determine the following tool characteristics:

- Cross-wired zones, e.g.: Zone 1's heater wired to Zone 2's thermocouple.
- No-load heaters. This could be a blown fuse or an open-circuit fault. The heater resistance cannot be determined because of poor connections. It is possible that the heater itself is faulty.
- Open thermocouples. The two connections to the thermocouple do not make a circuit. The zone's temperature cannot be read in this case.
- Reversed thermocouples. The two connections to the zone's thermocouple are reversed. The zone's temperature reading is incorrect in this case.
- Heater resistance for each zone. This determines the maximum current drawn by the heater when it is at 100% power. It determines the power of the heater.
- The response of each zone to a set amount of power to it's heater.

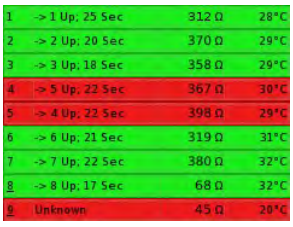
The diagnostics function works by applying a set amount of power to each zone, one zone at a time, and measuring the response from each thermocouple during the time that power is applied. By doing so, it is able to detect cross-wired zones as well as determining how the zones respond to power.
The diagnostics function proceeds automatically without user intervention. However, some simple checks are carried out first to make sure that the results will be accurate.
Diagnostics will not proceed unless the following conditions are met, these being checked automatically by the controller before diagnostics begins:

- All zones must be below 212° F (100° Celsius).
- All zones should be "settled". This means that they are not still cooling down particularly quickly.

The controller will detect these conditions before continuing and will warn the user if either condition is not met:



This image shows that zone 1 has been tested already and that it is wired correctly (->1). The thermocouple is ok ("Up") and that it took 25 seconds to change temperature by at least 10° Fahrenheit (6 degrees Celsius). Zone 2 is currently being tested.
Note that for cavities, the controller will expect temperatures to change by 10° Fahrenheit (6° Celsius) within 120 seconds.
For manifolds, a 10° Fahrenheit (6° Celsius) change is expected within 240 seconds. The cavity currently being tested is energised at 30% full power for this period, whilst manifolds being tested are energised at 60% power.



This image shows a problem with zones 4, 5 and 9.
Zones 4 and 5 are cross-wired (the thermocouples or heaters are connected in reversed order).
Zone 9 failed to respond. It is a manifold (it's zone number is underlined), so 60% power was applied to this zone for 240 seconds and no thermocouple changed by 6 degrees Celsius. It could be a "cold thermocouple", or perhaps the thermocouple is not seated correctly.

Stop

You can stop the diagnostics function at any time.

Skip Zone

Select this to skip the zone currently being tested and move on to the next zone. The result of the tests on the current zone will be unknown.

Save

Once all zones have been tested, diagnostics is ended and the user has the option of saving the results in a text file stored on the controller. This file can later be viewed on the controller, or exported and viewed on a PC. Diagnostic report files contain more detailed, easily readable information.

Tool Diagnostics: Error Messages

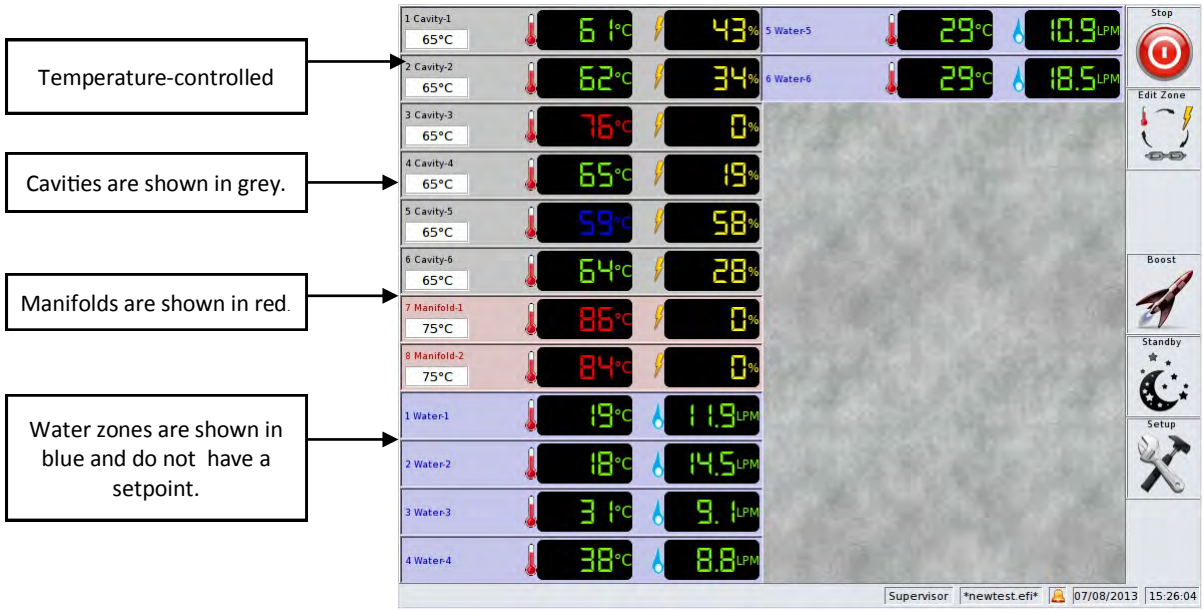
In general, zones with problems are coloured red and zones which pass the diagnostic tests are coloured green.

Error Message	Explanation	Possible Causes
Unknown	Power was applied but no zone registered a response. Cavity zones: The expected response is an increase in temperature of 10° F (6° C) within 2 minutes. Manifold zones: The expected response is an increase in temperature of 10° F within 4 minutes.	An 'Unknown' error message can be displayed if the number of manifold zones is incorrect due to the wrong value being configured in the setup dialog. 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 an 'Unknown' error.
Zone Skipped	The user skipped this zone. It was not tested.	None.
T/C Open	Error message reported when there is no signal from sensor assigned to the zone under test	Faulty sensor cable. Faulty sensor.
T/C Rev	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.
X -> Y Up	The sensor on zone Y increases in temperature in response to power being put into the heater of zone X. The sensor connected to zone X fails to respond.	The sensor connected to the zone under test has been swapped with the sensor indicated in the error message
X ->Y Dn	The sensor on zone Y decreases in temperature in response to power being put into the heater of zone X. The sensor connected to zone X 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 or faulty power cable; faulty heater or no heater connected.

RUN MODE:

This is the main screen and displays active zone information.

From here you can see what temperature each zone is currently at, the desired setpoint, the amount of power the zone is currently using and you can tell at a glance which zones have errors.



You can control the look of the run-mode screen in the General Setup section of the setup dialog.

Stop

Stops the VISIONS 3000 from controlling. If the "Monitor Before Run" has been enabled, the VISIONS 3000 will return to Monitor Mode. Otherwise the VISIONS 3000 changes to the Stop mode.

Edit Zone

Use this button to edit zone modes and setpoints using the Edit Zone dialog.

Boost

Pressing this button will temporarily increase the setpoints of the cavity zones. The Boost parameters are defined in the Setup menus.

Standby

This will immediately put all the active zones on the VISIONS 3000 into Standby mode. The Standby parameters are defined in the Setup menus.

Setup

Access this function to enter the Setup dialog, where you can change the settings for the controller, perform file and networking operations and access the data and event logs.

Next Page

Page through the zones 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 display mode selected.

MONITOR MODE:

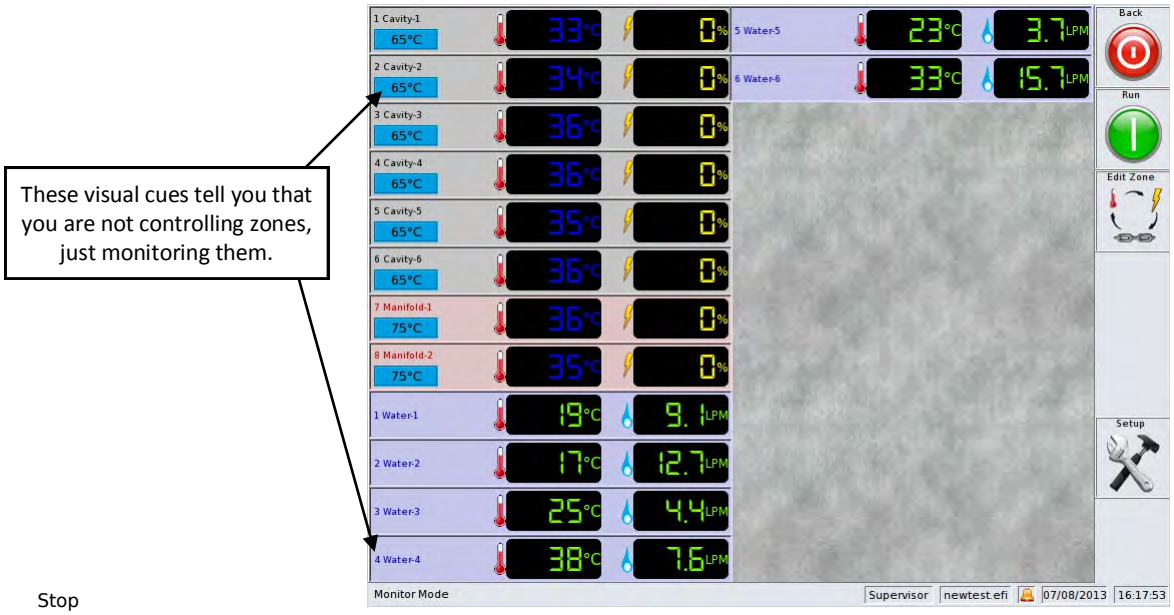
This feature is activated from the General Setup section of the setup dialog.

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, without applying power to the load.

From monitor mode it is possible to enter Run mode or return to Stop mode.

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

The controller may be placed in monitor mode by an alarm; this is called “Alarm Shutdown”.



Stop

Stops Monitor Mode. Returns the controller to Stop mode.

Run

Press this button to start the controller. The VISIONS 3000 enters Run-mode and begins controlling zones.

Edit Zone

Use this button to edit zone modes and setpoints using the Edit Zone dialog.

Setup

Access this function to enter the Setup dialog, where you can change the settings for the controller, perform file and networking operations and access the data and event logs.

Next Page

Page through the zones 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 display mode selected.

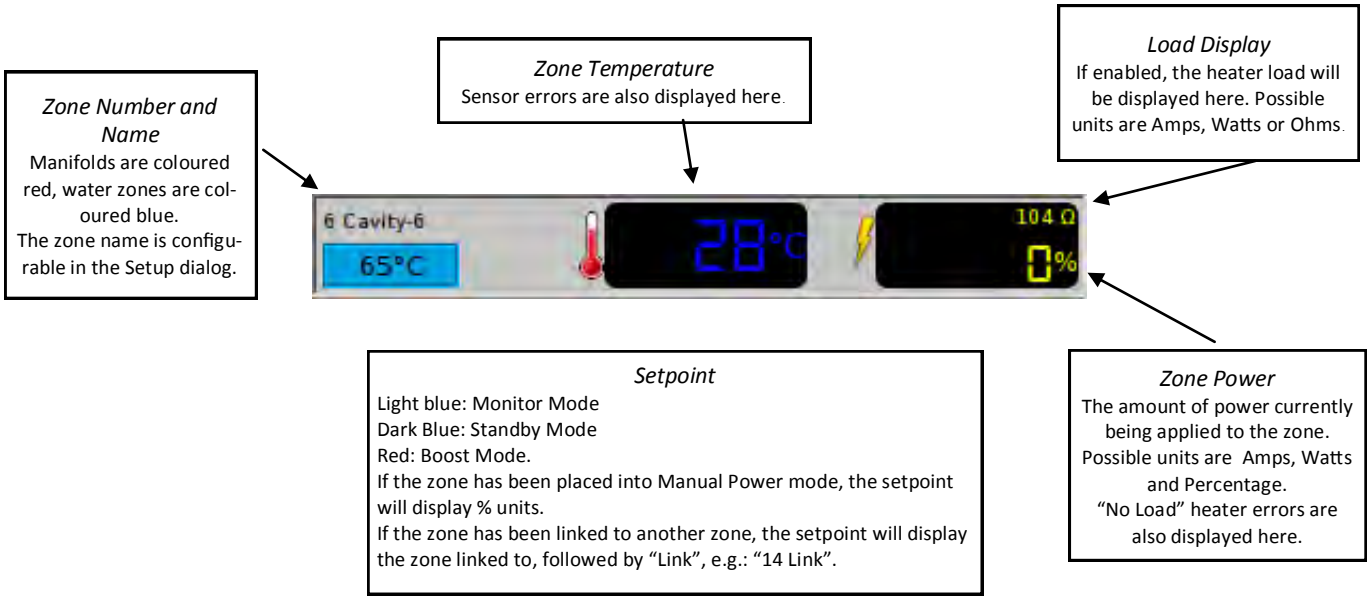
DISPLAY MODES:

There are three display modes which can be selected for the Run and Monitor modes. These have an impact on the number of zones which are visible on one page, and the amount of information which is visible.

You can change the display mode in the Setup dialog. The option is in "General Settings" > "General Setup".

Normal

In this mode up to 36 zones can be displayed at once. Use the "Next Page" button if there are more than 36 zones.



Graph:

In Graph Mode, up to 18 zones can be displayed at once. Each zone displays the same information as Normal Mode, but two timeline graphs are added to each zone. The graphs show the last hour's minute-average data for temperature and power. This data comes from the controller's history database and is updated every minute. The vertical scales are calculated automatically.

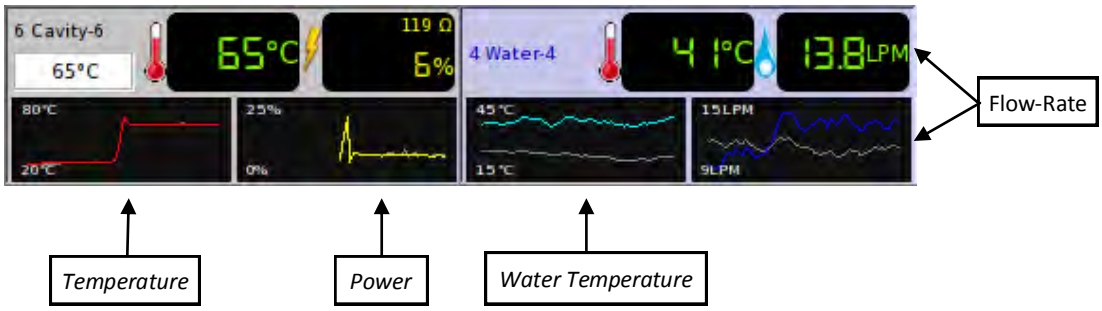
The red trace is temperature; the yellow trace is power.

For water zones, the light blue trace is temperature and the dark blue trace is flow-rate.

For cavities the grey traces indicate the average for all active cavity zones.
For manifolds, the grey traces indicate the average for all manifolds which are active.

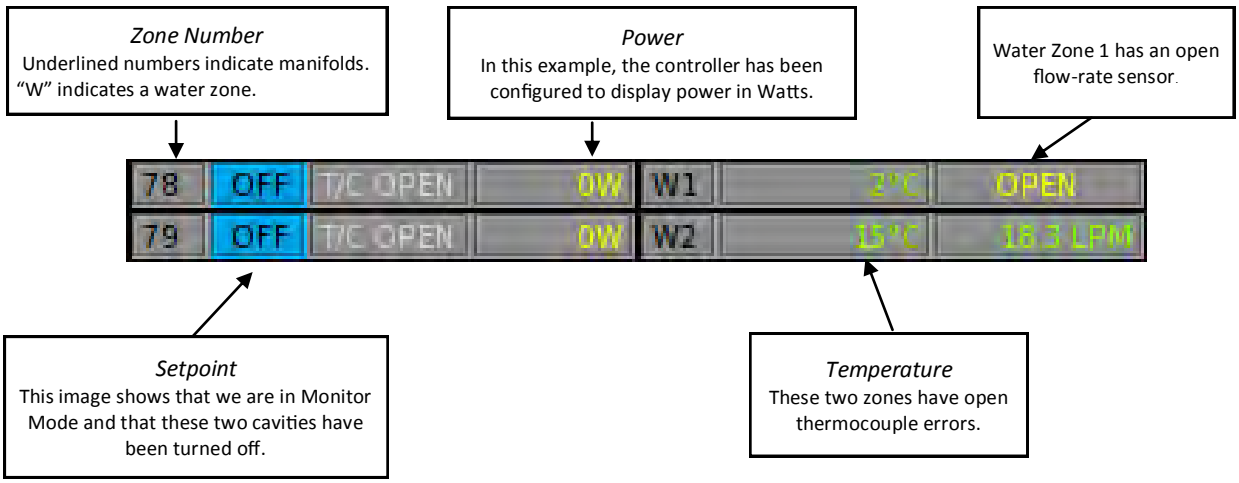
For water zones, the grey traces are the average temperatures and flow-rates for all water zones which do not have errors.

Graph mode allows you to quickly see how a zone is performing compared to the average for zones of the same type.



High Density:

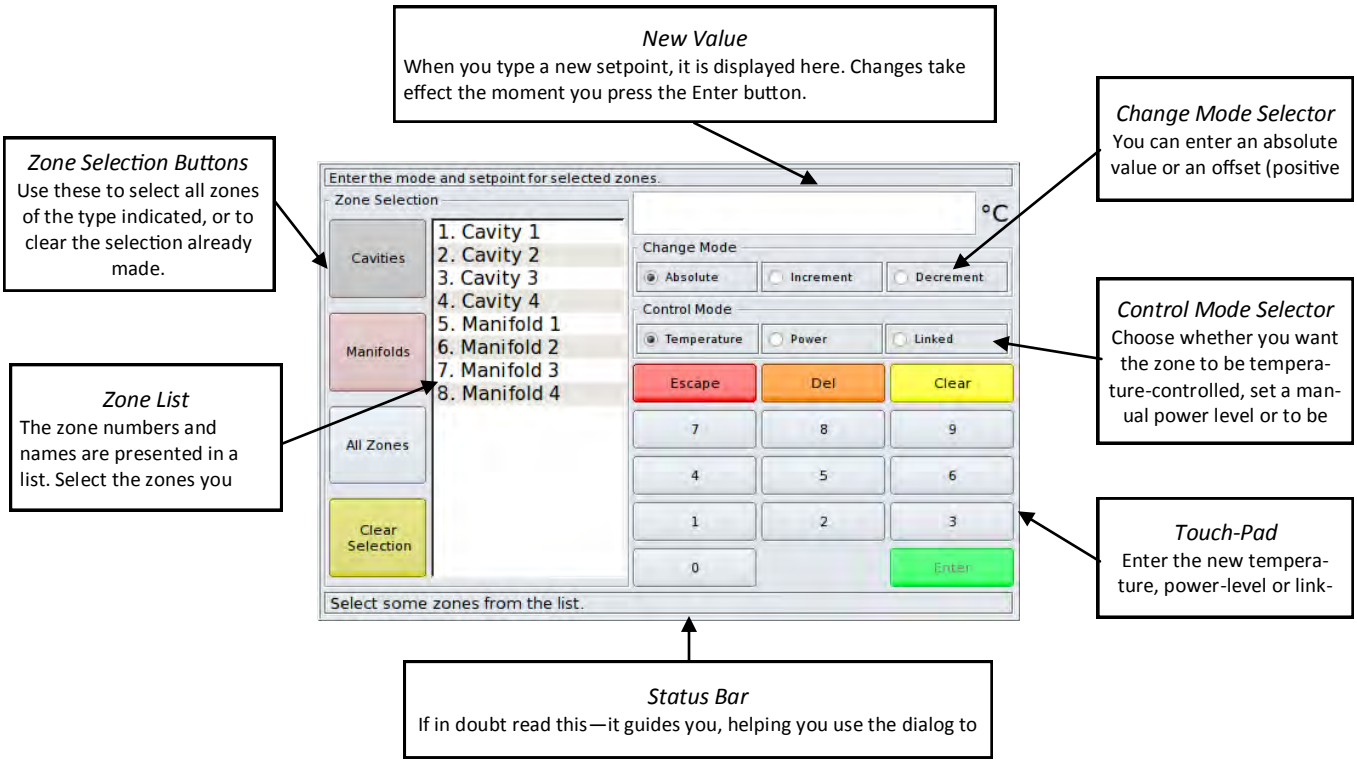
If there are more than 36 zones, you have the option to view up to 124 zones per page.
Although there are more zones visible at once, the zone names and load display are not available.



Edit Zone

Changing Setpoints and Modes:

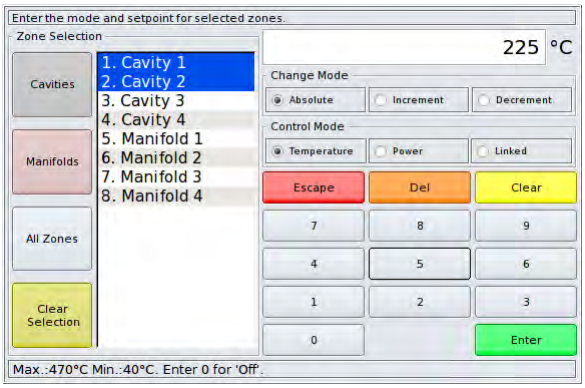
You can edit zone setpoints, turn zones off or change control-modes from the main run-screen, in **monitor** or **run** mode.
You must first be logged in as the Setter or Supervisor.
When you press the “Edit Zone” button, the Edit Zone dialog appears.



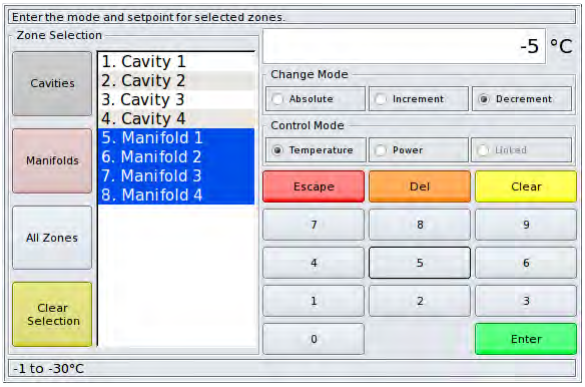
The dialog has it's own status-bar, which instructs the user what to do.
Using the Edit Zone dialog is easy:

- Select some zones from the list. You can select zones in any order you wish. The list is populated with the zone number and the zone name, if one is configured.
- You can use the quick-select buttons on the left-hand side to quickly select all cavities, all manifolds, or all zones, or you can cancel your selection.
- Choose the control-mode you want to set for the selected zones:
  - Temperature-mode is the normal control-mode. The controller holds zones at the set temperature in this mode.
  - Power-mode allows you to manually set a defined power for the zone(s), regardless of temperature. Zones in this mode are not temperature-controlled.
  - Linked-mode. In this mode you specify another zone for the selected zone(s) to follow. Zones in linked mode are not temperature-controlled.
- Enter the new setpoint. For temperature-controlled zones, the new setpoint is entered as a temperature. For zones in power-mode, the setpoint is entered as a percentage. With linked-mode selected, you enter the zone number which will act as the mas-ter zone the selected zones will follow.

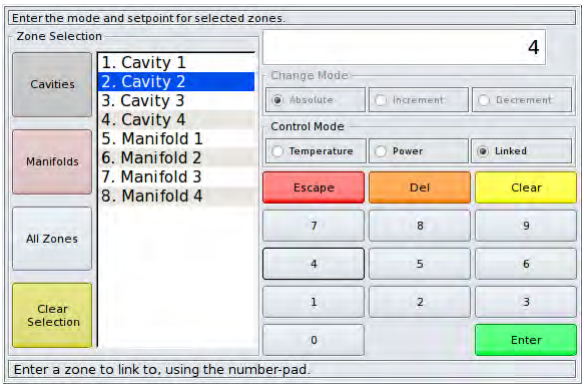
If desired, you can choose to enter setpoints as absolute or relative values. This is done using the "Change Mode" boxes.



Here the user is setting the temperature for zones 1 and 2.



Now the user is decreasing the manifolds by 5 degrees Celsius.



It is likely that zone 2 has a problem, because the user has linked it to zone 4. The power output to zone 2 will mirror that of zone 4.

Selecting Zones:

If preferred, you can select zones before you press the Edit Zone button. This way the selected zones list will be pre-selected for you when the Edit Zone dialog appears.

Here, the user has selected zones 1 and 3.

When they press the Edit Zone button, these zones will already be selected in the list of zones.

NOTE: Water zones cannot be selected, because they have no setpoint.

Turning Zones Off:

To turn a zone off, set it's temperature to 0 degrees. It is possible that the supervisor has limited the minimum cavity setpoint in the setup dialog. You can't set a new setpoint for cavities below this value. To turn a cavity off when a minimum cavity setpoint has been set, simply change the zone's mode to power-mode and select 0% power.

Boost

Boost Mode:

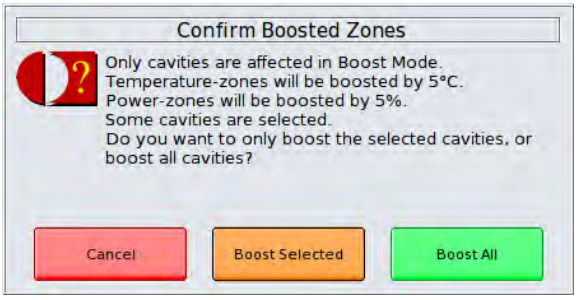
You can enter boost mode from the main run-screen, with the controller in run mode.
You must first be logged in as the setter or supervisor.
Use this mode to temporarily increase the temperature (or power) to the cavities.

Manifolds are not affected by boost mode.

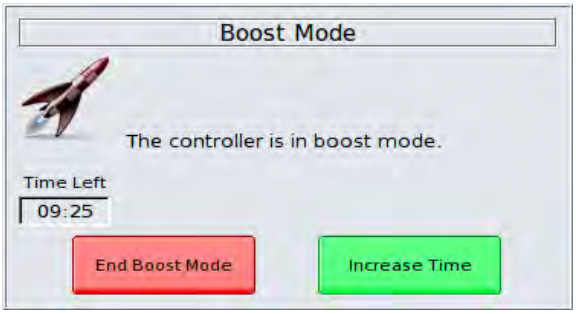
You cannot access boost mode during manifold preheat or during the start-up sequence.

The amount and duration of boost is determined by the user in the setup dialog.

When the boost mode button is pressed, you are asked to confirm that you want to place the cavities in boost mode.



If any cavities were selected before you pressed the boost button, you also have the option to boost only the selected zones, or to boost all the cavities.



Once boost mode is activated, the boost mode dialog appears, which shows the boost mode timer.
When the timer reaches zero, boost mode will automatically end and the controller will return to normal operation.
You can increase the boost duration in one minute intervals, or quit boost mode early.

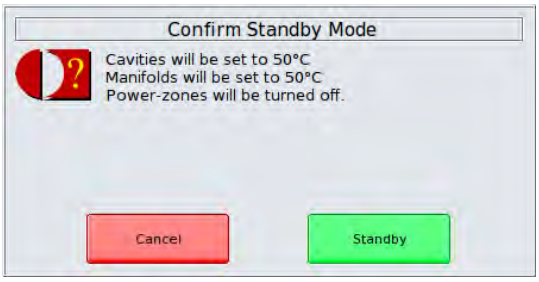
In boost mode, setpoints are displayed with a red background.

Standby

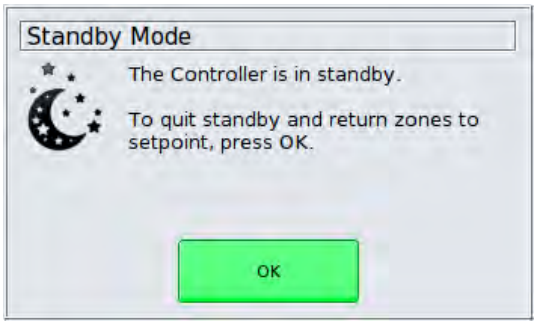
Standby Mode:

You can place the controller in standby mode from the main run-screen, with the controller in run mode.
You must first be logged in as the setter or supervisor.
Use this mode to temporarily decrease the temperature (or power) to all the zones. 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.

You cannot access standby mode during manifold preheat or during the start-up sequence.
The controller will hold zones at a lower temperature than normal.
Standby temperatures are chosen by the user in the setup dialog.



When you press the standby button, you are informed what the standby conditions will be before confirming the request.



Once the controller is in standby mode, it can only be returned to normal operation by the user.

In standby mode, zones display a dark blue setpoint.

It is possible to configure the controller to enter standby mode when an alarm is detected. This is done in the Alarm Actions page of the setup dialog. If the controller is in “Alarm Standby” mode, the “Standby Mode” dialog shown above will be replaced with the “Alert Dialog”. In this case, closing the Alert Dialog ends standby mode.

Setup

Initial Setup:

This page covers most of the basic setup changes needed to get your VISIONS 3000 controller working. It is suitable for configuring a new controller or setting the controller up for a new tool.

If your controller has already been configured for a tool and the tool has been changed, or the controller has been moved to a different machine, it is a good idea to first save your current setup.

You must first log in as the Supervisor.

Manage Zones

Manage Zones (Initial Setup):

Step 1: Set the number of cavities and manifolds.

- Record the number of Cavity zones.
- Record the number of Manifold zones.

Step 2: Set the Cavity Settings

- Cavity Power Limit. 70% is the default.
- Cavity Maximum Temperature. The controller will trigger an alarm if this temperature is exceeded.
- Cavity Standby Temperature. This is the temperature of the cavities when the standby button is pressed.
- Minimum Cavity Setpoint. Use this to prevent users from turning zones off completely, which can lead to cold spots in the tool. To deactivate this feature, enter zero

Step 3: Set the Manifold Settings

- Manifold Power Limit. 90% is the default.
- Manifold Maximum Temperature. The controller will trigger an alarm if this temperature is exceeded.
- Manifold Standby Temperature. This is the temperature of the manifolds when the standby button is pressed.
- Manifold Pre-Heat. This is off by default.

PID Settings

PID (Initial Setup):

Step 4: Cavity PID Settings.

A good initial value for cavities is “Medium”.

Step 5: Manifold PID Settings.
A good initial value for manifolds is "Slow".

Once you get the tool into production, you can tune these settings in order to achieve better control. Do this in conjunction with the graphs.

If desired, you can select the "Auto tune" feature for the cavities or manifolds.
Be aware however, that the Auto tune feature can delay the heating-up time, which is particularly noticeable when applied to manifolds.
You cannot select the "Auto tune" option during production - the controller must be stopped before this is a selectable option.

General Settings General Setup

General Setup (Initial Setup):

Step 6: Manifolds Before Cavities.
Enable or disable this setting appropriate to the tool and conduit wiring.

Step 7: Thermocouple Type.
Select J-Type (default) or K-Type as appropriate to the tool and conduit wiring.

Step 8: Temperature Units.
The controller works in Celsius, but can display temperatures in Fahrenheit.

- The controller is now ready.
- We recommend that you run the tool Diagnostics and save the results.
- You should give your zones some names.
- If you have water-zones fitted, you should configure them
- Additionally, you will want to set some alarm trigger levels and actions, once you have established stable a production condition.

Manifold Pre-Heat:

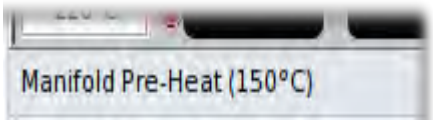
You can configure Manifold Pre-heat from the setup dialog.

To change the Manifold Pre-heat setting, you must first be logged in as the supervisor.

Manage Zones

The Manifold Pre-Heat Setting is in the "Manage Zones" section.

This is an important setting which affects how the controller starts heating up the tool.



When a pre-heat temperature has been set, the controller begins heating the manifolds first.
No power is applied to the cavities until they are "released".
The cavities are only released once all manifolds have reached or exceeded the manifold pre-heat temperature.

When you start the controller (enter run mode) with Manifold Pre-Heat active, a flashing message will appear at the bottom-left on the status-bar.

For example, if the pre-heat temperature is set to 270° F, the manifolds will be controlled at 270 degrees and the cavities will be turned off. Once all of the manifolds reach 270 degrees, cavities and manifolds will be released to their setpoint.

Manifold Pre-heat is closely related to Start-up Groups. The two functions can work together if desired, to create a more complex start-up sequence.

To turn Manifold Pre-heat off, simply change the value to zero.

Start-up Groups:

You can configure Manifold Start-up Groups from the setup dialog.

To edit Manifold Start-up Groups, you must first be logged in as the supervisor

From the home screen or the main run-screen, in monitor-mode or run-mode, press the setup button, then the "General Settings" icon, then "More", then select the "Start-up Groups" icon.

This is an important setting which affects how the controller starts heating up the tool.
This setting only affects manifolds.

When Start-up Groups are active, the manifolds are heated first, in groups. This is called the start-up sequencer.

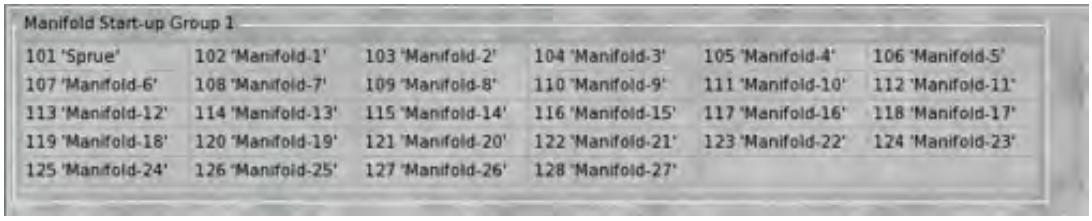
The Start-up Group Page allows you to define how many groups are in the sequence and which zones belong to which group. You enable the start-up sequencer in the General Setup page.

Start-up Sequence Without Pre-Heat:
Manifolds are heated beginning with Start-up group 1. Once all the zones in Group 1 reach setpoint, Start-up Group 2 is "released".

When all manifolds in the final group have reached setpoint, the cavities are released and the controller begins normal operation.

Start-up Sequence With Pre-Heat:
When used in conjunction with Manifold Pre-Heat, the start-up sequence is more complicated.
The manifolds are started group by group and controlled at the pre-heat temperature.
Once all zones in the last group reach pre-heat temperature, the cavities are released, but the manifolds start again with Group 1.

Editing Start-up Groups:
Initially, all manifolds are assigned to the same group. This means that if you enable the start-up sequencer, all manifolds would come up to setpoint first, then the cavities would be released.



Assign Zone

Place a zone into a new group using this button.

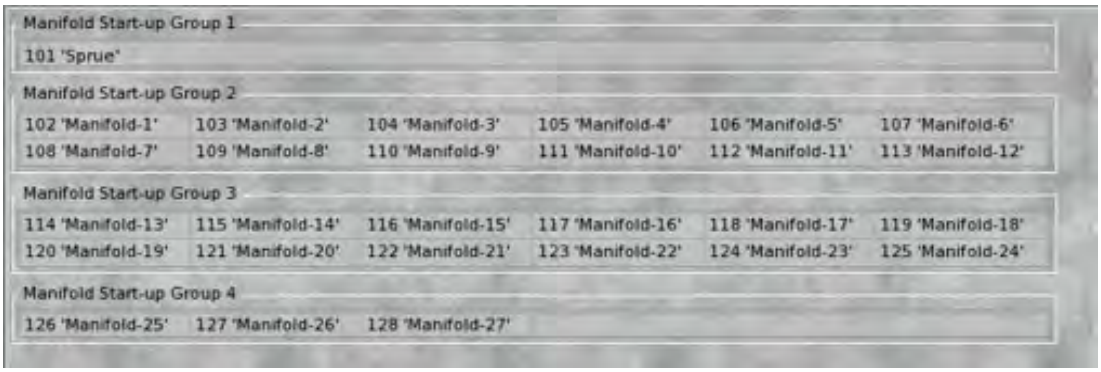
Assign Global

Use this button to place multiple zones into groups.

Only Supervisors can change star-up groups.

Changes made to start-up groups affect the current setup.

Manifolds are heated in group order (i.e.: Group-1 is heated first).



Once you have defined the start-up groups, you must enable the start-up sequencer.
This setting is in the General Setup page.
Only Supervisors can change this setting.

This setting is disabled by default.

Naming Zones:
You can view the Zone Names Page via the setup dialog.

From the home screen or the main run-screen, in monitor-mode or run-mode, press the setup button, then the "General Settings" icon, then the "More" icon, then the "Zone Names" icon.
This takes you to the Zone Names Page.

You can name individual zones or groups of zones and you can give zone names an index number. You can also import the names from a text file on an attached USB drive.
Changes made to zone names affect the current setup.

This image shows a controller which has 8 cavities (grey), 4 manifolds (pink) and 2 water-zones (blue).

This is how the Zone Names Page appears if the controller has no names allocated for any of it's zones.

Zone names are a good way to identify zones. If a zone does not have a name, the controller will always display the zone number.

Edit Name

This function can only be accessed by the Supervisor.
Press this button to edit the name of a single zone. You will be asked to enter the zone number of the zone you want to edit.
Enter some text using the on-screen touch keyboard.

Global Names

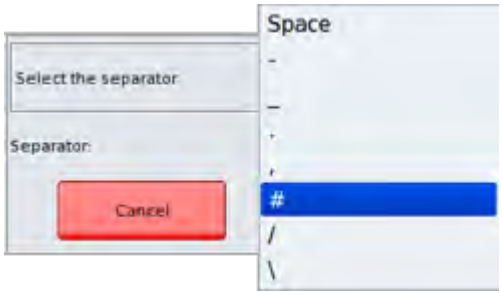
This function can only be accessed by the Supervisor.
Press this button to edit the names of multiple zones. You will be asked to enter the zone number of the first zone you want to edit, followed by the zone number of the last zone you want to change.
Enter some text using the on-screen touch keyboard.
The same text is entered as the name for all of the zones you selected.

Add Index

This function can only be accessed by the Supervisor.
Press this button to add a symbol / index number combination to multiple zones. You will be asked to enter the zone number of the first zone you want to edit, followed by the zone number of the last zone you want to change. Then you will be asked for the first index value and the separator symbol to use.

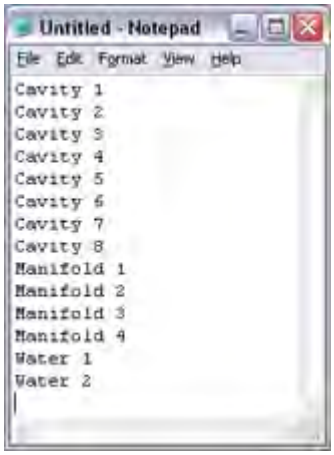
The same separator symbol is added to the names of all the zones you selected, but the index number increments by one per zone.

The index is added to the names of the zones; it is not stored separately and cannot be undone except by renaming the affected zones.



Import Names

This function can only be accessed by the Supervisor.
This is probably the easiest way to edit and change names, especially when the naming scheme is quite complicated.



Prepare a simple text file on a desktop computer, save the file to a USB drive and insert the USB drive into the top-box USB port on the controller. Then select this option.

Each line of the name file should contain the zone name.

One zone name per line.

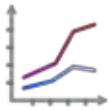
This is an example name file prepared on a PC for an 8 cavity, 4 manifold, 2 water-zone controller.

Graphs and Visualisations:

You can access the VISIONS 3000's graphs from the setup dialog.

Any user can view the graphs.

View Graphs

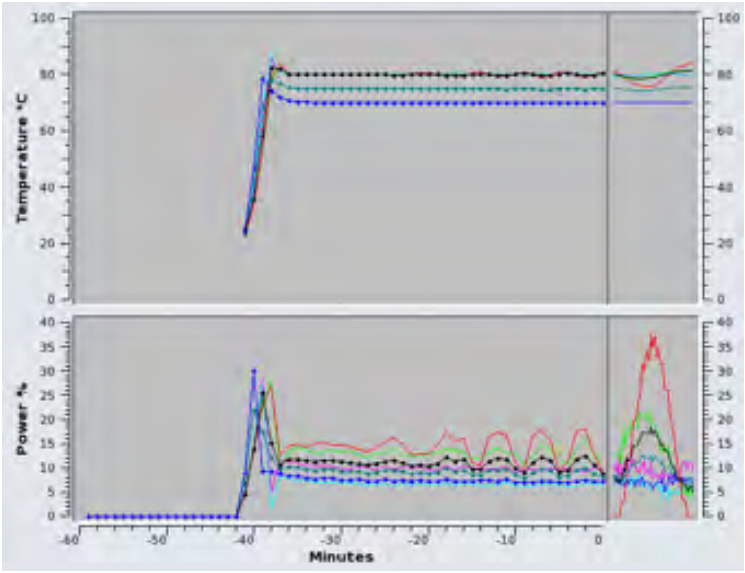


From the home screen or the main run-screen, in monitor-mode or run-mode, press the setup button, then select the "View Graphs" icon.
This takes you to the graph pages.

From here you can:

- View up to eight zones in live view and view the last hour's logged data minute by minute.
- View cavity, manifold and global average traces.
- Edit the y-axis scales.
- View up to eight zones from the controller's year-long data history.
- Switch to surface map view.
- Switch to the water-zone graphs (if fitted).

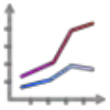
Live Graph:
The live graph shows the last minute's data (temperature and power) for up to eight user-selected zones, updated every second. Additionally, it shows the last hour's data updated once a minute.
The upper graph shows the traces for temperature.
The lower graph shows the power traces.



The axes of the graph are labelled and below the graph is a legend which displays each zone number and name (if configured) in the trace colour.

The live graph is useful for identifying poorly performing zones (as for the red trace in the example above) and to review the effect of zone tuning efforts.

Edit Traces

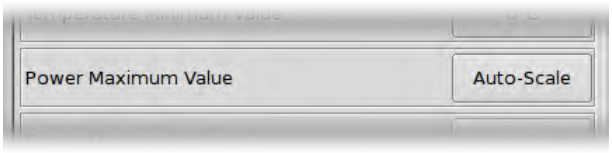


You can add and remove up to 8 zones and 3 averages by pressing this button.
For the hour-long portion of the graph, the average traces are rendered with small circles at each data-point.
These changes also affect the history graphs.

Edit Scales

Change the y-axes upper and lower values by selecting this option.

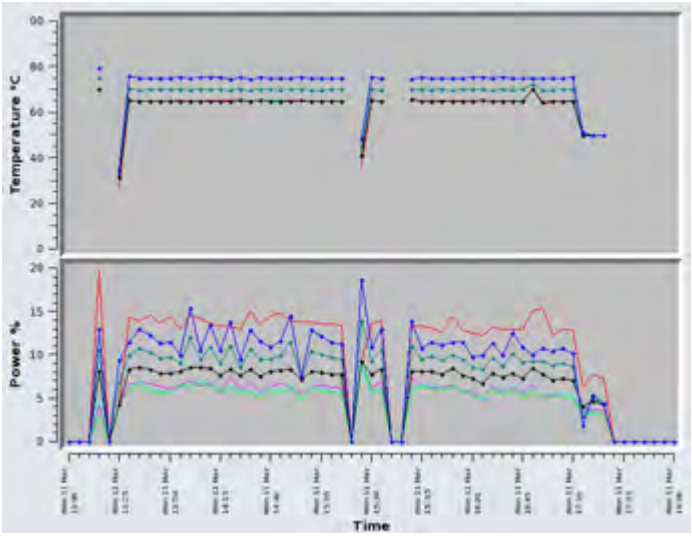
This allows you to zoom in on areas of interest in the graph. If you select to change the maximum value for temperature or power, you have the option of auto-scaling the y-axis; enter zero to select auto-scaling. This feature selects appropriate y-axis values based on the live-view portion of the graph. The graph will constantly rescale in order to keep the traces visible.



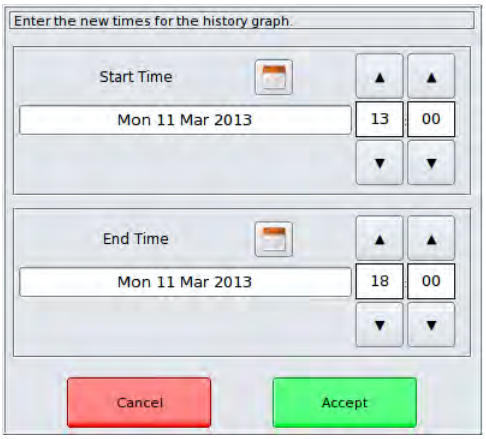
View History

Press this button to switch to the **history graphs**.

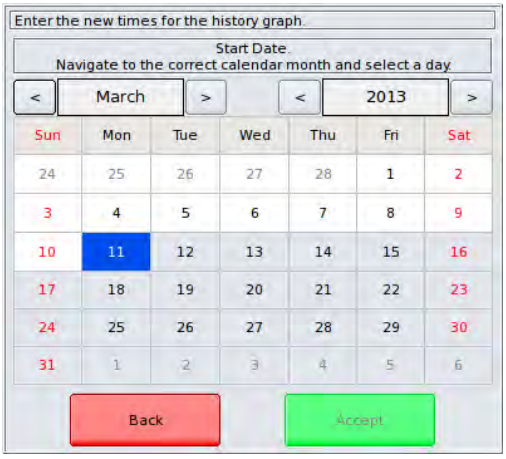
The VISIONS 3000 controller stores zone data for one year. The data stored is the minute-average data for each zone.
The same zones and scale settings as the live graph view are used.



You can edit the x-axis scale by pressing the Timeline button; change the start and end times and the start and end dates using the time-calendar dialog:



Click the calendar icon to change the start or end dates.



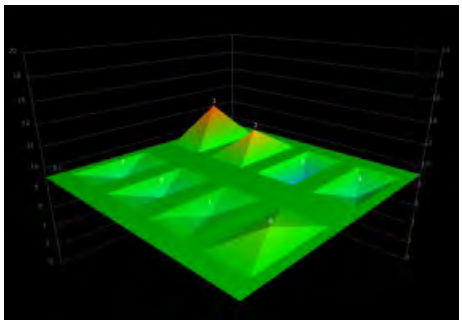
Surface Map

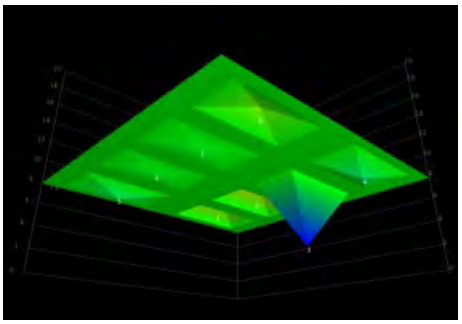
From the live graph view, click this icon to access the **surface-map** page.

This visualisation tool allows you to view the cavity zones as a 3-dimensional surface. It is useful for quickly comparing the performance of all of the cavities in one graph. All the cavities are visible as pyramids set against a baseline level which is the average.
You can view average or instantaneous data, updated live every second and you can rotate and zoom the view so that relevant zones are visible.
The data which can be visualised live are:

- Power as a percentage of full power per zone,
- Power in Watts,
- Temperature.

The images below show an 8 cavity tool which has stabilised at setpoint. The data being graphed is the %-power average. You can see from the first image that 2 zones require more power than the others while the second image, which has been rotated, reveals that one zone requires considerably less.





Rotate the view by touching the graph and swiping your finger.

Use the slider to zoom the view.

Water / Bar Graphs: (Option)

Water

If you have optional water-zones fitted, you can graph the zone temperatures and flow-rates and view the history data just as you would a normal temperature-controlled zone. Add up to eight water-zone traces and the average trace in the normal way.

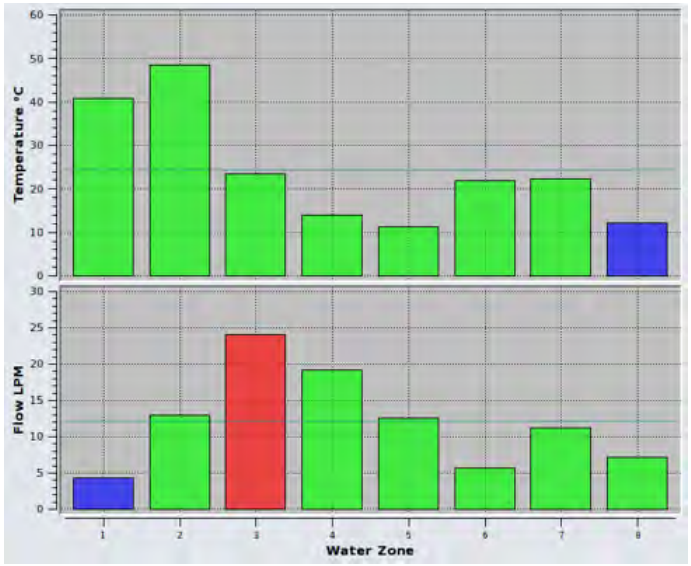
Bar-Graph

Click this button to access a **bar-graph** view of the water zones.

This is a useful way to visualise and compare all the water-zones simultaneously.
Each zone is represented as a bar.

- Green bars indicate that the zone is in-limits.
- Blue bars indicate a zone which is under-limit.
- Red bars indicate over-limit zones.

The limits can be set by a supervisor in the water-zone configuration panel.



The thin blue horizontal line represents the average value. These graphs are updated once a second.

Alarms:

You can set alarm limits, configure alarm actions and turn alarms on and off via the setup dialog.

Any user can view the current alarm settings, but to make changes, you must first be logged in as the supervisor.

Alarms

From the home screen or the main run-screen, in monitor-mode or run-mode, press the setup button, then select the alarms icon.
This takes you to the alarms setup page.

From here you can:

- View the Alarm Panel where you can see which zones are registering an alarm.
- View the Alarm Setup Panel where you can see the current alarm values and limits, and make changes.
- View and change the Alarm Actions to be taken by the controller in the event of an alarm condition being detected.
- View the Alarm Log.
- Change alarm settings and actions for the water-zones, if fitted.

Types of Alarm:

For normal temperature-controlled zones, the controller is able to detect the following alarms:

- **Open Thermocouple.** The controller cannot read a zone's temperature.
- **Reversed Thermocouple.** The temperature readings from the zone are incorrect.
- **Cold Thermocouple.** The temperature readings from the zone are incorrectly lower than the actual temperature.
- **No-Load.** The zone's heater (or connection to it) is faulty,
- **Temperature Tolerance.** The zone's temperature has drifted beyond a set amount from the setpoint.
- **Power Tolerance (cavities only).** The zone's heater is drawing more (or less) than a set amount of power than the average power drawn by the cavities.
- **Tool Motion.** Controllers fitted with a machine interface can detect when the tool is moving. This alarm can be set to trigger when a minimum number of movements is not detected.

Water Zones (if fitted) have their own alarms.

Alarm Setup

Select this option to view the **Alarm Setup** page.

Temperature-Tolerance, Power-Tolerance and Cold-Thermocouple alarms are controlled by values set by the supervisor.
The Alarm Setup Panel displays a list of zones, identified by number and name (if configured).
The current value for each alarm condition is displayed for each zone in a table.

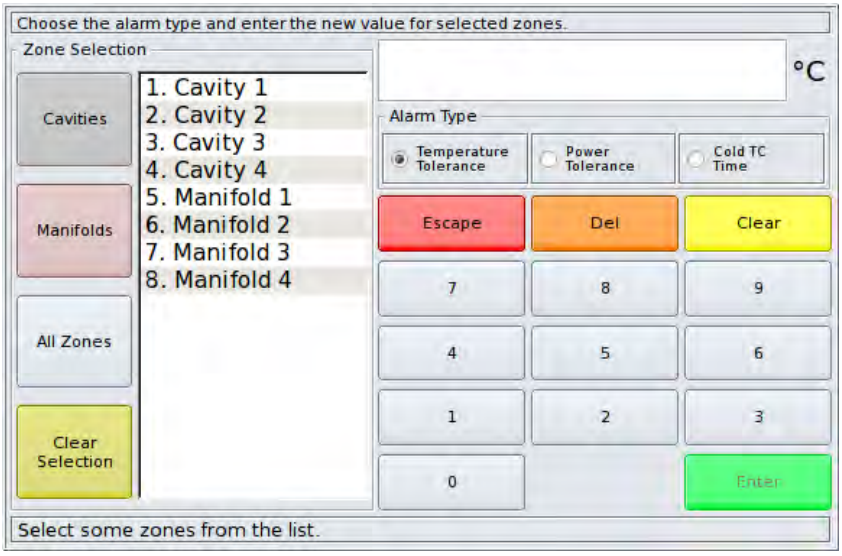
Zone	°C Tol	Pwr Tol	TC-Cold
1 Cavity 1	5°C	12%	15Min

Here, zone 1 will trigger the temperature-tolerance alarm whenever it's temperature strays more than 5 degrees above or below the setpoint.
With a 12% power-tolerance, the zone will trigger an alarm if it's average power consumption for it's heater is 12% greater or less than the average power consumption for all of the cavities. You cannot set a power-tolerance for manifolds. The average is taken from the last 60 seconds, on a rolling-average basis.
A 15 minute cold-thermocouple detection time means that the controller expects the zone to reach setpoint within 15 minutes of starting up.

Edit Alarms

Press this button when in the Alarm Setup page to change alarm limits.

Changes to the temperature-tolerance, power-tolerance or cold-thermocouple alarm limits are made through the Edit Alarm dialog.



This dialog has it's own status-bar, which instructs the user what to do.

Using the Edit Alarm dialog is easy:

- Select some zones from the list. You can select zones in any order you wish. The list is populated with the zone number and the zone name, if one is configured.
- You can use the quick-select buttons on the left-hand side to quickly select all cavities, all manifolds, or all zones, or you can cancel your selection.
- Choose the alarm type you want to change for the selected zones.
- Enter the new value.
  - For temperature-tolerance alarms, the new value is entered in degrees. This defines a band of temperatures above and below setpoint which are 'safe' from alarms.
  - For power-tolerance alarms, the new value is entered as a percentage. This defines a range of values above and below the average power for all cavities which are 'safe' from alarms.
  - For cold-thermocouple alarms, the new value defines the expected warm-up time of the zone(s), in minutes.

To turn an alarm off, enter zero. The selected zones will not be checked for the chosen alarm condition if the value displayed is "Off".

Alarm Actions

Use this option to configure the controller to take action when an alarm condition is detected.

The controller can take various actions when an alarm condition is triggered:

- **Ignore.** No action is taken.
- **Alarm.** The controller toggles the Alarm relay, which if connected will sound the external machine alarm, start the alarm indicator lamp and stop the machine. The controller continues to maintain temperatures and the Alarm Warning Dialog is placed on the screen.
- **Standby.** All zones are placed into standby mode , the Alarm Relay is toggled and the Alarm Warning Dialog is placed on the screen.
- **Shutdown.** The controller turns all zones off, the Alarm Relay is toggled and the Alarm Warning Dialog is placed on the screen.

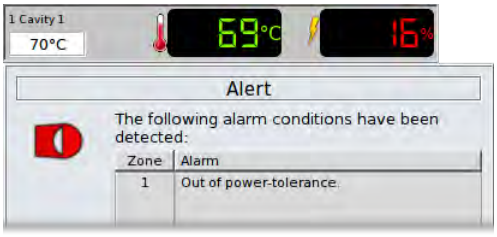
To make changes to the Alarm Actions page, you must be logged in as the supervisor.

Identifying Alarms:

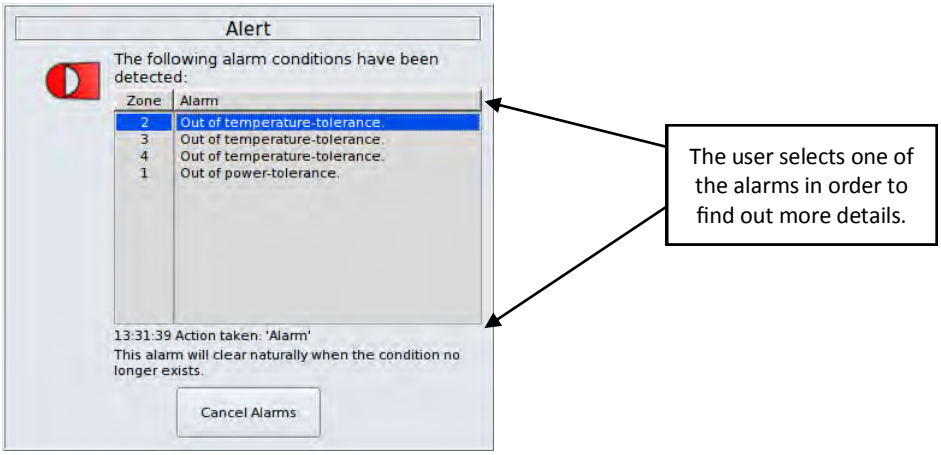
This zone is out of temperature-tolerance (over setpoint), so it's temperature is coloured red.
The zone is also out of power-tolerance (over); it's power level is coloured red. This zone needs more power than expected in order to maintain set-point..

If a temperature is coloured blue, it is under setpoint.
Temperatures displayed in green are in-tolerance.
If a zone needs less power than expected it would be coloured blue.
Zones which are in power-tolerance are coloured yellow.
These colourings hold true so long as the zone has a configured value in it's Alarm Setup Panel (i.e.: it is not set to "off"), even if the Alarm Action is set to "ignore".

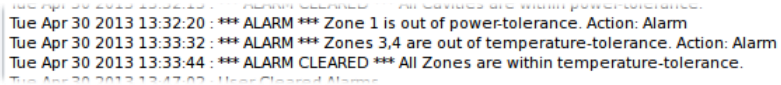
If an alarm action is set to any setting other than "ignore", the Alarm Warning Dialog will be displayed and the Alarm Relay will be toggled.



You can select alarms from the list to find out more:



Alarms actions set to "Alarm" will be removed from the Alarm Warning Dialog when the alarm condition no longer exists. When all alarms have been removed from the list, the Alarm Warning Dialog will be dismissed automatically, the Alarm relay will be toggled and the controller will resume normal operation. However, if an alarm action is set to "Standby" or "Shutdown", the Alarm Warning Dialog will remain on-screen. The alarm conditions for these cases are not removed from the list and the controller will require user intervention in order to resume normal operation.
All alarm conditions are logged so you can see which alarms occurred and when they were triggered:



You can check whether the Alarm Relay has been toggled from the status bar. An orange alarm-bell icon is displayed whenever there is an alarm and the alarm relay has been set to stop the machine from cycling:

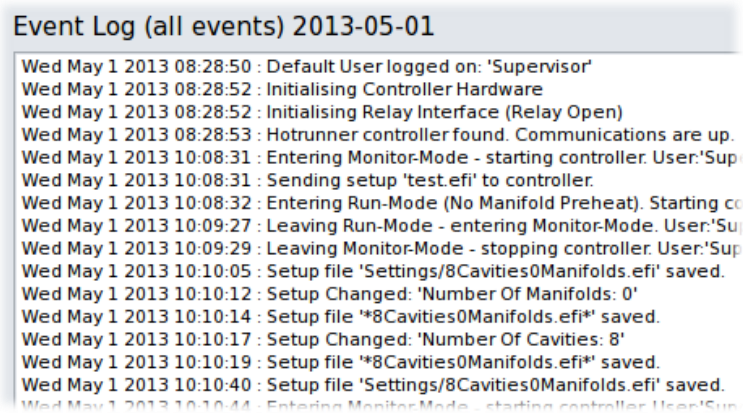
Event Logs:
You can view the logs via the setup dialog.

From the home screen or the main run-screen, in monitor-mode or run-mode, press the setup button, then the "Save, Load and View" icon, then "Load and View", then select the "View Logs" icon.
This takes you to the event log page.

The event log is a record of changes to the controller status over time, up to one year in the past.
The controller records the following events:

- System events, such as when the controller was started
- Controller events, such as boost mode
- Setup changes
- Alarms
- File accesses
- User events such as when a user logs in

When an event occurs, the controller places a time-stamped message in the log. The history of all previous messages can be recalled from the archive, so if you know the date a particular problem occurred you can look it up in the log.

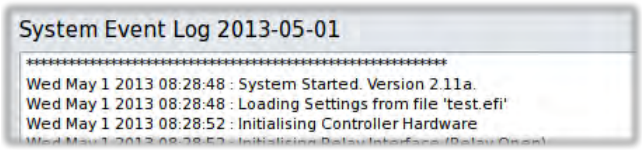


You can export the log to a USB drive. It is a simple text file and can be used in word processing applications on a PC.

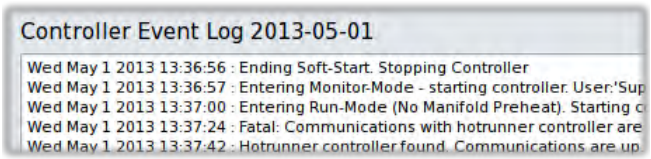
Initially, all of the different messages are displayed together in the same log.

Press the Log-Book icon to filter the log by message-type. The types of message currently being displayed are shown next to the Log-Book icon and in the Log-Page title area.

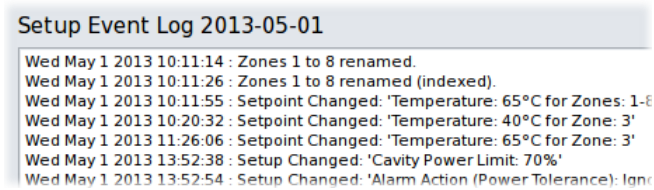
System Log:
These are messages about software versions, when the controller was started and various communications and serious hardware error messages.



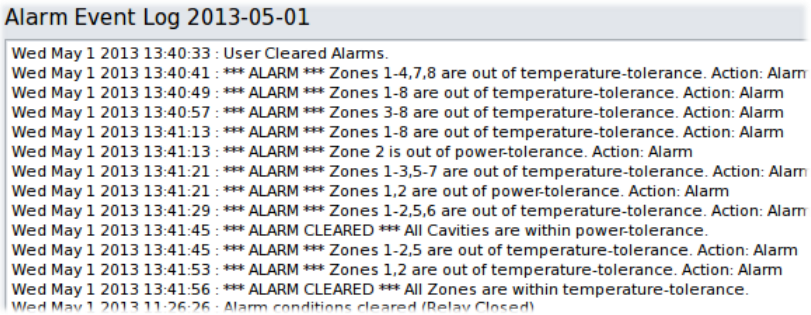
Controller Log:
Whenever the controller is put into monitor mode, soft start, diagnostics etc., a message of this type is entered into the log. Serious communications errors are logged here.



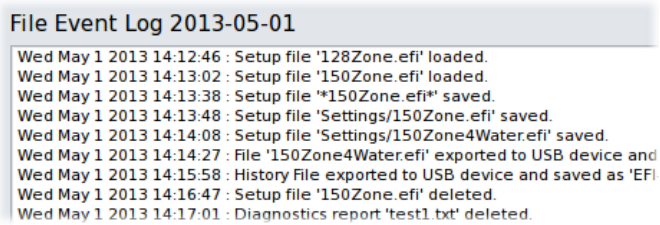
Setup Log:
Changes to the current setup are logged with these messages. This includes most of the changes possible in the setup dialog as well as zone setpoint or mode changes.



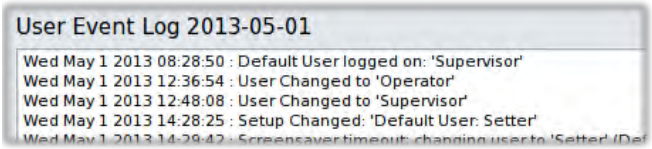
Alarm Log:
Alarm conditions are logged when they are triggered and when they are dismissed, either by the user or naturally (e.g.: the temperature-tolerance alarm). The state of the alarm relay is also logged.



File Log:
These messages log any file operations, including exporting or importing files.
Messages here referring to setup files with asterisks (*) in their name are automatic backups of the current setup file. These occur when a user makes a setup change.



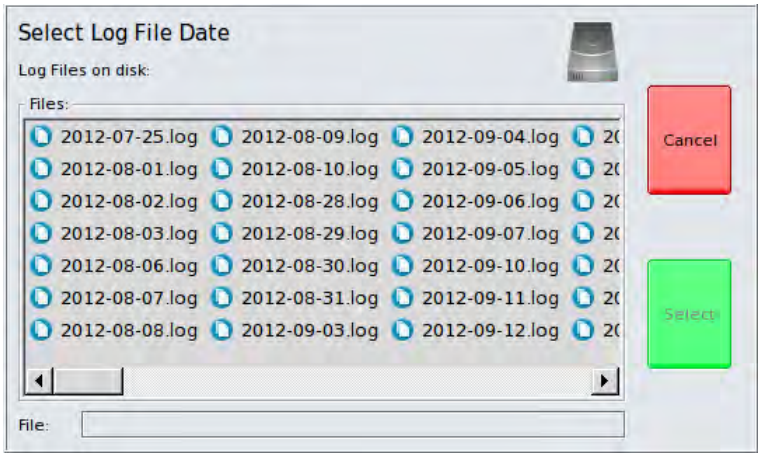
User Log:
When users log on and off, a message is entered into the log.



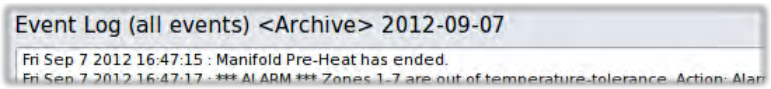
Select Date

Press this button to select a date from the **log archive**.

The VISIONS 3000 stores a years-worth of log messages in daily log-files. You can display the log entries from the archive by pressing the calendar icon. Simply pick a log-file from the list of dates which appears.



The title-bar of the Log-Page changes to show you that you are viewing the archive:



View Current

You can navigate quickly to the previous and next day's log using the up and down buttons, and you can return to today's log using the "View Current" button.

Users:
You can view the Users Page via the setup dialog.

Any user can access the Users Page.

Users

From the home screen or the main run-screen, in monitor-mode or run-mode, press the setup button, then the "Users" icon.
This takes you to the Users Page.
Here you can log-in and change passwords.

About Users:
Many functions on the VISIONS 3000 controller can only be accessed by certain users.
There are three user-levels which determine the functions that can be accessed.

- Operator
- Setter
- Supervisor

The highest user-level is "Supervisor"; the lowest is "Operator".
You change user-levels by logging-in at the Users Page of the Setup dialog.
The current user-level is shown on the status bar:

If a screen control or button is "greyed-out", the function is not available. This is usually because the current user-level does not have the privileges to access that function.

Log In
Operator

The Operator does not require a password. Most functions in the setup dialog are not available to this user, they cannot change setpoints, access Diagnostics, Soft-Start, Boost-Mode or Standby-Mode.
The "Operator" can start and stop the controller.
A "Setter" or "Supervisor" selecting this option is effectively logging out.

Log In
Setter

You will be asked for the password to access this user-level.
The "Setter" can access Boost-Mode, Soft-Start, Standby-Mode and can edit zone setpoints. Most functions in the setup dialog are not available to the "Setter".

Log In
Supervisor

You will be asked for the password to access this user-level, since it can access all of the controller's functions.

When entering a password, use the touch keyboard which appears on-screen.

Change
Password

The "Setter" can change the password for the "Setter" user-level.
The "Supervisor" can change both the "Setter" and "Supervisor" passwords.
When changing passwords, you will be asked to enter the current password first.
If you change the passwords, be sure to make a note of them and keep it somewhere safe.

Lost passwords:
Contact ITC if you lose your passwords. They are quite easy to reset but it requires a special user-level that is not publicly available.

Default Passwords:
The following passwords are configured on a new VISIONS 3000 Hot Runner Controller:

- Setter: adadadg
- Supervisor: test1ng

Change
Default User

The **Default User** is the user-level which the controller logs-in automatically when it is turned on, or when the screensaver activates. The "Supervisor" can change this setting to make the controller more secure when it is left unattended. Setting the "Default User" to "Operator" is the most secure. When a "Supervisor" or "Setter" leaves the VISIONS 3000 unattended, the VISIONS 3000 will default to the "Operator" user-level once the screensaver activates.
Note: it is possible that the screensaver has been disabled in the setup dialog.

File Operations:
You can view the File Operations Page via the setup dialog.

Any user can access the File Operations Page, but most functions require that you first log on as the Supervisor.

Save Load & View

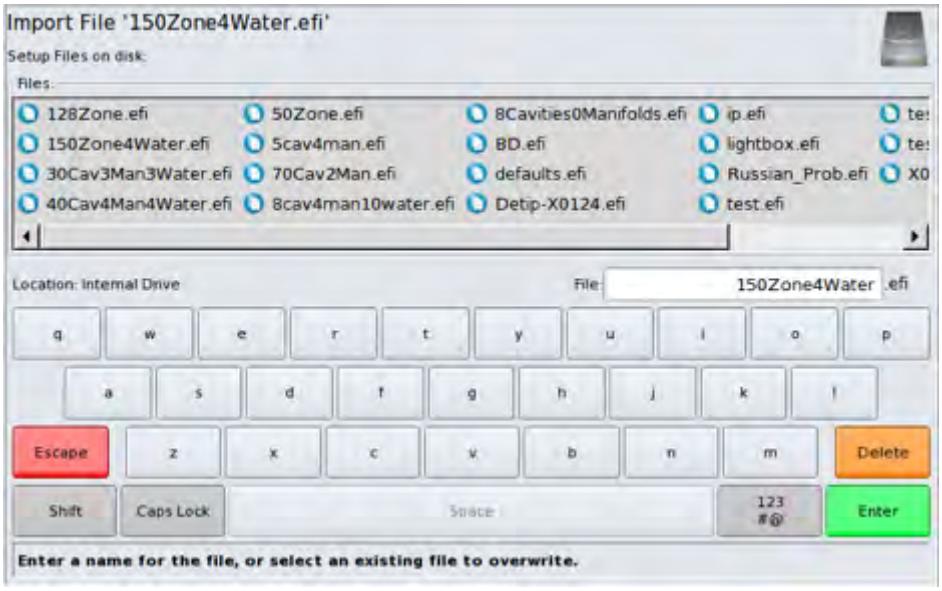
From the home screen or the main run-screen, in monitor-mode or run-mode, press the setup button, then the "Save Load & View" icon.
This takes you to the File Operations Page.

Nearly all file operations can be performed here, with the exception of importing zone names and adding a new language pack.

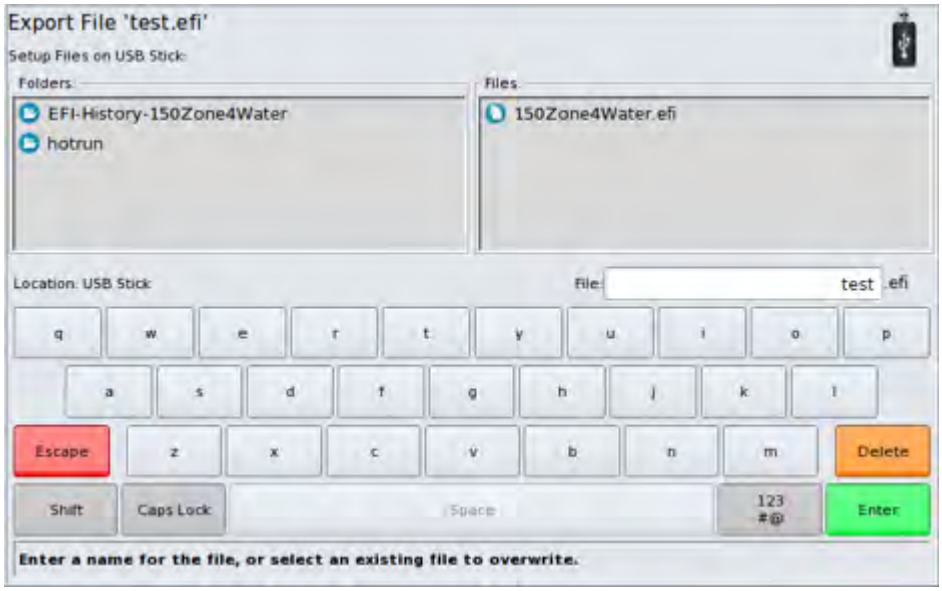
- Save Setup files
- Load Setup files
- View Diagnostics reports
- View the controller Logs
- Export Setup, Diagnostics, Logs and History files
- Import Setup and Diagnostics files
- Delete Setup and Diagnostics files

About VISIONS 3000 Files:
The controller loads and saves it's data to/from two sources: the internal drive and an external USB drive.
When loading or saving files internally, the user is restricted on the location the files can be placed. For example, the controller decides where setup files should be stored so the user only has to choose a name.
When saving or loading files to/from the USB drive, the user can usually choose where on the USB drive the files should be loaded from or saved to.

In this example, the user is importing a setup file from a USB drive and is only permitted to choose a name for the file; there is no list of folders:



In this example, the user is exporting a setup file and is permitted to choose the folder on the USB drive as well as the filename:



When unsure, read the status-bar of the virtual keyboard and look at the drive icon in the top-right:

The list of files and folders are from the USB drive.

The list of files is from the internal drive.

Save Setup

Only the Supervisor can access this function.
Most of the options which are configurable in the setup dialog, zone setpoint changes and a few other configurable options, are stored in setup files internally. An ITC controller setup filename ends with the "ITC" suffix. Sometimes, people use the term “toolset” when referring to setup files.

The current setup file is shown on the status bar, next to the clock.

If the filename has asterisks either side of it, the setup has been changed. This is your reminder that the file should be saved.

Changes to the setup file will not be lost if the controller is turned off - the next time the controller is started it will load the current setup file with changes, and the filename will be shown on the status-bar with asterisks.

Selecting "Save Setup" allows the setup to be saved. You can select a new filename (it's like the "Save As" option you are probably familiar with from desktop applications).

You will not be able to choose the folder to save to, because this operation acts on the internal drive.

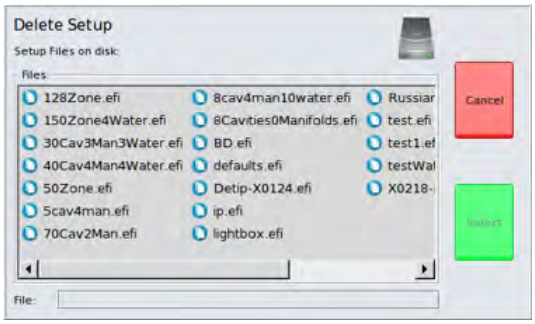
Delete Setup

Only the Supervisor can access this function.
This option allows you to manage the setup files stored internally on the controller.
Choose the file you want to delete from the list of available files.

Delete Diagnostics

Only the Supervisor can access this function.
This option allows you to manage the diagnostic files stored internally on the controller.
Choose the file you want to delete from the list of available files.

When deleting files, you will not be able to choose the folder, because this operation acts on the internal drive.



Load & View

Load Setup

The Setter or Supervisor can access this function, but only if the controller is stopped (i.e.: from the Stop Mode page).

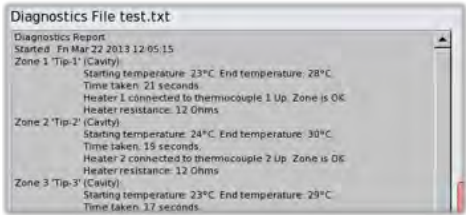
The controller will reconfigure itself from the setup file selected from the list of files stored internally.

Load & View

View Diagnostics

Any user can access this function.
Choose from the list of available diagnostics reports stored internally on the controller.

The text-viewer dialog appears:



The diagnostics report gives more information than is available in the diagnostics page, and can be viewed any time. The diagnostics report files are simple text files which can be exported to a USB drive for later use on a desktop computer.

Load & View

View Logs

Any user can access this function, which takes the user to the Event Logs Page.

Export

Only the Supervisor can access these functions.
To export any files, first insert a USB drive into the top-box USB port of the controller.
Select the function you require (export setup, diagnostic, logs or data history).

Exporting logs is simply a case of selecting a name for the log file and a folder on the USB drive where it should be saved to. The log-file generated is a simple text file. One year's-worth of log messages can create a very large file many megabytes in size.

If you choose to export the setup files, diagnostic reports or data history, you are asked if you want to export all of the files or just one of the files.

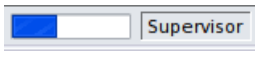
If you want to export all of the files in one operation, the controller will place the files in the root folder on the USB drive. You will not be prompted to overwrite files which are already there.

If you export a single file, you can choose the folder on the USB drive to save the file to.

About History Files:
History files are very large ".csv" spreadsheet files which you can open in a desktop PC spreadsheet application. These files of tabled data are extracted from the minute-by-minute data logs held internally on the controller.

Internally, the controller maintains a database for each setup it knows about. When exporting the data, a folder is created on the USB drive for each one of these setups and the spreadsheet files are created in that folder.

If you select to export all of the controller's history database, you will create many folders on the USB drive and will generate a lot of data. One year's worth of data history can require a gigabyte or more of data and will take several seconds to export.



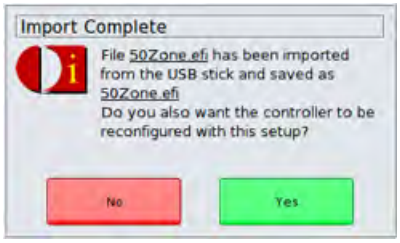
You will see a progress indicator on the status bar during long file operations.

Import

Only the Supervisor can access these functions.
To import files, first insert a USB drive into the top-box USB port of the controller.

Select the folder on the USB drive and the file to import, then choose the name the file should be called once it is imported, or just accept it's current name.

If you choose to import a setup file, the controller will ask you if you also want to load the setup file as the current configuration. If you answer yes to this question, the controller will immediately reconfigure itself to the newly imported setup file.



You cannot import log files or history files, which are specific to this controller. When these files are exported, they are not saved in the same format as they are stored internally.

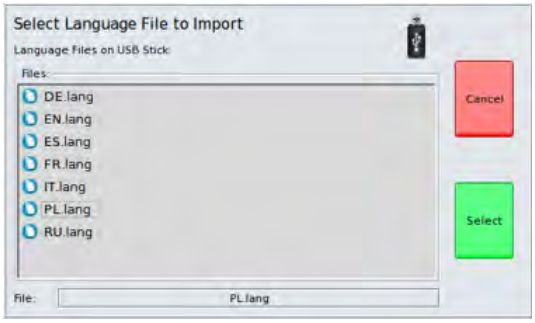
General Settings → Language

This feature allows you to select an alternative language for the VISIONS 3000 software. Every displayed object is translated, as well as new log entries and diagnostic reports. Language packs also contain a translated help system.
It is possible to import a new language, if provided by ITC.

Import Language

Only Supervisors can access this feature.

The file provided by ITC is called a "Language Pack". Place this file on a USB drive and insert it into the USB port on the back of the top-box. Then click the "Import Language" icon.
You will be asked to select a language pack file from those found on the USB drive. One language pack file can contain multiple languages. You will be asked to select one of the languages to import.



The language packs are checked before being installed. Any problems are displayed and are probably due to data corruption during download or when copied to the USB drive.

Networking:

You can configure network settings from the setup dialog.

To edit network settings, you must first be logged in as the supervisor

From the home screen or the main run-screen, in monitor-mode or run-mode, press the setup button, then the "General Settings" icon, then the "Network Settings" icon.
This takes you to the Network Settings pages.

The VISIONS 3000 controller supports network connections via wired or wireless interfaces. You can only use one of these at a time.

You need to configure and enable networking in order to use the following VISIONS 3000 functions:

- **VNC**. This allows you to remotely access the controller across a Local Area Network (LAN) or through the Internet.
- **FTP**. You can remotely access the files on the controller using FTP. This feature is most often used by ITC engineers when upgrading the software on the controller. The desktop application **ITC Sync** uses the FTP service.
- **Kistler Water Flow**. If your tool has Water Flow installed, you can use it to automatically balance the tool. To do this, you will need to enable networking.

The Network Settings pages allow you or your network administrator to configure the controller to access your network.

Network Services

Only Supervisors can change these settings.
Use this page to enable or disable the VNC and FTP services and to select the network interface to use.
The "Hostname" option allows you to give the controller a name. This is useful for identifying a controller when you have many controllers on the network. Changes to this setting require that the controller restarts.

IP Settings

Only Supervisors can change these settings.
In order for any device to use the network, it must be assigned an IP address. The VISIONS 3000 controller supports IPv4 addressing. The controller can automatically acquire an address using DHCP, if your network has a DHCP server. Alternatively you can assign a static address manually.
Your network administrator can advise you about IP addresses, masks and gateway addresses.

Wireless Settings

Only Supervisors can change these settings.
Your VISIONS 3000 controller may already be fitted with an internal Wi-Fi adapter. You can also attach a USB Wi-Fi adapter to the USB port. Configuring the VISIONS 3000 to connect to a Wi-Fi network is similar to the steps you'd take on a desktop PC. However, the VISIONS 3000 software requires you to know the name of the network to connect to before you begin configuring, because there is no "scan" facility. Your network administrator can advise you about network type and encryption settings.

Using VNC

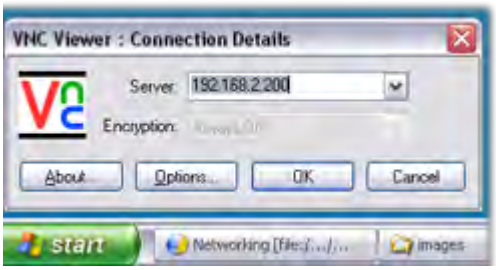
Virtual Network Computing (VNC) is a graphical desktop sharing system that allows you to view the VISIONS 3000 screen from a PC, laptop, tablet or smartphone.

You can access all of the features of the software and use the controller as though you were standing in front of it.

To use this feature:

- Connect the controller to the network, using either the wireless or Ethernet interface.
- Configure the controller to connect to the network (i.e.: IP address and / or Wi-Fi settings).
- Enable the VNC server on the controller in the Network Services page.
- Connect a laptop, desktop PC, tablet or smartphone to the network.
- On the PC, laptop, smartphone or tablet, download and install a VNC client application. There are many freely available from the Internet.

Assuming that the VISIONS 3000 controller and client device (e.g.: desktop PC) are properly configured, launch the VNC application and enter the IP address or hostname of the VISIONS 3000 controller:



You will be asked for the password, which is configured by the Supervisor in the Network Services page. Once connected, you can view the VISIONS 3000 software on your PC or other device.

The controller will only allow one VNC connection at a time. The first connection is accepted; later connection attempts are rejected.

Only Supervisors can change settings on this page.

Connect the Kistler Water Flow unit and the VISIONS 3000 Controller to a network. This can be done via a LAN hub or switch, a direct cable connection or via a Wi-Fi network. Your network administrator can advise.
Once connected, you can configure the VISIONS 3000 to accept setpoint changes from the Water Flow unit.

- Water Flow HRI Server. Enable or disable the Hot-Runner Interface.
- TCP Listen Port. This should match the same setting on the Water Flow unit.
- Client IP Address. If set to "Any", the VISIONS 3000 will accept the first connection made using the Kistler HRI protocol, and reject subsequent connections. For security, you can set this to the IP address of the Kistler Water Flow unit and force the VISIONS 3000 to reject any HRI requests that do not originate from the IP address specified.
- Maximum and Minimum Temperature. These settings allow you to limit the range of changes to setpoints that are accepted.

When a connection is established by the Water Flow unit, the Kistler logo appears on the status-bar and a message is added to the log.

When using Kistler Water Flow, setpoints can be continually changed by the Water Flow unit as it balances the tool. Setpoints can still manually be changed by a user at the controller.

Water Zones:

You can configure the water zones from the setup menu.

To make changes you should first log on as the supervisor.

From the home screen or the main run-screen, in monitor-mode or run-mode, press the setup button, then the "General Settings" icon, then the “Water Zones” button.
This takes you to the Water Zones Page.

An ITC VISIONS 3000 hot runner controller fitted with a water-zone module can monitor the temperatures and flow rates of one or more coolant circuits in the tool.

- If your VISIONS 3000 hot runner controller is equipped with the ITC water-zone module it will have labelled connectors on the side of the controller and the temperature and flow rate sensors connect directly to these.
- Alternatively, your tool may have been fitted with one or more Smart water manifolds, in which case the VISIONS 3000 controller connects to the MFIO unit using a single USB cable.

Monitoring the water circuits in the tool can help protect the mould, improve moulding efficiency and produce higher quality parts.

Data collected from the water-zones is stored in the controller's history database, and can be graphed.

Any user can access these settings, but to make changes you must first log in as the Supervisor.

If using the ITC water-flow module(s), you select the number of water zones fitted (up to 16).

If using Smart manifolds and an MFIO, the controller will automatically identify the ID number of the attached manifolds (up to 4). You configure the number of zones (up to 12) per manifold.

Water-zones have no setpoint, are coloured blue and display a water-droplet next to the flow-rate box. You cannot select water-zones for editing.

You can choose the flow-rate units. The controller works in metric litres per minute, but flow-rates can be displayed in imperial gallons per minute if desired.

If you have Smart manifolds, you can select which type (1 or 2) are fitted. This sets the minimum and maximum flow-rates of the sensors.

You can change the IP address of the MFIO unit if you have Smart manifolds fitted.

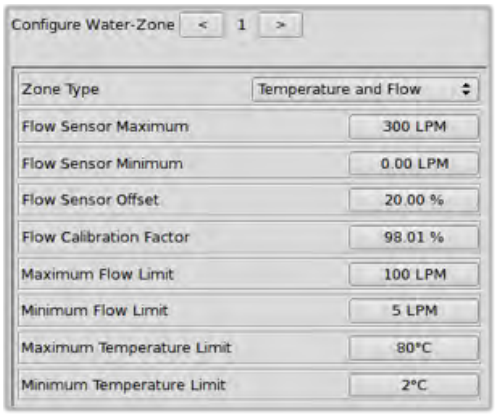
The ITC controller does not use the MFIO IP address and changing this setting does not affect the USB cable data connection.

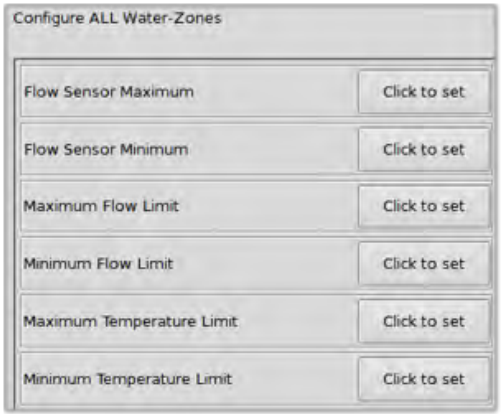
Configure Zones

Any user can view these settings, but to make changes you must first log in as the Supervisor.

You can configure and calibrate individual water zones by selecting this icon. You will be asked which zone you want to configure, or if you want to configure all the zones at the same time.

Some of the configuration options are specific to each zone, so if you select '0' to configure all zones, some options will not be visible. Some options are specific to the Water Flow Monitor or ITC modules and will not be visible.





When configuring a single zone, you can easily change the current zone using the forwards and backwards buttons.

- **Zone Type**. You may only be interested in the temperature, just the flow, or both. This option allows you to change the appearance of the display in run-mode or monitor-mode.
- **Flow Sensor Maximum and Minimum**. For ITC water-zone modules only. These settings should match the full-scale values for the sensor(s) in use. You can have different values for each zone, though it is more likely that you have the same sensors installed for every zone. You can find these values in the datasheet for the sensors.
- **Flow Sensor Offset and Calibration Factor**. These settings allow an ITC engineer to calibrate each zone, and should not be changed except when directed by ITC. If you think there is a problem with the calibration of your ITC water-zone module, contact us.
- **Maximum and Minimum Flow Limit**. These are alarm levels. If the flow-rate exceeds the maximum or falls below the minimum, an alarm condition is triggered. You can configure the controller to take action when these alarms are triggered. A good use of the minimum level is to ensure that the tool is not heated without the water turned on.
- **Maximum and Minimum Temperature Limit**. These alarm levels refer to the zone's water temperature.

Alarm Actions

Any user can view these settings, but to make changes you must first log in as the Supervisor.

Just as with the temperature-controlled zones, you can configure the controller to take action when one of the water-zone limits is exceeded.

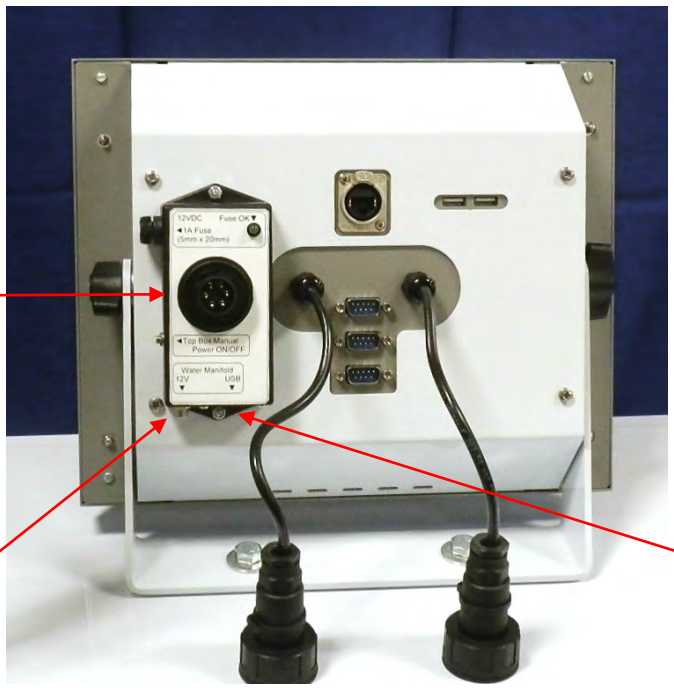
The controller is able to detect the following water-zone alarms:

- **Open Thermocouple**. The controller cannot read a water-zone's temperature.
- **Reversed Thermocouple.** The temperature readings from the water-zone are incorrect.
- **Temperature Over-Limit and Under-Limit.** The water-zone's temperature is out of limit.
- **Open Flow-Sensor.** There is a problem with the sensor, or the cable connecting it to the controller.
- **Flow-rate Over-Limit and Under-Limit.** The water-zone's flow-rate is out of limit.

The controller can take various actions when an alarm condition is triggered:

- **Ignore.** No action is taken.
- **Alarm.** The controller toggles the Alarm relay, which if connected will sound the external machine alarm, start the alarm indicator lamp and stop the machine. The controller continues to maintain temperatures and the Alarm Warning Dialog is placed on the screen.
- **Standby.** All zones are placed into standby mode , the Alarm Relay is toggled and the Alarm Warning Dialog is placed on the screen.
- **Shutdown.** The controller turns all zones off, the Alarm Relay is toggled and the Alarm Warning Dialog is placed on the screen.

You can tell when an alarm is active in the normal way, just as if a temperature-controlled alarm had been triggered.



ZONE TUNING:

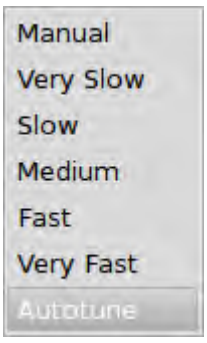
The VISIONS 3000 is a precision temperature controller, capable of maintaining the measured value for each controlled zone to within +/- 1 degrees Fahrenheit of the setpoint. In order to do this, the VISIONS 3000 uses a 3-term (Proportional, Integral, Derivative) algorithm to calculate the appropriate 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, measured in degrees, and the Integral term is referred to as Time Constant, measured in seconds. The Derivative term is automatically calculated from the Time-Constant setting.

Under normal circumstances, the default settings (Medium for cavities; Slow for manifolds) 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 Medium to Fast).

If the zones remain unstable, repeat the previous procedure to set the PID setting to Very Fast for either the cavity or manifold zones. It may be necessary to select Slow or Very Slow.

With certain types of bushings it may be impossible to find a pre-set combination of Bandwidth and Time-Constant which give precise control; some oscillation remains. In these circumstances, using the setup menu, it is possible to independently set the values for both the cavity and manifold zones. To do this, select the Manual option. You can enter independent values for Bandwidth and Time-Constant and begin looking for values which give better control.



Selecting the Auto-tune option causes the controller to automatically determine the best values for Bandwidth and Time-Constant on a zone-by-zone basis. The controller does this when it is started.

HARDWARE:

TOP BOX:

The Top Box contains a 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 pre-set period of time. This screensaver function is available from the Setup menu.

RACK:

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

All the module types within the rack have exclusive connectors so that other module types 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 visually 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.

LIGHT TOWER: (OPTIONAL)

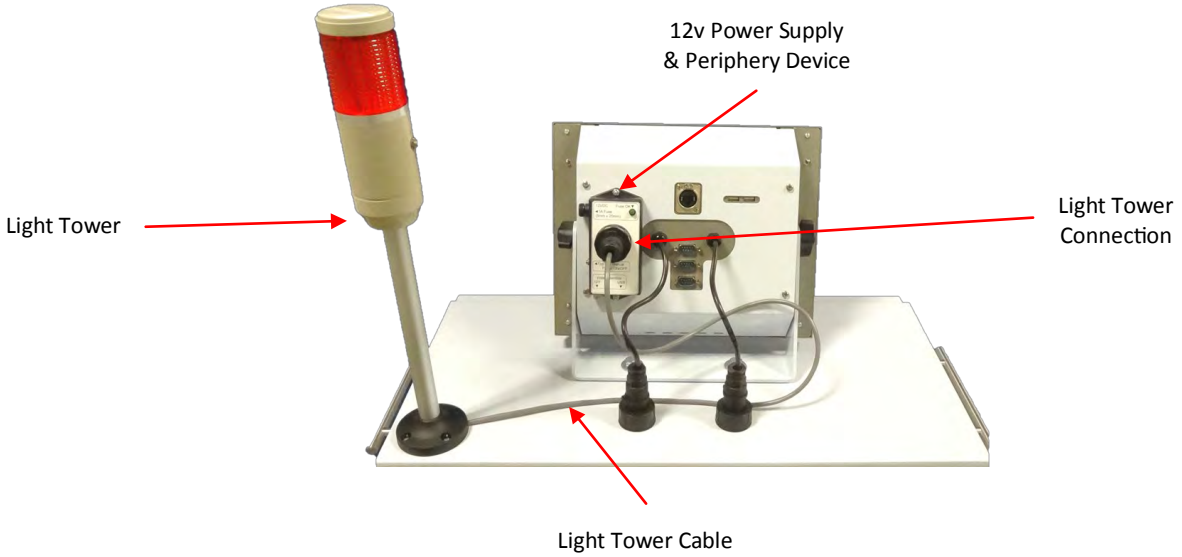
When a VISIONS 3000 system is ordered with the Optional Light Tower Alarm, the Light Tower is not delivered Attached to the cabinet.

INSTALLATION PROCEDURE:

1. On the Top, Right, Rear corner of the cabinet there will be a patter of (4) bolt holes w/bolts.
2. Remove the (4) bolts and alight the Light Tower above the hole pattern, install the (4) bolts and securely tighten.
3. Attach the Light Tower Cable to the Power Supply Periphery device located on the Rear Left side of the Top Box.

INSTALLATION PROCEDURE WHEN NOT ORDERED WITH SYSTEM:

1. Use base of Light Tower to layout pattern for the (4) bolts supplied with the Light Tower.
2. Follow Installation Procedure 2 & 3 above.



CPU MODULE

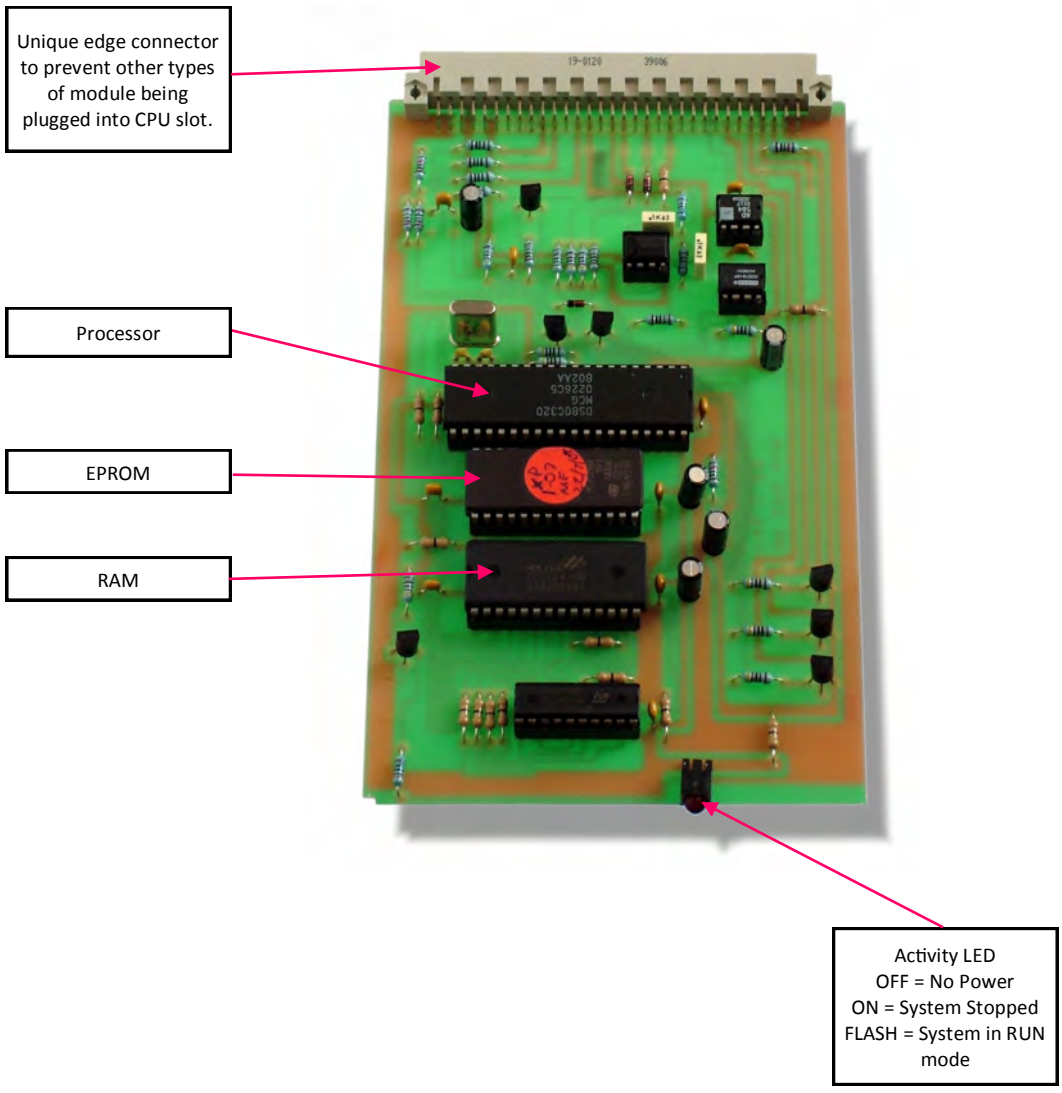
A single CPU module is fitted in the top rack, located immediately to the left of the PSU module.

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.

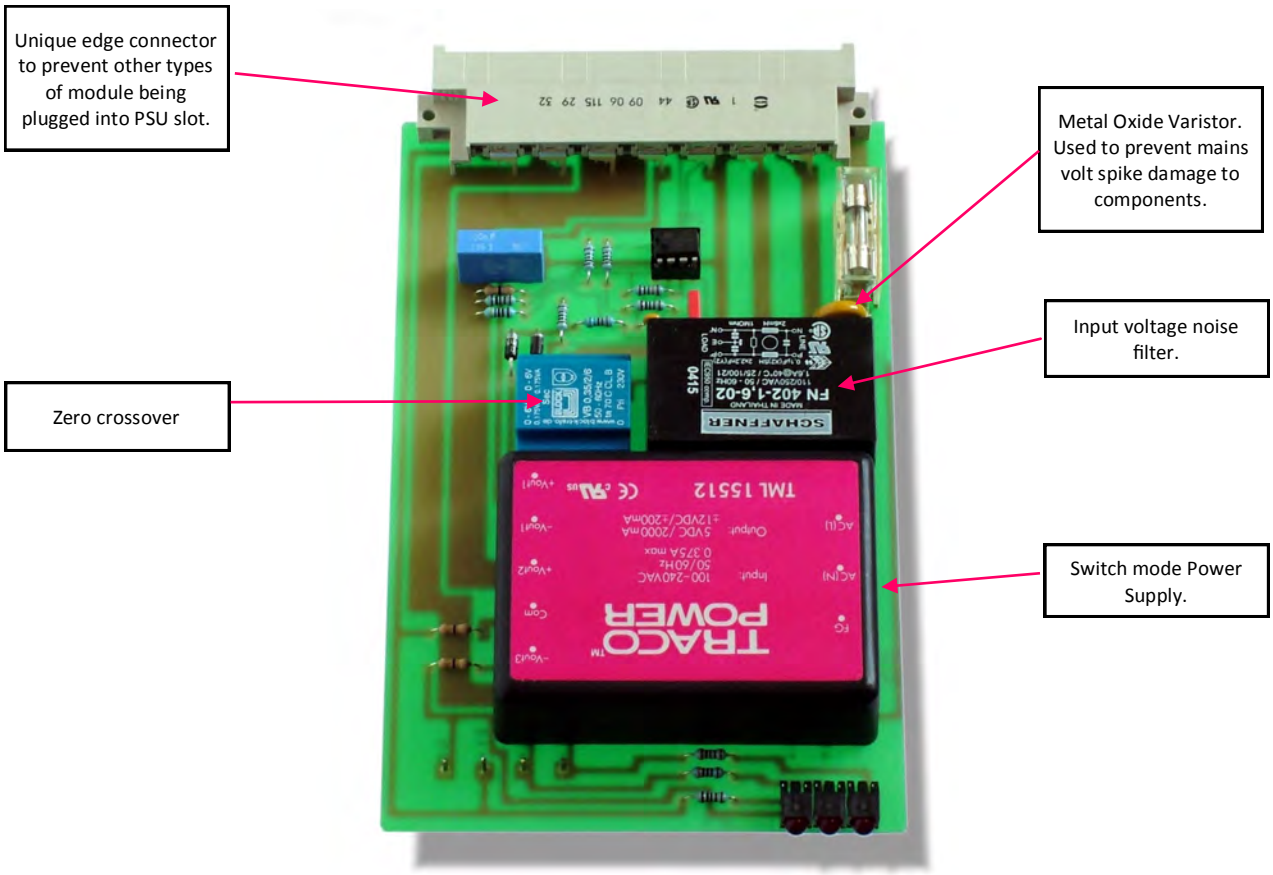


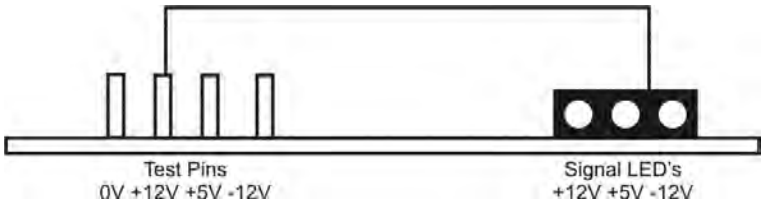
PSU MODULE:

A single PSU module is fitted in the top rack and is located on the very right hand side. 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.





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. Thermocouple modules are located to the left of the CPU module.

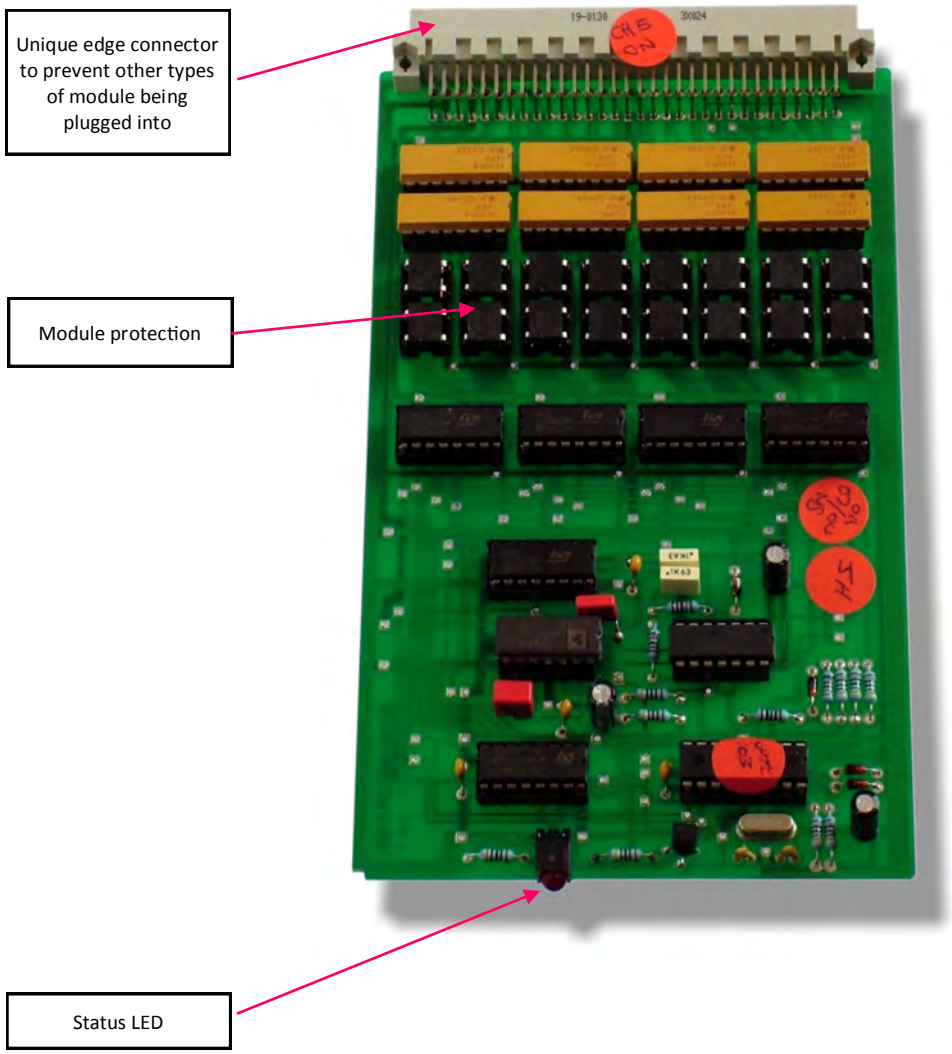
The single front panel LED indicates communication status and has three modes: -

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 POWER CARD (15 AMP):

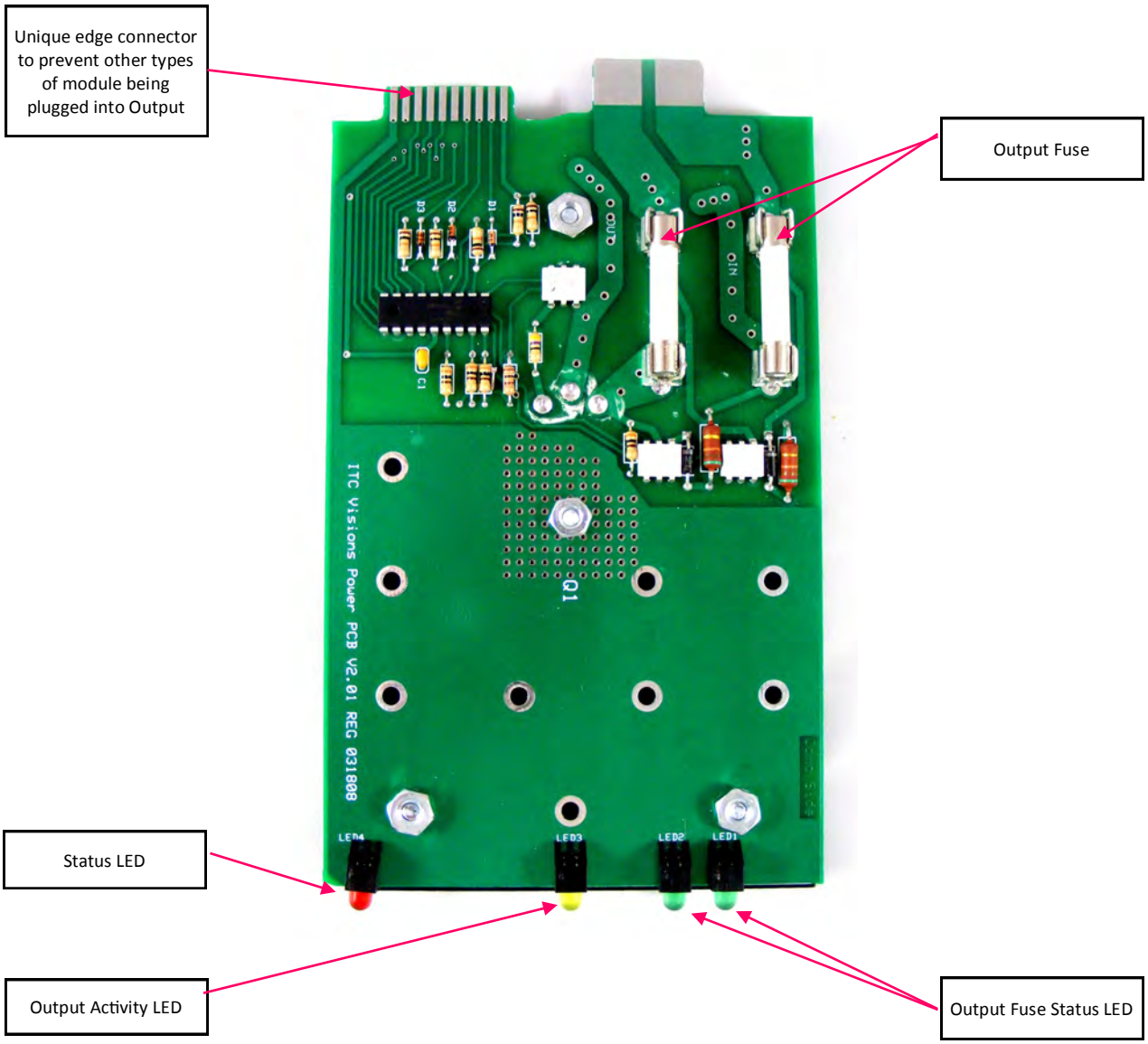
The Single Output card powers a single zone rated at 16 Amps at 240V a.c. and is suitable for applications requiring maximum flexibility from the controller to connect to a wide range of tools.

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.

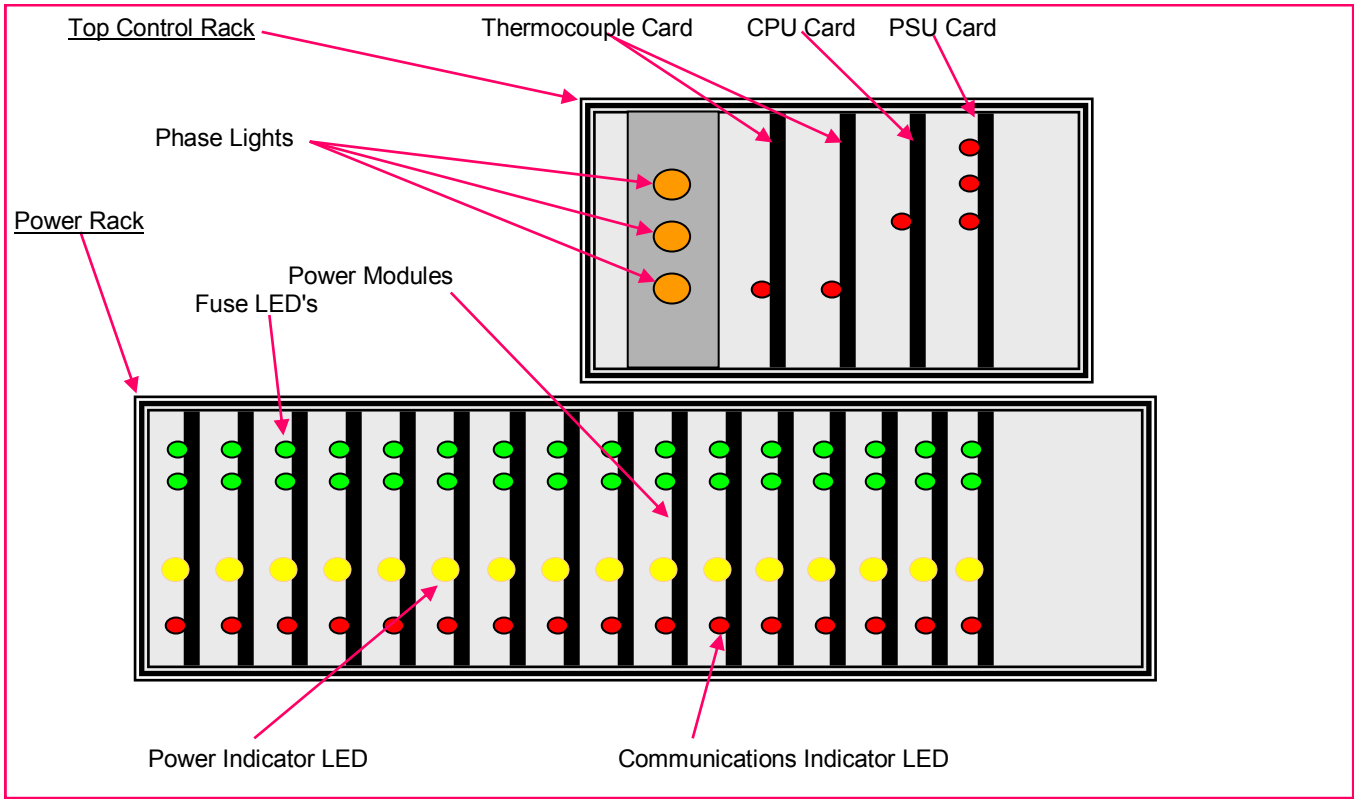
There are no coding pins, DIP switches or other form of address coding on the output power card. Address coding for all the output cards present in any given system is handled by the backplane.

This output power card is used in most North American systems. 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).



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 starting with the top control rack.

Check that the power cord is correctly inserted into the power outlet and that the VISIONS 3000 is turned on with breaker switch on the front door of the cabinet.

When power is "ON" to the system, all three **Orange** LED's should be lit. If all three are off, check input power to the system. If any one of the **Orange** LED's is off, this would tend to indicate a failed phase and is more than likely a blown fuse or tripped circuit breaker on the building incoming power.

FIRST - If all the **Orange** 3-Phase LED's are lit, then the three **Red** LED's on the PSU card should also be lit. These indicate from top to bottom (+12V, +5V, -12V). If all three **Red** LED's are off, check that Ground is properly connected. The PSU card fuse should also be checked and replaced if faulty. If only one of the **Red** LED's is lit, this would indicate a fault within the PSU card or a Power module is faulty. Turn "OFF" the VISIONS 3000 and then slide out of the racks, all of the cards except the PSU card. Turn the VISIONS 3000 back "ON" and determine if the three **Red** LED's on the PSU card are lit. If they are not lit, there is a fault in the PSU card. If the three LED's on the PSU card are lit, switch the VISIONS 3000 "OFF" and slide the CPU card back into the rack, then turn the power back "ON". Check the three PSU LED's, If not lit, then it is the CPU card which is faulty. If the three **Red** PSU LED's do come on, turn "OFF" the VISIONS 3000 and slide the first thermocouple card back into the rack. Repeat this process until the thermocouple card which is pulling down the voltage is found.

SECOND - If the PSU card is operating properly, the display (Top Box) should also be operational. If the display is blank, check that all communications and power leads are connected correctly between the Top & Bottom Boxes.

THIRD - If the PSU card is operational, the **Red** CPU LED should also be lit. In "STOP" mode, the LED will be lit continuously. In "RUN" mode, the LED will blink as the CPU module communicates with the display. If the LED is lit and not blinking while the VISIONS 3000 is in "RUN" mode, this would indicate a faulty CPU card. This will also be indicated by the Top Box being unable to obtain any values and show "COMS ERROR" on each zone.

TROUBLESHOOTING:

FOURTH - If the CPU card is operational and the front edge **Red** LED is blinking, a sequence will be seen as each of the Power modules **Red** LED's respond in turn. The sequence will illuminate only one communications LED on one module at a time. If two module communications LED's 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.
FIFTH - If the **Red** LED on the Thermocouple card does not operate, this indicates an error with the thermocouple module.

SIXTH - On the Power output modules, the bottom **Red** LED indicates communication with the CPU module. The Yellow LED flashes 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. The **Green** LED's for each zone indicates the protection fuse for that zone is functional. If any **Green** LED for a given zone is off, this indicates that that 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 be checked for faulty heaters, ground faults and any other short 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. unauthorised tampering of the internal workings of the controller may invalidate the warranty.

Output remains on all the time even though screen shows zero output power:	1. If this is a manifold zone (over 15 amps), it is probable that the associated power module has gone short circuit. All the power modules are labeled with their zone. Switch the system off and check the power module for proper operation. If faulty, replace the power module with a compatible unit.
The output from a given power module does not provide power.	1. It is probable that the fuse has blown on the module. Check the green LED on the card to see if it is on. Replace fuse with an identical type.
Erratic Operation	1. Check for loose connections between the top and bottom boxes & input power, etc. 2. Check for frayed or broken wires. 3. Check fan filters & replace if dirty. 4. Check machine / mold for proper ground.
Top Box does not power up:	1. Check that the controller is connected to 3-Phase power, then check that the VISIONS 3000 is turned on and that the (3) phase lights at the left of the top rack are lit. If one of the light's is out, the associated phase is not operational and the PSU for the top box is on that phase. Switch off the VISIONS 3000, rectify the power problem and try again. 2. If each of the (3) phase lights 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. If this is correct, it is possible the Top Box has failed. Please notify the factory.
Different results every time Tool Diagnosis is run. Particularly, Thermocouple open and swapped errors:	1. The most likely cause of this problem is a faulty thermocouple card and it should be replaced. If the system has more than one thermocouple card, the faulty card can cause erratic readings on the other cards. Therefore, a systematic approach should be used to determine which card is at fault.
Why does a selected zone not show data on the 3D Surface	1. Data from the zones are only shown on the surface graph when they are working in setpoint (AUTO) mode and using on operational thermocouple
Fuses:	1. Power Card Fuses must be replaced with identical characteristics. 2. For systems with higher amperage zones, fuses are located separate from the Power Card. They can usually be found on the bottom rack. There are two black holders with screw off caps, located in conjunction with the 30 amp SSR.

TROUBLESHOOTING:

Why does the Real Time Clock stay yellow when the zones are in-the-green:	1. The color of the Real Time Clock changes from yellow to green when the following conditions are met: a. The VISIONS 3000 is fitted with software version 2.330 or later. b. All active zones are within the Alarm Relay Tolerance. For example, for a setpoint of 400° F and Alarm Tolerance of 30° F, if the measured temperature of zones is between 370° & 420° F, the measured temperature will be displayed in green. c. The Alarm Relay Holding Time is greater than "0".
Measured Temperature on the display are not stable:	1. If all zones are oscillating, it is most likely that extraneous voltage has made its way to the systems thermocouple circuit. This is made possible by a poor Ground or Neutral connection to the VISIONS 3000. Try a different outlet or get a qualified electrician to test the power outlet. 2. If all zones are oscillating, it is possible the Ground and Neutral wires have been swapped. Again try a different outlet or get a qualified electrician to test the outlet. 3. If all zones are oscillating and it is not the power outlet, it is possible the PSU board has become faulty in the VISIONS 3000. Contact ITC for further information. 4. The zones may not have the correct PID setting selected. This would be the most likely cause if it is just the Cavity zones that were oscillating. For the Cavity PID, the normal value is Auto-Tune or 3-Medium. If the Cavity's are oscillating, try setting the value to 4-Fast or 5-Very Fast. 5. The Manifold PID should be set to 2-Slow in most cases. 6. If all Cavity zones and/or all the Manifold zones are oscillating, it is possible that the Bandwidth (BW) and Time Constant (TC) values for the selected PID settings have been changed from the factory default. Check the settings using the table shown below: (Protected by Password)

Cavity Zone PID - Parameter #2

Settings	Name	Band Width	Parameter Num-	Time Constant	Parameter Number
1	Very Slow	4	100	16	105
2	Slow	8	101	8	106
3	Medium	16	102	4	107
4	Fast	32	103	2	108
5	Very Fast	64	104	2	109
6	Auto Tune	Automatically determines best Bandwidth & Time-constant			

Manifold Zone PID - Parameter #2

Settings	Name	Band Width	Parameter Num-	Time Constant	Parameter Number
1	Very Slow	2	110	32	115
2	Slow	4	111	16	116
3	Medium	8	112	8	117
4	Fast	16	113	4	118
5	Very fast	32	114	2	119
6	Auto Tune	Automatically determines best Bandwidth & Time-constant			

TROUBLESHOOTING:

Zone does not get to Set-Point:	1. Heater Failure: This would be shown on the screen as a "NO LOAD" error and could be the result of a failed heater, broken connection cable of faulty fuse 2. Cable Wiring Fault/Failure: This would be shown on the screen as a "NO LOAD" error and could be the result of a failed heater, broken connection cable or faulty fuse. 3. Output Fuse: This would be seen by the corresponding "GREEN LED" on the output power module being "OFF". For manifold zones, it is also important to check the fuse. Always replace the fuse with a fuse of the same type, rating and speed. 4. Insufficient Wattage in Tool: It is possible the heater(s) are not of sufficient wattage to achieve the selected setpoint. If it is a cavity zone and the specifications of the heater is the same as the other zones which are reaching setpoint, then the fault is likely to be elsewhere. With manifold zones, it is not uncommon to combine a number heaters to provide sufficient wattage. Check on the VISIONS 3000 display to ensure that the measured wattage corresponds to that specified on the tool drawing. If one or more heaters have failed, it will show up in this manner. 5. Incorrect Thermocouple Location: Particularly with manifold zones, if the thermocouple is located some distance away from the source of heat, then it is possible that the thermal losses in the tool will indicate that the thermocouple is reading a temperature considerably different that the temperature at the heater. 6. Output Power Limit Set Too Low: To improve the reliability of the heaters in the tool and save energy, the maximum power is limited to 100% on cavity zones and 90% on manifold zones. Particularly on the cavity zones, it is possible that the output limit is set too low and will need to be adjusted. 7. Water Temperature Set Too Low: If the water temperature is set too low, then more heat is being drawn away from the tool than can be provided by the heaters and the temperature will not rise enough to reach setpoint. 8. Injection Barrel Heat Too Low: If the temperature of the barrel zones are set too low, the increase in temperature required in the tool will be more than can be achieved with existing heaters.
What printers can be connected to the VISIONS 3000 to printout tool	1. Printer must have an RS232 interface. This is usually a male 25 or 9 pin "D" connector 2. Epson LQ300
What settings should the printer be set to:	1. Baud Rate: 19200 bps 2. Auto Line Feed: Off 3. Parity: None 4. Data Length: 8 bits 5. ETX/ACK: Off
Erratic Display:	1. It is possible that something has occurred electrically to upset the microprocessor in the system. It indicates that there may be more interference in the power line to the control system than filtering within the power supply can accommodate. A random occurrence is not a major cause for concern. The solution usually is to connect the controller as close as possible to the electrical supply and not to the molding machine, where motors, solenoids, etc., can cause interference. 2. Equipment (Machine, Mold, Etc.) which is not properly grounded, can cause erratic operation of the control, worse yet, severe damage to the control system, blown fuses, wiring, thermocouple, etc. 3. Filters which are not properly maintained/cleaned can cause overheating of the microprocessors, etc., causing erratic operation, component degradation and premature failure.

Why does the display show the error code "NO LOAD":	1. Current output is monitored for each active zone on the VISIONS 3000. If output power is requested and no current is measured then the "NO LOAD" error will be displayed. This error code is designed to show errors in the tool. However, the error code can also be the result of the following: A. If the "NO LOAD" error is sown on all the active zones, possible faults include: a. The error could be caused by the tool connection conduits not being connected to the tool. b. It is possible that the fitted current sense module is faulty. To enable the VISIONS 3000 to continue to operate and control the load, should be set to "OFF", until the fault can be rectified. Current sense modules can be retrofitted to systems. However, please contact PCS for further information. B. If the "NO LOAD" error appears on a single zone, possible faults Include: a. Fuse on the output card is faulty or missing. Check the green LED on the relevant out put card to see if it is "ON". If it is OFF, then replace the fuse with one of the same rating and operating characteristics of Ultra Rapid FF. b. Check mold cable. Exchange with known good cable. c. Replace power card with known good card. d. Check continuity from power card backplane to connector on side of cabinet. e. It is possible that contact within power card connector has come loose. f. Turn power off than restart system. Observe "yellow" led on power card to see if it lights in sequence with the other "yellow" LED's

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 Board	VPSUBA
CPU Board	VCPUBA
Thermocouple Board	VTCBA
Single Zone 15 Amp Power Board	VBPA-16
Fuse - Power Board	ABC-15
40A Solid State Relay	VT-AA2440
Fan Filter Material	72C8663

SOFTWARE RELEASE HISTORY:

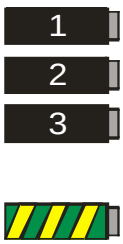
ITC offer a free upgrade to the latest version of software. However, this offer does not include the cost of any additional hardware that may be necessary, for example, interface card, touch-screen or current sense module.

Version Number	Description
2.52a 2.12a	MFN ID's displayed in both decimal and hex formats. Use of system "sync" to improve quick power-off reliability.
2.51b	Support for Smart manifold sizes other than 12 zones.
2.51a 2.11a	Added support for Data Module "EasyMaxTouch" touch-screens. Dynamic language system allows for new language packs to be installed by the user. New interactive help system.
2.51 2.11	Added water-flow and temperature bar-graph visualisation. Next / Previous buttons added to help the user configure water -zones. Water-zones graphed in "Graph Mode" display.
2.50	Water-zone data provided by MFIO unit attached via USB. This version replaces previous "ITC" water module versions. Forked from 2.10a. Up to 4 Smart manifolds (48 zones).
2.10a	Better top-box/bottom-box communications failure-mode logic (60Hz fix).
2.10	Remote control (serial port) "Demag Interface". Lost-password recovery code.
2.09	Improved log-file retrieval from the archive database. Improved rejection of unwanted button double-clicks. Code ensures that non-saved changes to setpoints are persistent across power-offs.
2.08	Coloured zone screen widgets according to type (cav. man. or water). Water-zones can now be configured for Temperature, Flow or both. Better graphing of water-zone average trace. Water-zone graphs upgraded to "gappy" curves. Several performance issues addressed, particularly when a large number of zones is configured. VNC server now has configurable port number. Added floating-point support to user dialog.
2.07	Added support for multiple ITC water-modules. Max. water-zones increased to 16. Better water-zone flow calibration.
2.06	Splash-screen added during start-up. Animated ITC logo added to start page and to alarm alert dialog. Fixed water-graph legend Zone Name error.
2.05	Added graph-mode display-mode. Better support for non-latin characters in internationalised diagnostic reports. Tiled-themed background styles. History temperature and flow resolution improved to 0.01. Surface-map zoom controls.
2.04	Fixed zone-selection bug (High Density View). Turning Manifold Pre-Heat off also turns off the Start-up-Sequencer. User is informed.
2.03	Non-destructive setup-changes, but still persistent across power-offs. (* -filenames).
2.02	TCScaling factor (for Plasthing machines). Better support for language translation files. Use of three-way (yes/no/cancel) user-interface where appropriate.
2.01	Network security enhancements. Network-specific data, such as WEP passwords are never exported but always stay on the VISIONS 3000 in a non-user-readable form.
2.00	Development version, forked from 1.19 for touchscreen-only hardware. All keypad-dependant code re-written. Incorporates virtual touch-keyboard, num-pad, setup dialog, setpoint dialog, file dialogs and date/time dialogs.
1.19	User-permissions changes. Requires newer access-control-list.
1.18	Kistler Water Flow release. Water history graph scale-change bugfix.
1.17	Prototype Kistler Water Flow support.. Save setup filename bugfix.
1.16	Manifold-before-cavities start-up-groups and surface-graph bugfixes.
1.15	Wi-Fi Support.
1.14	Added k-type thermocouple support..
1.13	OpenGL 3D surface-map visualisation.
1.00 to 1.12	These versions were prototype proof-of-concept internal-use only.

WIRING DIAGRAMS:

System Power:

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



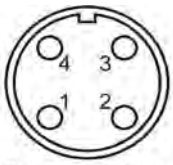
3 Phase Power Cord Wiring For 4 Wire 'Delta' Systems.
Note: The phases are wired using numbers 1—3.
Ground is number 4 used internally for safety.

US 4-WIRE WIRING

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

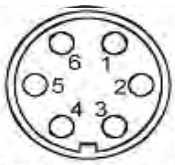
'Top Box Connectors:



Communications
Male Connector

'Top Box' Power
Female Connector

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



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

Power Connector:

Pin Number	Function
L	Live
N	Neutral
E	Earth

Communications:

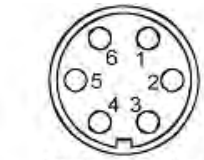
Pin Number	Function
1	TX
2	RX
3	Common
4	Common

Machine Interface:

Pin Number	Label	Function
1 & 2	Relay Contact Output	Closed = Run Open = Error
3 & 4	Standby Input	Shorted = Standby Open = Run
5	Fused	+12v Output
6	Ground	

Machine Interface:

Pin Number	Function	
1 & 2	Relay Contact Output	Closed = Run, Open = Error
3 & 4	Standby Input	Shorted = Standby, Open = Run
5	Fused	+12v Output
6	Ground	



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

Run Hold-off (Pins 1 & 2):

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 alarms are active. This is usually 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), though this is dependant on the alarm configuration. In general, when the alarm icon is visible, as shown below, these two outputs are short-circuited.

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 mold. 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 setpoint band, as the setpoint has been increased by the Boost function. This does not trigger an alarm. However, when Boost mode is finished the opposite applies; temperatures will be above the original setpoint. In order to prevent the Run Hold-off relay opening due to the cavity zones being 'in-the-red', a delay is enabled. If any of the active cavity zones fails to return to setpoint within the Alarm Hold-Off Time, the Run Hold-off relay will open indicating an error. Configure the Alarm Hold-Off Time in the Alarm Actions setup panel.

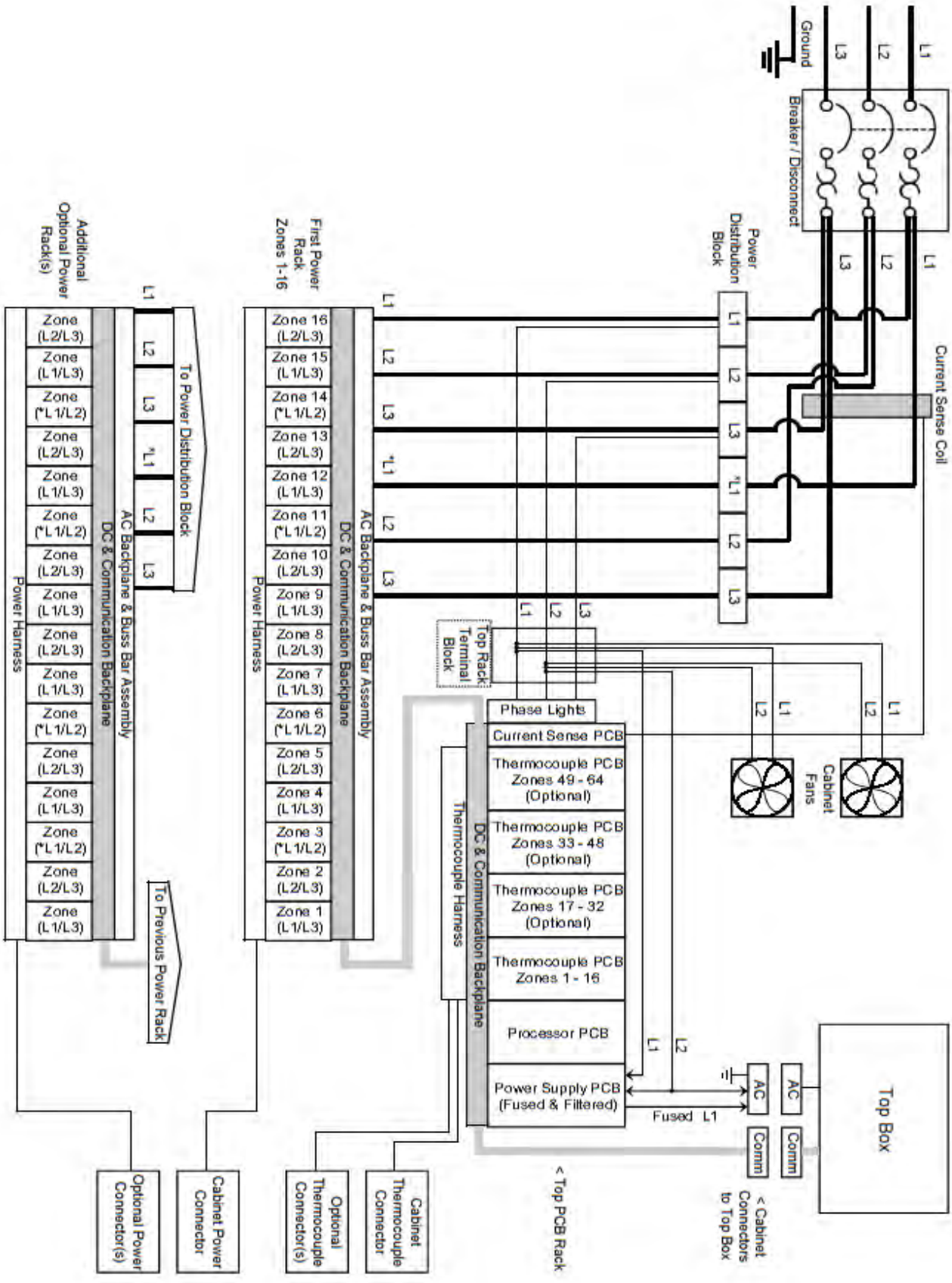
Tool Motion (Pins 3 & 4):

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 may trigger the Tool Motion Alarm.

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 is broken for any reason.

Configure Tool Motion in the Alarm Actions setup panel.

The simplest way is for the molding machine to be fitted with a good quality micro-switch which opens as the platens on the molding machine move. Connect the two contacts from the micro switch to pins #3 & #4 on the VISIONS top-box interface connector. This way the VISIONS 3000 receives an "open-close" once per machine cycle. In the "Tool Motion" section of "Alarm Actions" panel in "Setup" you will be able to set the minimum number of cycles expected per minute before shutdown is activated.


Ground
L1
L2
L3
Breaker / Disconnect
Power Distribution Block
Current Sense Coil
Cabinet Fans
Top Rack Terminal Block
Phase Lights
Current Sense PCB
Thermocouple PCB Zones 49 - 64 (Optional)
Thermocouple PCB Zones 33 - 48 (Optional)
Thermocouple PCB Zones 17 - 32 (Optional)
Thermocouple PCB Zones 1 - 16
Processor PCB
Power Supply PCB (Fused & Filtered)
Fused L1
DC & Communication Backplane
Thermocouple Harness
AC
Comm
Top Box
< Top PCB Rack
< Cabinet Connectors to Top Box
Cabinet Thermocouple Connector
Optional Thermocouple Connector(s)
Cabinet Power Connector
Optional Power Connector(s)
First Power Rack Zones 1-16
Zone 16 (L2/L3)
Zone 15 (L1/L3)
Zone 14 (*L1/L2)
Zone 13 (L2/L3)
Zone 12 (L1/L3)
Zone 11 (*L1/L2)
Zone 10 (L2/L3)
Zone 9 (L1/L3)
Zone 8 (L2/L3)
Zone 7 (L1/L3)
Zone 6 (*L1/L2)
Zone 5 (L2/L3)
Zone 4 (L1/L3)
Zone 3 (*L1/L2)
Zone 2 (L2/L3)
Zone 1 (L1/L3)
AC Backplane & Buss Bar Assembly
DC & Communication Backplane
Power Harness
Additional Optional Power Rack(s)
To Power Distribution Block
To Previous Power Rack

TECHNICAL SPECIFICATION:

Size	Size 1: 20 x 42 x 18 inches (w x h x d) (500 x 1050 x 450 mm) Size 2: 23 x 46 x 18 inches (w x h x d) (500 x 1050 x 450 mm) Size 3: 24 x 54 x 18 inches (w x h x d) (600 x 1350 x 450 mm) Size 4: 24 x 54 x 18 inches (w x h x d) (750 x 1550 x 550 mm) All sizes are approximate and given for indication only.
Weight	Size 1: 165 lbs (75kG) Size 2: 220 lbs (100kG) Size 3: 310 lbs (140kG) Size 4: 400 lbs (180kG) All weights are approximate and will depend on the specification of the system.
Cabinet Material	Painted 3mm mild steel
Number Of Zones	Size 1: 48 Zones Size 2: 64 Zones Size 3: 80 Zones Size 4: 192 Zones • The maximum number of zones shown is for the cabinet size using 1 zone 16 amp output cards. • System has a software limit of 256 zones.
Operating Temperature	32°F to 104°F (0^{oC} to $40^{o}C$)
Storage Temperature	-4°F 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

Module Protection	• All modules keyed to prevent insertion into incorrect function slot.
	• All modules capable of being removed and replaced whilst under load.
	• All modules fully fuse protected as follows: -
	  • PSU Module—Power input and output
	  • Thermocouple Module—All inputs protected for overvoltage
	  • 1 Zone Output Module—Both legs of output individually fused.

TECHNICAL SPECIFICATION:

Measurement Accuracy	• ±1.0°F (0.5°C) for the range Control: ± 0.5% • Updated every 100mS for fast response to fast loads. • Calibration: < 0.2% Of Full Scale 32°F to 930° (0°C to 500°C)
Calibration	Standard (using a NIST traceable thermocouple source)
Cold Junction Error	±1.0°F (0.5°C) @ 77°F (25°C) typically
Temperature Stability	±1.0°F (0.5°C) / °F (°C) 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 user-configurable label and can have a unique setpoint. • Each zone can be set to operate in automatic mode (closed 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 pre-set 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. • Pre-tune 'Auto Tune' capability.
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 F or C, 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 3.5Amps • 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	Full Colour, 12” LCD Display with backlight 800 x 600 (SVGA),
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 Tool-sets. • Storage of over 100 tool-sets with user selectable names. • Tool-sets 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.
Calibration Period	Recommended every 12 Months
Warranty	2 Years

waterflo Option

The following pages describe set-up and maintenance of the VISIONS 3000 "*Waterflo*" Option.
Operational instructions are found earlier in this manual on pages (25, 30, & 46).

***Waterflo* can be field installed on VISIONS 3000 Rev. 2.52a Controllers**

The Optional "*Waterflo*" Mold Water Monitoring System is comprised of two components:
"***ITC Smart Manifold***" & "***Waterflo* Interface**"

These items can be integrated into the VISIONS 3000 (rev 2.52a) control unit creating an intelligent and extremely accurate Mold Water Flow Monitoring System, with the ability to Monitor, Measure, Graph & Log 12 months of Flow Rate & Temperature Data for all mold water cooling channels, providing necessary operational data. Additionally A warning signal can be generated to activate an external warning device, or even disable connected equipment.

WARNING
Risk of Metallic Corrosion

Galvanic corrosion will occur when different metals are used in the same water installation. This will potentially shorten the life of the product.

Be aware that insufficient grounding of machine parts in contact with the water system can increase the corrosion of metal parts. Corrosion will occur very rapidly if the liquid in the system has a PH value higher than 8 or lower than 5. This will potentially shorten the life of the product.

It is well established that high temperatures (in excess of 190° F (90° C) will increase the corrosion rate of Aluminum thereby decreasing the life of the product.

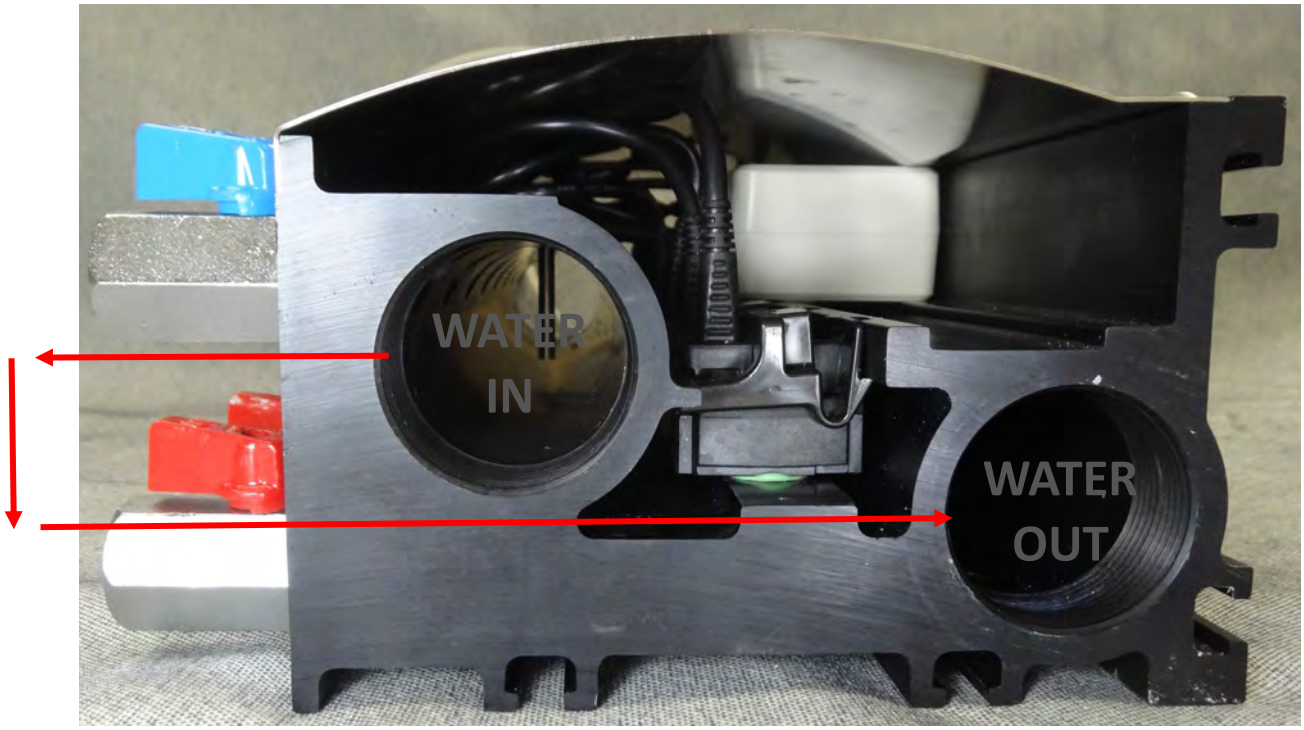
Corrosion will in time cause leakage. Frequent inspection and maintenance of the Smart Manifold will help prevent this. Frequent checks must be made of the cooling fluid for particle contamination, dissolved compounds and that the PH level is in the proper range.

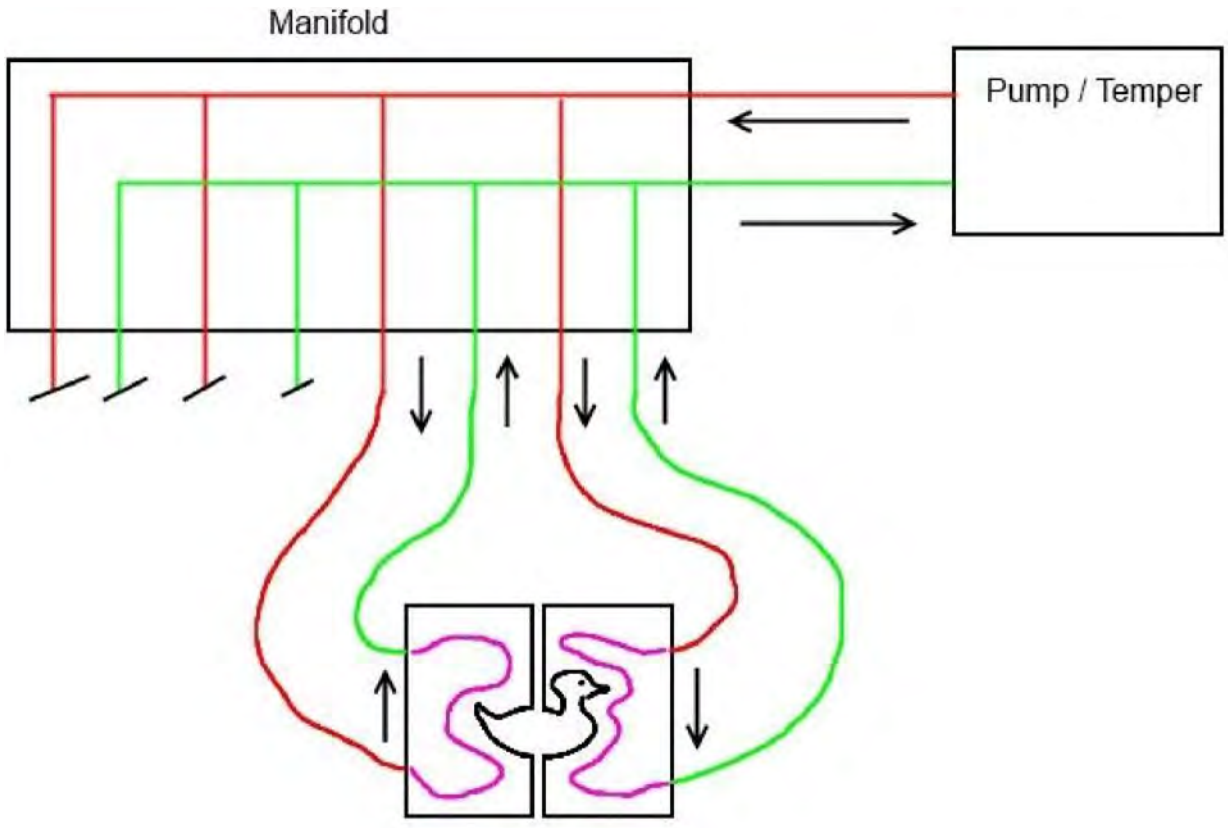
WARNING

Never operate this system without verifying the system is grounded first.

SMARTMANIFOLD
BY INTERNATIONAL TEMPERATURE CONTROL

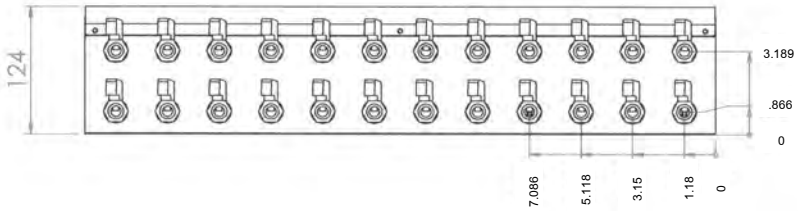
Water Circulation in *ITC Smart Manifold*

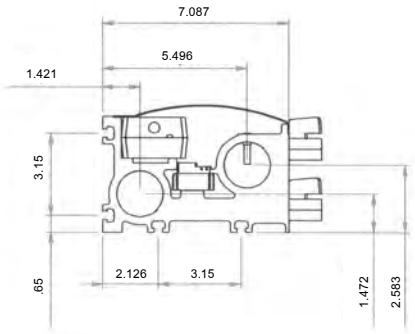


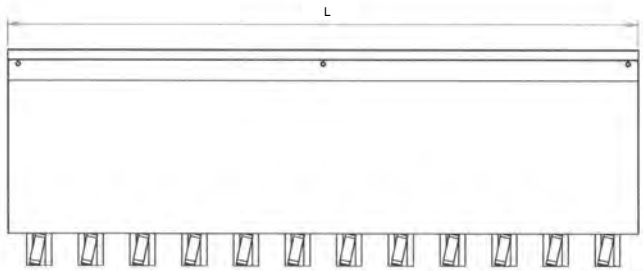


Connecting *Smart Manifold* to ***Waterflo*** Interface Unit*:*

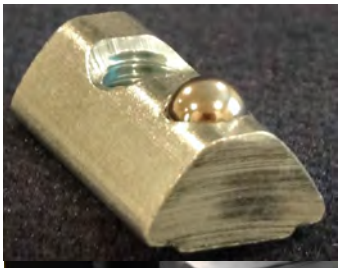
(Use this section if ***Waterflo*** Interface Unit was factory installed on the VISIONS 3000 Controller)

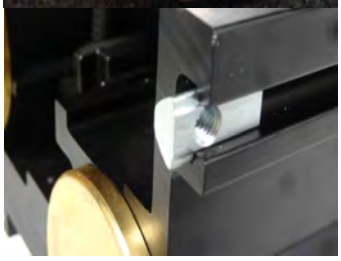






Model	No of Ports	L
WF-SM4	4	8.27
WF-SM8	8	16.14
WF-SM12	12	24.0





Install the *ITC Smart Manifold* to the surface on which it will reside.

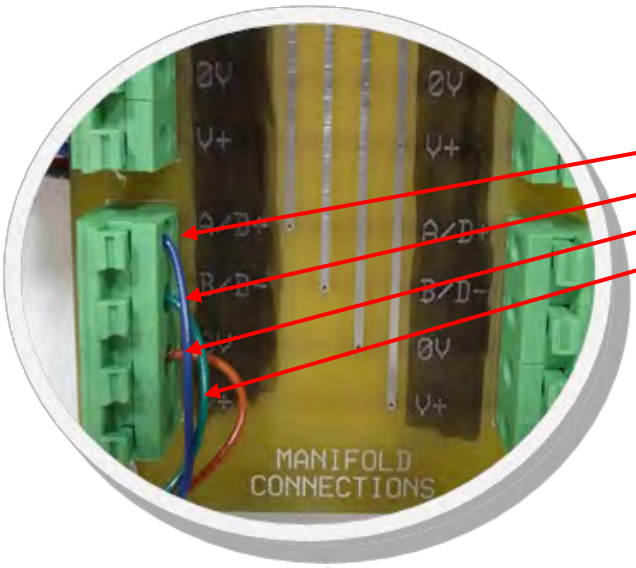
Note: If using T-Slot mounting bars (WFM-TB) use the dimensional drawing to determine placement (spring retention ball holds T-bar in place).

Manifold mounting slots are located on the bottom and on one side of the manifold.

T-Slot mounting bars (WFM-TB) can be provided by ITC.

Install the 1/2” NPT valves (reference Installation of Valves section).

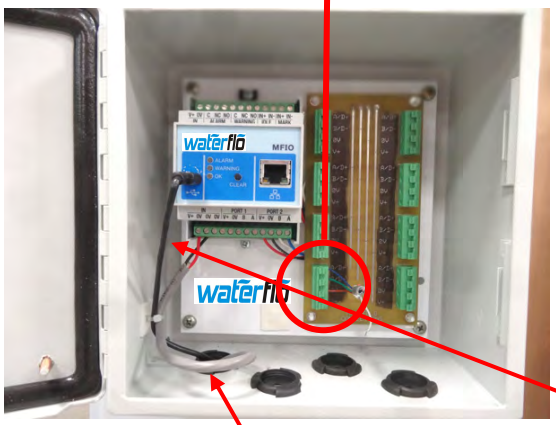
Install (2) Two 1-1/2” NPT Plugs on the dead end of the last manifold (reference Installation of Dead End Plugs section).



Install the cable running from the Smart Manifold Sensor box, Open cover on ***Waterflo*** Unit. Run cable into unit and connect the four (4) wires to the terminal strip as depicted.

Attach "A/D+" wire to "A/D+" wire port
Attach "A/D–" wire to "A/D–" wire port
Attach "OV" wire to "OV" wire port
Attach "V+" wire to "V+" wire port

Up to four (4) Smart Manifolds may be Daisy Chain connected in this manner.



Plug Gray the 12v cable from the Interface unit to the 12v port on the back of the Top Box.

Plug the Black USB cable from the Interface unit in the USB port on the back of the Top Box

Installation of Valves on *ITC Smart Manifold*:

To avoid confusion in the future, it is best to use valves which have color coded handles (Blue for inlet, cold water and Red for outlet, hot water).
Start by installing the first (Blue) valve at one end of the top (Inlet) row.
Be sure to use Teflon tape or thread sealer on the threads of all valves and ensure that no debris enters the flow channel.
Tighten the valve so that the valve handles are placed in there intended location and do not interfere with any other valves, apparatus

Once all the Blue Inlet valves have been installed on the top inlet row, proceed to install the Red Outlet valves on the bottom row.
Be sure to locate the valve handles so they are easily accessible and do not interfere with other valves or associated apparatus.

Installation of Plugs on Dead End on Inlet & Outlet of *ITC Smart Manifold*:

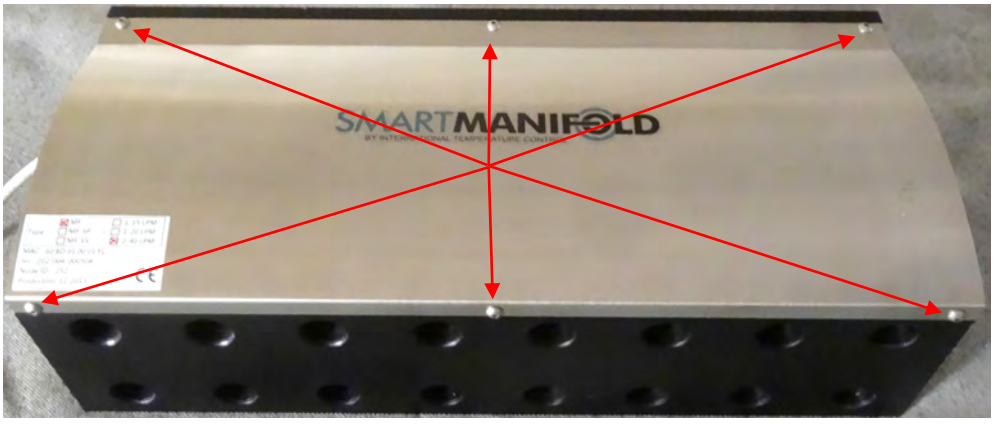
Install (2) 1-1/2" NPT plugs on the dead end of the main water inlet and outlet of the Smart Manifold.
If more than one manifolds are connected in line, the dead end of the last manifold is to have its inlet & outlet plugged off.

Service & Maintenance

Warning!! Before working on or dissembling any part of the ***Waterflo*** System:

First - Physically disconnect & lockout electrical power supply
Second - Physically disconnect water supply
Third - Empty the system of all water
Forth - Thoroughly clean the ITC Smart Manifold with clean soapy water or non-corrosive cleaning agent

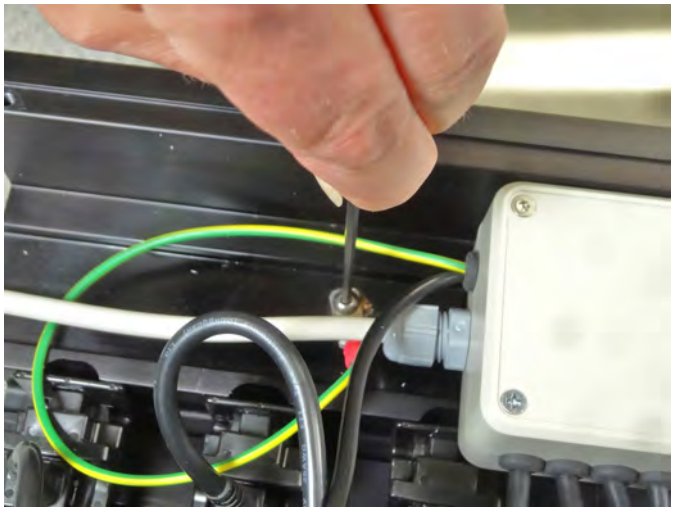
First remove the (6) cover screws, then lift off the cover.
Thoroughly & gently clean the manifold with clean water or a non-corrosive cleaning agent



If you have to remove the Sensor Box, from the ITC Smart Manifold use the following protocol:

Once the cover is removed from the *ITC Smart Manifold*, you will see a white plastic unit which is the sensor box.

First - Remove Ground Wire by removing the screw which attaches the ground wire to the manifold.



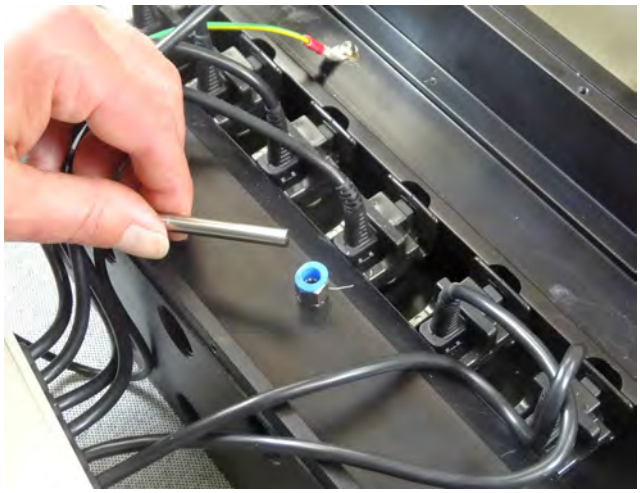
Second - Remove the (2) hex countersunk (M3 x 45) screws from the sensor box

Third - Carefully lift the Sensor Box from the manifold, being careful not to damage or put a strain on any wires or apparatus.

Disconnect the Temperature Sensors from the Manifold:

Removing the Inlet Thermocouple Sensors from the Smart Manifold:

To remove the water inlet temperature thermocouple from the manifold, first push down on the blue ring, then gently pull up on the thermocouple while holding the blue down.
Caution - do not pull on wire.

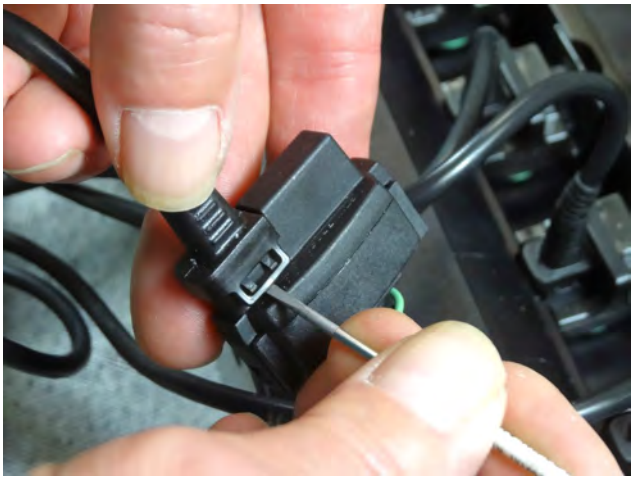


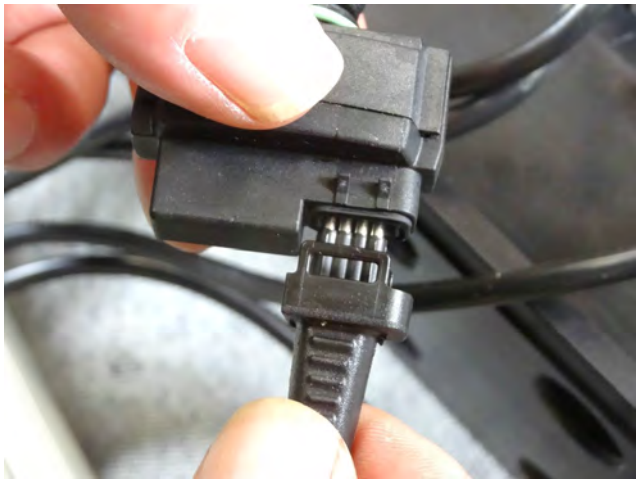
Removing the Channel Flow/Temperature Sensors from the Smart Manifold:

Locate the Flow Sensor which needs replacing.
Release the retaining clip by hand or with small pliers.

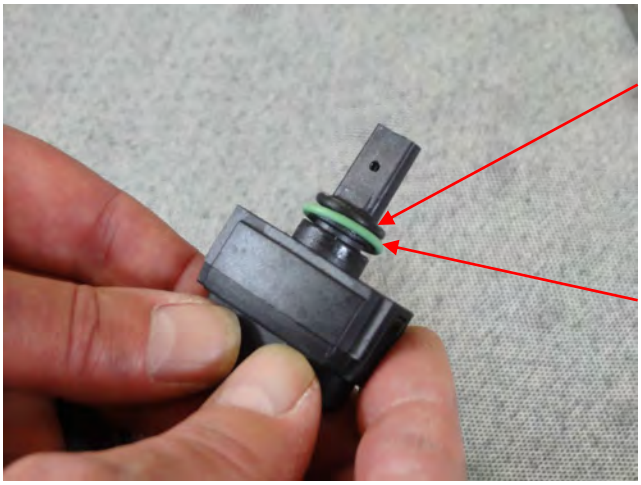
Remove the retaining clip.
Remove the Flow Sensor, making sure the (2) sealing rings are removed as well.

Gently un-snap the wire plug with a small straight screwdriver on each side and gently remove the plug from the sensor.



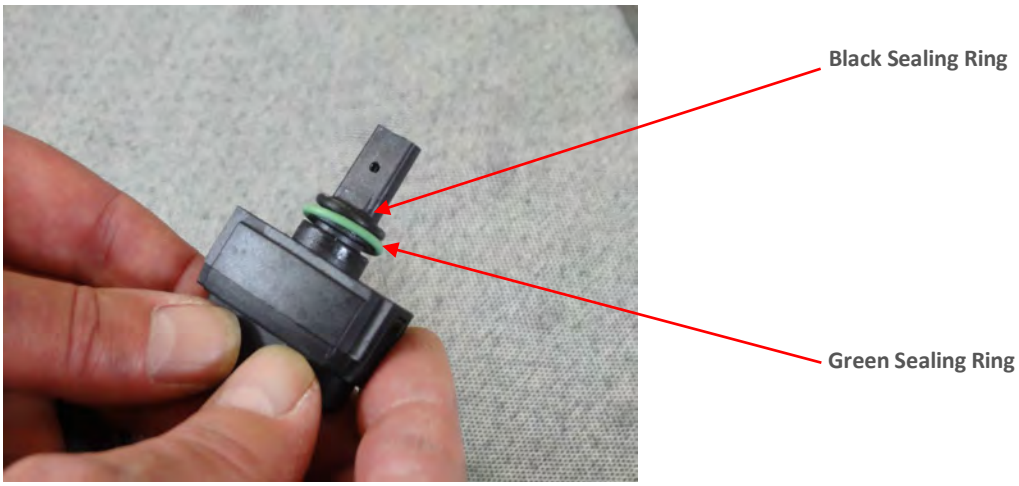


Check to ensure the sealing rings have not been left in the sensor hole on the manifold.



Re-installing the Sensor in the ITC Smart Manifold

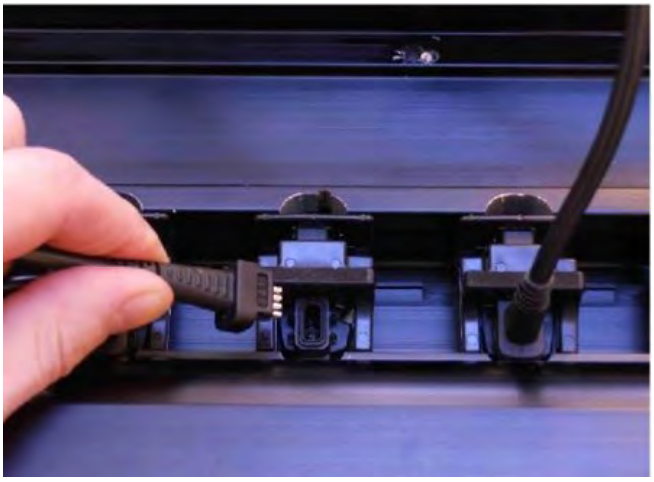
Check to ensure the (2) sealing rings are installed on the new sensor.
CAUTION: Pinched, incorrectly installed or missing sealing rings will cause leakage which can lead to electrical failure..



Gently reinstall the sensor in the manifold sensor hole, making sure sealing rings are not pinched.
Push down on the sensor, so the sealing rings are tightly seated.
CAUTION: Improperly seated sensor will cause leakage.
Place retaining clip over sensor.

Push down on the retaining clip so it snaps & locks on both sides.

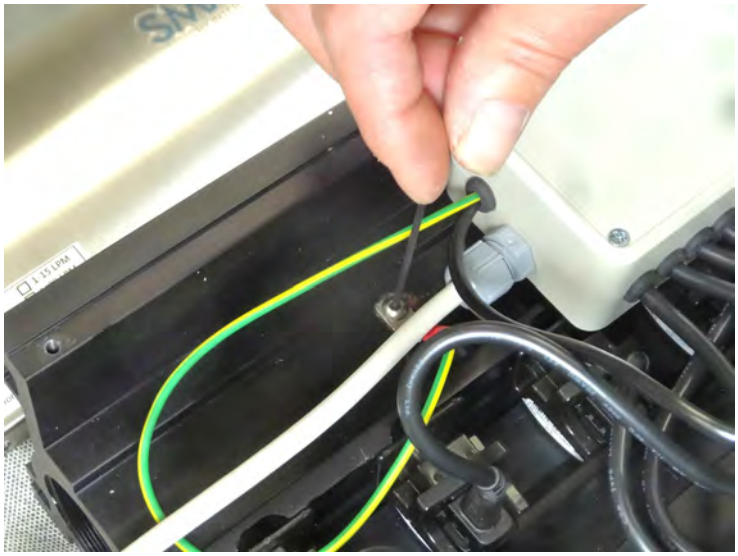
Gently connect the plug, being careful not to bend any of the sensor pins on the socket.



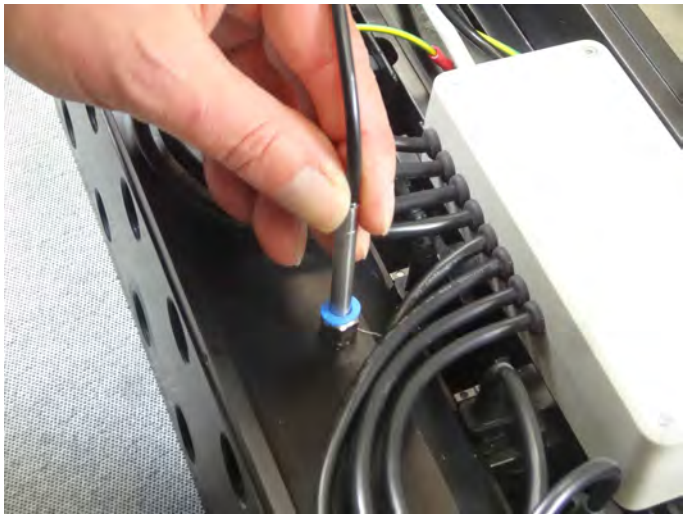
Re-install the Sensor Box

Place the Sensor Box over the mounting holes on the Manifold…
Install the (2) hex countersunk (M3 x 45) screws.

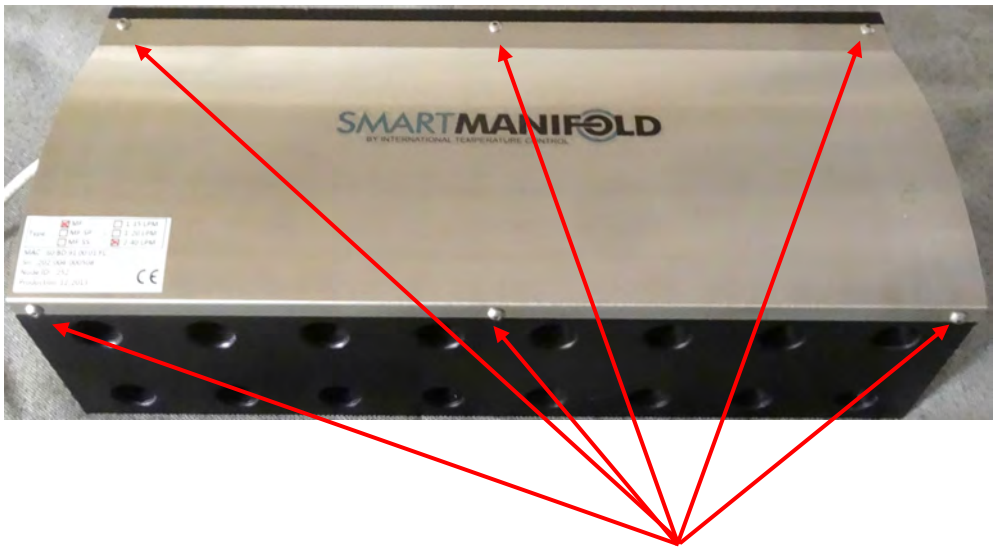
Re-connect the ground wire to the manifold and tighten screw to secure a good ground connection.



Push the temperature sensor into the blue fitting.
After inserting pull up gently to make sure it is securely locked in the fitting.



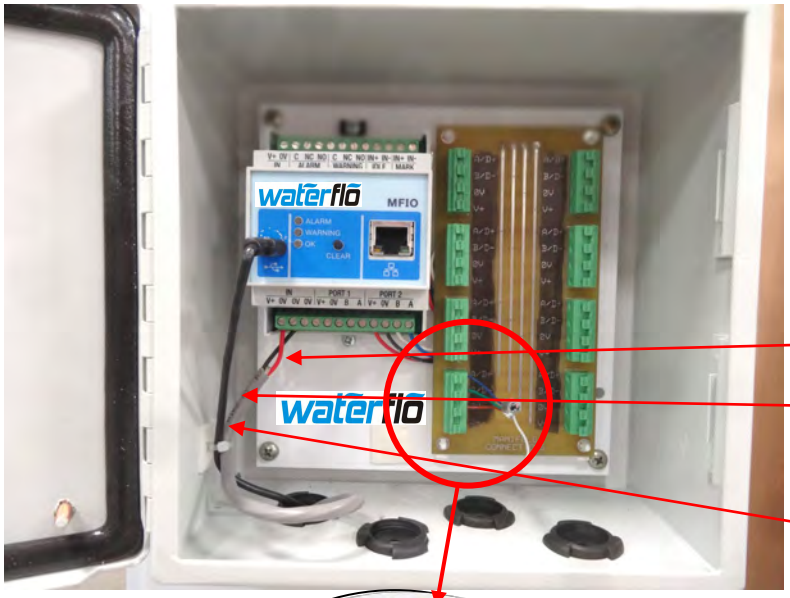
Re-Install the cover back on the manifold



(6) Pan Head Screws

Use This Section if the *Waterflo* System Was Not Factory Installed

The ITC Smart Manifold with ***Waterflo*** technology can be easily installed on the VISIONS 3000 control in the field. It is as simple as mounting the Interface Box on the VISIONS 3000 cabinet and connecting several labeled wires to the corresponding junction points.



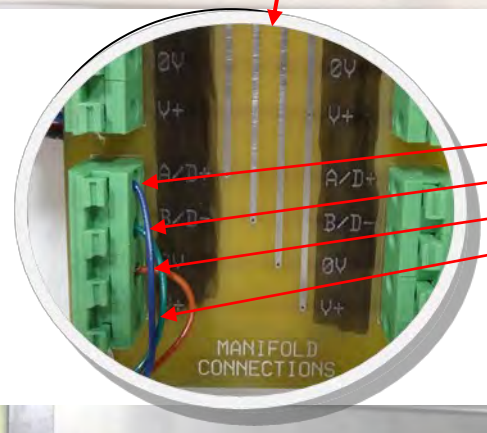
INSIDE THE INTERFACE JUNCTIION BOX

Gray—2 Wire Power Cable from VISIONS 3000 Top Box:

- Connect "RED" wire to 1st "IN –OV" on left bottom of Interface.
- Connect "BLUE" wire to 2st "IN –OV" on left bottom of Interface.

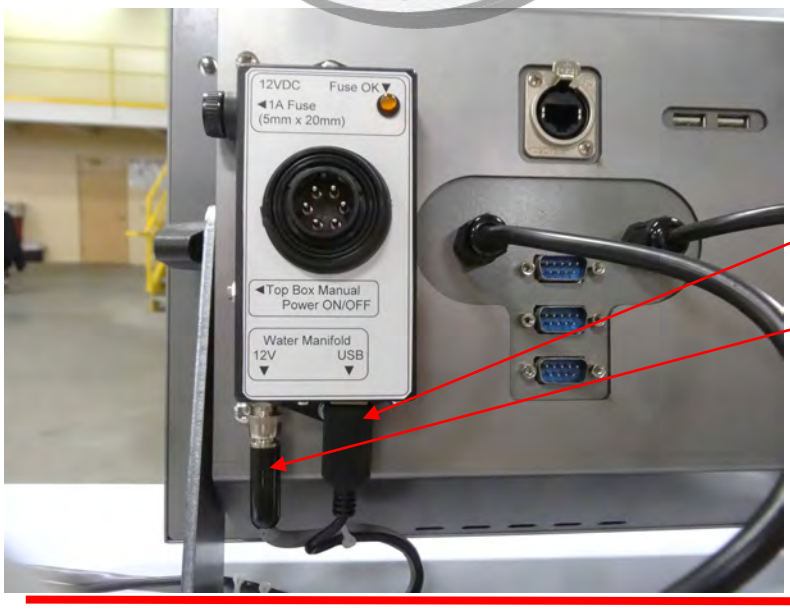
Black—USB Cable from VISIONS 3000 Top Box:

- Plug in to USB port on left side of Interface.



Manifold Cable—4 Wire; (there are eight sets of wire connectors, which will handle up to eight ITC Smart Manifolds. It makes no difference which connectors are used.

- Attach "A/D+" wire to "A/D+" wire port
- Attach "A/D–" wire to "A/D–" wire port
- Attach "ØV" wire to "ØV" wire port
- Attach "V+" wire to "V+" wire port



VISIONS 3000 Top Box Interconnection Element

- Plug the Black "USB" Cable into the "USB" port located on the bottom right of the Interconnection Element
- Plug the Gray "Power Cable" into the 12v power plug on the bottom left of the Interconnection Element

WATERFLO TECHNICAL SPECIFICATIONS:

ITC Smart Manifold	
Manifold Water Feed & Discharge Ports	1-1/2" NPT
Manifold Water Channel Ports	1/2" NPT
Number or Water Channel Ports	4, 8, & 12 (Other sizes on request)
Valves (OPTIONAL)	Color coded ball valves per channel (Red & Blue)
Operating Temperature Range	32° F - 220° F (0° - 105° C)
Operating Pressure (Max)	140 PSI
Temperature Sensing	Per Channel (Return) (Combination Pressure/Temperature)
Flow Sensing (Vortex)	Per Channel (Return) (Combination Pressure/Temperature)
Temperature Sensing Main Water Inlet	Yes (OPTIONAL)
Pressure Sensing Main Water Inlet/Outlet	Yes (OPTIONAL)
Power Supply	12 - 24 Vdc

Sensors	
Flow / Temperature	Vortex
Range (Flow Rate)	Series 1 = 4 gal/min (15 liters/min_ Series 2 = 10 gal/min (40 liters/min)
Accuracy (Flow Rate)	1.5% Full Scale
Range (Temperature)	32° F - 220° F (0° - 105° C)
Resolution (Temperature)	.5°
Accuracy (Temperature(	1.5% Full Scale
Sensor Signal	0.35 - 3.5 Vdc
Response Time	< 1 Sec.
Power Supply	5 Vdc
Burst Pressure	200 PSI @ 100° F

Item #	Item Description
WF-SM4-1	WaterFlo - Smart Manifold - 4 Channel - 4 gpm
WF-SM4-2	WaterFlo - Smart Manifold - 4 Channel - 10 gpm
WF-SM8-1	WaterFlo - Smart Manifold - 8 Channel - 4 gpm
WF-SM8-2	WaterFlo - Smart Manifold - 5 Channel - 10 gpm
WF-SM12-1	WaterFlo - Smart Manifold - 12 Channel - 4 gpm
WF-SM12-2	WaterFlo - Smart Manifold - 12 Channel - 10 gpm
WF-INT	WaterFlo - Interface Module MFIO
WF-IOPS	WaterFlo - In/Out Water Pressure (OPTION)

COMPLIANCES:

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

- 2002/95/EC (Rohs)
- 73/23/ EEC (LVD)
- 89/223/EEC (EMC)

VISIONS 3000 OPERATING MANUAL

Software Versions:
Valid For Software (Linux Version: 2.52a)
Configured to Accept *Waterflo* Option

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