



User Manual

version 3



REMOVE AND KEEP THIS SHEET SOMEWHERE SAFE

Every machine leaves our factory with two levels of password protection. We recommend that you remove this sheet in order to establish your own security.

> User Password - unix System Password - linux



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Section 1 - Introduction

The purpose of this manual is to assist users in the integration, operation and maintenance of the M2 Plus controller with a touchscreen console. This manual is designed to cover most system configurations. If you need additional information specific to your system please contact your representative or a *Mold-Masters* office whose location can be found in the "Global Support" section.

1.1 Intended Use

The M2 Plus controller together with the console is an electrical distribution and control device designed as a multi channel temperature controller for use in hot runner plastic molding equipment. It uses feedback from thermocouples within the nozzles and manifolds to give precise closed loop temperature control, and it is designed to be safe during normal operation. Any other uses would fall outside the engineered intent of this machine which may be a safety hazard and would void any and all warranties.

This manual is written for use by skilled persons who are familiar with injection molding machinery and their terminology. Operators should be familiar with plastic injection molding machines and the controls of such equipment. Maintenance persons should have sufficient understanding of electrical safety to appreciate the dangers of 3-phase supplies. They should know how to take appropriate measures to avoid any danger from electrical supplies.

Table 1-1 Release Details		
Document Number	Release Date	Version
M2P-UM-EN-00-02-4	July 2019	02-4
M2PUMEN0002-6	May 2021	02-6
M2PUMEN0002-7	January 2022	02-7
M2PUMEN0003	March 2025	03

1.2 Release Details

1.3 Warranty Details

For current warranty information please refer to the documents available from our website www.moldmasters.com/support/warranty or contact your *Mold-Masters* representative.

1.4 Returned Goods Policy

Please do not return any parts to *Mold-Masters* without pre-authorization and a return authorization number supplied by *Mold-Masters*.

Our policy is one of continuous improvement and we reserve the right to alter product specifications at any time without giving notice.

1.5 Movement or Resale of Mold-Masters Products or Systems

This documentation is intended for use in the country of destination for which the product or system was purchased.



INTRODUCTION

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1.7 Units of Measure and Conversion Factors

NOTE

The dimensions given in this manual are from original manufacturing drawings.

All values in this manual are in S.I. units or subdivisions of these units. Imperial units are given in parenthesis immediately after the S.I. units.

Table 1-2 Units of Measure and Conversion Factors		
Abbreviation	Unit	Conversion Value
bar	Bar	14.5 psi
in.	Inch	25.4 mm
kg	Kilogram	2.205 lb
kPa	Kilopascal	0.145 psi
gal	Gallon	3.785 l
lb	Pound	0.4536 kg
lbf	Pound force	4.448 N
lbf.in.	Pound force inch	0.113 Nm
I	Litre	0.264 gallon
min	Minute	
mm	Millimeter	0.03937 in.
mΩ	Milli Ohm	
Ν	Newton	0.2248 lbf
Nm	Newton Meter	8.851 lbf.in.
psi	Pound per square inch	0.069 bar
psi	Pound per square inch	6.895 kPa
rpm	Revolutions per minute	
s	Second	
0	Degree	
°C	Degree Celsius	0.556 ([°] F -32)
°F	Degree Fahrenheit	1.8 °C +32



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Section 3 - Safety 3.1 Introduction

Please be aware that the safety information provided by *Mold-Masters* does not absolve the integrator and employer from understanding and following international and local standards for safety of machinery. It is the responsibility of the end integrator to integrate the final system, provide necessary e-stop connections, safety interlocks and guarding, to choose the appropriate electrical cable for the region of use and to ensure compliance with all relevant standards.

It is the responsibility of the employer to:

- Properly train and instruct its personnel in the safe operation of equipment, including the use of all the safety devices.
- Provide its personnel with all necessary protective clothing, including such items as a face shield and heat resistant gloves.
- Ensure the original and continuing competence of personnel caring for, setting up, inspecting and maintaining injection molding equipment.
- Establish and follow a program of periodic and regular inspections of injection molding equipment to ensure it is in safe operating condition and proper adjustment.
- Ensure that no modifications, repairs or rebuild of portions are made to the equipment that reduces the level of safety existing at time of manufacture or remanufacture.





3.2 Safety Hazards

WARNING

Also refer to all machine manuals and local regulations and codes for safety information.

The following safety hazards are most commonly associated with injection molding equipment. See European Standard EN201 or American Standard ANSI/SPI B151.1.

Refer to the illustration of hazard areas below when reading the Safety Hazards Figure 3-1 on page 3-2.



Figure 3-1 Injection molding machine hazard areas



Safety Hazards - continued	
Table 3-1 Safety Hazards	

Hazard Area	Potential Hazards	
Mold Area Area between the platens. See Figure 3-1 area 1	 Mechanical Hazards Crushing and / or shearing and / or impact hazards caused by: Movement of the platen. Movements of the injection barrel(s) into the mold area. Movements of cores and ejectors and their drive mechanisms. Tie bar motion. Thermal Hazards Burns and / or scalds due to operating temperature of: The mold heating elements. Material released from/through the mold. 	
Clamping Mechanism Area See Figure 3-1 area 2	 Mechanical Hazards Crushing and / or shearing and / or impact hazards caused by: Movement of the platen. Movement of the drive mechanism of the platen. Movement of the core and ejector drive mechanism. 	
Movement of Drive Mechanisms Outside the Mold Area and Outside the Clamping Mechanism Area See Figure 3-1 area 3	 Mechanical Hazards Mechanical hazards of crushing, shearing and / or impact caused by the movements of: Core and ejector drive mechanisms. 	
Nozzle Area The nozzle area is the area between the barrel and the sprue bushing. See Figure 3-1 area 4	 Mechanical Hazards Crushing, shearing hazards and / or impact hazards caused by: Forward movement of the plasticizing and / or injection unit including nozzle. Movements of parts of the power-operated nozzle shutoff and their drives. Over pressurization in the nozzle. Thermal Hazards Burns and or scalds due to operating temperature of: The nozzle. Material discharging from the nozzle. 	
Plasticizing and / or Injection Unit Area Area from the adapter / barrel head / end cap to the extruder motor above the sled including the carriage cylinders. See Figure 3-1 area 5	 Mechanical Hazards Crushing, shearing and / or drawn-into hazards caused by: Unintentional gravity movements e.g. for machines with plasticizing and / or injection unit positioned above the mold area. The movements of the screw and / or the injection plunger in the cylinder accessible through the feed opening. Movement of the carriage unit. Thermal Hazards Burns and / or scalds due to operating temperature of: The plasticizing and / or injection unit. The heating elements e.g. heater bands. The material and / or vapors discharging from the vent opening, feed throat or hopper. Mechanical and / or Thermal Hazard Hazards due to reduction in mechanical strength of the plasticizing and / or injection guide to overheating. 	
Feed Opening See Figure 3-1 area 6	Pinching and crushing between injection screw movement and housing.	

SAFETY



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Table 3-1 Safety Hazards		
Hazard Area	Potential Hazards	
Area of the Heater Bands of the Plasticizing and / or Injection Cylinders See Figure 3-1 area 7	 Burns and / or scalds due to operating temperature of: The plasticizing and / or injection unit. The heating elements e.g. heater bands. The material and / or vapors discharging from the vent opening, feed throat or hopper. 	
Parts Discharge Area See Figure 3-1 area 8	 Mechanical Hazards Accessible Through the Discharge Area Crushing, shearing and / or impact hazards caused by: Closing movement of the platen. Movements of cores and ejectors and their drive mechanisms. Thermal Hazards Accessible through the discharge area Burns and or scalds due to operating temperature of: The mold. Heating elements of the mold. Material released from / through the mold. 	
Hoses See Figure 3-1 area 9	 Whipping action caused by hose assembly failure. Possible release of fluid under pressure that can cause injury. Thermal hazards associated with hot fluid. 	
Area Inside the Guards and Outside the Mold Area See Figure 3-1 area 10	 Crushing and / or shearing and / or impact hazards caused by: Movement of the platen. Movement of the drive mechanism of the platen. Movement of the core and ejector drive mechanism. Clamp opening movement. 	
Electrical Hazards	 Electrical or electromagnetic disturbance generated by the motor control unit. Electrical or electromagnetic disturbance that can cause failures in the machine control systems and adjacent machine controls. Electrical or electromagnetic disturbance generated by the motor control unit. 	
Hydraulic Accumulators	High pressure discharge.	
Power Operated Gate	Crush or impact hazards caused by the movement of the power operated gates.	
Vapors and Gases	Certain processing conditions and / or resins can cause hazardous fumes or vapors.	





3.3 Operational Hazards

WARNINGS

- Refer to all machine manuals and local regulations and codes for safety information.
- The equipment supplied is subjected to high injection pressures and high temperatures. Ensure that extreme caution is observed in the operation and maintenance of the injection molding machines.
- Only fully trained personnel should operate or maintain equipment.
- Do not operate the equipment with unconfined long hair, loose clothing or jewelry, including name badges, neckties, etc. These may get caught in the equipment and can cause death or serious injury.
- Never disable or bypass a safety device.
- Ensure that the protective guards are placed around the nozzle to prevent the material from splashing or drooling.
- A burn hazard exists from material during routine purging. Wear heatresistant personal protective equipment (PPE) to prevent burns from contact with hot surfaces or splatter of hot material and gases.
- Material purged from machine may be extremely hot. Ensure protective guards are in place around the nozzle to prevent material from splashing. Use proper personal protective equipment.
- All operators should wear personal protective equipment, such as face shields and use heat resistant gloves when working around the feed inlet, purging the machine or cleaning the gates of the mold.
- Remove purged material from the machine immediately.
- Decomposing or burning material could result in noxious gases being emitted from the purged material, feed inlet or mold.
- Ensure proper ventilation and exhaust systems are in place to help prevent inhalation of harmful gases and vapors.
- Consult manufacturer's Material Safety Data Sheets (MSDS).
- Hoses fitted to the mold will contain high or low temperature fluids or air under high pressure. The operator must shut down and lockout these systems as well as relieving any pressure before performing any work with these hoses. Regularly inspect and replace all flexible hoses and restraints.
- Water and / or hydraulics 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.
- Never perform any work on the mold machine unless the hydraulic pump has been stopped.
- Check frequently for possible oil leaks / water leaks. Stop the machine and make repairs.





Operational Hazards - continued

WARNING

- Make sure that the cables are connected to the correct motors. Cables and motors are clearly labeled. Reversing the cables can result in unexpected and uncontrolled motion causing a safety risk or damage to the machine.
- A crushing hazard exists between the nozzle and mold melt inlet during carriage forward motion.
- A possible shearing hazard exists between the edge of the injection guard and the injection housing during injection.
- The open feed port could present a hazard to a finger or a hand inserted during operation of the machine.
- The electric servo motors could overheat presenting a hot surface which could cause burns to someone touching it.
- The barrel, barrel head, nozzle, heater bands and mold components are hot surfaces which could result in burns.
- Keep flammable liquids or dust away from the hot surfaces as they could ignite.
- Follow good housekeeping procedures and keep floors clean to prevent slips, trips and falls due to spilled material on the work floor.
- Apply engineering controls or hearing conservation programs as necessary to control noise.
- When doing any work on the machine that requires moving and lifting the machine, ensure that lifting equipment (eyebolts, fork lift truck, cranes, etc.) will have sufficient capacity to handle mold, auxiliary injection unit or Hot Runner weight.
- Connect all lifting devices and support the machine using a crane of adequate capacity before commencing work. Failure to support the machine can result in severe injury or death.
- Mold cable from the controller to the mold must be removed before servicing the mold.



3.4 General Safety Symbols

Table 3-2 Typical Safety Symbols		
Symbol	General Description	
	General – Warning Indicates an immediate or potentially hazardous situation, which if not avoided, could result in a serious injury or death, and / or damage to equipment.	
	Warning – Barrel Cover Grounding Strap Lockout / tagout procedures must be followed before removing the barrel cover. Barrel cover can become energized upon removal of grounding straps and contact can result in death or serious injury. Grounding straps must be reconnected before reconnecting power to machine.	
	Warning – Crushing and / or Impact Points Contact with moving parts can cause serious crushing injury. Always keep guards in place.	
A.	Warning – Crush Hazard Closing Mold	
<u>A</u>	Warning – Hazardous Voltage Contact with hazardous voltages will cause death or serious injury. Turn off power and review electrical schematics before servicing equipment. May contain more than one live circuit. Test all circuits before handling to make sure circuits have been de-energized.	
	Warning – High Pressure Overheated fluids may cause severe burns. Discharge pressure before disconnecting water lines.	
<u>∧</u> ₽	Warning – High Pressure Accumulator Sudden release of high pressure gas or oil can cause death or serious injury. Discharge all gas and hydraulic pressure before disconnecting or disassembling accumulator.	
	Warning – Hot Surfaces Contact with exposed hot surfaces will cause serious burn injury. Wear protective gloves when working near these areas.	
	Mandatory – Lockout / Tagout Ensure that all energies are properly locked out, and remain locked out until the service work is completed. Servicing equipment without disabling all internal and external power sources can cause death or serious injury. De-energize all internal and external power sources (electrical, hydraulic, pneumatic, kinetic, potential, and thermal).	
	Warning – Molten Material Splashing Hazard Molten material or high pressure gas can cause death or severe burns. Wear personal protective equipment while servicing the feed throat, nozzle, mold areas and when purging the injection unit.	
	Warning – Read Manual Before Operation Personnel should read and understand all instructions in the manuals before working on equipment. Only properly trained personnel should operate the equipment.	
	Warning – Slip, Trip or Fall Hazard Do not climb on equipment surfaces. Serious slip, trip, or fall injuries can result from personnel climbing on equipment surfaces.	



General Safety Symbols - continued

Table 3-2 Typical Safety Symbols		
Symbol	General Description	
CAUTION	Caution Failure to follow instructions may damage equipment.	
i	Important Indicates additional information or used as a reminder.	

3.5 Wiring Check



CAUTION

System Mains Supply Wiring:

- Before connecting the system to a power supply, it is important to check that the wiring between the system and the power supply has been done correctly.
- Particular attention must be given to the current rating of the power supply. For example, if a controller is rated at 63A, then the power supply must also be rated at 63A.
- Check that the phases of power supply are wired correctly.

Controller to Mold Wiring:

- For separate power and thermocouple connections, ensure that the power cables are never connected to the thermocouple connectors and vice-versa.
- For mixed power and thermocouple connections, ensure that the power and thermocouple connections have not been wired incorrectly.

Communications Interface and Control Sequence:

- It is the customer's responsibility to verify functionality of any custom machine interface at safe speeds, prior to operating equipment in the production environment at full speed in automatic mode.
- It is the customer's responsibility to verify all required motion sequences are correct, prior to operating equipment in the production environment at full speed in automatic mode.
- Switching the machinery into Auto mode without having verified the control interlocks and motion sequence are correct, may cause damage to machinery and / or equipment.

Failure to do wiring or connections properly will result in equipment failure.



4

WARNING

DO NOT enter the cabinet without first ISOLATING the supplies.

Voltage and amperage cables are connected to the controller and the mold. Electric power must be shut off and lockout / tagout procedures followed prior to installing or removing any cables.

Use lockout / tagout to prevent operation during maintenance.

All maintenance should be performed by properly trained personnel based on local laws and regulation. Electrical products may not be grounded when removed from the assembled or normal operating condition.

Ensure proper grounding of all electrical components before performing any maintenance to avoid potential risk of electrical shock.

Often power sources are inadvertently turned on or valves are opened mistakenly before maintenance work is completed, resulting in serious injuries and fatalities. Therefore, it is important to ensure that all energies are properly locked out and that they remain locked out until the work is completed.

If a lockout is not performed, uncontrolled energies could cause:

- · Electrocution from contact with live circuits
- Cuts, bruises, crushing, amputations or death, resulting from entanglement with belts, chains, conveyors, rollers, shafts, impellers
- Burns from contact with hot parts, materials or equipment such as furnaces
- Fires and explosions
- Chemical exposures from gases or liquids released from pipelines





3.7 Electrical Lockout

WARNING - READ MANUAL

Refer to all machine manuals and local regulations and codes.

NOTE

In some instances, there may be more than one power source feeding equipment and steps must be taken to ensure that all sources are effectively locked out.

Employers must provide an effective lockout / tagout program.

- 1. Shut down machine using normal operational shutdown procedure and controls. This should be done by, or in consultation with the machine operator.
- 2. After ensuring that the machinery has been completely shut down, and all controls in the "off" position, open the main disconnect switch located in the field.
- 3. Using your own personal padlock, or one assigned by your supervisor, lock the disconnect switch in the off position. Do not lock only the box. Remove the key and retain. Complete a lockout tag and affix to the disconnect switch. Each person working on the equipment must follow this step. The lock of the person doing the work or in charge must be installed first, remain throughout and be removed last. Test the main disconnect switch and make sure it cannot be moved to the "on" position.
- 4. Try to start the machine using the normal operation controls and point of operation switches to make sure that the power has been disconnected.
- 5. Other sources of energy that could create a hazard while working on the equipment must also be de-energized and appropriately "locked-out". This can include gravity, compressed air, hydraulics, steam and other pressurized or hazardous liquids and gases. See Table 3-3.
- 6. When the work is completed, prior to removing the last lock, make sure the operational controls are in the "off" position so that the main disconnect switching is done under "no load". Ensure all blocks, tools and other foreign materials are removed from machine. Also ensure that all personnel that may be affected are informed that the lock(s) will be removed.
- 7. Remove lock and tag, and close the main disconnect switch if permission has been given.
- 8. When the work has not been completed on the first shift, the next operator should install a personal lock and tag before the first operator removes the original lock and tag. If the next operator is delayed, a lock and tag could be installed by the next supervisor. Lockout procedures should indicate how the transfer is to be conducted.
- 9. It is important that, for their personal protection, each worker and/or foreperson working in or on a machine places his/her own safety lock on the disconnect switch. Use tags to spotlight work in progress and give details of work being done. Only when the work is completed and the work permit signed off, may each worker remove his/her lock. The last lock to be removed should be that of the person supervising the lockout and this responsibility should not be delegated.
- © Industrial Accident Prevention Association, 2008.



Table 3-3 Energy Forms, Energy Sources and General Lockout Guidelines		
Energy Form	Energy Source	Lockout Guidelines
Electrical Energy	 Power transmission lines Machine power cords Motors Solenoids Capacitors (stored electrical energy) 	 Turn off power at machine first (i.e., at point of operation switch), and then at the main disconnect switch for the machine. Lock and tag the main disconnect switch. Fully discharge all capacitative systems (e.g., cycle machine to drain power from capacitors) according to the manufacturer's instructions.
Hydraulic Energy	 Hydraulic systems (e.g., hydraulic presses, rams, cylinders, hammers) 	 Shut off, lock (with chains, built- in lockout devices, or lockout attachments) and tag valves. Bleed off and blank lines as necessary.
Pneumatic Energy	 Pneumatic systems (e.g.,lines, pressure reservoirs, accumulators, air surge tanks, rams, cylinders) 	 Shut off, lock (with chains, built- in lockout devices, or lockout attachments) and tag valves. Bleed off excess air. If pressure cannot be relieved, block any possible movement of machinery.
Kinetic Energy (Energy of a moving object or materials. Moving object may be powered or coasting)	 Blades Flywheels Materials in supply lines 	 Stop and block machine parts (e.g. stop flywheels and ensure that they do not recycle). Review entire cycle of mechanical motion, ensure that all motions are stopped. Block material from moving into area of work. Blank as necessary.
Potential Energy (Stored energy that an object has the potential to release due to its position)	 Springs (e.g., in air brake cylinders) Actuators Counterweights Raised loads Top or movable part of a press or lifting device 	 If possible, lower all suspended parts and loads to the lowest (rest) position. Block parts that might be moved by gravity. Release or block spring energy.
Thermal Energy	 Supply lines Storage tanks and vessels 	 Shut off, lock (with chains, built- in lockout devices, or lockout attachments) and tag valves. Bleed off excess liquids or gases. Blank lines as necessary.

3.7.1 Energy Forms and Lockout Guidelines



3.8 Grounded Earth Connections

Grounded earth connections are located on the M5 self clinching studs attached to the metallic panels of the controller cabinet. See Figure 3-2.



Figure 3-2 Example of grounded earth connections



3.9 Disposal

WARNING

Milacron *Mold-Masters* declines any responsibility for personal injury or personal damage arising from reuse of the individual components, if these parts are used other than for the original and proper intended purpose.

- 1. Hot runner and system components must be disconnected from the power supply fully and properly before disposal, including electricity, hydraulics, pneumatics and cooling.
- 2. Ensure that the system to be disposed of is free from fluids. In the case of hydraulic needle valve systems, drain the oil from the lines and cylinders and dispose it in an environmentally responsible manner.
- 3. The electrical components are to be dismantled, separating them accordingly as environmentally-friendly waste or disposed as hazardous waste if necessary.
- 4. Remove the wiring. The electronic components are to be disposed in accordance with the national electric scrap ordinance.
- 5. The metal parts are to be returned for metal recycling (waste metal and scrap trade). The instructions of the corresponding waste disposal company are to be observed in this case.

Recycling of the materials occupies a forefront position during the disposal process.





3.10 M2 Plus Controller Safety Hazards WARNING - ELECTRIC SHOCK HAZARD

It is crucial to comply with these warnings to minimize any personal danger.

- Ensure that all energies are properly locked out in the controller and mold machine before installation of the controller into the system.
- DO NOT enter the cabinet without first ISOLATING the supplies. There are unguarded terminals inside the cabinet which may have a dangerous potential across them. Where a three-phase supply is used, this potential may be up to 600VAC.
- Voltage and amperage cables are connected to the controller and the mold. Electric power must be shut off and lockout / tagout procedures followed prior to installing or removing any cables.
- Integration should be done by properly trained personnel based on local codes and regulations. Electrical products may not be grounded when removed from the assembled or normal operating condition.
- Do not mix electrical power cables with thermocouple extension cables. They are not designed to carry the power load or list accurate temperature readings in each other's application.
- The main power switch is found on the front of the controller. It is sufficiently rated to handle the total load current during switch on and switch off.
- The main power switch can be locked using a padlock applied under the lockout / tagout procedure found in "3.6 Lockout Safety" on page 3-9.
- Use lockout / tagout to prevent operation during maintenance.
- All maintenance should be performed by properly trained personnel based on local codes and regulation. Electrical products may not be grounded when removed from the assembled or normal operating condition.
- Ensure proper grounding of all electrical components before performing any maintenance to avoid potential risk of electrical shock.

3.10.1 Operational Environment



WARNING

The display console and controller cabinet together are designed for use in the plastic injection molding industry as temperature controllers for third party hot runner systems as commonly used in mold tools. They must not be used in residential, commercial or light-industrial environments. Furthermore, they must not be used in an explosive atmosphere, or where there is a possibility of such an atmosphere developing.

The controller cabinet and touchscreen console should be installed in a clean dry environment where the ambient conditions do not exceed the following limits:

- Temperature +5 to +45°C
- Relative Humidity 90% (non-condensing)



3.10.2 Cabinet Push / Tip Forces

Table 3-4 Cabinet Push / Tip Forces		
	Small Cabinet	Medium Cabinet
Force required to move cabinet on castors	9lbs (4KG F)	13 lbs (6KG F)
Force required to tip cabinet if one castor is missing	20lbs (9KG F)	44 lbs (20KG F)



Section 4 - Overview

4.1 Specification

The following are general specifications. The actual controller / console supplied may have contractual variations and differ in some specified options.

Table 4-1 General Specifications		
Alarm Output	Closing volt-free contacts - 5A max 230V	
Case Details	Heavy duty metal cabinet	
	Sizes in cm	
	M2 Plus - Extra Small: 36w c 51d x 82h	
	M2 Plus - Small : 36w × 51d × 95h	
	M2 Plus - Medium: 45w × 63d × 101h	
	M2 Plus - Large: 45w × 63d × 128h	
Communication Protocol	VNC, RDP, SPI, Modbus RTU and Modbus TCP	
Control Accuracy	+/-1°F	
Control Algorithm	Self tuning PIDD	
Data Communications	RS-232 serial, DB9 male connector	
Ground Fault Detection	40mA per zone	
Interface	Full color LCD touchscreen [choice of sizes]	
Operating Range	0 - 472°C [Celsius] or 32° - 842°F [Fahrenheit]	
Output Overload Protection	15A super-quick acting [FF] fuse on both legs	
Power Output	15A/3600W per zone	
Printer Output Connector	USB port	
Relative Humidity Limit	90% [non-condensing]	
Remote Input	Voltage free signal Boost, Standby or Stop	
Soft-Start with Auto Tune	Unique low voltage method for heater safety	
Supply Earth-Leakage Trip	300mA Note: this is for tool protection	
Supply Voltage	415Vac 3 phase 50/60Hz with neutral. Other available include 240/380/400 and 600 volts in Star or Delta configuration.	
Temperature Scale	°C [Celsius] or °F [Fahrenheit]	
Thermocouple Input	Type 'J' or type 'K' [regular and high temp]	
Unit Overload Protection	Miniature circuit breaker	
Voltage Bandwidth	Stable within [20% supply voltage swing]	



4.2 Controller Front View



Figure 4-1 M2 Plus controller. Medium cabinet with TS17 console





Figure 4-2 M2 Plus controller. Large cabinet with TS17 console



4.4 Screen Layout and Navigation

The M2 Plus controller uses a consistent layout on its screens for easy user navigation.

			4	_	1				<u> </u>		
Display To	Distore A	මුළ ලි Apps Sett	경 너스 ings Grap	h Picture	5	Shutd) 🕨 🕨	00 p Standby	Boost	Û	←● 3
Probe 1	Probe 2	Probe 3	Probe 4	Probe 5	Probe 6	Probe 7	Probe 8	Probe 9	Probe 10		
247	247	247	247	247	247	247	247	247	247		
250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C		
28.8 %	28.8 %	28.8 %	28.8 %	28.8 %	28.8 %	28.8 %	28.8 %	28.8 %	28.8 %		
1.80 A	1.80 A	1.80 A	1.80 A	1.80 A	1.80 A	1.80 A	1.80 A	1.80 A	1.80 A	\diamond	
Probe 11	Probe 12	Probe 13	Probe 14	Probe 15	Probe 16	Probe 17	Probe 18	Probe 19	Probe 20	Mode	
247	247	247	247	247	247	247	247	247	247		
250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	^	
28.8 % 1.80 A	28.8 % 1.80 A	29.2 % 1.80 A	29.2 % 1.80 A	29.2 % 1.80 A	29.2 % 1.80 A	29.2 % 1.80 A	29.2 % 1.80 A	29.2 % 1.80 A	29.2 % 1.80 A	Page	
Probe 21	Probe 22	Probe 23	Probe 24	Probe 25	Probe 26	Probe 27	Probe 28	Probe 29	Probe 30	\sim	
247	247	247	247	247	247	247	247	247	247	Page	← 4
250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C		
29.2 %	29.2 %	29.2 %	29.2 %	29.2 %	29.2 %	29.2 %	29.2 %	29.2 %	29.2 %	ᄓ	
1.80 A	1.80 A	1.80 A	1.80 A	1.80 A	1.80 A	1.80 A	1.80 A	1.80 A	1.80 A	Display	
Probe 31	Probe 32	Probe 33	Probe 34	Probe 35	Probe 36	Probe 37	Probe 38	Probe 39	Probe 40	Д,	
247	247	247	247	247	247	247	247	247	247	Print	
250°C	250°°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C		
20.2 % 1.00 A	20.2 % 1.00 A	20.2 % 1.00 A	29.2 % 1.80 A	20.2 % 1.00 A	29.2 % 1.80 A	29.2 % 1.80 A	20.2 % 1.80 A	20.2 %	20.2 %		
Mode	RUN	Tool ID #1: 16	0			09 Mar 2	018 14:27	Factory	Status	DEMO	← 5
1. Naviga	tion Mer	nu buttor	is 4	4. Contro	l Menu b	outtons					
2. Quick	Access b	outtons	Į	5. Inform	ation bar	-					
3 Inform	ation but	ton									
5. 1110/116		1011									

Figure 4-3 Screen layout



NOTE

Due to the compact size of the TS8 screen, the [**Pictures**] button is not available from the Navigation bar. The user can access the [**Pictures**] screen from the [**Apps**] button.

See "4.22.2 Access the Pictures Screen: TS8 Console" on page 4-37 for more information.



4.4.1 Navigation Menu Buttons

The buttons at the top left hand side of the Display screen give access to the following screens:

- Display
- ToolStore
- Apps
- Settings
- Graph
- Pictures

After the user chooses a button, it is enabled and it turns green.

See Figure 4-3.

The user can touch any of these buttons to return to the main page for that screen.



NOTE

The user has 8 screen choices from the **[Apps]** button. The **[Apps]** button changes to the corresponding icon and turns green after the user selects the icon.



4.4.2 Quick Access Buttons

The Quick Access buttons are located at the top right hand side of the Display screen:

- Button One can be configured as Shutdown or Stop
- Button Two can be configured as Run, Sequence or Startup
- Button Three and Button Four are not configurable

When these buttons are inactive, they show as an outline. When these buttons are enabled, they are solid. See Table 4-2.

Table 4-2 Quick Access Buttons						
	Disabled	Enabled				
Button One (Shutdown)	Shutdown	Shutdown				
Button One (Stop)	Stop	Stop				
Button Two (Run)	Run	Run				
Button Two (Sequence)	Sequence	Sequence				
Button Two (Startup)	Startup	Startup				
Button Three	00 Standby	Standby				
Button Four	() Boost	Boost				



NOTE

The [**Boost**] button is greyed out and unavailable if the controller is not in Run mode.

The [**Standby**] button is greyed out and unavailable if the system setting "Allow Standby" is set to disabled and the console is in Stop Mode.

The user can press and hold Button One and Button Two to cycle through the mode options:

Button One:

- · Hold [Shutdown] and the controller enters Stop mode
- Hold [Stop] and the controller enters Shutdown mode

Button Two:

- Hold [Run] and the controller enters Startup mode
- Hold [Startup] and the controller enters Run mode
- Hold [Sequence] and the controller enters Startup mode



4.4.3 The Information Button

The [Information] button is located in the top right hand corner of the screen:



Use this button to access the following controller details:

- · console model
- software version
- hostname
- IP address
- · console uptime
- installed protocol
- current theme
- remote share status
- · access to the quick guide

See Figure 4-4.

	e Apps	SE Settinos	Graph	Pictures		Stop	Startup	00 Standby	Boost	0
BELL	10									ි Upgrade
Mast	ers									() Exit
Consele Model	TS1	2								
Software Version	21st July	2021								
Serial Number	130456840	0020121								
Hostname	ts-1	2								
IP Address	192.168	.10.1								
Console Uptime	2022-01-18	16:45:18								
Installed Protocol	SPI									
Romete shore	Off									
Current Theme	Mode	m								
										-
										8
										Guide
Mode STOPPE	D Tool ID #	0: detect_1			1	18 Jan 2022	16:55	Login	Status	NORMAL

Figure 4-4 Information screen

The user can access a quick guide of operational instructions from this screen. For more information, see "6.4 Quick Start Guide" on page 6-6.

The user can change the theme from this screen. For more information on changing the screen theme, see "4.6 Modern Theme" on page 4-9.

This screen is also used to install software upgrades. For more information on upgrading the software, see "8.1 Upgrade Software" on page 8-1.





4.4.4 Control Action Buttons

The buttons on the right side of the zone display area change from screen to screen.

4.4.5 The Information Bar

The bottom information bar shows overall information. From left to right:

- Mode: use the mode window to change the mode, if you are on the display page
- Message bar, including date and time
- Shortened user name
- Status: select the status window to go to the alarms page

The user can also login and logout of the controller from the information bar. For more information about the Mode and Status windows, see "4.17.1 Mode Window" on page 4-27 and "4.17.2 Status Window" on page 4-27.

4.5 Choose a Screen Theme

There are three available themes for the console display. Buttons and menu items function in the same way regardless of the theme chosen.

1. Choose the [Information] button:



The Select Theme box opens:

Select Them	æ	
Modern		
Light		
Classic		
	Cancel	

2. Choose the required theme or choose [**Cancel**] to exit without changing the screen theme.

A message box opens:



3. Choose **[OK]** to restart the console or **[Cancel]** to return to the information screen without changing the theme.


4.6 Modern Theme

This is the default theme for the display, and it is the one used in this manual.

		¥ ≣@	<u>د</u>		_	Ľ]	00	Ø	0
Checkson 1	ooistore /	Apps Sec	ingis cirap	n Picture	•	Shut	own stand	p standby	BOOM	
Probe 1	Probe 2	Probe 3	Probe 4	Probe 5	Probe 6	Probe 7	Probe 8	Probe 9	Probe 10	
247	247	247	247	247	247	247	247	247	247	
250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	
28.8 %	28.8 %	28.8 %	28.8 %	28.8 %	28.8 %	28.8 %	28.8 %	28.8 %	28.8 %	
1.00 A	1.00 A	1.80 A	1.80 A	1.80 A	1.90 A	1.90 A	Lao A	Liso A	1.00 A	\diamond
247	247	247	247	247	247	247	247	247	247	Mode
250°C	25000	25000	25000	25010	25000	25010	25000	250°C	250°C	
28.8 %	28.8 %	29.2 %	29.2 %	29.2 %	29.2 %	29.2 %	29.2 %	29.2 %	29.2 %	Barra
1.80 A	1.80 A	1.80 A	1.80 A	1.80 A	1.90 A	1.80 A	1.80 A	1.60 A	1.60 A	- age
Probe 21	Probe 22	Probe 23	Probe 24	Probe 25	Probe 26	Probe 27	Probe 28	Probe 29	Probe 30	\sim
247	247	247	247	247	247	247	247	247	247	Page
250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	* ¬
29.2 %	29.2 %	29.2 %	29.2 %	29.2 %	29.2 %	29.2 %	29.2 %	29.2 %	29.2 %	L.¢
Probe 21	Probe 32	Probe 33	Probe 34	Probe 35	Probe 36	Probe 37	Probe 38	Probe 20	Probe 40	Ospiay
247	247	247	247	247	247	247	247	247	247	÷
250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	Print
29.2 %	29.2 %	29.2 %	29.2 %	29.2 %	29.2 %	29.2 %	29.2 %	29.2 %	29.2 %	
1.80 A	1.80 A	1.80 A	1.80 A	1.80 A	1.80 A	1.80 A	1.80 A	1.80 A	1.80 A	
Mode	RUN	Tool ID #1: 16	0			09 Mar 3	2018 14:27	Factory	Status	DEMO

4.6.1 Light Theme

Display	[] ToolStore	Apps Se	⊖© k ttings Gr	스 문 aph Picts	3 Ires	Shutdo	wn Startup	00 Standby	CC Boost	(i)
Probe 1	Probe 2	Probe 3	Probe 4	Probe 5	Proba 6	Froba 7	Frobe 0	Frobo ()	Probe 10	
250	250	250	250	250	250	250	250	250	250	
250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	
14.4 % 0.12 A	14.4 % 0.12 A	14.4 % 0.12 A	14.4 % 0.12 A	14.4 % 0.12 A	14.4 % 0.12 A	14.4 % 0.12 A	14.4 % 0.12 A	14.4 % 0.12 A	34.4 % 0.12 A	
Probe 11	Probe 12	Probe 13	Probe 54	Probe 15	Probe 36	finabe 17	Frobe 30	Frobe 10	Probe 29	~
250	250	250	250	250	250	250	250	250	250	Mode
250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	~
14.4 %	14.4 %	14.4 %	14.4 %	14.4 %	14.4 %	14.4 %	14.4 %	14.4 %	14.4 %	Page
Probe 21	Prote 22	Probe 23	Probe 24	Probe 25	Probe 26	frobe 27	Frobe 20	Frobe 23	Probe 30	\sim
250	250	250	250	250	250	250	250	250	250	Page
250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	*-
14.4 % 0.12 A	14.4 % 0.12 A	14.4 % 0.12 A	14.4 % 0.12 A	14.4 % 0.12 A	14.4 % 0.12 A	14.4 % 0.12 Å	34.4 % 0.12 Å	14.4 % 0.12 Å	34.4 % 0.12 A	Display
Prote 31	Prote 52	Probe 33	Probe 34	Probe 35	Prote 36	Frote 37	Frobe 38	Frobe 33	Probe 40	
250	250	250	250	250	250	250	250	250	250	B
250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	Print
14.4 %	14.4 %	14.4 %	14.4 %	14.4 %	14.4 %	34.4 %	34.4 %	34.4 %	34.4 %	
0.12 A	0.12	0.12	0.12	0.12	0.12 A				0.12	
Mode	DUM	Tool ID at: 16	ðnew.			10 Jun 3	018 14:55	Sustem	Status	ORMAL



4.6.2 Classic Theme

Display	ToolStore	Apps	Settings	Graph	Pictures	Shutdown	Startup	Standby	Boost	0
	Auto A	Contra de			Print de	to the t			Burley Mr.	
246	246	246	246	246	246	246	246	246	246	-
250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	
16.8 %	16.8 %	36.8 %	15.8 %	16.8 %	16.8 %	26.8 %	15.8 %	15.8 %	16.8 %	
Probe 11	Probe 12	Probe 13	Probe 14	Probe 15	Probe 26	frobe 17	Probe 18	Probe 10	Probe 20	
246	246	246	246	246	246	246	246	246	246	Mode
250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	
16.8 % 0.17 A	16.8 % 0.17 A	16.8 % 0.17 A	10.8 % 0.17 A	16.8 % 0.17 A	16.8 % 0.17 A	16.8 % 0.17 A	15.8 % 0.17 A	16.5 % 0.17 A	16.8 % 0.17 A	Page
Probe 21	Probe 22	Probe 25	Probe 24	Prote 25	Probe 26	Frobe 27	Probe 28	Probe 29	Probe 30	
246	246	246	246	246	246	246	246	246	246	Page
250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	
9.17 A	9.17 A	6.17 A	0.17 A	0.17 A	9.17 A	0.17 A	0.17 A	0.17 A	0.17 A	Display
Probe 51	Probe 32	Probe 35	Probe S4	Prote 35	Probe 35	Probe 57	Probe SI	Probe 30	Probe 40	E
246	246	246 250°C	246 250°C	246	246	246 250°C	246 250°C	246	246 250°C	Print
16.8 %	16.8 %	16.8 %	16.0 %	16.8 %	16.8 %	16.8 %	15.8 %	15.8 %	16.8 %	
0.17 A	0.17 A	0.17 A	0.17 A	0.17 A	0.17 A	0.17 A	0.17 A	0.17 A	0.17 A	
							_		_	

Mode RUN Tool ID #4: 160new

19 Jun 2018 14:53 System Status NC



4.7 Zone Display Options (TS8 Console)

The TS8 console can show up to 96 zones on a single screen. The amount of information shown decreases with an increased amount of zones.

The user can change the size of the zone panels with the [Display] button:



Alternatively, the user can choose to keep the default zone panel size and use the [**Page** \blacktriangle] and [**Page** \blacktriangledown] buttons to scroll through the zones.



NOTE

Due to the compact size of the TS8 screen, the [**Pictures**] button is not available from the Navigation bar. The user can access the [**Pictures**] screen from the [**Apps**] button.

See "4.22.2 Access the Pictures Screen: TS8 Console" on page 4-37 for more information.

4.7.1 TS8 Console: 36 Zones on Screen

The default screen displays up to 36 zones and the following information:

- alias name
- actual temperature
- set temperature
- power
- current



Figure 4-5 TS8 console with 36 zones



4.7.2 TS8 Console: 54 Zones on Screen

Each zone shows alias name, actual temperature and set temperature.

		음	8	<u>ل</u>	Churte	Þ	00	Ø	(Ì)
Display	Tooistore	Apps	settings	orapn	Snutdo	wn startu	p stands	y Boost	
Manifold	1 Manifold 2	Manifold 3	Manifold 4	Manifold 5	Manifold 6	Manifold 7	Manifold 8	Manifold 9	
482	482	482	482	482	482	482	482	482	
482*	482°F	482°F	482°F	482°F	482°F	482°F	482°F	482°F	
Manifold 1	0 Manifold 11	Manifold 12	Manifold 13	Manifold 14	Manifold 15	Manifold 15	Manifold 17	Manifold 18	^
482	482	482	482	482	482	482	482	482	No.
482"	= 482°F	482°F	482°F	482°F	482"F	482°F	482°F	482°F	Mode
Manifold 1	9 Manifold 20	Manifold 21	Manifold 22	Manifold 23	Manifold 24	Manifold 25	Manifold 26	Manifold 27	
482	482	482	482	482	482	482	482	482	Page
482"	- 482"F	482°F	482°F	482°F	482°F	482°F	482"F	482°F	~
AP2	402	400	A02	400	AP2	400	A0-2	A02	Page
402	402	402	402	402	402	402	40210	402	
Nanifold 3	7 Manufold 38	Hantfold 39	Manifold 40	Namifold 41	Manafold 42	Manifold 43	Manifold 44	Nanifold 45	ᄓ
482	482	482	482	482	482	482	482	482	Display
482"	482°F	482°F	482°F	482°F	482°F	482°F	482°F	482°F	Д
Manifold 4	6 Manifold 47	Manifold 48	Manifold 49	Nanifold 50	Manifold 51	Manifold 52	Manifold 53	Nanifold 54	Print
482	482	482	482	482	482	482	482	482	
482"	- 482°F	482"F	482"F	482°F	482°F	482°F	482°F	482°F	
Mode	TOPPED	Tool ID #0:	144z + IO		19 S	ep 2018 20:	21 Facto	ry Status	DEMO

Figure 4-6 TS8 console with 54 zones

4.7.3 TS8 Console: 96 Zones on Screen

Each zone shows alias name and actual temperature.

Display	ToolStore	아마.	66 Settions	Graph	Shutdos	an Startur	00	(2) Boost	()
Unspring	Tonstore	- the second sec	ocumys	отарл	anatao	mi ətaitup	, Standby	Buusi	
485	485	485	485	485	485	485	485	485	
485	485	485	485	485	485	485	485	485	
485	485	485	485	485	485	485	485	485	
485	485	485	485	485	485	485	485	485	\diamond
485	485	485	485	485	485	485	485	485	Mode
485	485	485	485	485	485	485	485	485	~
485	485	485	485	485	485				Page
									Page
									1 Display
									- Co Print
Mode	STOPPED	Tool ID #0	: 144z + IO		19 Se	ep 2018 20:1	9 Factor	Status	DEMO

Figure 4-7 TS8 console with 96 zones



4.8 Zone Display Options (TS12 Console)

The TS12 console can show up to 144 zones on a single screen. The amount of information shown decreases with an increased amount of zones.

The user can change the size of the zone panels with the [Display] button:



Alternatively, the user can choose to keep the default zone panel size and use the [**Page** \blacktriangle] and [**Page** \bigtriangledown] buttons to scroll through the zones:

4.8.1 TS12 Console: 40 Zones on Screen

The default screen displays up to 40 zones and the following information:

- alias name
- actual temperature
- set temperature
- power
- current

Disolar T		후 ()	in the	b Picture		Sheet	lown Startu	00 Standby	(A) Boost	۲
										-
Probe 1	Probe 2	Probe 3	Probe 4	Probe 5	Probe 6	Probe 7	Probe 6	Probe 9	Probe 10	
247	247	247	247	247	247	247	247	247	247	
250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	
28.4 %	28.0 %	28.8 95	28.8 95	28.8 %	28.8 %	28.4 %	28.4 %	28.4 %	28.8 %	
1.80 A	1.60 A	1.80 A	1.80 A	1.00 A	1.00 A	1.00 A	1.00 A	1.80 A	1.80 A	0
Probe 11	Probe 12	Probe 13	Probe 14	Probe 15	Probe 15	Probe 17	Probe 18	Probe 19	Probe 20	Mode
247	247	247	247	247	247	247	247	247	247	
250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	~
28.1 %	28.8 %	29.2 %	29.2 %	20.2 %	29.2 %	29.2 %	29.2 %	29.2 %	29.2 %	Page
Line A	1.00 A	1.00 A	1.00 4	1.00 A	1.00 A	1.00 A	1.00 A	1.00 A	1.00 A	
247	247	047	P1008 24	247	247	PTODE 2/	Prece 28	247	247	× 1
247	247	247	241	241	241	247	247	247	247	Page
250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	ta.
29.2 %	20.2 %	29.2 99 1.40 A	20.2 %	20.2 %	29.2 %	20.2 %	29.2 % 1.80 A	28.2 %	29.2 Ye 1.40 A	Display
Probe 31	Probe 32	Probe 33	Probe 34	Probe 35	Probe 36	Probe 37	Probe 38	Probe 29	Probe-48	
247	247	247	247	247	247	247	247	247	247	8
250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	Print
29.2 %	29.2 %	29.2 %	29.2 %	29.2 %	29.2 %	29.2 55	29.2 %	29.2 %	29.2 %	
LAS A	1.60 A	1.60 A	1.60 A	1.00 A	1.00 A	1.80 A	1.80 A	1.80 A	1.80 A	
Mode	RUN	Tool ID #1: 16	0			00 Mar 2	2018 14:27	Factory	Status	DEMO

Figure 4-8 TS12 console with 40 zones



4.8.2 TS12 Console: 60 Zones on Screen

This screen shows the same information as the 40 zone screen.



Figure 4-9 TS12 console with 60 zones

4.8.3 TS12 Console: 96 Zones on Screen

Each zone shows alias name, actual temperature and set temperature.



Figure 4-10 TS12 console with 96 zones



4.8.4 TS12 Console: 144 Zones on Screen

Each zone shows alias name and actual temperature.

Display	TeolSter	- 年 - 410	i Cife Serring	je Grap	5 A 1900	a wes	sh	utdown	D Startup	00 Standby	COST BOOST	۲
Anti-Dreak	PRUE BAR	PRUE BAR	PRUE BAR	BridgeTOP	EntageBOT	HeatedSkip	HeatedStep	Proate d'Enry	HeatedStep	ManEOT 1	ManTOP 1	
252	252	252	252	252	252	252	252	252	252	252	252	
MenBOT 2	MaritOP 2	ManBOT 3	ManTOP 3	ManDOT 4	MenTOP 4	ManBOT 5	ManTOP 5	ManBOT 6	ManTOP 6	ManEOT 7	ManTOP 7	
252	252	252	252	252	252	252	252	252	252	252	252	
Manadria	Maritor s	MANBOT 9	Marice 9	AMANDOT 10	Martop 15	Manifold 11	MANTOP 11	Marelof 1	MANICP 1	Marator 1	MarioP 13	
MarchOT 14	Man TOP 14	Number 15	Martop 15	AND DOT 10	MacTOP 15	102	1012	252	252	232	232	\diamond
252	252	252	252	252	252	250	250	250	250	250	250	Mode
119.7	TIPE	TIP 1	TP 10	TIP 11	TIP 52	102.13	TIP 54	1.9.15	TIP IS	T.P. 17	TIP 18	
250	250	250	250	250	250	250	250	250	250	250	250	~
TIP 19	10.20	TIP 71	T-0-22	TIP 21	TIP 24	TEP 25	TIP 26	1.0 27	TIP 28	T.0.25	TEP 30	Page
250	250	250	250	250	250	250	250	250	250	250	250	
TIP 31	TIP 32	TIP 33	TP M	TIP 35	TIP 35	TIP ST	TP 38	T.P. 19	TIP-60	TP 41	TIP 42	\sim
250	250	250	250	250	250	250	250	250	250	250	250	Page
TP 43	19.44	TP-05	79.45	TIP OF	710-48	19.45	TIP 50	19.55	19.52	7.9 53	TIP 54	
250	250	250	250	250	250	250	250	250	250	250	250	ta,
T P 55	10 %	T P 57	10.00	TP 54	TIP 60	TIP 61	TP 62	19.63	TIP 64	TP 65	TIP 66	Display
250	250	250	250	250	250	250	250	250	250	250	250	
250	25.0	250		250		260	260	260	250		250	-B-
200	200	230	230	230	230	200	200	200	250	250	200	Print
250	250	250	250	250	250	250	250	250	250	250	250	
TIP IS	10.02	TIP 11	TP M	TIP 95	120.00	712-92	TIP 18	10.00	TIP 100	TIP 101	100 102	
250	250	250	250	250	250	250	250	250	250	250	250	
Mode	STOPPED	Tool K	9 143: 1442	+ 10			05.	Apr 2018 1	1:05 \$7	stom	itatus	DEMO

Figure 4-11 TS12 console with 144 zones

4.9 Zone Display Options (TS17 Console)

The TS17 console has a widescreen format and more zones can be seen on the Display screen. All other functionality is the same as the TS12 console. For the purposes of this user manual, images from a TS12 console are used.

4.9.1 TS17 Console: 78 Zones on Screen

The default screen displays up to 78 zones and the following information:

- alias name
- actual temperature
- set temperature
- power
- current



Figure 4-12 TS17 console with 78 zones



4.9.2 TS17 Console: 105 Zones on Screen

This screen shows the same information as the 78 zone screen.



Figure 4-13 TS17 console with 105 zones

4.9.3 TS17 Console: 165 Zones on Screen

Each zone shows alias name, actual temperature and set temperature.

2		華	86	. 🖴		}					C.	Dates	00	a	0
-															
Prote 1	Photos 2	Pole 3	Pole 4	Pole S	Price 5	Protes 7	Point I	Pole 8	Prote 30	Price II	Prote 12	Prote SI	Prote 14	Pole 25	
250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	
250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	256°C	250°C	250°C	256°C	250°C	259°C	250°C	
Prote 34	Prate D	Pole 30	Frate 33	Prote 20	Prite 21	People 22	Prote 25	Pole 24	Police 25	Trite 35	Prote 27	Prote 25	Point 25	Ander 30	
250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	
250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	350°C	250°C	250°C	250°C	250°C	250°C	250°C	
Prote 21	Protection Inc.	Prote 12	Police SH	Prote 35	Pride 25	Photos D ²	Prote St	8-de 20	Probe 40	Frate 41	Price C	Trobe 41	Prote BI	Note 45	× .
250	2.00	250		200	250	200	250	200	250	200	200	250	2.00	250	Mode
Trate at	Press of	Auto al	Total all	Product No.	Frank TL	Course 52	Prote SI	Print In	Posts 10	Frank To	Frank St.	Table To	Oracia III	Posts in	
250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	
250.0	25010	250 0	28010	25010	25070	25010	250 2	25615	25010	25010	25010	25010	25010	25010	
Prote KI	Prote 42	Prote 53	Prote SI	Prote 15	Prote IS.	Prote 17	Prote 12	Node 10	Prote 20	Frate 73	Prote 72	Prote 71	Prote 74	Point 25	
250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	
250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	256°C	250°C	250°C	250°C	250°C	250°C	250°C	Page
Prote 25	Phase 77	Pole 20	Pole 25	Prote 30	Prote IS	Protect2	Prote 65	Policial	Poste (K)	Trate IS	Prote 17	Prote St.	Point IS	Prote St.	
250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	ta,
25010	250°C	250°C	250°C	250°C	250°C	250°C	250°C	358°C	250°C	250°C	250°C	250°C	250°C	250°C	Display
Prote 11	Prote 12	Note 10	7124-38	Posta 35	Price 35	People SP	Poile St.	3-24 25	Prote 200	Pole 10	Prote 182	Peter Dill	N-84 (00)	Pole 26	
250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	- -
250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	-
Prote Dil	Press Lar	Profee 208	Price 20	Prote 120	Trute III	Protectal	Pole III	None the	Prote 125	Price 12	rester till?	Prote 101	P-04 23	Profee 120	
250	10.00	200	1000	1000	2100	200	200	200	250	200	1000	200	1000	200	
Prote UI	Point U.C.	Prote 111	Print Till	Print 17	Prote UK	Point UP	Poils 128	Point IN	Prote UK	Proje 11	Proje US	Prote UII	Point IN	Posts 100	
250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	
20010	26PC	250°C	296.6	250°C	250°C	25010	250°C	29910	250°C	250°C	256°C	250°C	250°C	250°C	
Prote 134	Prote LTP	Prote STR	Point STR	Protectad)	Prote 545	Phyles 142	Pole 141	Inde SM	Prote 145	Prite \$45	Protect 47	Prate 545	Pole St.	Pole 10	
250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	
250°C	250°C	250°C	250°C	250°C	250°C	250*C	250°C	258°C	250°C	250°C	258°C	250°C	350°C	250°C	
Prote 221	Prote 152	Note 251	Point 254	Pride 200	Prote 125	Photos 157	Pole 22	5-de 25	Prote 200						
250	250	250	250	250	250	250	250	250	250						
250°C	250°C	250°C	250°C	250°C	250°C	250°C	25010	250°C	250°C						

Figure 4-14 TS17 console with 165 zones

4.10 Resize Zones

The user can resize panels in both the TS12 and TS17 consoles. To resize the panels, use a "pinch and pull" movement with fingers.



4.11 User Interface

Users are presented with a keyboard or keypad for entering values.

Keyboard: for alphanumeric input



Keypad 1: for basic numeric input



Keypad 2: an extended keyboard which adds:

- Value keys Set, Add, Subtract for temperature
- Mode keys Auto, Manual and Slave for working modes



4.12 Screensaver

The screen light turns off the backlight after five minutes of inactivity. Touch the screen anywhere to restore light to the screen.





4.13 Choose Zones

On the Display screen, users can choose zones individually. Users can also use the [**Range**] button to choose multiple zones simultaneously.

- 1. Choose the first zone.
- 2. Choose the last zone.
- 3. Choose [Range].





NOTE

The user can also choose the first zone and then choose the last zone twice to select the range.

The range of zones selected will be highlighted in blue. See Figure 4-15.

		tanne Sett	\$ \n	b Bichurer		Shutd	nam Startu	00 Steadby	() Broast	٩
Cristiant, 1	oolotore y	vhha acr	nga onip	in Pressile	•	anuta	548 G	p standby	DOOM	0
Probe 1	Probe 2	Probe 3	Probe 4	Probe 5	Probe 6	Probe 7	Probe 8	Probe 9	Probe 10	Set
250	250	250	250	250	250	250	250	250	250	0
250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	
15.2 %	15.2 %	15.2 %	25.2 %	15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	200m
0.90 A	0.90 A	0.90 A	0.90 A	0.90 A	0.90 A	0.90 A	0.90 A	0.90 A	0.90 A	↔
Probe 11	Probe 12	Probe 13	Probe 14	Probe 15	Probe 16	Probe 17	Probe 18	Probe 19	Probe 20	Range
250	250	250	250	250	250	250	250	250	250	
250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	\sim
15.2 % 0.90 Å	15.2 % 0.90 A	15.2 % 0.90 A	15.2 % 0.90 A	15.2 % 0.90 A	15.2 % 0.90 A	15.2 % 0.90 A	15.2 % 0.90 A	15.2 % 0.90 A	15.2 % 0.90 A	Zone
Probe 21	Probe 22	Probe 23	Probe 24	Probe 25	Probe 26	Probe 27	Probe 28	Probe 29	Probe 30	\sim
250	250	250	250	250	250	250	250	250	250	Zone
250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	_
15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	×
0.90 A	0.90 A	0.90 A	0.90 A	0.90 A	0.90 A	0.90 A	0.90 A	0.90 A	0.90 A	Cancel
Probe 31	Probe 32	Probe 33	Probe 34	Probe 35	Probe 36	Probe 37	Probe 38	Probe 39	Probe 40	Д
250	250	250	250	250	250	250	250	250	250	Brint
250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	Prints
15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	
0.30	0.50			~ ~ ~	0.30 A					
Mode S1	OPPED	Zone Selectio	n Active			22 Mar 2	018 02:36	System	Status	DEMO

Figure 4-15 Range of zones highlighted

The user can now set or change parameters or settings for the range selected.



To monitor the health of a zone, the controller uses set and measured parameters. See Table 4-3 and Table 4-4.

	Table 4-3 Set Param	eters
Parameter	Metric Unit	Imperial Unit
Temperature	°C = degree Celsius	°F = degree Fahrenheit
Flow	L = liters per minute	G = gallons per minute
Pressure	B = bar	P = PSI
Other	% = percentage	% = percentage

Table	Table 4-4 Measured and Displayed Parameters										
Parameter	Description	Symbol									
Ampere	Current measurement of the heater circuit	A									
Delta	Difference between two measurements	D									
Ohms	Resistance of the heater circuit calculated from stated voltage and measured current.	Ω									
Percentage	Power output for a zone %	%									
Reynolds Number	Indication of the quality of coolant flow in a circuit	Re									
Watts	Wattage of the heater circuit calculated from stated voltage and measured current	W									



4.15 Display Screen

The Display screen is used to:

- Monitor observe zone condition
- **Control** users can run or stop the system, choose Standby or Boost mode, or shutdown the system
- Set users can set or alter zone setpoints or run modes

Display T	colStore /	후 (영 Apps Sett	ings Grap	h Picture:		Shutd	own Startu	00 p Standby	Boost	٢
Probe 1	Probe 2	Probe 3	Probe 4	Probe 5	Probe 6	Probe 7	Probe 8	Probe 9	Probe 30	
489.8	491.3	487.8	490.9	486.2	492.3	497.3	491.6	495.8	508.3	
500°F	500"F	500°F	500°F	500°F	500°F	500°F	500°F	500°F	500°F	
32.8 %	33.6 %	34.4 %	33.2 %	35.2 %	32.8 %	32.4 %	32.8 %	30.8 %	1.2 %	
1.66 A	1.65 A	1.72 A	1.72 A	1.78 A	1.77 A	170 A	1.75 A	1.77 A	1.61 A	\diamond
Probe 11	Probe 12	Probe 13	Probe 14	Probe 15	Probe 16	Probe 17	Probe 18	Probe 19	Probe 20	Mode
489.0	492.2	495.1	487.8	502.9	500.2	500.2	501.9	502.6	503.5	
500°F	500°F	500°F	500°F	500°F	500°F	500°F	500'F	500°F	500°F	^
33.2 %	30.8 %	36.8 %	40.4 %	23.2 %	33.5 %	30.0 %	26.4 %	24.8 %	20.4 %	Page
1.72 A	1.72 A	173 A	1.70 A	177 A	172 /	1.65 A	1.01 A	1.50 A	165 A	
P1000 21	PT000 72									\sim
498.5	503.8									Page
500°F	500°F									t-1
36.4 %	10.2 %									Display
	1.00									Unspring
										A.
										Print
										2
										Help
Mode	RUN	Tool ID #0: te	586			27 Feb 2	018 11:56	System	Status	ORMAL

Figure 4-16 Display screen

4.16 Display Screen Options

Four different displays are available to use as the main display. The top menu buttons do not change and these functions are available on all screens.

From the Display screen,

1. Choose [Display]:



The Display View box opens. See Figure 4-17.



Display View	
	Zurie Stil Actual
Zone Panels	Table View
Bar Graph	EasyView
Ca	ncel

Figure 4-17 Display View box

2. Choose the required view or choose [**Cancel**] to return to the default zone panel display.



NOTE

Users can also swipe through the four screen options. From the default zone panel screen, use two fingers to swipe right or left through the options.

4.16.1 Zone Panel Display

The number of zones displayed in the Zone Panel screen is determined by the user. See "4.8 Zone Display Options (TS12 Console)" on page 4-13 and "4.9 Zone Display Options (TS17 Console)" on page 4-15.

A zone window shows information about the zone, including set and actual



Zone Panel Display - continued

temperatures, applied power and current, and the health status. See Table 4-5.

Table 4-5 Zo	one Status	
Zone	Display	Indicator
Healthy zone		
Zone name (user configurable)	Probe 1	
Actual temperature in whole degree or •— in tenth of a degree steps	→ 489.8 ▼ 500°F	Actual temperature is black text on green
Scale and set temperature	32.8 %	background.
Applied power (%)	1.00 A	
Applied current (Amps)		
Warning zone Deviation exceeds first stage [warning]	Probe 1 226.3 220°C 0.0 % 0.00 A	Actual temperature is black text on yellow background.
Alarm zone Deviation exceeds second stage [alarm]	Probe 24 21.7 260°C 0.0 96 0.00 A	Actual temperature is white text on red background.
Fatal error Problem detected. See Table 9-2 for a list of possible error messages explained.	Probe 2 T/C 260°C 0.0 96 0.00 A	Error message is white text on red background.
Zone off Individual zone switched off	STEEL 0 180°F	This zone has the off switch indicator.
Lost communications Zone has lost communication with the console	Probe 12 N/Z 500°F 0.0 % 0.00 A	Error message is yellow text on black background.



4.16.2 Table Display

Table view lists each zone and the following parameters:

- set temperature
- actual temperature
- power
- average power
- alarm baseline
- alarm power
- amps
- watts
- earth leakage
- heater baseline
- heater resistance

The [**Mode**] button and the [**Print**] buttons are available in the right hand menu. The user has a scrollbar on the right hand side to move through the zones.

The status of the zones is indicated by the color of the actual power column. Figure 4-18 shows the actual temperature in red, which indicates an alarm status.

— •	⊐ ≛	₹ 6	6 6	1 E	3		D	> 0	<u>a</u>	3	1
Display Tools	store Ap	ps seu	ngs on	pn Pico	ures	Shui	down 51#	TUP Stan	dby 800		
Zone	Set	Actual	Fower	Average Power	Alarm Perwar	Amps	Watta	Leokage	Heater Resistance		
Probe 1	250 °C	80	8.0%			0.50A	120W	Oma	-		
Probe 2	250 °C	80	8.0%			0.50A	120W	Oma	-		
Probe 3	250 °C	80	8.0%			0.50A	120W	Oma	-		~
Probe 4	250 °C	80	8.0%			0.50A	120W	Oma	-		Mode
Probe 5	250 °C	80	8.0%			0.50A	120W	Oma	-		
Probe 6	250 °C	80	8.0%			0.50A	120W	Oma	-		
Probe 7	250 °C	80	8.0%			0.50A	120W	Oma	-		
Probe 8	250 °C	80	8.0%			0.50A	120W	Oma	-		
Probe S	250 °C	80	8.0%			0.40A	96\V	Oma	-		
Probe 10	250 °C	80	8.0%			0.40A	96\V	Oma	-		
Probe 11	250 °C	80	8.0%			0.40A	96\V	Oma	-		
Probe 12	250 °C	80	8.0%			0.40A	96\V	Oma	-		₽
Probe 13	250 °C	80	8.0%			0.40A	96\V	Oma	-		Print
					Total Power	A00.0	0.00kW				
Mode	То	ol ID #1: 16	0			09 Mar	2018 14:24	Factory	Status		DEMO



Figure 4-18 Display screen - table view

4.16.3 Bar Graph Display

The bar graph display shows the zones in graph format against the variables of temperature, power and flow, depending on their configuration. The status of the zones is indicated by the color of the columns. Figure 4-19 shows zone 10 in yellow, which indicates a warning status.

The [**Mode**] button and the [**Print**] buttons are available in the right hand menu.

Use [**Page** \blacktriangle] or [**Page** \triangledown] to see the zone types in sequence.





Figure 4-19 Display screen - bar graph view

4.16.4 EasyView Screen Display

The EasyView screen displays a picture of the tool loaded with zones labelled with information about zone condition. See Figure 4-20.



Figure 4-20 Display screen - EasyView screen view

The EasyView Screen must be setup from the Pictures screen before it will display.

See "5.12 Import a Picture" on page 5-40. and "5.13 Setup the EasyView Screen" on page 5-41 for more information on how to set up the EasyView



screen.

4.17 Modes of Operation

The Quick Access buttons [**Shutdown**, **Startup**, **Standby** and **Boost**] are available from buttons at the top of the screen. See Figure 4-21.



Figure 4-21 Quick Access buttons

The user can also choose the [Mode] button from the side menu:



A box opens on the right side of the Display screen. See Figure 4-22.

The user can access the following modes from this box:

- Run
- Standby
- Startup
- Shutdown
- Boost
- Stop

The user chooses [Cancel] to close the box and return to the Display screen.

Display	ToolStore	다. (2월 Apps Settin	gs Graph	E Pictures		Stop Sta	tup Stand	(2) by Boost	()
TIP 9	TIP 20	TDP 11	T3P 12	TIP 13	TIP 14	T1P 15	TIP 16	TIP 17	
440	440	440	440	440	440	440	440	440	I
482"	F 482°F	482°F	482°F	482°F	482°F	482°F	482°F	482°F	
28.0 %	23.0 %	28.0 %	28.0 %	28.0 %	28.0 %	28.0 %	28.0 %	28.0 %	
1.70 A	1.70 A	1.70 A	1.70 A	1.79 A	1.70 A	1.70 A	1.70	Mode	
11P 18	TDP 29	10P-20	109-21	TIP 22	TIP 23	T1P 24	TIP 2	Run	Mode
440	440	440	440	440	440	440	44(Standby	
482*1	F 482°F	482°F	482°F	482°F	482°F	482°F	48	Startup	~
21.0 9	23.0 %	28.0 %	21.0 %	28.0 %	20.0 %	21.0 %	28.0	Shutdown	Page
TIP 27	TIP 20	TIP 20	T2F 30	TIP 31	TIP 32	112 33	TIP 3	Roost	
440	440	440	440	440	440	440	44(Stop	Page
482*1	F 482°F	482°F	482°F	482°F	482°F	482°F	48		
28.0 9	29.0 %	28.0 %	28.0 %	28.0 96	28.0 %	28.0 %	28.0	5-14-24	11
1.70 A	170 A	1.70 A	1.70 A	1.70 A	1.70 A	1.70 A	1.70	d and	Display
TIP 36	TIP 37	TUP 30	T3P 30	TIP 40	TIP 41	TIP 42	TIP 4	Cancel	- B
440	440	440	440	440	440	440	440	440	Print
482*1	F 482"F	482°F	482°F	482°F	482'F	482°F	482°F	482"F	
28.0 %	23.0 %	28.0 %	28.0 %	28.0 %	28.0 %	28.0 %	28.0 %	28.0 %	
1.70	170 A	1.70 A	1.70 A	170 A	1.70 A	1.70 A	1.70 A	1.70 A	
Mode	RUN T	col ID #23: 168z	+ 10		28	Feb 2019 09:08	System	Status	DEMO

Figure 4-22 Mode box



4.17.1 Mode Window

The Mode window at the bottom left hand corner displays the current chosen mode for the controller. The mode will flash on and off. If a mode that is time limited is chosen, for example, boost, then the window will alternately flash the mode and the time remaining.

See Table 4-6 for a list of Mode displays.

	Table 4-6 Mode Window Display					
Mode	Display	Description				
RUN	Black text in green box	All control zones are working normally.				
STOP	Black text in red box	The system has been shut down and the heaters are at room temperature.				
STANDBY	Black text in yellow box	Any zones with standby temperatures configured have been reduced in temperature until the next command is given.				
STARTUP	Black text in green box	The system has been started in a homogeneous or staged heat rise. It will switch to "RUN" when working temperature has been reached.				
SHUTDOWN	White text in blue box	The system has been shut down in a homogeneous or staged heat fall. It will switch to "STOPPED" when a temperature of 90°C (162°F) has been reached.				
BOOST	Black text in yellow box	Any zones with boost temperatures configured are being temporarily raised. (manual request)				

4.17.2 Status Window

The right hand Status window shows "NORMAL" if all the zones are at their set temperature and no faults have been detected. If any zone detects a fault then the Status window changes its display and color. See Table 4-7.

	Table 4-7 Status Window Display						
Mode	Display	Description					
NORMAL	Black text in green box	Controller is running normally.					
WARNING	Black text in yellow box	A zone's temperature exceeds the warning limits.					
ALARM	White text in red box	This shows either a fatal error or a zone's temperature exceeds alarm limits.					



NOTE

The Status alarm is only active when in Run mode to prevent slower systems, such as MASTER-FOLLOW, from raising unnecessary alarms. Once at their set temperature, systems will switch to Run mode and the alarm becomes active.

See "Section 9 - Troubleshooting" for more information on alarms and error messages.



4.18 ToolStore Screen

The ToolStore screen has 10 different tool banks, each of which contains 20 tool slots, giving a total capacity of 200 different tool settings.

i

NOTE

The tools are numbered from 1–200 sequentially through the tabs to ensure that individual tools can be identified for remote tool loading.

See "13.6 Remote Tool Selection" for more information.

	ToolS	tore Apes	මයි 🗠 Settings Grap	E Pictures	Shutde	wn Startup	00 (Standby B	2) post	0
	Bank 6	B	ank 7	Bark 8	Bar	uk 0	Bank 10		Detect
	Bank 1	8	ank 2	Bank 3	Ber	nk 4	Bank 5		8
Tool #	Tool ID	Tool Name	Teol No	tes	Last Modified	Sequence	Connection		Restore
1	1	160			10:06 23/02/18		Demo Mode		싪
2	2	MMUK-Test					Serial Port		Save
3	3	144z+10	98 Ca	iny .			Demo Mode		
4	4	160new				1: Timer (5 mi	in) Demo Mode		
5	5	40z + SVG	24 CA\	NTY Y			Demo Mode		-
6	6	40zone	32 cavity + v	ater + IO			Demo Mode		Delete
7	7	60zone	48 Cavity	+ 30A			Demo Mode		-
8	8	60zone	48 Cavity	+ 30A			Demo Mode		×
9	9	8 zone	8 Cavity 4	MFIO			Demo Mode		Cancel
10	10	All Zones					Serial Port		
-11	11	NPE_WATERFLO					Serial Port		
12	12	waterflow					Serial Port		
13	13	testy			12:50 13/04/18		Demo Mode		
Mode		Tool ID #3:	144z + 10		04 May	2018 20:11	System Statu	5	DEMO

Figure 4-23 ToolStore screen - tool banks

The tool bank tabs show the following information:

- **Tool** # the allocated tool number [not user configurable]
- Tool ID used to identify tools for remote tool loading via an IO5 card
- Tool Name a user configurable text field for tool name

The color of the name is a key that shows the state of tool:

- **black** a tool store that has been named, but holds no settings
- blue a tool that has been saved and named, but is not in current use
- **purple** the tool that is currently in use and that has no changes to any settings
- **red** the tool that is in current use but which has been changed from its stored settings
- **Tool Notes** a user configurable text field that may be used to hold an expanded description of the tool
- Last Modified the date of the last saved change to the tool settings



- **Sequence** allows the user to run a series of tools or tool settings in a pre-set sequence for a set time period. If tool sequencing is not used, this value defaults to 0. See "6.18 Sequence Tools and Settings" for more information.
- **Connection** normally defaults to Serial Port, which indicates that the tool settings are stored locally within the console memory. The tool may also be in Demo mode. See "8.7 Training and Demonstration Mode" for more information.

If a tool is loaded, the tool bank tab where it is saved will be shown in purple. See "Figure 4-23 ToolStore screen - tool banks" on page 4-28.

4.18.1 ToolStore Screen Side Menu Buttons

These buttons are shown to the right of the tool banks. See Table 4-8 for more information on their function.

	Table 4-8 ToolStore Screen Side Menu Buttons							
Button	Function							
ි	To backup a tool.							
Backup	See "Backup Tool Settings" on page 6-30.							
企	To load a tool.							
Load	See "Load a Tool Locally" on page 6-25.							
⊳	To start a preprogrammed sequence for startup and / or shutdown.							
Sequence	See "Sequence Tools and Settings" on page 6-34.							
Q	To search the tool bank for a tool.							
Search	See "6.14 Search the Tool Bank" on page 6-26.							



4.19 Apps Screen

The Apps screen displays nine options for the user. Choose [**Apps**]:



The Apps screen opens. See Figure 4-24.



Figure 4-24 Apps screen

For more information on the icons shown on the Apps screen, see "Table 4-9 Apps Screen Icons" on page 4-31.



NOTE

The TS8 is not compatible with SmartMold, so only 8 icons are displayed.



4.19.1 Apps Screen Icons

Table 4-9 Apps Screen Icons						
lcon	Function					
×=	To access self diagnostic tests for the controller. See "Self Diagnostic Tests" on page 8-7.					
	To export tool data from the controller. See "6.21 Export Tool Data - Export Screen" on page 6-48.					
	To access the Pictures screen. See "Pictures Screen" on page 4-29.					
	To access the Actions screen. See "6.22 Monitor Controller Changes - Actions Screen" on page 6-50.					
	To access the Alarms screen. See "6.23 Monitor Alarms - Alarms Screen" on page 6-54.					
(¢	To connect to a remote access point. See "6.24 Connect Remotely - Remote Screen" on page 6-58.					
íÍÍ	To access the Energy screen. See "6.20 Monitor Energy Usage - Energy Screen" on page 6-45.					
	To access the Purge function. See "Purge Function" on page 6-12.					
	To connect to the SmartMold option, if installed.					



4.20 Settings Screen

The Settings screen contains options for system settings and tool settings. Choose [**Settings**]:



The Settings screen opens. See Figure 4-25.

Display	C ToolStore	Apps 1	CC Settings	년고 Graph	원 Pictures			Shutdown) Startup	00 Standby	Boost	0
Card	Туре	Alarm Heater	Alerma Active	Alarm Title	Hasimum Scipent	Minimum Selpcint	Mooiman Power	Ground Protection	TC Offset	Speed	Sensor	O Set
	Probe 1	Off	C,R,I	0	450.0	0.0	100	On	0.0	Auto	Type J	se r
4400	Probe 2	CIF	C,8,I	0	450.0	0.0	100	On	0.0	Auto	Type J	Config
· -	Probe 3	Off	C,B,I	0	450.0	0.0	100	On	0.0	Auto	Type J	
	Probe 4	orr	C,B,I	0	450.0	0.0	100	On	0.0	Auto	Type J	←→ Paore
	Probe 5	Off	C,B,I	0	450.0	0.0	100	On	0.0	Auto	Type J	
4400	Probe 6	orr	C,B,I	0	450.0	0.0	100	On	0.0	Auto	Type J	
	Probe 7	Off	C,B,I	0	450.0	0.0	100	On	0.0	Auto	Type J	
	Probe 8	Cff	C.8.I	0	450.0	0.0	100	On	0.0	Auto	Type J	
	Probe 9	Off	C,B,I	0	450.0	0.0	100	On	0.0	Auto	Type J	
ANX ANX	Probe 10	Off	C,B,I	0	450.0	0.0	100	On	0.0	Auto	Type J	×
	Probe 11	Off	C,8,I	0	450.0	0.0	100	On	0.0	Auto	Type J	Cancel
	Probe 12	Off	C,B,I	0	450.0	0.0	100	On	0.0	Auto	Type J	æ
155	Probe 13	Off	C,B,I	0	450.0	0.0	100	On	0.0	Auto	Type J	Print
	Probe 14	Off	C,B,I	0	450.0	0.0	100	On	0.0	Auto	Type J	
Mode	STOPPED	Tool ID #0	: None				14	4 Mar 2018 :	14:51	System	Status	ORMAL

Figure 4-25 Settings screen

4.20.1 Settings Screen Side Menu Buttons

	Table 4-10 Settings Screen Side Menu Buttons					
Button	Function					
O Set	To set parameters for tools or the system. See "5.5 Configure the Parameters and Settings" on page 5-10.					
ලිලී Config	To open the Settings box.					
↔ Range	To choose a range of zones. See "Choose Zones" on page 4-18.					
⊠ Cancel	To cancel and return to the previous screen.					
요 Print	To send information to printer or USB memory stick. See "Configure a Printer" on page 5-49.					



4.20.2 System Settings Icons

	Table 4-11 System Settings Icons					
lcon	Function					
User Admin	To configure user information. See "7.6 User Admin Settings" on page 7-11.					
User Access	To configure user access settings. See "7.1 User Access Screen" on page 7-1.					
Oate/Time	To configure date and time settings. See "5.14 Set Date and Time" on page 5-47.					
Printers	To configure default printer settings. See "5.15 Configure a Printer" on page 5-49.					
Network	To configure a network connection. See "7.7 Configure a Network Connection" on page 7-13.					
Retwork Share	To share files remotely over a network. See "7.8 Share Files on a Network" on page 7-18.					
System Config	To access and configure system settings. See "5.5.3 Configure System Settings" on page 5-21.					

4.20.3 Tool Settings Icons

Table 4-12 Tool Settings Icons			
Icon	Function		
	To configure Quad IO card for remote signalling. See "Section 13 - Quad IO Options" on page 13-1.		
O svg	To configure SVG settings. See "Section 14 - Sequence Valve Gate Option" on page 14-1.		
Tool Centig	To access and configure tool settings. See "5.5 Configure the Parameters and Settings" on page 5-10.		



4.21 Graph Screen

The Graph screen shows graphs of temperature versus time or power versus time for up to 20 zones.

Choose [Graph]:



The Graph screen opens. See Figure 4-26.



Figure 4-26 Graph screen



4.21.1 Graph Screen Side Menu Buttons

Table 4-13 Graph Screen Side Menu Buttons				
Button	Functions			
iii Timeline	To show history of operation for selected tool. Timeline is shown in bottom information bar. See "Figure 4-26 Graph screen" on page 4-34.			
ک Power	To show power on the bottom axis of the graph. Toggles to [Show].			
رک Temp	To show temperature on the bottom axis of the graph. Toggles to [Power].			
↔ Scale	To choose scale of time period shown. Choices are 5 minutes, 30 minutes or 24 hours.			
X Cancel	To cancel and return to the previous screen.			
∧ zone	To move up through the zones.			
∽ Zone	To move down through the zones.			
D Print	To send information to printer or USB memory stick. See "Configure a Printer" on page 5-49.			



4.22 Pictures Screen

The Pictures screen allows the user to link zone temperatures to physical position on an uploaded image. The TS12 and TS17 consoles can store up to 120 pictures. The TS8 console can store up to 20 pictures. A scrollbar on the right hand side allows the user to scroll through multiple screens to find pictures, if necessary.

Choose [Pictures]:



The Pictures screen opens. See Figure 4-27.



Figure 4-27 Pictures screen



NOTE

The default Pictures screen is blank until the user saves pictures to it.

4.22.1 Pictures Screen Side Menu Buttons

Table 4-14 Pictures Screen Side Menu Buttons			
Button	Function		
ි	To import pictures into the console memory.		
Import	See "5.12 Import a Picture" on page 5-40.		
と	Displays links between pictures and the currently loaded tool.		
Links	See "5.13.3 View Linked Pictures" on page 5-43.		



4.22.2 Access the Pictures Screen: TS8 Console

The TS8 console does not have a [**Pictures**] button in the Navigation menu. To access the Pictures screen:

1. Choose [Apps]:



2. Choose [Pictures]:



The TS8 console can hold up to 20 images. The user is able to link only one image to each tool. See Figure 4-28.

လြွယ္လွ်ိဳ Configure Picture Link Select empty Easyview slot to link the currently loaded picture.					
	Slot Picture Name				
	1	picture03.jpg			
		ОК Са	ncel		

Figure 4-28 TS8 console - Configure Picture Link box



4.22.3 EasyView Screen

After a picture is saved to the Pictures screen, the user can load it to the EasyView screen. The EasyView screen links uploaded pictures of tools to specific zones for monitoring purposes.

See Figure 4-29.



Figure 4-29 Linked EasyView screen

The picture on the EasyView screen can be moved using the touchscreen.

Apart from the zone number (or alias name), the mini panels show one other piece of information, which may be:

- the actual temperature
- the setpoint temperature
- the power output percentage
- the current (or Amps) consumed by that zone



NOTE

The mini panel header is not color-coded as on the Display screen.

The lower half is color-coded to indicate the alarm status, as shown below:

Table 4-15 Alarm Status Colors			
Black on green Normal working			
Black on yellow First stage warning status			
White on red Second stage alarm status or fatal error			



Table 4-16 EasyView Screen Top Menu Buttons				
Button	Function			
ි Backup	Backup a picture. See "5.13.1 Link a Picture in the EasyView Screen" on page 5-42.			
间 Delete	Delete a picture. See "5.13.6 Backup a Picture from the EasyView Screen" on page 5-45.			
∫ Prev	See the previous picture saved.			
Next	See the next picture saved.			
ு Link	Link a picture. Toggles to [Unlink]. See "5.13.1 Link a Picture in the EasyView Screen" on page 5-42.			
Unlink	Unlink a picture. Toggles to [Link]. See "5.13.2 Unlink a Picture in the EasyView Screen" on page 5-42.			
R Hide	Hide the mini panels on a linked EasyView picture. Toggles to [Show].			
() Show	Shows the mini panels on a linked EasyView picture. Toggles to [Hide].			
⊖ Place	Places a mini panel on the linked picture. See "5.13.4 Add a Mini Panel to the Tool Picture" on page 5-44.			
C Remove	Remove a label from the EasyView picture. See "5.13.5 Remove a Mini Panel from the Tool Picture" on page 5-45.			
X Exit	Exit the EasyView screen.			



The Zoom screen displays the Deviation graph, the Output Power graph and a table with zone settings.

1. Choose any zone:

Display ToolSt	ore Apps :	ම් ්ය Settings Graph	Pictures	Shutdow	n Startup Sta	ndby Boost	٥
							0
Probe 1	Probe 2	Probe 3	Probe 4	Probe 5	Probe 6	Probe 7	Set
23.7	21.3	23.7	21.0	25.0	22.5	25.1	Q
0°C	0°C	0°C	0°C	0°C	0°C	0°C	Zoom
0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	↔
0.00 A	0.00 A	0.00 A	0.00 A	0.00 A	0.00 A	0.00 A	Range
Probe 8	Probe 9	Probe 10	Probe 11	Probe 12	Probe 13	Probe 14	
22.1	27.9	39.1	26.2	26.4	26.1	26.2	Zone
0°C	0°C	0°C	0°C	0°C	0°C	0°C	~
0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 96	0.0 %	Zone
0.00 A	0.00 A	0.00 A	0.00 A	0.00 A	0.00 A	0.00 A	
Probe 15	Probe 16	Probe 17	Probe 18	Probe 19	Probe 20	Probe 21	Cancel
26.2	26.2	27.8	28.3	25.7	T/C	25.7	А
0°C	0°C	0°C	0°C	0°C	0°C	0°C	Print
0.0 %	0.0 %	0.0 %	0.0 %	0.0 96	0.0 %	0.0 %	
0.00 A	0.00 A	0.00 A	0.00 A	0.00 A	0.00 A	0.00 A	
Mode Zone Selection Active 05 Apr 2018 10:20 System Status AL					ALARM		

2. Choose [Zoom]:





The Zoom screen opens. See Figure 4-30.



Figure 4-30 Zoom screen

The user can change the orientation of the graphs on the screen by touch.

The time scale shown is displayed in the information bar at the bottom of the screen.

4.22.6 Interpret the Zoom Screen

Refer to the numbering on Figure 4-30 for this section.

- 1. In the Deviation graph, the red line indicates that the actual temperature has varied above the set temperature. The blue line indicates that the actual temperature has varied below the set temperature. If the two lines are close together, there is precise temperature control. A zone that deviates more noticeably than its neighbor zones could have a problem, such as a faulty thermocouple or an incorrect zone speed setting.
- 2. The table on the left shows the main settings for the zone and the current temperature value.
- 3. The Output Power graph shows the output power levels that have been measured. Power traces should be fairly similar for similar zones at similar temperatures.



1.22.7 Zoom Screen Side Menu Buttons			
Table 4-17 Zoom Screen Side Menu Buttons			
Button	Function		
O Set	To set zone temperatures, working modes, or turn zones on and off. See "5.6 Set Zone Temperature" on page 5-26 and "6.9 Turn Zones Off or On" on page 6-18.		
	To toggle between a 5 minute graph and a 30 minute graph.		

To move up through the zones.

To move down through the zones.

To cancel and return to the previous screen.

See "Configure a Printer" on page 5-49.

To send information to printer or USB memory stick.

. . 4.2

 \leftrightarrow Scale

 $\overline{}$ Zone

 \sim Zone

 \mathbf{X} Cancel

Ð

Print





4.23 Override Button

NOTE

The override button is not shown nor used in the classic theme mode nor in the TS8 console.

When enabled, the Override button is located between the mode buttons and the function buttons on the top bar:



Setup

Input	Delay Time	Action	Output	Action
1	0	Machine OK	1	Enable Mould Closure
2	10	Automatic Mode (IMM)	2	Inactive
3	0	Inactive	3	Inactive
4	0	Inactive	4	Inactive

Input Signals	Output Signals
1. Machine OK	1. Enable Mould Closure
2. Automatic Mode (IMM)	2. Inactive
3. Inactive	3. Inactive
4. Inactive	4. Inactive

Override Times

- 0 minutes: Removes the Override button from the screen—Default setting.
- 1–15 minutes: The Override button is displayed on the top bar. When the Override button is pressed, the console will output the Enable Mould Closure signal for the entered length of time. Note: Only whole minutes can be entered.



Scenarios

- The Override button can be pressed when all of the following conditions are satisfied.
 - IMM is in manual mode; e.g., the Automatic Mode input signal is 0.
 - The Machine OK signal is 1.
 - The console is in Run, Standby, or Startup mode.
 - The alarm severity is less than a fault; i.e., none of T/C, Triac, Fuse, Power Limit, Ground errors.
- When the Override button is pressed, the Enable Mould Closure signal will stay active for the time entered in the Override Time setting.
- After the timer elapses, the Enable Mould Closure signal becomes inactive.
- If the Override button is pressed while an override is active, the override time remaining is set to the length of time in the Override Time setting.
- Override is canceled when any of the following conditions are satisfied.
 - The console mode is changed.
 - The Automatic Mode signal is received from the IMM.
 - The machine OK signal is lost.
- Override is NOT canceled when
 - switching from Run to Standby mode when it is done automatically from the delay of the automatic mode signal being switched to 0, or
 - there is a severe alarm; e.g., none of T/C, Triac, Fuse, Power Limit, Ground errors.


Section 5 - Setup



WARNING

Ensure that you have fully read "Section 3 - Safety" before connecting or operating the controller.

It is the responsibility of the integrator to understand and follow international and local standards for safety of machinery when integrating the controller with the molding system.

The M2 Plus Series controller should be located in such a way that the main disconnect is easily accessible in case of emergency.

M2 Plus Series controllers are shipped with a power cable, which is a correct size to run the system. When you install a connector on the cable, ensure that the connector can safely withstand the full system load.

The M2 Plus Series controller supply should have a fused disconnect or main circuit breaker according to local safety codes. Refer to the serial plate on the controller cabinet for confirmation of the main supply requirements. If the local supply is outside the specified range, please contact *Mold-Masters* for advice.



WARNING - ELECTRIC SHOCK HAZARD

It is crucial to comply with these warnings to minimize any personal danger.

- Ensure that all energies are properly locked out in the controller and mold machine before installation of the controller into the system.
- DO NOT enter the cabinet without first ISOLATING the supplies. There are unguarded terminals inside the cabinet which may have a dangerous potential across them. Where a three-phase supply is used, this potential may be up to 600VAC.
- Voltage and amperage cables are connected to the controller and the mold. Electric power must be shut off and lockout / tagout procedures followed prior to installing or removing any cables.
- Integration should be done by properly trained personnel based on local codes and regulations. Electrical products may not be grounded when removed from the assembled or normal operating condition.
- Do not mix electrical power cables with thermocouple extension cables. They are not designed to carry the power load or list accurate temperature readings in each other's application.



WARNING - TRIP HAZARD

The integrator should ensure that the controller cables do not present a trip hazard on the floor between the controller and the mold machine.



IMPORTANT

We recommend that you run a self diagnostic routine (see Section "8.3 Self Diagnostic Tests") to check that all zones are correctly sequenced and that there is no crosswiring between zones or between heater outputs and thermocouple inputs.



5.1 Introduction

M2 Plus controllers are shipped with a configured tool loaded. The user can copy this tool and alter the parameters to suit production requirements.

i

5.2 Create a New Tool

IMPORTANT

The controller must be in Serial Port mode.

The user cannot overwrite an existing tool to create a new tool.

1. Choose [ToolStore]:



2. Choose an empty tool slot.

	Bank 6	Bar	¥7	Bank B	flan	k9	Bank 10	Detec
	Bark 1	Ber	κz	Bank 3	Bar	K4	Bank S	3
Tool #	Tool ID	Test Name	Tool Ne	leu .	Lost Hodifine	legence	Connection	Resto
5	5	40z+SVG	24 CAV	ITY			Demo Mode	A
8	8	4Eizone	32 cavity + w	ater + IO			Demo Mode	Save
7	7	60zome	4E Cavity	+ 30A			Demo Mode	
8	9	GOzome	48 Cavity	+ 30A			Demo Mode	
9	9	8 zene	8 Cavity +	MFIO			Demo Mode	
10	10	AlZones					Serial Port	
\mathbf{n}	-11	NPE_WATERFLO					Serial Port	Delet
12	12	waterflow					Scrial Port	\times
13	13	testy			12:50 13/04/18		Demo Mode	Cano
14	14	linux			18:94 12/04/18		Senal Port	
15								
16								
17								

3. Choose [Detect]:



- 4. Enter password, if required.
- 5. Enter tool name:





Create a New Tool - continued

The console runs an automatic card detect routine to find out what type and how many cards are fitted in the selected controller. See "5.2.1 Cards That May Be Detected" on page 5-4 for more information.

The following message will show during the detection process:

0	Information							
A+								
Aut	o detecting cards. Please wait:							



NOTE

If the system has a problem running the detect sequence, it may report "Auto Detect Failed" and it will offer to retry the process. Choose [**OK**] to retry card detection. If the detection routine continues to fail, contact your supplier for advice.

Warning		
Auto Detect Failed. Retry ?		
	ОК	Cancel

After a tool has been created, the user must configure the zones, the tool settings and the system settings as required.



5.2.1 Cards That May Be Detected

Table 5-1 M2 Plus Controller Cards						
Card	Symbol	Description				
M2Z6MOD		6 zone card rated at 5 Amp rating for probes with current sensing and ground fault monitoring				
M2QMOD		4 zone card rated at 15 Amp rating with current sensing and ground fault monitoring				
20A-MOD		2 zone card rated at 20 Amp rating for manifolds with current sensing only				
1Z-3Ph-30A		1 zone 3-phase card rated for 480 VAC, 30 Amps with current sensing				
HRC-AI8	AIB	8 channel 4-20mA analogue input card typically used with analogue flow sensors to monitor coolant flow rates				
HRC-D12	DIZ	16 channel digital input card typically used to accept external signals				
HRC-WT3		12 channel RTD card used for temperature monitoring using resistive temperature devices				
HRC-WT4	WT4	12 channel TC card used for temperature monitoring using thermocouple sensors				
HRC-IO3 or TMK-IO4		4 channel digital Input / Output card for remote signalling				
HRC-IO5		4 channel digital Input / Output card for remote signalling and remote Tool Selection input				
DO32	0032	32 channel digital output Card used to signal external equipment				
M2-SVG12	SVG	12 channel sequential valve gate card that can open and close valve gates at discrete preset point				
30 Amp Card	SOMOD	2 Zone 30 Amp dual slot card that supports 30 Amps at 100% duty cycle				
HRC-AI04	AIO4	4 channel Analog output card (PWM, 0-10V, 4-20mA)				
20A-MOD		2 zone 20 Amp card with current sensing and ground fault monitoring				



5.3 Configure the Control Cards

The ToolStore screen displays icons in the first column to show what cards have been detected.

All temperature control cards initially default to probe zones and use probe default values.

The tool may run on this basic setting, but it is better to configure larger, slower zones, such as manifolds.

Surplus zones should be set to [Not Used] to prevent false alarms.

Example: if you have six cards offering 36 control zones, but are only using 32 actual zones, it is best to set the last four zones to [**Not Used**] so they do not display false alarms.

5.3.1 Set Zone Types

Setting the zones to reflect the tool makes it easier to use, as control card characteristics are preprogrammed so they are more likely to match the heat load.

Automatic first time start will perform this routine, but it is helpful to have the cards designated before they are first used.

From the Display screen:

1. Choose [Settings]:



2. Choose a zone from the Type column. See Figure 5-1.

	Ci Teolittare	幸	8	<u>ا</u> ا				Shuddown		00	a	<u>)</u>	0
Utspilay	recistore	vhha	0.010	, ,	rapn r	Towney		chuldown	overvap	01011110	y 000		0
Circl	Туре	# 7	Doost Temp	Doost. Time	Diock Temp	Dieck. Ramp	Moster Zone	Worn High	Norm LOW	Alarm High	Alarm Low		Set
	Probe 1	00	50	60	0	S*C/min	No Master	8.0	8.0	12.0	12.0		තුදු
440	Probe 2	20	50	60	0	S*C/min	No Master	8.0	8.0	12.0	12.0		Config
	Probe 3	00	50	60	0	S*C/min	No Master	8.0	8.0	12.0	12.0		
	Probe 4	20	50	60	0	S*C/min	No Master	8.0	8.0	12.0	12.0		Pange
Section 2	Probe 5	20	50	60	0	S*C/min	No Master	8.0	8.0	12.0	12.0		
440	Probe 6	20	50	60	0	S*C/min	No Master	8.0	8.0	12.0	12.0		
	Probe 7	20	50	60	0	S*C/min	No Master	8.0	8.0	12.0	12.0		
	Probe 8	20	50	60	0	S*C/min	No Master	8.0	8.0	12.0	12.0		
ALC: NO.	Probe 8	30	50	60	0	5°C/min	No Master	8.0	8.0	12.0	12.0		
- E	Probe 10	20	50	60	0	5°C/min	No Master	8.0	8.0	12.0	12.0		×
	Probe 11	20	50	60	0	5°C/min	No Master	8.0	8.0	12.0	12.0		Cancel
	Probe 12	20	50	60	0	5°C/min	No Master	8.0	8.0	12.0	12.0		Д
ALC: NOT	Probe 13	20	50	60	0	5°C/min	No Master	8.0	8.0	12.0	12.0		Print
440	Probe 14	00	50	60	0	S*C/min	No Master	8.0	8.0	12.0	12.0		
Mede	STOPPED	Zone	Selection	Active			2	2 Mar 2018 0	2:37	system	Status		DEMO

Figure 5-1 Choose zone from the Type column



Set Zone Types - Continued

3. Choose [Set]:



The Configure Card Slot box opens:



- 4. Choose zone type. Available options:
 - [Not Used] switches off unused card zones
 - [Probe] sets the zone to a faster response curve
 - [Manifold] sets the zone to a slower response curve or zone only with no control function
 - [Spear] for 4SMODC cards only
 - [Monitor] allows you to set any control zone from any card as a monitor
 - [**Special**] used for cards that do not control temperature. For example:
 - **RTD zone** suits 12RTD (12 channel) temperature measuring cards for cooling water
 - IO zone suits QCIO (four in / out channels) Input / Output cards
 - Water suits Al8 (8 channel analogue) or 16DLI (16 channel) water flow measurement cards
- 5. Change the color of the header, if required.
- 6. Choose [**OK**] to accept the user setting changes or [**Cancel**] to return to the Settings screen without saving any changes.



5.4 Set Chillers, Cavities and Water Flow Zones

The user can set or change a single zone's temperature or the user can use **[Range]** to change multiple zones simultaneously. See "4.13 Choose Zones" on page 4-18 for more information about the Range function.

1. Choose the required zone or zones:



2. Choose [Set]:



- 3. Enter password, if required.
- A keypad opens:



4. Choose [Manual] for the mode.



5. Enter the required values using the keypad or choose:

- [Add] to increase the current temperature by a set amount
- [Subtract] to decrease the current temperature by a set amount



NOTE

The values set must fall within the limits set on the Settings screen. See "5.5.1 Configure Tool Parameters Zone by Zone" on page 5-10 for information on how to change these limits.

6. Choose [**Enter**] to accept the changes and return to the Display screen, or choose [**Esc**] to clear the input.

The user can return to the Display screen at any time by choosing [**Esc**] twice.

For more information on water flow control and monitoring, see "Section 11 - Water Manifolds" on page 11-1.



5.4.1 Preconfigured Zone Values

Table 5-2 shows the whole setup chart and the preconfigured values that are given to probe and manifold zones. These values may be changed to suit each tool.

Table 5-2 Preconfigured Zone Values						
Parameter	Probe and Manifold Cards	Other Monitoring Cards				
Alarms Active	C, B, I	C, B, I				
Alarm Hi and Lo	25°C or 45°F	25°C or 45°F				
Alarm Power	Off	Off				
Alarm Time	10 seconds	10 seconds				
Alias	blank	blank				
Boost Time	0	blank				
Display Group	1	blank				
Master Zone	blank	blank				
Max Power Setting	100%	blank				
Max Setpoint Setting	450°C or 842°F	450°C or 842°F				
Min Setpoint Setting	0°C or 32°F	blank				
Rack Address	slot address	slot address				
Reading Avg	0	0				
Sensor	J-Type	blank				
Shutdown Stage	off	off				
Speed	Auto	blank				
Standby and Boost Temp	0°C or 0°F	blank				
Startup Stage	off	off				
Offset Value	0°C or 0°F	blank				
T/C Open Mode	Normal	blank				
Warn Hi and Lo	5°C or 9°F	blank				



5.5 Configure the Parameters and Settings

Card allocation provides preset parameters for the tool and the system, which function for general use. Many settings, such as warning and alarm levels, may require adjustment for each tool. Some parameters are configurable on a zone by zone basis for precision and other settings are configurable on a whole tool or whole system basis.

- For information on tool parameters configurable zone by zone, see "5.5.1 Configure Tool Parameters Zone by Zone" on page 5-10.
- For information on tool settings configurable for all zones, see "5.5.2 Configure Tool Settings for the Whole Tool" on page 5-15.
- For information on system settings configurable for all zones, see "5.5.3 Configure System Settings" on page 5-21.



NOTE

Settings can be either values or options.

- For values, a keypad appears.
- For options, the user may need to choose from a list or use a checkbox.

Some settings require the console to restart and the user is asked to confirm the action. As an example:

! Warning							
Changing the language requires an application restart. Change to German?							
	ОК	Cancel					

The values set for the settings belong to the tool that is currently loaded. If a new tool is loaded, then this new tool will bring its own settings into the ToolStore screen.

5.5.1 Configure Tool Parameters Zone by Zone

Zone by zone configuration is available for some parameters to allow for precision. The user can also configure more than a single zone at a time.

From the Display screen,

1. Choose [Settings]:





Configure Tool Parameters Zone by Zone - continued

2. Choose the zone or zones to be configured and choose the column of the required parameter. See Figure 5-2.

Displey	C) ToolStore	拿 Apps	िंद्ध Settings	Craph	E Pictures		Sh	utdown) Startup	00 Standby	🕜 Boost	Ó
Carri	Туре	Reck. Address	Ains		T/C Open Mode	Selpoint	Standity Temp	Beast Temp	Boost Time	Dieck. Temp	Block Ramp	O Set
	Probe 1	1			Normal	500	268	268	59	0	5°F?n	ŵĽ
4400	Probe 2	z			Normal	500	268	268	59	0	5*F/m	Config
	Probe 3	э			Normal	500	208	208	59	0	\$°F?n	-
	Probe 4	4			Normal	500	208	208	59	0	\$*F/m	Range
	Probe S	5			Normal	500	268	298	59	0	S'F?n	
4400	Probe G	G			Normal	500	200	200	50	0	\$°F/m	E
	Probe 7	7			Normal	500	208	268	63	0	\$°F?n	A00
	Probe 0	0			Normal	500	260	200	50	0	\$°F/m	
	Probe 0	0			Normal	500	268	268	60	0	\$°F/m	
4400	Probe 10	10			Normal	500	268	208	60	0	\$*F/m	×
	Probe 11	11			Normal	500	208	268	60	0	\$°F/n	Cancel
	Probe 12	12			Normal	500	268	268	69	0	\$°F/n	A
And some	Probe 13	13			Normal	500	268	268	69	0	\$°F/m	Print
	Probe 14	14			Normal	500	268	268	59	0	\$°F/m	ര
												Нер
Mode		Zone Sel	ection Activ	*			27 Fe	b 2018 1	1:25 E	actory	Status	NORMAL

Figure 5-2 Choose zones and required parameter

3. Choose [Set]:



- 4. Enter password, if required.
- 5. Set the required value.
- 6. Repeat steps 2 through 5 for each parameter that requires adjustment.

See "Table 5-3 Tool Parameters - Zone by Zone" on page 5-12 for a list of configurable parameters.



Table 5-3 Tool Parameters - Zone by Zone						
Function	Description	Setting Limits				
Rack Address	Read only.	Not user configurable.				
Alias	To change the current alias name, the user must use the backspace key on the keyboard first to delete the existing name.	Maximum characters = 11. Default = blank.				
T/C Open Mode	Chooses a response for any zone that detects a failed thermocouple (T/C):					
	Normal – No action corrective taken. The zone power sets to 0% and it shows a thermocouple fatal alarm.					
	Auto Manual - The zone has enough data after ten minutes of steady operation to switch to Manual mode at a power level that should hold the previous temperature.					
	Auto Slave – The zone has sufficient data after ten minutes of steady operation to slave the failed zone to another similar zone.					
	Nominated Zone Slaving – Allows the user to specify a zone to act as a master for another zone, if it were to fail.					
Setpoint	Temperature set by the user.	Maximum = 450°C / 800°F				
Standby Temp	Sets the Standby temperature for any zone.	Maximum = 350°C / 660°F				
Boost Temp	Sets the increase in temperature when Boost is selected.	Maximum = 250°C / 450°F				
Boost Time	Sets how long the Boost temperature is applied.	Maximum = 5400 seconds.				
Block Temp	Temperature the zone should control at during Block mode.	Maximum = 400°C / 800°F				
Block Ramp	Rate of temperature drop while zone decreases to the block temp value while in Block mode.	Maximum = 20°C / 30°F per minute				
Master Zone	Chooses a Master zone for any group of sub- zones.					
Warn High	Sets the temperature deviation above setpoint which will trigger the Warn indication.	Maximum = 99°C / 178°F				
Warn Low	Sets the temperature deviation below setpoint which will trigger the Warn indication.	Maximum = 99°C / 178°F				
Alarm High	Sets the temperature deviation above setpoint which will trigger the Alarm indication.	Maximum 99°C / 178°F				
Alarm Low	Sets the temperature deviation below setpoint which will trigger the Alarm indication.	Maximum 99°C / 178°F				
Alarm Pow High Alarm Pow Low	Sets the power percentage which if exceeded will trigger the Alarm indication.	Maximum = 100% [Off]				
Alarm Heater	Generates an alarm if the heater resistance exceeds this setting compared to the heater reference value.	Maximum = 100% [Off]				

Table 5.2 Tabl Devenations



Table 5-3 Tool Parameters - Zone by Zone							
Function	Description	Setting Limits					
Alarms Active	Offers a selection table which allows you to decide how any of the following alarm conditions should affect the system:	Option for alarm actions: Console – displays the alarm condition in the lower Status panel.					
	 Low temperature alarm Zone alarm Power alarm 	Beacon – extends the alarm to activate an attached Alarm Beacon and Sounder.					
		Mold Protect – puts the console into Stop mode. All zone heaters will cool down.					
		Injection Disable – sends out a shutdown signal from the IO card, which may be externally configured to stop the molding machine.					
Alarm Time (seconds)	Sets a brief delay between an alarm condition being detected and an external alarm being sent.	Maximum = 999 seconds.					
Maximum Setpoint	Sets the highest permitted setpoint for the zone or zones.	Maximum = 450°C or 800°F.					
Minimum Setpoint	Sets the lowest permitted setpoint for the zone or zones.	Minimum = 0°C or 0°F.					
Maximum Power	Sets the highest permitted power level for the zone or zones. Works in open loop (Manual) or closed loop (Auto) configuration.	Maximum = 100%.					
Ground Protection	Choose [On] to continuously monitor ground leakage. The controller may reduce output voltage, if required, to protect the system.						
	If this parameter is set to [Off], ground leakage is not monitored.						
	Note : if output is too high then the main output fuse will rupture.						
Offset Value	Sets a proportional value to compensate between displayed temperature and the Actual temperature.	Maximum = ±150°C or ±300°F.					
Speed	Chooses or overrides the Auto-Speed setting to determine the control characteristic for the zone temperature. Note : The Ultra setting forces the controller to always stay in phase angle firing. This is used if a very small nozzle might show temperature instability in burst fired mode.						

Configure Tool Parameters Zone by Zone - continued

7-

na ku Zana



Table 5-3 Tool Parameters - Zone by Zone							
Function	Description	Setting Limits					
Sensor - Temperature	Chooses temperature sensor for the zone: Type J Type K Type K High	Type J / Type K thermocouples: Maximum = 472°C / 881°F. Type K High thermocouples: Maximum= 700°C / 1292°F.					
Sensor - Analog	Chooses analogue sensors for AI cards.	Note : analogue sensors read 0-20mA and can be used for flow, pressure or other devices.					
Display Group	Chooses groups of zones to display on separate Display screens. By default, all zones are in group one but selected zones can be allocated to subsequent groups. Zones that need not be shown on the Display screen can be set as display group 0.	Default = 1. Maximum = 6 groups.					
Startup Stage	Configures groups of zones into separate startup groups.	Maximum = 16 groups. Default = 1.					
Shutdown Stage	Configures groups of zones into separate shutdown groups.	Maximum = 16 groups. Default = 1.					

Configure Tool Parameters Zone by Zone - continued



5.5.2 Configure Tool Settings for the Whole Tool

The tool settings accessed from [**System Config**] on the Settings screen affect all zones of the tool. They cannot be configured on a zone by zone basis.

1. Choose [Settings]:



2. Choose [Config]:



3. Enter password, if required.

The Settings box opens:

ⓒट्ट Settings					
System Settings					
2		\bigcirc			Ŕ
User Admin	User Access	Date/Time	Printers	Network	Network Share
System Config					
Tool Settings					
Guadio	Oc svg				
de Back					

4. Choose [Tool Config] from Tool Settings.

The Tool Config box opens:

nput Timer	Select option from list
nput Signal Power Mode	
Power Alarm Delay	
Pressure Units	
	Action
	,,



- 5. Choose the required setting.
- 6. Enter the required value or option.
- 7. Choose [**OK**] to accept the new value or choose [**Back**] to return to the Tool Config screen without saving.

See "Table 5-4 Tool Settings - Whole Tool" on page 5-17 for a list of configurable tool settings.



IMPORTANT

The user must save the tool in the ToolStore to save these changes permanently. See "6.11 Save a Tool" on page 6-21 for more information.



5-17

Table 5-4 Tool Settings - Whole Tool			
Function	Description	Limits	
Button One	Allows user to choose which button is displayed as the first button in the top Mode buttons: [Shutdown] or [Stop].		
Button Two	Allows user to choose which button is displayed as the second button in the top Mode buttons: [Run] , [Sequence] or [Startup] .		
Display Mode	 Sets the Display screen and Settings screen to group the zones as: [Sorted]: all probe zones displayed first, followed by manifolds, then specials. [Mixed]: groups the probe and manifold zones by their position in the card rack. Manifolds may appear out of sequence order, but will be grouped with their corresponding probe zones. 		
Flow Units	Choose [Gallons] or [Liters].	Note : this parameter only appears if a flow monitor (analogue input) card is detected in the rack.	
Input Timer	Sets a delay between the time an input signal is received and the controller entering a new mode. The controller uses the delay to confirm that the it has received a proper input signal versus an input pulse.	Maximum = 99 minutes.	
Input Signal	 Sets how the console responds to a remote input, normally open pair, at the HAN4A connector on the rear panel: STANDBY if Closed - switches the controller into Standby mode when the remote input is closed and returns the controller to Run mode when the remote input signal is removed. Works in all modes. STANDBY if Opened - switches the controller into Standby mode when the remote input is opened and maintains the controller in Standby mode even if the remote input signal is restored. Works only in Run mode. BOOST if Closed - switches the controller into Boost mode when the remote line is closed and returns the controller to Run mode even if the remote input signal is restored. Works only in Run mode. BOOST if Closed - switches the controller into Boost mode when the remote line is closed and returns the controller to Run mode even if the remote input signal is removed. Works in all modes. STOP if Closed - switches the controller into Stop mode when the remote line is closed and maintains the controller in Stop mode even if the remote input signal is removed. Works in all modes. STOP if Opened - switches the controller into Stop mode when the remote line is closed and maintains the controller in Stop mode even if the remote input signal is removed. Works in all modes. 	Note: Only those zones that have Boost or Standby temperatures configured in their setup will respond to the remote input signal.	



Table 5-3 Tool Settings - Whole Tool		
Function	Description	Limits
Power Mode	Chooses how power levels are shown on the Display screen.	Note: to choose [Watts] or [Ohms], the supply voltage
	Percentage power is constantly displayed.	must be set.
	If you have control cards with current measuring coils this option allows the lower window of each zone to show one of three possible parameters:	
	Choose [Amperes] to show the zone current.	
	• Choose [Watts] to show the power in the zone.	
	• Choose [Ohms] to show the calculated resistance value for that zone.	
	If there are no current measuring coils, the lower window display will be blank.	
Power	Pauses the power alarm by a preset time (in minutes),	Maximum = 99 minutes.
Alarm Display	so it does not instantly cause an alarm effect.	Default = 0 minutes.
Pressure Units	Choose [Bar] or [PSI].	
Quad IO Reset Time	Sets all relay outputs to off [de-energized] if the IO	Maximum = 90 seconds.
	within a set time period.	Default = 0 minutes.
	If set to 0, the IO card will not look for incoming signals and it will operate normally.	Note : this parameter only appears if an IO card is detected in the rack.
Second Startup	 Chooses a final operating mode for the console once it has completed a startup sequence and reached normal temperature. [RUN] is the default condition. 	
	• [BOOST] will temporarily apply boost settings until it times out.	
	• [STANDBY] will reduce temperature to Standby temperature until it is manually or remotely changed.	
Stack Mold	Adds a extra warning during Startup / Shutdown when using a stack mold.	
Standby Temp	Sets an overall standby temperature, which will override individual standby temperature settings.	Maximum = 260°C or 500°F.
	Leave this value set to 0, for individual standby values to remain valid.	

Configure Tool Settings for the Whole Tool - continued



Table 5-3 Tool Settings - Whole Tool			
Function	Description	Limits	
Startup Mode	Chooses between the different startup modes: MASTER-FOLLOW - a default option that ties the faster-acting nozzles' set temperature to slower manifolds' actual temperature to produce a homogeneous rise of all zone temperatures.	If staged startup is selected then the option stage soak timer allows you to hold stages for a user configurable time.	
	MASTER-ONLY - heats only the nominated Master zones first.		
	• No power is supplied to the subordinate nozzles until the Master zones have reached their set temperature.		
	STAGED - allows you to nominate up to 16 stage groups that will heat up in successive stages.		
	 When staged startup is selected then the shutdown automatically follows a staged shutdown. 		
	• Shutdown pattern has a separate allocation, and this pattern does not have to match the Startup sequence.		
	AUTOMATIC-FOLLOW - measures the heat gain of every zone and automatically holds back the faster (probe) zones to the same rise rate as the slowest rising zone.		
	 Very similar to MASTER-FOLLOW but it is not necessary to nominate a Master zone. 		
Shutdown Timer	 Sets a delay period (in minutes) to hold off the action of successive groups during a staged shutdown. Sets the time that successive zone groups must wait before each switches off. 	Maximum = 99 minutes.	
	 Setting this option to zero makes the shutdown timer ineffective, and a staged shutdown is then based only on shutdown temperature. 		
Shutdown Temp	 Sets the temperature to which each shutdown group must fall before the next group is switched off. Raising the shutdown temperature means that 	Maximum = 260°C or 500°F.	
	zones do not have to cool down as much before subsequent stages are switched off, which	Default = 0.	
	 Lowering the shutdown temperature has the opposite effect and lengthens the shutdown time. 	extremely long shutdown interval.	
	• If this set value is equal to or higher than the normal temperature, then it has no effect on the Shutdown sequence, and the shutdown interval is then based only on the shutdown timer.		
Temp Scale	Chooses [Degree C] or [Degree F] as required.		

Configure Tool Settings for the Whole Tool - continued



Table 5-3 Tool Settings - Whole Tool			
Function	Description	Limits	
Soak Timer	Sets a delay or period of temperature balancing before the console switches to Run.	Note : a Quad IO output called "soaking" will be	
	• The status bar will display SOAK in the Mode box during this time.	active during the soak time.	
Soak Timer (Staged)	Sets a timer period for each stage to hold or soak before the next stage begins during a staged startup.A different time can be set for each stage.	Maximum = 60 minutes. Default = 0 minutes [no soak time].	
	During the soak period, the Mode window display changes from STARTUP to SOAK and STAGE 1, 2, 3 etc. flashing alternatively until all stages reach working temperature.		
	The Mode window will then display RUN.		
Weight Unit	Chooses Metric [Kg] or Imperial [Lbs] as the unit for weight.		

Configure Tool Settings for the Whole Tool - continued



5.5.3 Configure System Settings

The system settings accessed from [**System Config**] on the Settings screen are applied globally. They are not tool-specific, and they cannot be configured on a zone by zone basis.



NOTE

Settings can be either values or options.

- For values, a keypad appears.
- For options, the user chooses from a list or uses a checkbox.
- 1. Choose [Settings]:



2. Choose [Config]:



3. Enter password if required.

The Settings box opens:





Configure System Settings - continued

4. Choose [System Config] from System Settings.

The System Config box opens:

Ilow Global Set	
alow Global Set	Select option from list
llow Toolload	
llow Standby	
Blanking Delay	
Baud Rate	
Calibrate Touch	
	View

- 5. Choose the required setting.
- 6. Enter the required value or option.
- 7. Choose [**OK**] to accept the new value or choose [**Back**] to return to the System Config screen without saving.

See "Table 5-5 System Settings" on page 5-23 for a list of configurable tool settings.



Table 5-5 System Settings			
Function	Description	Limits	
Allow Global Set	[Enable]: probe and manifold zones to be set together.		
	[Disable]: probe and manifold must be set as separate actions.		
Allow Toolload	[Enable]: able to change tools while in Run mode. [Disable]: force the operator to shutdown to change tools.		
	If Toolload is disabled, the [Load] button on the ToolStore screen is grayed out when the system is in Run mode.		
Allow Standby	[Enable]: console can be switched to Standby mode from any other operating mode.		
	 [Disable]: console cannot switch from Stop mode to Standby mode. It must first be put into Run or Start mode before Standby mode is available. 		
Blanking Delay	Sets the period of inactivity before the screensaver activates.	Maximum = 98 minutes.	
	Note : the blanking delay will remain permanently visible if set to 99 minutes.		
Baud Rate	Sets the communication rate between the console and the control cards.	If the baud rate is too high for an older card then the error message	
	 Newer control cards can work at faster speeds (38400) and units are always matched at the factory. 	"N/Z" will be shown. See "Table 9-2 Fault and Warning Messages" for more information.	
	If a new card is changed for an older card, a lower baud rate (19200 or 9600) may be required to make it work correctly.		
Calibrate Touch	Sets the screen response to align with point of touch.	Note : the process stops the controller so be careful not to do this while the system is in use.	
	See "8.2 Check Touchscreen Alignment" for more information.		
Console Startup	Chooses the operating mode that is used after initial switch on.		

Configure System Settings - continued



0 2 1

Configure System Settings - continued

Table 5-5 System Settings			
Function	Description	Limits	
Language	Sets the language used for the screen text. User can choose any language listed.	 After choosing a different language, the console will temporarily shut down and restart in the new selected language. If the system is in Run mode, then the control cards will maintain the working temperatures during this brief changeover. 	
Leakage	Three modes are available:	See "5.9 Melt Leakage Detection"	
Mode	Off - sets the leakage detection off	on page 5-30 for more information.	
	Manual - sets a single absolute percentage level		
	Auto - monitors zone power used and alerts if power consumption is greater than average. This is the default setting.		
	Smart - monitors zone power used and generates an alert if power consumption exceeds the high limit or the low limit.		
Limit Exceeded	[Disable] – means that an attempt to set the temperature above the limit has not been effective and the set temperature will stay the same.		
	[Enable] – means that an attempt to raise the set temperature above the limit will increase the set temperature to the limit.		
N/Z Alarm	[Disable] – leaves N/Z in its normal condition which does not raise a system alarm if it occurs.		
	 [Enable] – allows N/Z condition to initiate a system alarm notification in the lower status window. At the same time it energizes the alarm relay for remote signaling. 		
Power Display	[Peak] option shows the peak amps delivered. [Derived] modifies the peak power by the percentage time for which it is switched on. • it will usually read less than [Peak]		
Slave Address	This is where you can input the Slave address for the console when it needs to communicate via an external protocol.	Maximum = 25 characters.	



Configure System	Settings - continue	ed in the second s

	S	
Function	Description	Limits
Supply Voltage	Enter the system supply voltage. It is used to calculate the "Watts" display. This is normally the phase-neutral voltage on a Star supply and the phase-phase voltage on a Delta supply.	Maximum = 500V.
T/C Alarm	[Enable]: thermocouple break triggers an alarm when console is in Stop mode.	
	[Disable]. No alarm will be triggered	
Temperature Precision	Allows you to set the resolution for the actual temperature seen on the Display screen to a floating point scale which displays temperature to within one tenth of a degree or an integer scale which rounds the displayed temperature to the nearest whole degree.	
	Choose [Float] or [Integer] as appropriate.	



5.6 Set Zone Temperature

The user can set a single zone's temperature or the user can use [**Range**] to change the temperature of multiple zones simultaneously. See "4.13 Choose Zones" on page 4-18 for more information about the Range function.

This same procedure can be used with the Display screen or the Zoom screen.

1. Choose the required zone or zones:



2. Choose [Set]:



3. Enter password, if required.

A keypad opens:



4. Choose [Auto] for the mode.



Set Zone Temperature - continued



NOTE

For more information on Manual mode, see "5.7.1 Set Manual Mode" on page 5-27.

For more information on Slave mode, see "6.7 Slave Mode" on page 6-10.

- 5. Enter the required temperature using the keypad or choose:
 - [Add] to increase the current temperature by a set amount
 - [Subtract] to decrease the current temperature by a set amount



NOTE

The temperature set must fall in the limits configured in tool settings. See "5.5 Configure the Parameters and Settings" on page 5-10 for information on how to set and change these limits.

6. Choose [**Enter**] to accept the changes and return to the Display screen, or choose [**Esc**] to clear the input.

The user can return to the Display screen at any time by choosing [**Esc**] twice.

5.7 Manual Mode

Manual mode applies a set percentage of power to the zone or range of zones rather than using set temperatures.

5.7.1 Set Manual Mode

1. Choose the required zone or zones:





Set Manual Mode - continued

2. Choose [Set]:



3. Enter password, if required.

A keypad opens:



- 4. Choose [Manual] for the mode.
- 5. Enter the percentage power required.
- 6. Choose [**Enter**] to accept the changes and return to the Display screen, or choose [**Esc**] to clear the input.

The user can return to the Display screen at any time by choosing [**Esc**] twice.

The zone or zones have a display that flashes "MAN" and the chosen power percentage alternately. See Figure 5-3.



Figure 5-3 Alternate zone displays in Manual mode



1. Choose [ToolStore]:



2. Choose tool to be renamed. See Figure 5-4.

Display	TuolSterr	証 総 Apps Settings	Graph Pictur	l nes Sh	ndown Stariup	Standby Boo	u Ū
	Benk Ø	Dank 7	8	anik 8 🕴 E	ank 9	Bank 10	i O Bet
9	Bank 1	Bank 2	8	ank D E	ank 4	Bank 5	- 44
Test #	Tool ID	Taol Name	Taul Holes	Last Modified	Jequince	Connection	Lond
1	1	160		05:06 23:02/1	3	Demo Mode	A
2	2	beach-thai		14:40 01/11/1	,	Serial Port	Save
9	9	ET .		17:51 01/11/1	,	Serial Port	9
4	4	12		09:00 02/11/1	1	Serial Port	Backup
5	5	test		08:48.02/11/1	,	Serial Port	
6	e	0		08:50 02/11/1	,	Serial Port	
7	1020	64		08:52 02/11/1	/	Serial Port	Delete
8	8	emodeard		10:34 02/11/1	,	Serial Port	×
9							Cancel
10	3	test		14:91 09/01/8	9	Serial Port	
-11		tesH6		11.33 27/02/1		Serial Port	
12						Serial Port	
13							
Vede	RUN	Tool ID #0: test6		27 Fe	6 2018 11:52	System Status	ALARM

Figure 5-4 Choose tool to be renamed

3. Choose [Set]:



- 4. Enter password, if required.
- 5. Use [Esc] or [BackSpace] to delete the existing tool name.
- 6. Enter the new tool name:



7. Choose [**Enter**] to accept the changes and return to the Display screen, or choose [**Esc**] twice to return to the Display screen without changing the tool name.



5.9 Melt Leakage Detection

A leakage detection system is available on the console. It monitors zone power levels to check for large changes in power usage over time.

It takes about five minutes of settled operation until a steady average power is achieved. The console then samples actual power levels for the next 20 minutes to get a realistic algorithm to use as average power. During all this time the message in the Alarm Power column shows "Sampling".

If zone temperatures are changed or if the console is stopped, all average power calculations are reset. In each case there will be a delay until new average power levels are recalculated and the Leakage Detection function is restored.



NOTE

Leakage monitoring and average power calculations are disabled while the system is in Standby or Boost mode. The average calculation is stored until the controller re-enters Normal mode.

A melt leak will cause the zone to use abnormal amounts of power. An alarm is raised as soon as the average power level exceeds the limit.

Leakage detect function has three options:

- **Auto** this is the default setting. The warn level defaults to 10% above normal average power. The alarm level defaults to 20% above normal average power.
- **Manual** the user sets a single power percentage level above which an alarm condition exists.
- Off the leakage detection and alarm outputs are turned off.

Leakage detection events can always be seen in the zone windows on the Display screen. The % box normally displays in green when reading are normal or healthy but changes to amber if the measured power exceeds warning level and shows in red if it exceeds the alarm level.

Any other displays such as the status window and the alarm beacon are dependent on the settings in Alarm Active as described immediately above.

5.9.1 Enable Melt Leakage Detection

1. Choose [Settings]:



2. Choose [Config]:



3. Enter password, if required.



The Settings box opens:



4. Choose [**System Config**] from System Settings. The System Config box opens:

llow Global Set	Celest action from Est
llow Toolload	Sharks option stole and
llow Standby	
tiow Standby	
sianking Delay	
Saud Rate	
Calibrate Touch	
	Action



Set Melt Leakage Detection - continued

5. Choose [Leakage Mode] from the menu.

A box with three options opens:

Manual		
	Action V OK	te Back

- 6. Choose one of the three options:
 - Off
 - Auto see "5.9.2 Set Auto Leakage Detection" on page 5-32
 - Manual see "5.9.3 Set Manual Leakage Detection" on page 5-35

5.9.2 Set Auto Leakage Detection

The user must set a warn level default value and an alarm level default value for auto leakage detection.

The warn level defaults to 10% above normal average power. The Alarm level defaults to 20% above normal average power.

If leakage detection is set to **Auto**, any rise in zone power consumption that triggers the Leakage alarm can activate the console alarm with beacon. It can also send an Injection Disable output if the controller is fitted with a Quad IO card.

Auto leak information can be found on the following screens:

Display screen [Table Format] and Zoom screen [Table]:

- [Average Power] shows the current average power being consumed
- [Alarm Power] shows "Sampling" during the initial checking time, after which it shows the calculated figures for warnings and alarms.

Settings screen:

- [Alarm Pow] shows "Auto"
- [Alarms Active] allows the user to set any actions associated with Alarm Pow. See "Table 5-3 Tool Parameters Zone by Zone" on page 5-12.
- 1. Choose [Settings]:





2. Choose [Config]:



3. Enter password, if required.

The Settings box opens:



4. Choose [**System Config**] from System Settings. The System Config box opens:





Allow Global Set Allow Toolload Allow Standby	Selicet option from list
Sanking Delay Baud Rate Calibrate Touch	
	Action

5. Scroll through the parameters and choose [Leakage Warn].

A keypad opens:

Leakage Mode			eakage W	farn Desere for		
Leakage Warn Leakage Alarm Limit Exceeded N/Z Alarm	War	n %	et Alarin	Power Ins	_	
Power Display	Esc	7	8	·	Delete	>
		•	•	•		
		1	2	3	Enter	View
			Ů			
L						_

6. Enter the required value in percentage.

7. Choose [**Enter**] to accept the value or [**Esc**] to return to the options list. Then set Alarm level.

8. From the options list, choose [Leakage Alarm].

A keypad opens:





- 9. Enter the required value in percentage.
- 10. Choose [**OK**] to accept the set value or choose [**Back**] to return to the Settings box without saving.

5.9.3 Set Manual Leakage Detection

The user must enter a value in the [**Alarm Pow**] column on the Settings screen for the Manual Leakage Detection to function.

- 1. Choose [Manual].
- 2. Choose [OK].
- 3. Choose [Back] to return to the Options screen.

5.10 View or Print System Settings

The current system settings are available to view or print.

1. Choose [Settings]:



2. Choose [Config]:



3. Enter password, if required. The Settings box opens:



View or Print System Settings - continued

ැිලී Settings					
System Settings					
User Admin	User Access	Oate/Time	Printers	Network	Network Share
System Config					
Tool Settings					
Quadio	Oo svg	Tool Config			
H Back					

4. Choose [System Config] from System Settings.

The System Config box opens:

Allow Global Set	Television to the
Allow Toolload	Select option from list
Allow Standby	
Blanking Delay	
Baud Rate	
Calibrate Touch	
	Action

5. Choose [View] from the Options list screen:



The System Config view screen open:


View or Print System Settings - continued

Sec. 1	Convolt Sections			
Allow Global Set	Disable			
Allow Teelload	Disable			
Allew Statulity	Diseble			
(Banking Delay	10 Minu.			
Saud Rate	9000			
Calibrate Totach	1974			
Console Startup	Stop			
Language	English			
Leakage Mode	Auto			
Leakage Warn	10			
Leakage Alarm	20	1		
Linit Exceded	Enable	Action		
N/Z Alama	Disabir		- Back	
Pewer Display	Derived		The second	

The user can print the system settings from this screen.

6. Choose [Print]:



A message box opens:

6	Information
Prin	ting please wait



NOTE

The user must choose the default print setting from the [**Printers**] screen. All output is sent directly to this default after the user chooses the [**Print**] button. No printer settings box will open.

See "5.15 Configure a Printer" on page 5-49 for more information.



5.11 View or Print Tool Settings

The current tool settings are available to view or print.

1. Choose [Settings]:



2. Choose [Config]:



3. Enter password, if required.

The Settings box opens:

ැිලී Settings					
System Settings					
User Admin	User Access	Oate/Time	Printers	Network	Network Share
System Config					
Tool Settings					
Guadio	Oo svg	Tool Config			
🗲 Back					

The Tool Config view screen opens. See Figure 5-5.

Carlo	Current Service			
Display Medic	Mood			
Flow Units	Galons			
Impat liner	B&lins.			
Inout Signal	Standby # Closed			
Power Mode	Amperes			
Nover Alarm Delay	ØMins .			
Juario Reset Time	9 Secs.			
Second Startup	Run			
Souk Faster	Diations.			
Stack Mold	Disable			
Standby Temp	0'F			
Startup Mede	Automatic Fellow	Action		
Shutdown Timer	Disabled	III need	A Buch	
Shukdown Temp	Dissbled	E Pint	- Back	

Figure 5-5 Tool Config view screen



View or Print Tool Settings - continued

- 4. Choose [Tool Config] from Tool Settings.
- 5. Choose [View] from the Options list screen:



The user can print the tool settings from this screen.

6. Choose [Print]:



A message box opens:

6	Information
Prii	nting please wait



NOTE

The user must choose the default print setting from the [**Printers**] screen. All output is sent directly to this default after the user chooses the [**Print**] button. No printer settings box will open.

See "5.15 Configure a Printer" on page 5-49 for more information.



5.12 Import a Picture

To use the EasyView screen, the user must first import at least one picture.

- 1. Save the picture onto the USB memory stick.
 - The console recognizes the most common raster image files such as JPG GIF, TIF or PNG. See Figure 5-6.



Figure 5-6 Save picture to USB memory stick

- 2. Insert the USB memory stick with the image into the console and wait about 10 seconds.
- 3. Choose [Pictures]:



4. Choose [Import]:



5. Enter a password, if required.

A picture selection box opens:

🗄 Select file to load
picture01.jpg
picture02.jpg
Cancel

6. Choose the required picture or choose [Cancel] to exit without importing.



Import a Picture - continued

A message box opens:

i Information	
Do not remove media while transferring	data.

The new picture appears on the Pictures screen.



NOTE

If the picture is already saved on the console, a copy is automatically saved with a numeric extension with the format: *picture01_01.jpg*.

5.13 Setup the EasyView Screen

The EasyView screen must be setup before it will display as an option for the main Display screen.

At least one picture must be loaded to the console.

See "5.12 Import a Picture" on page 5-40 for more information on importing a picture.

After the user chooses the required picture from the Pictures screen, the EasyView screen opens. See Figure 5-7.



Figure 5-7 EasyView screen

The user must now link the picture with a tool. See "5.13.1 Link a Picture in the EasyView Screen" on page 5-42.



5.13.1 Link a Picture in the EasyView Screen

Pictures must be linked to tools to display properly.

- 1. Choose the required picture.
- 2. Choose [Link]:



3. Enter a password, if required.

The Configure Picture Link box opens:

Suf.	Picture Name
1	picture01.jpg
2	
8	
4	
5	
6	

4. Choose an empty slot and press [**OK**] to make the link or [**Cancel**] to return to the EasyView screen without linking the picture.



NOTE

After the link is made, the [Show] button becomes available.

A picture can be reused for more than one tool.



NOTE

The TS8 console only allows one picture to be linked at any time.

5.13.2 Unlink a Picture in the EasyView Screen

- 1. Choose the required picture.
- 2. Choose [Unlink]:



3. Enter a password, if required.



Unlink a Picture in the EasyView Screen - continued

A confirmation box opens:



4. Choose [**OK**] to unlink the tool or [**Cancel**] to return to the EasyView screen without unlinking the picture.



NOTE

The [Show] button becomes unavailable if the picture is unlinked.

5.13.3 View Linked Pictures

The user can view the pictures linked to the currently loaded tool. From the Display screen,

Tom the Display screet

1. Choose [Pictures]:



2. Choose [Links]:



The Configure Picture Link box opens:

24	Picture Itarie
1	picture01.jpg
2	
3	
4	
5	
6	



NOTE

The picture names are greyed out and unavailable. The user must link or unlink pictures using the EasyView screen.

3. Choose [OK] or [Cancel] to return to the Pictures screen.

5.13.4 Add a Mini Panel to the Tool Picture

After the tool is linked, the user can place the zones on the corresponding areas of the picture. The default view for the EasyView screen has mini panels hidden. The user must choose [**Show**] to see the labels. To hide any placed labels from view, the user chooses [**Hide**].

- 1. Choose the required picture.
- 2. Choose [Show]:



- 3. Enter a password, if required.
- 4. Choose [Place]:



A zone selection box opens:



- 5. Choose either [Auto] or a [Zone number or alias]:
 - [Auto]: the zones will be placed sequentially where the user touches the screen. There is no need for the user to press [Place] before every zone.
 - [**Zone number or alias**]: the user chooses a specific zone to place and must press the [**Place**] button each time a new zone is to be located.
- 6. Choose [**Cancel**] to return to the EasyView screen without adding a mini panel.



NOTE

The user can reposition the mini panels at any time on this screen by choosing [**Show**]. The mini panels can also be repositioned on the EasyView screen from the Display screen if the user has password access for this function.



5.13.5 Remove a Mini Panel from the Tool Picture

1. Choose [Remove]:



2. Choose the zone required from the zone selection box:

Probe	1		
Probe	2		
Probe	3		
Probe	4		
Probe	5		
Probe	6		
Probe	7		
Probe	8		
		Inner	

3. Press [**Cancel**] to return to the EasyView screen without removing a mini panel.

5.13.6 Backup a Picture from the EasyView Screen

- 1. Insert the USB memory stick with the data and wait about 10 seconds.
- 2. Choose the required picture and choose [Backup]:



A message box opens:





NOTE

If the picture is already saved on the media, the user must confirm whether or not to overwrite it.

3. Remove the USB memory stick after the message disappears.



1. Choose the unwanted picture and choose [Delete]:



A confirmation box opens:

Question		
Delete Picture picture02.jpg		
	ОК	Cancel



IMPORTANT

The picture is not only deleted from the EasyView screen but also from the Pictures screen. To use the picture again, the user must upload it again and relink it.

2. Choose [**OK**] to delete the picture or choose [**Cancel**] to return to the EasyView screen.

For more information on using the EasyView screen, see "6.19 Use EasyView Screen as the Display Screen" on page 6-38.



5.14 Set Date and Time

Mold-Masters recommends that the correct time and time zone are set to fully utilize the timing features of the M2 Plus controller.

1. Choose [Settings]:



2. Choose [Config]:



3. Enter password, if required.

The Settings box opens:



4. Choose [Date/Time] from System Settings.

The Date/Time screen opens. See Figure 5-8.

Haur Min Da	ry Month Year		
	OK Cancel		
Time Zone			
Time Zone	EuropeiLondon	>	
NTP Time Server			
Address		>	

Figure 5-8 Date/Time screen



Set Date and Time - continued

- 5. Choose the required box and use the [▲] and [▼] buttons to set the required value. See Figure 5-8.
- 6. Choose **[OK]** to save the new setting to the system or choose **[Cancel]** to return to the original values.
- 7. Choose [**Time Zone**] to set the time zone.

A dropdown menu opens:

i 🗄 Select An Rem
Africa
America
Antarctica
Arctic
Asia
Atlantic
Australia
Europe
Indian
Pacific
Cancel

- 8. Choose the correct time zone or choose [**Cancel**] to return to the Date/ Time screen.
- 9. Choose [**NTP Time Server**] to synchronize many controllers to the same time.

A keyboard will open for the user to input the IP address:



10. Choose [**Enter**] to accept the input or choose [**Esc**] twice to return to the Date/Time screen.

The time automatically updates without the requirement to restart the console.



5.15 Configure a Printer

The user can send information in different formats to a configured output point, whenever the screen displays a print icon. The print output can be in the form of a picture, a graph, a table or a .csv file.

1. Choose [Settings]:



2. Choose [Config]:



3. Enter password, if required.

The Settings box opens:



4. Choose [Printers] from System Settings.



Configure a Printer - continued

The Printers box opens:

Make	Alea	5	
Model	MD-1009	>	
Connection	Local USB	>	
Printer Address	4,5.0.4	>	
Share Name		>	
Paper Size	M .	otter	
	Access X Ca	neel	

5. Choose [Make]:



6. Choose [Model]:





Configure a Printer- continued

7. Choose [Connection]:

i Seb	et An Iter	•		
Loca	I USE	3		
Netw	ork T	CP		
Netw	ork L	PD		
Wind	lows	SMB		
Print	to file	e		
		Cancel	1	

The connections include:

- Local USB: send output to USB printer
- **Network TCP (Transmission Control Protocol):** a standard network communication protocol.
- Network LPD (Line Printer Daemon): for a UNIX / Linux network protocol.
- Windows SMB (Server Message Block): a communication protocol used by Windows networks.
- **Print to file:** output defaults to JPG format. PNG and PDF are also available.
- 8. Enter [Printer Address], if required.
- 9. Enter [Share Name], if required.
- 10. Choose [Paper Size], A4 or Letter, if required.
- 11. Choose [Accept] to set the parameters.
- 12. Choose [Cancel] to restore all boxes to their previous settings.
- 13. Choose [Back] to return to the Settings box.



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5.16 Set the Storage Locations

The user can set where information is stored: Local or Share. The default values are Local.

1. Choose [Settings]:



2. Choose [Config]:



- 3. Enter the password, if required.
- 4. Choose [Storage].

ලිදී Settings				
System Settings				
User Admin	User Access	Oate/Time	Printers	
Network Share	Storage	Ö System Config	CC Factory Settings	
Tool Settings				
	Tool Config			
- Back				

The Storage Configuration box opens:

Activity	Localized		
Toulstore	Local		
Pictures	Local		
History Data	Local		
festing Results	Local		
		Accept Cancel	



- 5. Choose a Location cell of an Application:
- 6. Choose **Local** or **Share**:

i

NOTE

You can select Share only if your controller is connected to a Share Server, which is set up on the "7.8 Share Files on a Network" on page 7-18.

7. Choose Accept.



Section 6 - Operation



WARNING

Ensure that you have fully read "Section 3 - Safety" before connecting or operating the controller.

The Operation section of the manual describes how use the controller. This includes stopping and starting the controller, how to adjust temperatures and settings and how to recognize alarms.

6.1 Switch On the Controller

The main isolator is a rotary switch located on the front of the M2 Plus controller. See "Figure 6-2 Turn the main power switch off" on page 6-3.

The main power switch is sufficiently rated to handle the total load current during switch on and switch off.

Use a suitably-sized padlock or similar device to lock the switch in the off position and prevent operation during maintenance.



NOTE

The M2 Plus controller consoles have their main on / off switch at the back of the console. See Figure 6-1.

- 1. Switch on the main switch to energize the main cabinet.
- 2. After the main cabinet is switched on, press the console switch until it lights up and then release it.

See Figure 6-1 for console switch location.

The console will start its normal bootup sequence.



Figure 6-1 Location of console on / off switch

The Display screen opens after the bootup sequence is completed. The user must login to access the functions. See "6.3 Login or Logout" on page 6-4.



6.1.1 Mold Heating

After the bootup process is completed, one of the following actions happens:

- If the startup parameter is set to **Stop**, then the tool remains at zero power, and it does not heat up.
- If the startup parameter is set to **Startup, Standby or Run**, the controller applies power to the zones so that they heat up.

6.2 Switch Off The Controller

i

NOTE

Mold-Masters recommends that the console is used to shutdown the heating load and that the main power switch of the controller is only used to switch off a dormant controller.

6.2.1 Shutdown the Console

1. Choose [i]:



The Information screen opens:



2. Choose [Exit]:







A message box opens:

8	Question	
Exit	HRC controller	
	ОК	Cancel

3. Choose [**OK**] to turn the console off or choose [**Cancel**] to return to the Information screen without turning the console off.



NOTE

The cards receive the message to stop outputting power after [**OK**] is pressed and the console begins the shutdown process.

6.2.2 Shutdown the Controller

Use the main power switch on the controller cabinet to isolate power to the whole system. See Figure 6-2.



Figure 6-2 Turn the main power switch off



6.3 Login or Logout

For the first time login, system and user level passwords are listed on the inside cover of this manual. For security purposes, *Mold-Masters* recommends that these passwords are changed as soon as possible.

6.3.1 Login

Choose the login button from the bottom information bar to login from any screen. See Figure 6-3.

Display Tool	Store A	<mark>je ε</mark> pps Se	ିଲ ttings ସ	iraph P	ictures	Shutda	own Start	up Stan	dby Boo) sst	(i)
Zane	Set	Actual	Power	Average Power	Alarno Ponter	Amps	Walks	Leskage	Hoster Resistance		
Probe 1	275 °C	275	21.2%		Of	1.30Å	311W	0ma	-		
Probe 2	275 °C	275	21.2%		Off	1.30A	311W	0ma	-		
Probe 3	275 °C	275	21.2%		off	1.30A	311W	0ma	-		~
Probe 4	275 °C	275	21.2%		Off	1.30A	311W	0ma	-		Mode
Probe S	275 °C	275	21.2%		Off	1.30Å	311W	0ma	-		
Probe 6	275 °C	275	21.2%		Off	1.30A	311W	0ma	-		
Probe 7	275 °C	275	21.2%		Off	1.30A	311W	0ma	-		
Probe 8	275 °C	275	21.2%		or	1.30A	311W	0ma	-		
Probe 9	275 °C	2/5	21.2%		or	1.30A	311W	0ma	-		
Probe 10	275 °C	275	21.2%		or	1.30Å	311W	0ma	-		
Probe 11	275 °C	275	21.2%		Of	1.30A	311W	0ma	-		
Probe 12	275 °C	275	21.2%		or	1.30A	311W	0 ma	-		æ
Probe 13	275 °C	275	21.2%		Of	1.30A	311W	0ma	-		Print
					Total Power	0.00A	0.00kW				
Mode	Te	ol ID #1: 16	0			12 Apr	2018 10:41	Login	Status		DEMO

Figure 6-3 Login button on the Display screen

Based on configured settings, users require password or both user id and a password to login. For more information on passwords, see "7.1 User Access Screen" on page 7-1.

If the user is not logged in, a keyboard appears to prompt a login:







A confirmation box appears:

information	
User logged in.	
	ок

The user will stay logged in until the logout timer expires or the user logs out.

6.3.2 Logout

Each keytouch resets the timer. After a set time of inactivity, the screen will timeout and the user is logged out. The logout timer can be configured to remain logged in indefinitely. For more information on setting the timer, see "7.6 User Admin Settings" on page 7-11.

1. Choose the [System] or [User] button on the information bar:

Mode	STOPPED	Tool ID #10: 60zone 18 Apr 2018 15:	18 Apr 2018 15:50		Status	DEMO
Mode	STOPPED	Tool ID #10: 60zone 18 Apr 2018 15:	50	User	Status	DEMO

A confirmation window opens:

Question		
Are you sure you want to logout?		
	ОК	Cancel

2. Choose [OK] to logout or choose [Cancel] to stay logged in.

The [**System**] or [**User**] button changes to [**Login**]. See "Figure 6-3 Login button on the Display screen" on page 6-4.



6.4 Quick Start Guide

The M2 Plus console contains a quick start guide that covers the essential controller operational procedures. Access to the quick guide is found on the Information screen. See Figure 6-4.

1. Choose [i]:



The Information screen opens:



Figure 6-4 Quick start guide button on the Information screen

2. Choose [Guide]:



The quick start guide opens on the console screen:





Quick Start Guide - continued



NOTE

The user is able to scroll through the pages of the quick start guide on screen.

To save the quick guide as a PDF, insert a USB memory stick into the console and choose:



To return to the Information screen from the quick start guide, choose:







Table 6-1 Control Modes for All Zones								
Operation	Available by	Description						
Run	Mode button	Switches on all zones.						
Standby	Top menu button or Mode button	Reduces the temperature of all zones that have any standby temperature configured. Temperature remains reduced until Run command is given.						
Startup	Top menu button or Mode	STARTUP - Initiates a starting sequence that is configured on the Settings screen.						
	button	 MASTER-FOLLOW – Applies power to Master zones then adjusts other zones' set temperatures to follow Master zones' actual temperature. Produces a homogenous heat rise. 						
		MASTER-ONLY – Applies power to Master zones but waits until they are at full temperature before switching on all other zones.						
		 STAGED – Applies power to nominated stage zones and then waits until they reach normal temperature before switching on next stage zones. The startup sequence will progress through several stages. 						
		SECOND STARTUP - When all the zones have reached their set temperatures, the system then goes into SECOND STARTUP mode which may be configured to either:						
		• RUN – maintain set temperature.						
		BOOST – temporarily raise the temperature and then return to normal Set Temperature.						
		STANDBY – lower zone temperatures until the Run command is given.						
Shutdown	Top menu button or Mode button	Initiates a switch off sequence that is determined by the Startup mode. With the Startup mode set to MASTER-FOLLOW or MASTER-						
		 Shutdown switches off the nominated Master zones then adjusts all other zones' set temperatures to the manifold actual temperatures. The whole tool cools in a homogeneous manner. 						
		 With the Startup mode set to STAGED: Shutdown consecutively switches off the zone groups in timed intervals and in the order as nominated by Shutdown Stage configuration. 						
		When the shutdown sequence finishes, the system goes to Stop mode.						
Boost	Top menu button or Mode button	Temporarily raises the temperature of all zones that have any boost temperature configured. When the boost period is over, the zone temperatures return to normal set levels.						
Stop	Mode button	Switches off all zones.						
Purge	Purge Wizard on Apps screen	This mode can only be initiated while in Run mode.Guides the operator through a color change routine.						



6.6 Boost Mode

- Boost mode is determined by two quantities that determine boost
 the boost temperature and the boost time.
- Boost time that takes precedence over boost temperature. Once the boost period expires then the extra heating power is removed regardless of whether the zones actually reach the configured boost temperature.
- Boost raises the temperatures of only zones that have any boost temperature configured.
- Boost mode is only available while the system is in Run mode.
- The boost command may be received locally through the console interface or remotely via the remote console interface or the Quad IO card.

6.6.1 Enter Boost Mode Manually

When the manual boost command is given, the Mode window on the Display screen flashes between the word "BOOST":



and the boost time (in seconds) remaining:



The boost message displays until boost time period expires, after which the zones returns to normal set temperature and the Mode window shows RUN.

The user can enter Boost mode in three ways:

- 1. Choose [Boost] from the top menu buttons
- 2. Choose [Boost] from the side menu popout box
- 3. Choose [**Boost**] from the keypad to boost the temperature of that zone individually

6.6.2 Enter Boost Mode Remotely

The boost command can be received from an external source. See "10.5 Alarm Output / Auxiliary Input" on page 10-6.

The display shown in the Mode window is the same as if Boost was chosen locally.



6.7 Slave Mode

A zone that is malfunctioning can be slaved to another zone that is working properly. There are several points to remember when using zone slaving:

- 1. Only slave like zones for like zones.
 - A probe zone cannot be slaved to a manifold zone.
- 2. A zone that is already slaved to another zone can not be made a lead zone.
 - For example: if zone 2 is currently slaved to zone 3, then zone 1 cannot be slaved to zone 2. The leading zone must be a healthy zone.
- 3. A zone that creates a loop cannot be chosen.
 - For example: if zone 2 is slaved to zone 3, then zone 3 cannot be slaved back to zone 2.
- 4. When selecting a lead zone, choose a similar zone type that is currently operating at the same temperature and at the same power level.
 - If the lead zone is working at the same temperature but outputting a noticeably different power level, then the slaved zone may not regulate efficiently.

6.7.1 Enter Slave Mode

1. Choose the required zone or zones.

Display T		· · · · · · · · · · · · · · · · · · · ·	g 🗠	b Richard		Shutd	own Startu	00 Standby	Boost	0
			nga cang		•			,		0
Probe 1	Probe 2	Probe 3	Probe 4	Probe 5	Probe 6	Probe 7	Probe 8	Probe 6	Probe 10	Set
250	250	250	250	250	250	250	250	250	250	0
250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	<u> </u>
15.Z %	15.2 %	15.Z %	15.2 %	15.Z %	15.2 %	35.2 %	15.2 %	15.2 %	15.2 %	200m
6.90 A	0.90 A	0.90 A	0.90 A	0.90 A	0.90 A	0.90 A	0.90 A	0.90 A	0.90 A	↔
Probe 11	Probe 12	Probe 13	Probe 14	P1050 15	P1050 15	Probe 17	Probe 18	Probe 19	Probe 29	Range
250	250	250	250	250	250	250	250	250	250	
250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	
15.Z %	15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	Zone
0.90 A	0.90 A	0.90 A	0.90 A	0.90 A	0.90 A	6.90 A	0.90 A	0.90 A	0.90 A	
Probe 21	Probe 22	Probe 23	Probe 24	Probe 25	Probe 26	Probe 27	Probe 20	Probe 29	Frobe 30	~
250	250	250	250	250	250	250	250	250	250	Zone
250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	
15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	152 %	15.2 %	15.2 %	15.2 %	15.2 %	
Probe 21	Probe 22	Prohe 22	Probe 34	Probe 25	Prohe 36	Drohe 37	Drohe 18	Drohe 10	Danhe 40	Cancer
250	250	250	250	250	250	250	250	250	250	A
230	2.50	2.50	250	250	250	250	2.00	2:30	250	Print
250 °C	250 °C	250°C	250 °C	250 C	250°C	250 C	250 G	250°C	2000	
6.90 A	0.90 A	0.90 A	0.90 A	0.90 A	0.90 A	0.90 A	0.90 A	0.90 A	0.90 A	
Mode ST	OPPED	Zone Selectio	n Active			22 Mar 2	018 02:36	System	Status	DEMO

2. Choose [Set]:



3. Enter password, if required.



A keypad opens:



4. Choose [Slave].

A zone selection box opens:

i 🗄 Select An Item	,
Probe 1	
Probe 2	
Probe 3	
Probe 5	
Probe 6	
Probe 7	
Probe 8	
Probe 9	
Probe 10	
Probe 11	
Probe 12	
	Cancel

5. Choose the lead zone or choose [**Cancel**] to return to the Display screen without choosing a lead zone.



Enter Slave Mode - continued

The zone shows as slaved on the Display screen. See Figure 6-5.

		₩		E Dictorer		Shut		00 Standbu		(î
cosport 1	oolaene ,	opps sea	ings crup	ii Piteitai ta	•	5100		p councey	uroran.	0
Manifold 1	Manifold 2	Manifold 3	Manifold 4	Probe 1	Probe 2	Probe 3	Probe 4	Probe 5	Probe 6	Set
253	S 1	253	253	225	225	225	225	225	225	<u> </u>
254°C	254°C	254°C	254°C	225°C	225°C	225°C	225°C	225°C	225°C	4
31.2 %	31.2 %	31.2 %	31.2 %	12.0 %	12.0 %	12.0 %	12.0 %	12.0 %	12.0 %	200m
1.90 A	1.90 A	1.90 A	190 A	0.70 A	6.70 A	6.70 A	0.70 A	0.70 A	0.70 A	
Probe 7	Probe 8	Probe 9	Probe 10	Probe 11	Probe 12	Probe 13	Probe 14	Probe 15	Probe 16	Range
225	225	225	225	225	225	225	225	225	225	
225°C	225°C	225°C	225°C	225°C	225°C	225°C	225°C	225°C	225°C	
12.0 %	12.0 %	12.0 %	12.0 %	12.0 %	12.0 %	12.0 %	12.0 %	12.0 %	12.0 %	Zone
Probe 17	Probe 18	Probe 19	Probe 20	Probe 21	Probe 22	Probe 23	Probe 24	Probe 25	Probe 26	\sim
225	225	225	225	225	225	225	225	225	225	Zone
225°C	225°C	225°C	225°C	225°C	225°C	225°C	225°C	225*C	225°C	
12.0 %	12.0 %	12.0 %	12.0 %	12.0 %	12.0 %	12.0 %	12.0 %	12.0 %	12.0 %	×
0.70 A	0.79 A	0.70 A	0.70 A	0.70 A	6.70 A	0.70 A	0.70 A	0.70 A	0.70 A	Cancel
Probe 27	Ptobe 28	Probe 29	Probe 30	Probe 31	Probe 32	Probe 33	Probe 34	Probe 35	Probe 36	-
225	225	225	225	225	225	225	225	225	225	8
225°C	225°C	225°C	225°C	225°C	225°C	225°C	225°C	225°C	225°C	Print
12.0 %	12.0 %	12.0 %	12.0 %	12.0 %	12.0 %	12.0 %	12.0 %	12.0 %	12.0 %	
0.70 A	0.70 A	0.70 A	0.70 A	0.70 A	6.70 A	6.70 A	0.70 A	0.70 A	0.70 A	
Mode S1	OPPED	Tool ID #1: 16	0			21 Mar 2	018 11:13	System	Status N	ORMAL

Figure 6-5 Display screen with slaved zone

6.8 Purge Function

The Purge function is only available while the tool is in Run mode. If the controller is not in Run mode, the user will be prompted to enter Run mode by this message:



6.8.1 The Purge Process

1. Choose [Apps]:



2. Choose [Purge Wizard]:



3. Enter password, if required.



The Purge Process - continued

The Purge screen opens:



Figure 6-6 Purge screen

4. Choose [Config]:



5. Enter password, if required.

The Purge Wizard Settings box opens:

flamman and	d Durley		-
Recommence	a cycini	1	1
Purge Materia	220	>	
Purge Cycles		250	>
Normal Cycle	ē.	250	>
Soak Time (m	iri)	5	>
Purge Mode	🗑 Mechanic	al 🛄 Chemica	E.
Factory Settin	ga.	2 220 250 5 3 4 Chemica Res	et



NOTE

The Purge parameters can be set any time the Purge wizard is on the screen.

The boxes of the Purge Wizard are pre-populated with values that the user can change, if required.



The Purge Process - continued

6. Choose the required parameter.

A keypad opens:



7. Enter the required value.



NOTE

To reset the values to factory settings, choose [Reset].

8. Choose the type of purge [Mechanical] or [Chemical]:

Purge Mode 🗹 Mechanical 🔟 Chemical



NOTE

The Soak time box will be greyed out and unavailable if Mechanical purge is chosen.

9. Choose [**OK**] to accept the values entered or [**Cancel**] to return to the Purge screen without making changes.

For more information on the different processes for mechanical and chemical purge processes, see "6.8.2 Chemical Purge" on page 6-15 and "6.8.3 Mechanical Purge" on page 6-16.



Mold-Masters recommends using the chemical purge option.

Chemical purge uses a proprietary purge agent. A soak step is used and the Soak Time box in the Purge Wizard Settings is enabled.

The user is guided through a series of steps listed on the left side of the screen. The current step is highlighted in blue. A completed step is shown with a blue checkmark.



- 1. A blue checkmark shows a completed step.
- 2. The current step is shown in blue.
- 3. The user is guided through the purge process.

Figure 6-7 Chemical purge screen

Steps in the Chemical Purge Process

- 1. Start: the user presses [Start] to begin the purge process.
- Boost: the Boost function is initiated and the normal Boost time is overridden. Boost temperature will be held until the operator chooses [Next].
- 3. Add: the user is instructed to add purging material.
- 4. Mould: the programmed number of cycles is completed with the purging material.
- 5. Soak: the barrel is filled with purge agent material and soaks for at least the preset time. The [**Next**] and [**Back**] buttons are greyed out and unavailable during this step.
- 6. Mould: the programmed number of cycles is completed with the purging material.



Chemical Purge - continued

- 7. Quality: the user is asked if the color is acceptable.
 - Choose [Yes] to leave the purge process.
 - Choose [No] to start the process again.
- 8. Finish: the system displays a summary screen. See Figure 6-8.

Display	C ToolStore	e ⊒ Purge	िट्ट Settings	년 <u>)</u> Oraph	D Pictures		Shuide	wn Sta	rtup	00 Standby	(2) Boost	0
	Start Boost Add Mould Soak Mould	Chemi Starte Ended Total 1 cycle Purge Settin Recon Purge Purge Norse Soak 1	cal Purge d: Thu Mar 11 Thu Mar 15 Thu Mar 50 iso of 2 recom- meterial tests primeterial tests primeterial tests meterial tests primeterial	5 08:46:27 00:51:27 2 mended 1: 220 lbs fes: 2 lbs	Process Co 2018	mpleted						୍ଦ୍ରେଞ୍ଚ Config
	Quality											
	Finish							1]		
				Cycl	e 1 of 2 Fleco	mmended	No	Rest	art) Print
Mode	RUN	Tool ID	#0: None				15 Mar 20	18 08:51	- Sy	stern	Status	ALARM

Figure 6-8 Chemical purge summary screen

- 9. Choose [Restart] to start the process again.
- 10. Choose [Display] to return to the Display screen.

6.8.3 Mechanical Purge

Mechanical purge does not use a purge agent and the process has fewer steps. The user is guided through the steps in the same way as with the chemical purge process.

Steps in the Mechanical Purge Process:

- 1. Start: the user presses [Start] to begin the purge process.
- 2. Add: the user is instructed to add purging material.
- 3. Mould: the programmed number of cycles is completed with the purging material.
- 4. Mould: the programmed number of cycles is completed with the purging material.
- 5. Quality: the user is asked if the color is acceptable.
 - Choose [Yes] to leave the purge process.
 - Choose [No] to start the process again.



6. Finish: the system displays a summary screen. See Figure 6-9.

Display	C ToolStore	후 Purge	ලිදී Settings	Graph	20 Pictures		Shutdown	Startup	00 Standby	() Boost	()
	Start Add Mould Quality Finish	Mechan Started Ended: Total Ti 1 cycles Purge a Settling Recom Purge o Normal	ical Purge Thu Jaul 65 II Thu Jaul 6	Pn 43:55 2016 43:57 2018 ended 220 lbs s: 1 s: 5	ocess Compi	leted					ିର୍ଜ୍ଜ config
			C	ycle 1 of 1	Recommend	led	No	Restart]		D Print
Mode	RUN	Tool ID /	/5: 40z +SVG				05 Jul 2018	18:44	System	Status	DEMO

Figure 6-9 Mechanical purge summary screen

6.8.4 Print the Purge Results

The user can print the results of the purge process with the [Print] button:



A message box opens:





NOTE

The user must choose the default print setting from the [**Printers**] screen. All output is sent directly to this default after the user chooses the [**Print**] button. No printer settings box will open.

See "5.15 Configure a Printer" on page 5-49 for more information.



6.9 Turn Zones Off or On

The user can turn a single zone off or on, or turn multiple zones off or on with the [**Range**] button. See "4.13 Choose Zones" on page 4-18 for more information about the Range function.

1. Choose the required zone or zones:

		≢ 6	\$ <u>6</u>		-		D	00	ß	١
Copies 1	oolacere A	-titis sec	ngo Urap	n Picture	•	Shute	own stant	p standby	DOOSL	0
Probe 1	Probe 2	Probe 3	Probe 4	Probe 5	Probe 6	Probe 7	Probe 8	Probe 9	Probe 10	Set
250	250	250	250	250	250	250	250	250	250	0
250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	~
15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	20011
0.90 A	0.90 A	C.90 A	0.90 A	0.90 A	0.90 A	0.90 A	0.90 A	0.90 A	0.90 A	↔
Probe 11	Probe 12	Probe 13	Probe 14	Probe 15	Probe 15	Probe 17	Probe 18	Probe 19	Probe 20	Range
250	250	250	250	250	250	250	250	250	250	
250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	~
15.2 %	15.2 %	35.2 %	15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	Zone
0.90 A	0.90 A	6.90 A	0.90 A	0.90 A	0.90 A	0.90 A	0.90 A	0.90 A	0.00 A	
Probe 21	Probe 22	Probe 23	Probe 24	Probe 25	Probe 26	Probe 27	Probe 28	Probe 20	Probe 30	\sim
250	250	250	250	250	250	250	250	250	250	Zone
250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	
15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	Ľ
0.90	0.90 A	0.90 A	0.90 A	0.90 A	0.90 A	0.90 A	0.90 A	0.90 A	0.90 A	Cancel
Prote 31	Probe 32	Probe 33	Probe 34	Probe 35	Probe 30	Probe 37	Probe 38	Probe 39	Probe 40	A
250	250	250	250	250	250	250	250	250	250	-Or Defect
250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	250°C	- Think
15.2 %	15.2 %	35.2 %	15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	15.2 %	
0.00 A	A Gen	0.40 A	0.0 A	0.40 A	0.40 A	0.00 A	0.50 A	0.90 A	030 A	
Mada CT	ODBED	Tono Polostia				22.14.4		Sustan	61+1+1+	DEMO
Mode SI	CALCO .	zone selectio	n Acese			22 MB2 2	CTR 02:39	system	ataturs	DEMO

2. Choose [Set]:



- 3. Enter password, if required.
- A keypad opens.



Figure 6-10 Keypad - turn zone off

4. Choose [Off]. See Figure 6-10.



Turn Zones Off or On - continued

The screen returns to the Display screen and the zone or zones change their display. See Figure 6-11.



Figure 6-11 Zone off

To turn the zone(s) back on, repeat steps 1 and 2, then choose [**On**]. The [**Off]** button on the keypad changes to [**On**]:




6.10 Rename an Existing Tool

A tool does not have to be loaded to be renamed.

1. Choose [ToolStore]:



2. Choose the tool to be renamed. See Figure 6-12.

Display	Tuolaterr	호 않 Apps Settings	Graph Pictures	Shutdown	Startup Standby	() Boost
	Elenik Ø	Dank 7	Elenk B	Bank 9	Bank 1	e Int
	Bank 1	Bank 2	Bank 3	Earth 4	Bank :	A.
Test #	Tool ID	Tirol Name	Taol Hales	Last Molified	legence Goverter	Lord
1	1	160		05:06 23/02/18	Demo Mor	1e
2	2	bench-thai		14:40 01/11/17	Serial Por	t Seve
0	0			17:51 01/11/17	Serial Por	1 5
4	4	12		09:00 02/11/17	Serial Por	1 Backup
5	s	test		08:48 02/11/17	Serial Por	1
¢	c	0		08:50 02/11/17	Serial Por	a. 🔟
7	1623	.64		08:52 02/11/17	Serial Por	t. Delete
8	8	emodeard		10:34 02/11/17	Serial Por	1 🗵
9						Cancel
10	3	test		14:41 06/01/18	Serial Por	1
11		teaMS		11.33 27/08/18	Serial Por	1 .
12					Serial Por	n)
13						
Vode	RUN	Tool ID #0: test0		27 Feb 2018	11:52 System	atus ALARM

Figure 6-12 Choose the tool to rename

3. Choose [Set]:



4. Enter password, if required.

A keyboard opens:



- 5. Enter the new tool name.
- 6. Choose [Enter].

The tool name changes in the tool bank.





6.11 Save a Tool

NOTE

The user must save the current tool in use before another tool can be loaded.

Tools that have not been saved are shown in red in the tool bank. See Figure 6-13.

	All Allers	WARD STREAM		1000000	528800425	52000	an an an	5. 2000/06/11 (#3/2/1	8
	Bank 6		Bank 7		Bank 8	Ba	ink 9	Bank 10	Backup
	Bank 1		Bank 2		Bank 3	Ba	nk4	Eank 5	6
Tool #	Teol ID	Tool Name		Tool Notes	š	Lost Modified	Dequesta	Dreeclan	Restor
1	1	160				10:06 23/02/18		Demo Mode	
2	2	MMUK-Test						Serial Port	Sequen
3	3	144c + 10		\$8 Cavity	8.			Demo Mode	Ö
4	4	160new					1: Timer (5 m	in) Demo Mode	Search
5	5	40z+SVG		24 CAMIN	(Demo Mode	-
8	6	4Ezone	32 ca	wity + wate	er = 10			Demo Mode	
7	7	(Kizene	48	Cavity + 3	KA .			Deno Mode	
9	8	Gizone	- 48	Cavity + 3	RA			Deno Mode	
9	9	8 zone	94	Cavity + M	FIO			Demo Mode	
10	10	All Zones						Serial Port	
н	ш	NPE_WATERFLO	0					Sertal Port	
12	12	waterflow						Serial Port	
13	13	testy				12:50 13/04/18		Demo Mode	

Figure 6-13 Unsaved tool in tool bank

The user can save a tool in two ways:

- overwrite the settings of the current tool
- save the changes as a new tool



6.11.1 Overwrite Tool Settings

The user can overwrite existing tool settings for the currently loaded tool if changes to the current tool are made.

1. Choose the current tool:

	lank 8	Eank 7	Bank 8	Earl		Bank 16	
1	bank t	Bank 2	Bank 3	Een	k4	Bank 5	
Teek #	Toul ID	Taol Name	Taol Heles	Last Modified	Sequence	Ownerthen	Cond
1	1	160		05:06 23/02/18		Demo Mode	A
2	2	bench-thai		14540 01/11/17		Serial Port	Seve
0	0	E1		17:51 01/11/17		Serial Port	
4	4	12		09:00 02/11/17		Serial Port	යා Backu
5	s	test		08:48 02/11/17		Serial Port	
¢	6	0		08:50 02/11/17		Serial Port	
7	1023	.84		08:52 02/11/17		Serial Port	Delet
8	8	emodeard		10:34 02/11/17		Serial Port	×
9							Cano
10	3	test		14:41 08/01/18		Serial Port	
11		tes#6		11:30 27/02/18		Serial Port	
12						Serial Port	
13							

2. Choose [Save]:



A message box opens:



3. Press **[OK]** to continue or **[Cancel]** to return to the previous screen without saving the new settings.

The tool name is now purple in color, as it is the current tool and it has been saved.



6.11.2 Save Changes as a New Tool

1. Choose the current tool:

Cisplay	TuolStory	호 않 Apps Settings	ය. Graph	50 Pictures	Shut	l 👂	Standby Box) (i)
	Benk Ø	Bank 7		Elenk 8	Ban	k9	Dank 10	Set .
9	Bark 1	Bank 2	e TÌ	Bank 3	Ean	k4	Bank 5	- AL
Test #	Tool ID	Tool Name	31	and Helen	Last Molified	Sequence	Gaucettan	Lond
1	1	160			05:06 23/02/18		Demo Mode	A
2	2	beach-thai			14:40 01/11/17		Serial Port	Save
0	9	81			17:51 01/11/17		Scrial Port	
4	4	12			09:00 02/11/17		Serial Port	(C) Rackup
5	5	test			08:48.02/11/17		Serial Port	- Contraction of the contraction
		0			08:50 02/11/17		Serial Port	Û
7	1023	64			08:52 02/11/17		Serial Port	Delete
8	8	emodeard			10:34 02:11:07		Serial Port	×
9								Cancel
10	3	test			14:41 06/01/18		Serial Port	
п		tesH5			11:00 27/02/18		Scrial Port	
12							Serial Port	
13								
Mode	RUN	Tool ID #0: test5			27 Feb 2	018 11:52	System Status	ALARM

2. Choose an empty tool slot in the tool bank:

	Bank 6	Bar	k7	Bank B	Ban	k9	Bank 10	Detes
	Bank 1	Der	42	Bank 3	Den	k4	Bank S	8
Tool #	Tasi ID	Test Note	Tool I	kites	Last Modified	Separate	Connection	Resto
5	5	402+SVG	24 CA	VITY			Demo Mode	A.
0	8	40zone	32 cavity +	water + IO			Demo Mode	Save
7	7	60zome	48 Cavit	y + 30A			Demo Mode	
8	в	BDzome	48 Cavit	y + 30A			Demo Mode	
9	9	8 20010	8 Cavity	+ MFIO			Demo Mode	
10	10	All Zones					Serial Port	
11	-11	NPE_WATERFLO					Serial Port	Delet
12	12	waterflow					Serial Port	×
13	13	testy			12:50 13/04/18		Demo Mode	Cance
14	14	linux			18:44 12/04/18		Serial Port	
15					and a state of the second second second second second second second second second second second second second s			
16	2							
17								

3. Choose [Save]:





Save Changes as a New Tool - continued

A message box opens:



A keyboard opens:



- 4. Enter the new tool name.
- 5. Choose [**Enter**] to save the new tool or choose [**Esc**] twice to return to the tool bank without saving the new tool name.

In the tool bank, the tool name is now blue in color.



IMPORTANT

This new tool has not been loaded. The original tool is still loaded. The user must load the new tool to use it. For more information, see "6.12 Load a Tool Locally" on page 6-25.



6.12 Load a Tool Locally

The controller must be in Stop mode to load a tool, unless the system setting [**Allow Toolload**] is enabled. See "4.20 Settings Screen" on page 4-32 on how to access system settings.



NOTE

If the controller is in Run mode and another tool setting with a different temperature is selected and loaded, then the tool will immediately change to run at the new incoming temperature setting.

1. Choose [ToolStore]:



2. Choose the required tool:

Display	CD Tuolaliery	🛬 😂 Apps Settin	gs Graph	50 Pictures	Shut	own startup	Standby Bo	ost 🛈
	Bank 6	Bank	,	Elank 8	Bani	k9	Dank 10	0
9	Bank t	Bank	2	Bank 3	Een	k4	Bank 5	-AL
Test r	Tost ID	Tirol Name		Facil History	Last Modified	Sequence	Gamertion	Lond
1	1	160			05:06 23/02/18		Demo Mode	A
2	2	beach-thai			14:40 01/11/17		Serial Port	Save
0	3	81			17:51 01/11/17		Serial Port	5
4	4	12			09:00 02/11/17		Serial Port	요) Backup
5	s	test			08:48 02/11/17		Serial Port	
6	c				08:50 02/11/17		Serial Port	
7	1023	64			08.52 02/11/17		Serial Port	Dekrte
8	8	emodeard			10:34 02/11/17		Serial Port	×
9								Cancel
10	3	test			14:41 08/01/18		Serial Port	
-11		tesMS			11.00 27/02/19		Serial Port	
12			1				Serial Port	
13								
Node	RUN	Tool ID #0: test	5		27 Feb 2	018 11:52 5	Statur	ALARM

3. Press [Load]:



4. Enter password, if required.

A message box opens:





Load a Tool Locally - continued

5. Choose [OK] to load the new tool.



NOTE

The user can press [**Cancel**] to go back to the tool bank without loading the new tool.

A warning box opens:

🔔 Warning		
You will lose changes to currer (testy)	nt tool	
	ОК	Cancel

6. Choose [**OK**] to load the new tool or [**Cancel**] to return to the tool bank without loading the new tool.

6.13 Load a Tool Remotely

If the controller is fitted with an IO5 card then it is possible to load tools from a remote location. See "13.7 Remote Tool Loading" on page 13-8.

6.14 Search the Tool Bank

Users can search for a tool in the tool bank.

1. Choose [ToolStore]:



2. Choose [Search]:



A keyboard opens:



- 3. Enter the tool name.
- 4. Choose [Enter].



Search the Tool Bank - continued

The Tool Search Results box opens:

Q Tools	iearch Resulti		
104 /	Teel ID	Rate	
1	1	160	Τ.
4	4	150new	
		Cancel	

If the search is unsuccessful, this message box opens:

i Information	
Search was unsuccessful	
	ок

5. Choose the tool required from the list.

The user will automatically be taken to the tool bank screen with that tool.





6.15 Delete a Tool

CAUTION

Once you have deleted a tool there is no way to recover its previous settings. Take care that you are deleting the correct tool.

NOTE

A tool that is loaded cannot be deleted.

1. Choose [ToolStore]:



2. Choose the tool to be deleted. See Figure 6-14.

Cisplay	Tuestillore	幸 総 Apps Settings	Graph Pictures	shutd	own Startup	Standby Br	2) ① Hest
	Sank 6	Bank 7	Bank 8	Bani	KB	Bank 10	0 64
3	Bark/1	Bank 2	Bank 3	Bani	14	Bank 5	£.
Test	Taxt ID	Text Name	Teel Noies	Last Modified	Seguritor	Connection	Lond
.1	1	160		05:96 23/02/18		Demo Mode	<u>A</u>
2	2	bench-that		14:40 01/11/17		Serial Port	Save
3	9	(H .)		17:51 01/11/17		Serial Port	
4	4	12		05:00 02/11/17		Serial Port	Backara
5	5	test		08:48 02/11/17		Serial Port	
6	6	13		08:50 02/11/17		Serial Port	Û
7	1023	15		08:52 02/11/17		Serial Port	Delete
8	8	Amodeard		10:34 02/11/17		Serial Port	×
.8							Cancel
10	3	test		14:44 08/01/18		Serial Port	
13		test45		11:33 27/02/18		Serial Port	
12						Serial Port	
13							
tanta l	CU.	Taul ID 40 Instit		23 feb 3		and the second	ALADRA

Figure 6-14 Choose the tool to delete

3. Choose [Delete]:



4. Enter password, if required.



Delete a Tool - continued

A message box opens:



5. Choose [**OK**] to confirm or choose [**Cancel**] to return to the ToolStore without deleting the tool.



6.16 Backup Tool Settings

Backing up tools saves tool settings to an external storage device. The saved settings can be used for secure recovery or can be transferred to another controller for use.



NOTE

If the particular tool has an EasyView image and EasyView screen associated with it, then the mini panel configuration is saved within this backup procedure.

The same picture should be saved, and the Picture and Tool files should be kept together.

6.16.1 Backup a Single Tool

- 1. Insert the USB memory stick and wait about 10 seconds.
- 2. Choose the tool to backup. See Figure 6-15.

Display	TuolSterr	🛬 😪	s Graph	Pictures	Shuk	own Startup	00 Standby	Boost	0
	Benk G	Bank 7	1	Elenk 8	Ban	k9	Dank 10	1	O Set
	Bank 1	Benk 2		Bank 3	Een	64	Bank 5	6	<u>.</u>
Test #	Tool ID	Tixel Name		Fact Hotes	Last Molified	Sequence	Concestion		Lond
1	1	160			05:06 23:02:18		Demo Mode		S.
2	2	bench-thai			14:40 01/11/17		Serial Port		Save
0	э				17:51 01/11/17		Scrial Port		
4	4	12			09:00 02/11/17		Serial Port		ලා Backup
5	s	test.			08:48 02/11/17		Serial Port		
6	6	0			08:50 02/11/17		Serial Port		
7	1023	64			08.52 02/11/17		Serial Port		Delete
8	8	emodeard			10:34 02:11.17		Serial Port		×
9									Cancel
10	3	test			14:41 08/01/18		Serial Port		
11		tes#45			11:33 27/02/18		Serial Port		
12							Serial Port		
13									
Mode	RUN	Tool ID #0: test6	9		27 Feb 2	018 11:52 5	System Sti	atus	ALARM

Figure 6-15 Choose the tool to backup

3. Choose [Backup]:



4. Enter password, if required.



NOTE

If the picture associated with the tool has been saved previously, the user is asked if the file can be overwritten. Choose [**OK**] or [**Cancel**].



A message box opens:



- 5. Choose [OK] to continue to return to the ToolStore.
- 6. Wait about 10 seconds then remove the USB memory stick.

6.16.2 Backup All Tools

An entire tool bank can also be saved.



IMPORTANT

Only the visible tool bank will be backed up. To backup all tools, each tab in the ToolStore must be backed up individually.

- 1. Insert the USB memory stick and wait about 10 seconds.
- 2. Choose [ToolStore]:



- 3. Enter password, if required.
- 4. Choose [Backup]:



After the backup is complete, a message box opens:

i Information	
Bank backed up successfully	
	ОК



6.17 Restore Tool Settings

The user can choose to restore a single tool's settings or the entire tool bank's settings.

6.17.1 Restore a Single Tool

- 1. Insert the USB memory stick with the data and wait about 10 seconds.
- 2. Choose [ToolStore]:



3. Choose an empty tool slot:

	Bank 6	Bar	ik7	Bank I	Ban	k9	Bank 10	Detect
	Bard(3)	Bar	¥2	Bank 3	Ban	k4	Bank 5	8
Teol #	Tael 10	Tool Hame	Тоо	listes	Last Modified	Sequence	Connection	Restor
5	5	402 + SVG	24 0	AVITY			Demo Mode	A.
6	៍ទ	4Brome	32 cavity	+ water + IO			Demo Mode	Save
7	7	Olcone	-48 Can	ity + 30A			Demo Mode	
8	8	00zome	48 Cer	ity + 30A			Demo Mode	
9	9	8 zeer	8 Cavil	y + MF10			Demo Mode	
10	10	All Zones					Serial Port	Û
н.	11	NPE_WATERFLO					Serial Port	Delete
12	12	waterflow					Serial Port	⊠
13	13	testy			12:50 13/04/18		Demo Mode	Cance
14	14	linus			18:41 12/04/18		Serial Port	
15								
16								
17								



IMPORTANT

An empty tool slot must be chosen or the imported data will overwrite the currently loaded tool.

4. Choose [Restore]:



5. Enter password, if required.



Restore a Single Tool - continued

The tool selection box opens:

i≡ Select tool to restore
160new_070518-1433 (160new)
40z_SVG_070518-1434
Canoel

- 6. Choose the required tool.
- 7. Wait about 10 seconds then remove the USB memory stick.
- 8. Check the ToolStore tab [Last Modified] to see that the data imported.

6.17.2 Restore All Tools

- 1. Insert the USB memory stick with the data and wait about 10 seconds.
- 2. Choose [ToolStore]:



3. Choose [Restore]:



4. Enter password, if required.



IMPORTANT

The user must choose a blank ToolStore tab or the imported data will overwrite the existing tools on the visible tab.

A warning box opens:

Question	
Warning!! This banks tools will be overwritten!!	
	OK Cancel

- 5. Choose [**OK**] to restore all settings or [**Cancel**] to return to the tool bank without restoring settings.
- 6. Wait about 10 seconds then remove the USB memory stick.



The combination of sequence and time columns allows the user to run a preset sequence of actions.

6.18.1 Example of a Sequence

Step 1:

- Manifolds are heated to a lower start temperature and allowed to settle. Other zones are off. The sequence timer holds this condition for 60 minutes and then moves to the next step.
- Step 2:
- Manifolds are then heated to normal temperature. Other zones are off. The sequence timer holds this condition for 10 minutes and then moves to the next step.

Step 3:

• All other zones are switched on and allowed to heat up to normal temperature. The sequence timer holds this condition for 15 minutes and then moves to the next step.

Step 4:

• All zones enter Run mode.

6.18.2 Program a Sequence

1. Choose [ToolStore]:



2. Choose the required tool and the corresponding box in the Sequence column:

Set	Bank 19	K9	Ban	Bank B	anik 7	Be	Bank 6	
â	Bank S	ik4	Ban	Bank 3	ink 2	Ba	Bank 1	
Los	Convector	Segurnce	Last Modified	loal Notes:		Tool flatte	Toor ID	Toot /
۵.	Demo Mode		10:06 23/02/18			100	1	1
Sav	Serial Port					MMUK-Test	2	2
	Demo Mode			8 Cavity	9	144z + 10	э	а
Back	Demo Mode					100mew	đ	4
	Demo Mode			4 CAVITY	2	407 + SVG	5	5
D	Demo Mode			ity + water + IO	32 cavi	-Brone	.0	6
Oele	Demo Mode			Cavity + 30A	48 0	60cone	7	7
×	Demo Mode			Cavity + 38A	48.0	60eone	8	8
Cent	Demo Mode			wity + MFIO	8 Ca	8 zone	9	9
	Serial Port					All Zones	10	10
	Serial Port					NPE_WATERFLO	11	11
	Serial Port					waterflow	12	12
	Demo Mode		12:50 13/04/19			testy	13	13



Program a Sequence - continued

3. Choose [Set]:



4. Enter password, if required. A Settings keypad opens:



5. Choose [Sequence Number].

A keypad opens:



- 6. Enter the step number of the sequence [Step 1, Step 2, etc.].
- 7. Choose [Enter].
- 8. Choose [Trigger Next].

A selection box opens:

🔠 Select An I	leen.	
Off		
Timer Ela	psed	
Input Act	ive	
At Tempe	rature	
	Cancel	

9. Choose the required action in the sequence or choose [**Cancel**] to return to the keypad.



Program a Sequence - continued

10. Choose [Time (Mins.)]:

A keypad opens:



11. Enter the required time.

The screen returns to the ToolStore. The sequence is shown in the Sequence column. See "Figure 6-16 Programmed sequence shown in ToolStore" on page 6-36.

	Bank 6	B	ank 7	10	Bank 8	Ba	nk 9	Bank 10	Set
	Sonk 1	8	ank 2	18	Bank 3	Ba	nk 4	Bank 5	£
Teel #	Teel ID	Tool Base	x.	Test Notes	â,	Last Mediled	Segunce	Connection	Load
ĩ.	1	160				10:06 23/02/18		Demo Mode	۵.
2	2	MMIR-Test						Serial Port	Save
з	а	1442 + 10		98 Cavity	(1.11.1	Demo Mode	8
4	4	100mm					1: Timer (5 min)	Demo Mode	Back
5	5	40z +SVG		24 CAVITY	(Demo Mede	
.6	6	Altrone	32 es	wity + wate	97 + 9D			Demo Mode	
7	2	60zone	- 4	Cavity + 3	NA.			Demo Mode	Delet
0	0	Ocone	- 4	Cavity + 3	A0			Demo Mode	×
0	0	8 zone	8	Cavity + M	FIO			Demo Mode	Cano
10	10	All Zears						Serial Port	
11	п	NPE_WATERFLO						Serial Port	
12	12	weterflow						Serial Port	
13	13	featy				12:50 13/04/18		Demo Mode	

Figure 6-16 Programmed sequence shown in ToolStore



6.18.3 Start a Sequence - Locally

NOTE

A tool with a sequence pattern loaded must be chosen.

From the Display screen:

1. Choose [ToolStore]:



2. Choose [Sequence]:



- 3. Enter password, if required.
- A message box opens:



4. Choose [**OK**] to start the sequence or choose [**Cancel**] to return to the ToolStore without starting the sequence.

i

6.18.4 Start a Sequence - Remotely

NOTE

A tool with a sequence pattern loaded must be chosen.

One input within the IO card can be used to enable a sequence.

The sequence will run at its preset timed intervals with steady input.

The user can apply and release input to the IO card, and this action will force the tool sequence to move on to the next step. This procedure can be used to reduce the overall time required for testing and initial settings.



6.19 Use EasyView Screen as the Display Screen

After the EasyView screen has been setup, the user can choose it as the main display screen. See "4.16 Display Screen Options" on page 4-20.

The mini panels show the zone number or alias, the chosen parameter and the condition of the zone, indicated by color.

The parameters available for display are shown on the right. They include:

- actual [temperature]
- setpoint
- power [in percent]
- amps

It is possible that more than one picture is associated with a single tool. The user can view each picture in sequence with the [**Picture** \blacktriangle] and [**Picture** \triangledown] buttons.

6.19.1 Lock and Unlock the Screen

If the EasyView screen is chosen as the main display, the zones are automatically locked. The user can unlock them, if necessary.



NOTE

The zones cannot be unlocked on the Display screen if any zone is chosen. Press [**Cancel**] to deselect zones before unlocking the screen.

1. Choose [Unlock]:



- 2. Move the required mini panel / mini panels.
- 3. Choose [Lock] to relock the screen:



The user can now move the entire image using the touchscreen. The zones stay locked in place.

6.19.2 Choose Zones with the EasyView Screen

The user can choose a zone or multiple zones on the EasyView Screen by touching them. The chosen zones are highlighted with a blue outline. See Figure 6-17.



Choose Zones with the EasyView Screen - continued

After a zone is chosen, the right hand menu buttons change to **[Set]**, **[Zoom]** and **[Cancel]**.



Figure 6-17 Choose zone on the EasyView screen



NOTE

The Range function is not available on this screen. To change multiple zones, the user must choose the zones one by one before choosing [**Set**].



6.19.3 Set or Change Temperature with the EasyView Screen

The user can set temperature using the EasyView screen when it is the main display.

1. Choose the required zone or zones:



2. Choose [Set]:



3. Enter password, if required.

A keypad opens:



4. Choose [Auto] for the mode.



NOTE

For more information on Manual mode, see "5.7.1 Set Manual Mode" on page 5-27.

For more information on Slave mode, see "6.7 Slave Mode" on page 6-10.



Set or Change Temperature with the EasyView Screen - continued

- 5. Enter the required temperature using the keypad or choose:
 - [Add] to increase the current temperature by a set amount
 - [Subtract] to decrease the current temperature by a set amount



NOTE

The temperature set must fall in the limits configured in tool settings. See "5.5 Configure the Parameters and Settings" on page 5-10 for information on how to set and change these limits.

6. Choose [**Enter**] to accept the changes and return to the EasyView screen, or choose [**Esc**] to clear the input.

The user can return to the EasyView screen at any time by choosing [Esc].

6.19.4 Set Manual Mode with the EasyView Screen

- 1. Choose the required zone or zones.
- 2. Choose [Set]:



3. Enter password, if required.

A keypad opens:



- 4. Choose [Manual] for the mode.
- 5. Enter the percentage power required.
- 6. Choose [**Enter**] to accept the changes and return to the EasyView screen, or choose [**Esc**] to clear the input.

The user can return to the EasyView screen at any time by choosing [**Esc**] twice.



The mini panel / panels now have a display that alternately flashes "MAN" and the temperature.



6.19.5 Set a Zone to Slave on the EasyView Screen

1. Choose the required zone or zones:



2. Choose [Set]:



3. Enter password, if required.

A keypad opens:



4. Choose [Slave] for the mode.



A zone selection box opens:

📋 Select An Ite	m
Probe 1	
Probe 2	
Probe 3	
Probe 5	
Probe 6	
Probe 7	
Probe 8	
Probe 9	
Probe 10	
Probe 11	
Probe 12	
	Cancel

5. Choose the lead zone or choose [**Esc**] to return to the EasyView screen without slaving.

The mini panel now displays the chosen zone as a slaved zone. See Figure 6-18.



Figure 6-18 EasyView screen with a slaved zone

The user can return to the EasyView screen at any time by choosing [**Esc**] twice.



6.19.6 Open the Zoom Screen from the EasyView Screen

1. Choose the required zone or zones:



2. Choose [Zoom]:



The Zoom screen opens. See "4.22.5 Zoom Screen" on page 4-40 for more information on the Zoom screen.



6.20 Monitor Energy Usage - Energy Screen

The Energy screen reports energy and material consumption. The energy statistics are derived from:

- · parameters that are manually input
- · the actual current that the control cards measure
- 1. Choose [Apps]:



2. Choose [Energy]:



3. Enter password, if required.

The Energy screen opens. See Figure 6-19.

Display To	DolStore	Energy	ිළි Settings	년 <u>고</u> Graph	50 Pictures	st	witchown	Startup	00 Standby	Boost	0
Port Weight (Cycle Time	Cavitaes (grouns) • (secs)	102 10.00 10.0	Amps ktir ktirb	i (Inst) 0. / (Inst) 0. (Instai) 1.4	00 00 100	Amps (avg) kill (avg) killhing (avg)	0.00 0.00 0.000				
Materialhou	r (kyh)	367.2			Waler Energy (-				1	
										ľ	ලිදී Centig
											↔ Scale
		4		;-		2		····; · ·			Print
					5 Minutes						
Mode		Tool ID /	V3: 144z + KO			04	May 2018	20:13	System	Status	DEMO

Figure 6-19 Energy screen - time scale 5 minutes



6.20.1 Configure the Energy Screen

The user can configure the Energy screen.

To change the time period shown on the x axis, choose [Scale]:



The time scale choices available are 5 minutes, 30 minutes and 24 hours.



NOTE

The 5 and 30 minute graphs display as line graphs. The 24 hour graph displays as a bar graph.

1. Choose [Config]:



The Energy Settings box opens:

😑 Energy Setti	ngs		
Settings			
Part Weight (g	rams)	10.00	>
Cycle Time (se	cs)	10.0	>
Graph	Water Energy ((Wh)	>
Reset Total En	ergy (kWh)	Res	set
	ок	Car	ncel

2. Choose [Part Weight (grams)]:



3. Enter part weight or choose [Esc] to return to the Energy Settings box.



Configure the Energy Screen - continued

4. Choose [Cycle Time (secs)]:



5. Choose [Graph]:



6. Press [OK] to accept or [Cancel] to return to the Energy screen.

The user can reset the total energy used back to 0 with the [Reset] button.

6.20.2 Print the Graphs from the Energy Screen

The user can print the graphs from the Energy screen.

1. Choose [Print]:



A message box opens:

i	Information
Prin	ting please wait



NOTE

The user must choose the default print setting from the [**Printers**] screen. All output is sent directly to this default after the user chooses the [**Print**] button. No printer settings box will open.

See "5.15 Configure a Printer" on page 5-49 for more information.



6.21 Export Tool Data - Export Screen

The console auto-archives data to a .csv file every 12 hours if it is operational. The Auto Archived History Data box on the Export screen displays these archived files, which are available for backup.

The user can also export historical data from the controller at any time with the Export screen.

- 1. Insert a USB memory stick into one of the USB ports on the console.
- 2. Choose [Apps]:



3. Choose [Export]:



4. Enter password, if required.

The Export screen opens. See Figure 6-20.

Display ToolStore	Export	응용 년 Settings Gr	<u>ha</u> aph	5 Pictures	Shutdown) Startup	00 Standby	(∕) Boost	0
Display ToolStore Export History Dat Start Date End Date First Zone Last Zone	Export la Vied Mar	Settings Gr 14 07 52 33 2018 15 08:10 30 2018 Probe 1 Probe 22 ort	> > > >	Auto Archived Histor 14-03-2018am 13-03-2018am 13-03-2018pm 12-03-2018pm 12-03-2018pm 11-03-2018pm 10-03-2018am	Shurdown y Data I.CSV I.CSV I.CSV I.CSV I.CSV I.CSV I.CSV	Startup	Standby	Boost	
Mode STOPPED	Tool ID	#0: None			15 Mar 2018 (18:17 5	ystorm 1	Status	NORMAL

Figure 6-20 Export screen



Export Tool Data - Export Screen - continued

5. Choose [Start Date] and [End Date] from the dropdown menus:



6. Choose [First Zone] and [Last Zone] from the dropdown menus:

\Xi Select An Item	
Probe 1	
Probe 2	
Probe 3	
Probe 4	
Probe 5	
Probe 6	
Probe 7	
Probe 8	
Probe 9	
Probe 10	
Probe 11	
	Cancel

7. Choose [Export]:



This message appears when data is transferring:

6	Information						
Do not remove media while transferring data.							

8. Remove the USB memory stick after the message disappears.

In the event that the controller is not working properly and cannot be fixed with the manual, then it is necessary to contact *Mold-Masters* for additional assistance.

Mold-Masters recommends that a copy of the controller's configuration is exported and sent to *help@moldmasters.com*.



6.22 Monitor Controller Changes - Actions Screen

This screen is a dated list of all operational changes made to the controller or its configuration. Its size is limited to available disk space but it can usually hold 12 months' worth of information.

If the record of operations is required for a longer time period, the history should be exported weekly or monthly and stored externally.

1. Choose [Apps]:



2. Choose [Actions]:



3. Enter password, if required.

The Actions screen opens. See Figure 6-21.

			\$			E 1.11		00 🤅	Ð	0
Display	Toorstore	Actions	Settings	cirapn	Pictures	Shulo	own startup	Standby B	IOST	
n	ne	User	Acti	an	Zrec	Volue	Old Volue	Tool #		
2018-03-0	9 14:41:48	System	Tool Lo	aded		Teel ID 1		1		
2018-03-0	9 14:36:25	System	Tool Lo	aded		Teel ID 3		3		
2018-03-0	9 14:36:11	System	Controlle	r Mode		Stopped	Run	1		
2018-03-0	8 14:35:47	System	Tool S	aved		Teel ID 1		1		
2010-00-0	0 14:05:01	System	User L	ogin				1		
2018-03-0	9 14:35 25	System	UserLo	ogout				1		
2018-03-0	9 14:34:19	System	User L	ogin				1		
2018-03-0	9 14:34:11	Factory	UserLo	Juogo				1		
2018-03-0	9 14:32:04	Factory	Tool S	aved		Teel ID 1		1		× 1
2018-03-0	9 14:29:49	Factory	Tool N	lame		ryu7		1		
2018-03-0	9 14:28:50	Factory	Tool S	aved		Teel ID 2		1		Page
2018-03-0	8 14:27:52	Factory	Controlle	r Mode		Run	Stopped	1		
2010-00-0	0 14:23:53	Factory	User L	ogin				1		~
2018-03-0	9 14:23 50	System	UserLo	ogout				1		Page
2018-03-0	9 14:22:02	System	Setp	olint	Probe 40	40.0	250.0	1		
2018-03-0	9 14:22:02	System	Setp	oint	Probe 39	-90.0	230.0	1		Y
2018-03-0	8 14:22:02	System	Setp	oint	Probe 38	40.0	250.0	1		Filter
2018-03-0	9 14:22:02	System	Setp	oint	Probe 37	40.0	250.0	1		
2018-03-0	9 14:22:02	System	Setp	olint	Probe 36	40.0	250.0	1		А
2018-03-0	8 14:22:02	System	Setp	oint	Probe 35	-90.0	250.0	1		8
2018-03-0	0 14:22:02	System	Setp	oint	Probe 34	40.0	250.0	1		Print
2018-03-0	9 14:22:02	System	Setp	oint	Probe 33	40.0	250.0	1		
2018-03-0	9 14:22:02	System	Setp	oint	Probe 32	40,0	250.0	1		
2018-03-0	9 14:22:02	System	Setp	oint	Probe 31	40.0	250.0	1		
Mede	STOPPED	Tool ID	#1: 160			09 Mar 2	018 14:47 Sy	stom Statu		DEMO

Figure 6-21 Actions screen



NOTE

If the user does not have access to the Actions screen or if the user is logged out, the screen will appear blank. After a user logs in, the screen must be refreshed by exiting to the Apps screen and then choosing the **[Actions]** icon again.

The user can move through the list of actions on a particular screen with the scrollbar on the right hand side of the screen.

The user can move through the pages of actions with the [Page \blacktriangle] or [Page \bigtriangledown] buttons.



4. Choose [Filter]:



The Filter Settings box opens:

5. Choose [Start Date] and [End Date] to filter by date:

🗮 Select An Item	
All	
2018-03-19	
2018-04-05	
2018-04-06	
2018-04-09	
2018-04-10	_
2018-04-11	
2018-04-12	
2018-04-13	
2018-04-16	
2018-04-17	
	Cancel



Monitor Controller Changes - Actions Screen - continued

6. Choose [Action] to filter by action:



7. Choose [User] to filter by user:

🗏 Select An Item		
All		
User		
System		
	Cancel	

8. Choose [Zone] to filter by zone:





NOTE

Choose [Reset Filters] to return all filter options to "All" if required.



9. Choose [**OK**] to display results or choose [**Cancel**] to return to the Actions screen. See Figure 6-22.

Display TeelSteer	Actions	Settings Graph	EQ Pictures	Shutdow	D Starbas Starb		0
							_
Time	User	Action	Zone	Value	Old Value	Tool #	
2018-04-18 15:54:33	System	User Login				10	
2018-04-18 15:53:12	System	User Logout				10	
2018-04-18 15:52:54	System	Tool Saved		Tool ID 21		10	
2018-04-18 15:50:51	System	User Login				10	
2018-04-18 15:33:00	System	User Logout				•	
2018-04-18 15:31:55	System	User Login				•	
2018-04-17 10:53:14	System	User Auto-Logout				•	
2018-04-17 19:48:43	System	Group	Cavity 16	Group 1	Group 255	•	
2018-04-17 19:48:43	System	Group	Cavity 15	Group 1	Group 255		
2018-04-17 19:48:43	System	Group	Cavity 14	Group 1	Group 255		
2018-04-17 19:48:43	System	Group	Cavity 13	Group 1	Group 255	•	14804
2018-04-17 19:48:43	System	Group	Flow 12	Group 1	Group 0		
2018-04-17 19:48:43	System	Group	Flow 11	Group 1	Group 0		II ~
2018-04-17 15:48:43	System	Group	Flow 10	Group 1	Group 0	•	Page
2010-04-17 10:40:43	System	Group	Flow 9	Group 1	Group 0	•	
2018-04-17 19:48:13	System	Group	Flow 8	Group 1	Group 0	•	17
2018-04-17 19:48:43	System	Group	Flow 7	Group 1	Group 0		Filter
2018-04-17 19:48:43	System	Group	Flow 6	Group 1	Group 0		
2018-04-17 19:48:43	System	Group	Flow 5	Group 1	Group 0	•	<u> </u>
2018-04-17 10:48:43	System	Group	Flow 4	Group 1	Group 0		8
2018-04-17 19:48:43	System	Group	Flow 3	Group 1	Group 0		Print
2018-04-17 19:48:43	System	Group	Flow 2	Group 1	Group 0		
2018-04-17 15:48:43	System	Group	Flow 1	Group 1	Group 0	•	
2018-04-17 15:48:43	System	Group	Cavity 12	Group 1	Group 0		
Mode STOPPED	Tool ID	#10: 60zone		18 Apr 20	18 15:58 System	Status	DEMO

Figure 6-22 Actions screen - results shown

10. Choose [Print] to export or print the filtered results:



A message box appears:



11. Choose [**Export**] or [**Print**] as required, or choose [**Cancel**] to return to the filtered results screen.



NOTE

The user must choose the default print setting from the [**Printers**] screen. All output is sent directly to this default after the user chooses the [**Print**] button. No printer settings box will open.

See "5.15 Configure a Printer" on page 5-49 for more information.



6.23 Monitor Alarms - Alarms Screen

1. Choose [Apps]:



2. Choose [Alarms]:



3. Enter password, if required.

The Alarms screen opens. See Figure 6-20.

Display T	CoolStore	Alarms a	승문 날 Settings Gra	h E		Shutdown	Startup	00 Standby	Boost	0
Terr		7	Protocolat	Archard	E und	Tests				
inte		2000	autom	76.10.0	Evant	1031 P	_			
2010-00-00 1	10:21:41	Probe 10	650.0	0.0	NZ	2				
2018-03-09 1	19:19:39	Probe 12	250.0	227.0	Warn Low	11				
2018-03-091	19:18:29	Probe 11	250.0	227.0	Warn Low	- 11				
2018-03-09 1	19:19:39	Probe 10	250.0	227.0	Warn Low	11				
2018-03-09 1	10:19:30	Probe 9	250.0	227.0	Warn Low	- 11				
2018-03-09 1	19:19:39	Probe 8	250.0	227.0	Warn Low	- 11				
2018-03-09 1	19:19:39	Probe 7	250.0	0.155	Warn Low	- 11				
2018-03-09 1	19:19:39	Probe 6	250.0	227.0	Warn Low	11				
2018-03-09 1	19:19:39	Probe 5	250.0	227.0	Warn Low	11				~
2018-03-09 1	19:19:39	Probe 4	250.0	227.0	Warn Low	11				
2018-03-091	19:19:39	Probe 3	250.0	227.0	Warn Low	- 11				Page
2018-03-09 1	19:19:39	Probe 2	250.0	227.0	Warn Low	11				
2018-03-00 1	10:10:30	Probe 1	250.0	227.0	Warn Low	11				\sim
2018-03-09 1	19:19:02	Probe 7	250.0	110.0	Alarm Low	- 11				Page
2018-03-09 1	50:01:01	Probe 6	250.0	110.0	Alarm Low	- 11				
2018-03-08 1	90:01:01	Probe 5	250.0	110.0	Alarm Low	11				Y
2018-00-00 1	19:19:02	Probe 4	250.0	110.0	Alarm Low	11				Eilter
2018-03-09 1	19:19:02	Probe 3	250.0	110.0	Alarm Low	11				Fines
2018-03-091	50:81:81	Probe 2	250.0	110.0	Alarm Low	- 11				л
2018-03-09 1	19:19:02	Probe 1	250.0	110.0	Alarm Low	11				8
2018-03-09 1	19:19:02	Probe 12	250.0	110.0	Alarm Low	11				Print
2018-03-09 1	19:19:02	Probe 11	250.0	110.0	Alarm Low	11				
2018-03-09 1	50:01:01	Probe 10	250.0	110.0	Alarm Low	11				
2010-00-00 1	10:19:02	Probe 3	250.0	110.0	Alarm Low	11				
Mode 5	TOPPED	Tool ID #1	160			09 Mar 2018	14:54	vstom	Status	ORMAL

Figure 6-23 Alarms screen



NOTE

If the user does not have access to the Alarms screen or if the user is logged out, the screen will appear blank. After a user logs in, the screen must be refreshed by exiting to the Apps screen and choosing the **[Alarms]** icon again.

The user can move through the list of actions on a particular screen with the scrollbar on the right hand side of the screen.

The user can move through the pages of actions with the [Page \blacktriangle] or [Page \triangledown] buttons.

4. Choose [Filter]:





Monitor Alarms - Alarms Screen - continued

The Filter Settings box opens:

5. Choose [Start Date] and [End Date] to filter by date:



6. Choose [Action] to filter by action:




Monitor Alarms - Alarms Screen - continued

7. Choose [User] to filter by user:



8. Choose [**Zone**] to filter by zone:

All	
Cavity 1	
Cavity 2	
Cavity 3	
Cavity 4	
Flow 1	
Flow 2	
Flow 3	
Flow 4	
Flow 1	
Flow 2	_

9. Choose [Reset Filters] to return all filter options to "All".



Monitor Alarms - Alarms Screen - continued

10. Choose [**OK**] to display results or choose [**Cancel**] to return to the Alarms screen. See Figure 6-24.

Display	ColStore	Alarms	ලිළි Settings	년 <u>고</u> oraph	Pictures		Shutdown	Star) tup	00 Standby	Boos		0
n	ne	Zere	3etpoint		Actual	Event	Teal #						
2018-04-1	8 14:21:11	TP 1	482,0		0.0	NZ	8						
2018-04-1	8 12:50:11	TP 1	462.0		0.0	NZ	8						
2018-04-1	7 20:12:33	TIP 1	462.0		0.0	NZ	8						
2018-04-0	620:51:25	TIP 1	462.0		0.0	N/Z	8						
2018-04-0	6 14:35:16	TIP 1	462.0		0.0	N/Z	8						
2018-04-0	6 14:33:30	TIP 1	407.0		476.0	Warn High	22						
2018-04-0	6 14:30:11	TIP 1	407.0		\$27.0	Alarm High	22						
2018-04-0	6 14:29:04	TP 1	527.0		465.0	Warn Low	22						
2018-04-0	6 14:21:12	TP 1	462.0		4/2.0	Warn Low	22						~
2018-04-0	6 14:13:27	TP 1	462,0		77.0	Alarm Low	22						
2018-04-0	6 13:54:25	TP 1	462.0		441,0	Warn Low	22						Page
2018-04-0	6 13:54:21	TP 1	462.0		438.0	Alarm Low	22						
2018-04-0	6 13:45:40	TIP 1	437.0		476.0	Warn High	22						\sim
2018-04-0	6 13:45:21	TIP 1	437.0		527.0	Alarm High	22						Page
2010-04-0	6 10:41:14	TIP 1	527.0		400.0	Warn Low	22						
2018-04-0	6 13:33:22	TIP 1	462.0		442.0	Warn Low	22						Y
2018-04-0	6 13:25:38	TIP 1	462.0		77.0	Alarm Low	22						
2018-04-0	6 13:06:36	TP 1	462.0		444.0	Warn Low	22						Pater
2018-04-0	6 13:06:32	TP 1	462.0		436.0	Alarm Low	22						n
2018-04-0	6 12:57:51	TP 1	437.0		476.0	Warn High	22						8
2018-04-0	6 12:57:33	TP 1	437.0		\$27.0	Alarm High	22						Print
2018-04-0	6 12:53:25	TIP 1	527.0		9.634	WarnLow	72						
2018-04-0	6 12:45:33	TIP 1	482.0		442.0	Warn Low	22						
2010-04-0	6 12:37:40	TIP 1	402.0		77.0	Alarm Low	22						
Mode		Tool ID #1	0: 60zone				18 Apr 2018	15:58	s	ystem	Status	0	DEMO

Figure 6-24 Alarms screen - results shown

The user can print these results with the [Print] button:



A message box opens:





NOTE

The user must choose the default print setting from the [**Printers**] screen. All output is sent directly to this default after the user chooses the [**Print**] button. No printer settings box will open.

See "5.15 Configure a Printer" on page 5-49 for more information.





6.24 Connect Remotely - Remote Screen

The user must configure a wired or wireless network before the VNC application can be configured. See "7.7 Configure a Network Connection" on page 7-13.

A VNC application is available to connect to, monitor and control an external application that is hosted on a remote networked computer. The user can utilize either the whole screen, or just part of it, to view the remote application.

The TS12 and TS17 consoles are VNC compatible and can be linked to another VNC application on an outside computer. Control can be interchanged in either direction, and operation can be centralized from a single point.

Users can operate the touchscreen application from a connected terminal in a distant location or from a mobile phone, if the phone has the correct VNC program installed.

1. Choose [Apps]:



2. Choose [Remote]:



3. Enter password, if required.

The Remote screen with the VNC settings box opens. See Figure 6-25.

Display	C) ToolStore	ternete .	Settings	Craph	Dictures.	Shutdown	Startup	00 Standby	Boost	0
VNC S	ettings				-					1
Server	Address			0.0.0.0	>					
VNC P	assword				>					
View Fr	ullscreen Or 1	Vindowed		Fut 🕷	window					-
Master	IP Address	00010000000000	. Sweether	NVACIONNE DAN	acconstant_11					뭊
Master	Address			0.0.0.0	>					Shirt Wic

Figure 6-25 Remote screen with VNC Settings box



4. Enter [Server Address]:



5. Enter [VNC Password]:



6. Choose [Fullscreen or Windowed]:

View Fullscreen Or Windowed	🔲 Full	🖌 Window
-----------------------------	--------	----------



NOTE

In windowed mode, the user is able to view different parts of the screen using the scroll bars. In fullscreen mode, the user can only see the VNC screen.

7. Choose [Start VNC] to connected to the remote desktop:



6.24.1 Stop the VNC

If windowed mode is selected: choose [**Stop VNC**] to return to the Remote screen with VNC Settings box.

If fullscreen mode is selected: the user must wait for the VNC timeout to complete. See "5.5.3 Configure System Settings" on page 5-21 for more information.



6.25 The SmartMold Screen

SmartMold is an application that will be available from *Mold-Masters* in the future. Currently, if the user chooses the SmartMold icon:



the following message opens:

=	Milacron - SmartMold Browser	Ą
	Application is not currently paired with a SmartMold. Press search button	
	Search	

Figure 6-26 SmartMold screen

To exit the application, choose the menu icon in the top left hand corner. See Figure 6-27.



Figure 6-27 SmartMold menu



Section 7 - User Access and Networking



WARNING

Ensure that you have fully read "Section 3 - Safety" before changing or configuring user access or a network.

7.1 User Access Screen



NOTE

The job titles, such as Operator 1 or Operator 2 are not user definable.

Only users who have Supervisor level access are able to access this screen.

1. Choose [Settings]:



2. Choose [User Access]:



3. Enter password, if required.

The User Access screen opens. See Figure 7-1.

lyfanna:	t Operator	2 Operator	3 Operator	d Operatur
Console Mode:				
Enter Run Mode				
Enter Standby Mode			-	~
Enter Startup Mode	-	-	-	-
Enter Shutdown Mode	-	-	-	-
Enter Boost Mode		-	-	-
Enter Stop Mode				-
Enter Purge Mode		-	-	-
Start Tooltest				

Figure 7-1 User Access screen



User Access - continued

There are 12 levels of user access for the controller:

- Levels 1 to 4 Operator Level
- Levels 5 to 8 Maintenance Level
- Levels 9 to 12 Supervisor Level

Choose the access level tabs to see or configure user access. Use the scrollbar on the right side is used to move through the list of options. Choose [**Back**] to return to the Settings box at any time.

Actions available to a user in a particular level are indicated by a green checkmark.

7.2 Configure User Limitations

Many functions are restricted according to their job title. A user with Supervisor level access can add or remove functions from other users.

7.2.1 Add a Function for a User

Choose the box where the function intersects with the required user:

NAMES OF TAXABLE PARTY.	1 Charlestor	2 Overable	3 Outrahut	1 December -
Console Mode:				
Enter Run Mode				
Enter Standby Mode			-	-
Enter Startup Mode	-	-	-	-
Enter Shutdown Mode	-	-	-	-
Enter Boost Mode		-	-	-
Enter Stop Mode				-
Enter Purge Mode		-	-	-
Start Tooltest				
er er		1		
6				



Add a Function for a User - continued

A green checkmark appears:

	1 Oursestor	2 Overstor	1 Operator	A VINCE AND A
	r cyanada	e cystator	3 Gjen kor	an open sources
Console Mode:				
Enter Run Mode				
Enter Standby Mode			-	-
Enter Startup Mode	-	-	-	-
Enter Shutdown Mode	1	1	-	-
Enter Boost Mode		~	~	~
Enter Stop Mode				-
Enter Purge Mode		1	1	1
Start Tooltest	1	1	1	~



NOTE

Allowing an action for a particular user level also allows any user with a higher level of access to also perform that function. In the example, all users above Operator level 1 now have access to Tooltest.

7.2.2 Remove a Function from a User

To remove a function from a user, choose the box with the green checkmark, where the function intersects with the required user:

oplana:	1 Operator	2 Operator	3 Operator	4 Operator
Console Mode:				
Enter Run Mode				
Enter Standby Mode			1	1
Enter Startup Mode	1	-	1	
Enter Shutdown Mode	1	1	1	1
Enter Boost Mode		1	1	-
Enter Stop Mode				-
Enter Purge Mode		1	1	
Start Tooltest	1	1		-





emove a Function from a User - continued

NOTE

Removing a function from a particular user level does not remove it from any other user.

7.2.3 Import System Security Settings

Security settings can be imported to the M2 Plus controller with a USB memory stick.

1. Insert the USB memory stick with the security settings data into the console and wait about 10 seconds.

From the User Access screen,

2. Choose [Config]:



The System Security Settings box opens:

System Security Setting	s	
Settings		
Import Security Settings		Import
Export Security Settings		Export
	ок	Cancel

3. Choose [Import] to import user security settings.

A message box opens:



4. Choose [**OK**] to import settings or choose [**Cancel**] to return to the System Security Settings box.





7.2.4 Export System Security Settings

IMPORTANT

The 12 user levels share over 100 different functions.

Mold-Masters recommends that any changes made to the default settings are exported and saved for backup purposes.

Security settings can be exported from the M2 Plus controller onto a USB memory stick.

1. Insert the USB memory stick into the console and wait about 10 seconds.

From the User Access screen,

2. Choose [Config]:



The System Security Settings box opens:

Q System Security Settings	
Settings	
Import Security Settings	Import
Export Security Settings	Export
ок	Cancel

3. Choose [Export] to import user security settings.

A message box opens:

1 Information	
Do not remove media while transferring data.	

4. Remove the USB memory stick after the message disappears.



7.3 User Admin Screen

Only users who have Supervisor level access are able to access this screen to change user details, add or delete users or configure user admin settings.

1. Choose [Settings]:



2. Choose [User Admin]:



3. Enter password, if required.

The User Admin screen opens. See Figure 7-2.

은 User Admin	
User User System T thayalan	User Information User ID: 503 Full Name: thai thayalan Screen Name: T thayalan Security Level: 4 Operator Created: 2018-03-14 14:55:02 Last Login: None Failed Logins: 1
2+ 2 ≡ *	2. 20

Figure 7-2 User Admin screen



7.3.1 View User Details

Choose the user name. See Figure 7-3.

은 User Admin	
User User System T thayalan	User Information User ID: 503 Full Name: thai thayalan Screen Name: T thayalan Security Level: 4 Operator Created: 2018-03-14 14:55:02 Last Login: None Failed Logins: 1 Q
2+ 2=	2 20

Figure 7-3 User Admin screen - user details

The user information box on the right side displays the user's details.

7.3.2 Edit User Details

- 1. Choose the required user. The user will be highlighted in blue. See Figure 7-3.
- 2. Choose the Edit User icon:



The Edit User box opens:

Uper ID	\$03	
First Name	that :	>
Middle Name	0	>
Last Name	thayadan	>
Security Level	4 Operator	
New Password		>

- 3. Edit the required details.
- 4. Choose [**OK**] to accept the user setting changes or [**Cancel**] to return to the User Admin screen without saving any changes.
- 5. Choose [Back] at any point to return to the previous screen.





7.4 Add New User

1. Choose [Add New User]:



The Add User box opens:

First Name Niddle Name Last Name Security Law A Operator New Password	User ID	500	
First Name Niddle Name Last Name Security Level 4 Operator New Personnel	user it.	200	
Middle Nume Last Name Security Level 4 Operator New Personnel	First Name		3
Last Name Security Level 4 Operator New Pesseword	Middle Name		1
Security Level 4 Operator	Last Name	1	3
New Password	Security Level	4 Operator	3
	New Password)
	New Password		

2. Choose [User ID] and use the keypad to enter a value:



3. Enter the user's name:

[First Name - Middle Name (not required) - Last name]





Add New User - continued

4. Choose [Security Level] from the dropdown menu:



5. Choose [New Password] and use the keyboard to enter a new password:

	Erme P	kstmord							
Exc.			ŀ	Ģ		Ļ		l	I lind Square
Cape Look	Ļ	井	Þ	¢	Ţ	Þ	ф	Ţ	Ĵ
		\vdash		<u> </u>		_			

The user will be asked to confirm the new password:

	le fige Passweld -
Custock	

6. Choose **[OK]** to create the new user or **[Cancel]** to return to the User Admin screen without creating the user.



NOTE

Choose [Esc] twice at any point to return to the previous screen.





7.5 Delete User

NOTE

A user's records are maintained in the data files even if that user has been deleted and is no longer visible.

1. Choose [Delete User]:



2. Choose the user to be deleted from the list.

A message box opens:

8	Question	
Are	you sure you want to delete this user?	
	ок	Cancel

3. Choose [**OK**] to delete the user or [**Cancel**] to return to the User Admin screen without deleting the user.



7.6 User Admin Settings

Login settings and user lists are managed in this section.

1. Choose [User Admin Settings]:



The User Admin Settings box opens:

Add Loge Over	ope	e. 3
Login Mode	Ransword	Qi meu [_
Logout Time (Mins.)		** >
Import User List		import
Export liner List		Export

7.6.1 Auto Login User

The console can be started with a named user logged in automatically. No password is required.

1. Choose [Auto Login User].

A selection box opens:

Off		
User		
System		
	Cancel	

- 2. Choose the required user or choose [System] for unrestricted use.
- 3. Choose [Off] to turn the Auto Login User function off.

7.6.2 Login Mode

Login mode can be customized to permit login with either:

[Password] or [Password] and [User ID]

Choose the required option with a checkmark.

7.6.3 Logout Time

Set the amount of time (in minutes) that a login is effective if no input is entered. The range is from 1 to 99.

Choose 99 to allow users to stay logged into the system indefinitely.



7.6.4 Import User List

User details can be imported into the console from other consoles.

- 1. Insert the USB memory stick into the console and wait about 10 seconds.
- 2. Choose [Import].

A warning box opens:

? Question	
Do you want to import the user data?	
ок	Cancel

3. Choose [**OK**] to continue or [**Cancel**] to return to the User Admin Settings screen.

7.6.5 Export User List

User data can be exported to a USB memory stick.

- 1. Insert the USB memory stick into the console and wait about 10 seconds.
- 2. Choose [Export].

A message box opens:

(1) Information
Do not remove media while transferring data.

3. Remove the USB memory stick after the message disappears.







Networking configuration depends on the system and should only be carried out by competent IT staff.

The M2 Plus controller with TS12 or TS17 console can communicate over wired or wireless networks to pass information to and from the console.

The TS8 console is available with or without wireless functionality configured. See Figure 7-4.

10-0	>	tranface -	Windess	× .				
	>			1	Harborn States	the proj	. >	
		MAC Aldrese	W-0.019112#		Domain Name	-	>	
					Autoork Lettings			
	>				OHCP.	Truth	>	•
Enable	>				IP Address	181.101.8	101 >	
107,108,850.5	3				Fort Maca	199,299,29	4.4	
295,255,250.0					Calverry	-	- >	
102,108,006.3	0				1	A house 1	×	Ĩ.
	eef.					Strend B	0,00000	1
					te fan			
hox [.] T	58	with wi	reless		Network	hox [.] T	S8 и	without wireles
	Code 107.108.00.5 255.255.251.0 107.108.00.1 107.108.00.1 107.108.00.1 107.108.00.1 107.108.00.1 107.108.00.1 107.108.00.1 107.108.00.1 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.00.5 107.108.0	tradie → 10210818005 → 10210818005 → 10210818001 → 10210818001 → 10210818001 → 10210818001 → 10210818001 → 10210818001 → 10210818005 → 10210818005 → 10210818005 → 10210818005 → 10210818005 → 10210818005 → 10210818005 → 10210818005 → 10210818005 → 10210818005 → 10210818005 → 10210818005 → 1021081805 → 1021081800 → 1021081800 → 1021081800 → 1021081800 → 1021081800 → 1021081800 → 1021081800 → 1021081800 → 1021081800 → 1021081800 → 1021000 → 10210000 → 10210000 → 10210000000000000000000000000000000000	toox: TS8 with win	box: TS8 with wireless	toox: TS8 with wireless	Image: Second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second 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Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second 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Figure 7-4 TS8 console Network boxes

7.7.1 Configure a Wired Connection

For connection using an Ethernet cable.

1. Choose [Settings]:



2. Choose [Config]:



- 3. Enter password, if required.
- 4. Choose [Network]:





Configure a Wired Connection - continued

The Network box opens:

PO & LINAR IN	I However		
Machine Name	tv 12	>	
Domain Name	local	>	
Vetwork Interdace			
enterface	Wired	>	
MAC Address	00.05.8+.04.82.44		
Setwork Settings			
Wireless SSID	Disabled	>	
DHCP	Enable	>	
e Address	168.254.5.175	>	
Net Mank	285,255.0.0		
Galenwy	109/2545.175	>	
	1		
	A cas	97.5	

5. Enter [Machine Name]:



6. Enter [Domain Name]:





NOTE

The controller may not be linked to a network. In that case the controller is identified as "Local."



7. Choose the Interface [Wired]:





NOTE

The MAC Address box is autofilled and cannot be configured.

8. Choose [Accept] to connect or [Cancel] to return to the network box.



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7.7.2 Configure a Wireless Network

NOTE

This section applies to TS12 and TS17 consoles. It also applies to TS8 consoles that are configured for wireless functionality.

In addition to entering the information in to the Hostname and Network Interface boxes, the user must configure the required wireless parameters in the Network Settings boxes.

- 1. Choose the Interface [Wireless].
- 2. Choose [Wireless SSID].

A message box opens:

(i) Information	
Searching for network connections. Please Wait	

A Wireless Network Connections box opens, which lists the available networks:



3. Choose the required network.



NOTE

The option "Add Hidden SSID" requires further setup. See "7.7.3 Add Hidden Wireless SSID" on page 7-17.

4. Choose [OK] to select or [Cancel] to return to the Network box.



Configure a Wireless Network - continued

5. Enter the wireless password, if required:



- 6. Choose [Cancel] to return to the Network screen.
- 7. Choose [Accept] to connect or [Cancel] to return to the network box.



NOTE

If the network is connected, the address in the Wireless SSID box is green. If the network is not connected, the address is red.

Wireless SSID	ControlsTeam	>

7.7.3 Add Hidden Wireless SSID

If the user chooses the "Add Hidden SSID" option, the connection must be manually configured.

1. Choose [Add Hidden SSID].

The Wireless Manual Setup box opens.

- 2. Enter the SSID.
- 3. Enter the password.
- 4. Choose [OK] or [Cancel] to return to Network box.
- 5. Choose [Accept] to connect or [Cancel] to return to the network box.



NOTE

If the network is connected, the address in the Wireless SSID box is green. If the network is not connected, the address is red.



7.8 Share Files on a Network

The user can share files or tools between linked controllers or through the SmartMold option, if it is installed.

1. Choose [Settings]:



2. Choose [Config]:



3. Enter password, if required.

The Settings box opens:



4. Choose [Network Share] from System Settings.

The Network Share box opens:

lost Name	l' v	lest	>
iharename		lest	>
Jsemana	10 M	lest	>
Password			>
	🖌 Accept	×	ancel
	14	6	



Share Files on a Network - continued

5. Choose [Host Name] and enter the host name:





NOTE

If this box is already filled, choose [Esc] to delete the content.

6. Choose [Share Name] and enter the share name:



7. Choose [Username] and enter the username:



8. Choose [Password] and enter the password:



9. Choose [Accept] to connect.

NOTE

The user can choose [**Cancel**] to clear all the information from the boxes and can choose [**Back**] to return to the Settings box.



Share Files on a Network - continued

A message box opens:



7.9 Linked Controllers

Multiple controller cabinets can be linked to work together as a single controller. To connect the controllers, a data link is used between the controller cabinets and the DIP switch on the backplane board. This link must be configured sequentially through the multiple controller cabinets.

Example:

A 60 zone cabinet and 30 zone cabinet can be configured to work as a single 90 zone controller. A single console can be connected to either controller, and it would display all 90 zones.

The first console connects directly to the cabinet via its data link.

• This is the Master console, and its IP address is printed on the console case.

The second console connects to the first console via an Ethernet link.



IMPORTANT

The first console must be designated as the Master at the second console.

7.10 Multiple Consoles Using Master IP Address

Two or more consoles may work together to control a single device if they are all interconnected on a Local Area Network.

Enter the IP address of a remote Master console which is already linked to a controller cabinet.

- The local console will search the LAN for that console and establish a connection.
- Once this has been done then both consoles command and monitor a single controller cabinet.

Commands may be entered on either console. The command will be carried out and both consoles will see the appropriate changes.







WARNING

Ensure that you have fully read "Section 3 - Safety" before doing maintenance procedures on the controller.

There are no user serviceable parts inside the touchscreen controller. In the unlikely event of equipment failure, return the unit for repair.

8.1 Upgrade Software



CAUTION

Put controller into Stop mode before any updates are installed.

Mold-Masters has a policy of continuous improvement. A notification to existing customers is sent out in the instance of software upgrades available.

It may be possible to apply system upgrades to your own controller depending on the type and age of your equipment. Please contact your supplier and provide the serial number for your model to find out if your particular console can be upgraded.

There is usually no need to return the control system to the supplier for any upgrades. The user can download the update onto a USB memory stick.

- 1. Release the controller from any production working.
- 2. Choose the Information button:



The Information screen opens:





Upgrade Software - continued

- 3. Insert the USB memory stick with the upgrade data and wait about 10 seconds.
- 4. Choose [Upgrade]:



5. Enter password, if required.

An information box will open:

i Information	
Loading Program	
	ОК

After the upgrade is installed, the user is prompted to restart the console to complete the upgrade:



6. Choose the information button once the console has restarted:





Upgrade Software - continued

7. Check the screen to see that the latest version has been installed. See Figure 8-1.

Display Tool] Store	拿 Apps	ියි Settings	Graph	5 Pictures	Stop	Startup	00 Standby	Boost	í
										ි Upgrade
Mas	tei	rs								() Exit
Console Mod	el	TSI2	2							
Software Versio	m	21st July	2021							
Sertal Numb	er 1	304569404	020121							
Hostian	e	102.100	10.1							
Constanting Sector		192.100.	10.1							
Locale open		22-01-18 I 601	6240:18							
Participation star	_	00	_							
Comment Theory		Mada	-							
Carron, men		NIGGE								
										~
										ы
										Guide
Mode STOP	PED	Tool ID #	0: detect_1			18 Jan 2022	16:55	Login	Status	ORMAL

Figure 8-1 Check software version





CAUTION

Ensure that the calibration process is done with precision. Miscalibration will compromise the the touchscreen functionality, and it will then be necessary to contact *Mold-Masters* for assistance.

The Calibration routine places a crosshair target at four different positions on the screen. The use of a stylus increases the precision of the alignment.

1. Choose [Settings]:



2. Choose [Config]:



3. Enter password, if required.

The Settings box opens:



4. Choose [System Config] from System Settings.



Check Touchscreen Alignment - continued

The System Config box opens:

(武)을 System Config	
Allow Global Set Allow Toolload Allow Standby Blanking Delay Baud Rate Calibrate Touch	Select option from list
← Back	Action

5. Choose [Calibrate Touch] from the Options list:

Baud Rate	Calibrate Touch
Calibrate Touch Console Startup Language	Resulting the builtsteer, consider will need to restart if this option is Enabled
.eakage Mode .eakage Warn	V Cesable
	Action
	🖌 OK 🛛 🗮 View

6. Choose [Enable].

A warning box opens:

? Question		
Calibrate the touch screen? Program will exit!		
	ОК	Cancel

7. Choose [**OK**] to continue with the calibration routine or [**Cancel**] to return to the Options list without calibrating.



Check Touchscreen Alignment - continued

8. Choose the device for calibration, if on a networked system.

The calibration screen will open. See Figure 8-2.



Figure 8-2 Calibration screen



IMPORTANT

Mold-Masters recommends the use of a stylus pen for precision.

- 9. Touch the center point of the crosshairs.
 - When you stop touching the screen, the crosshair target will move to another position.
- 10. Repeat until all four locations have been tested.



NOTE

The console will automatically restart.

11. Choose [**Cancel**] if the console is not networked and the Display screen opens automatically.



8.3 Self Diagnostic Tests

The diagnostic routine may be performed at any time that the controller is connected to the tool, provided that it is not in use for production. It can be performed on some of the zones or all of the zones.

The controller can perform three types of diagnostic tests:

- fast test
- full test
- power only test

From the Display screen,

1. Choose [Apps]:



The Apps screen opens:



2. Choose [Testing]:





Self Diagnostic Tests - continued

The Testing screen opens:

Cisplay	C) TopiStore	Testing	Settings	ka Gruph	EG Pictures	SA	witdown	Stortup	00 Standby	Beest	0
Test R	ange				Press St	art to Test	_	E.			0
First 2	one		Probe 1	>	llune Alas	wak too CA ab All					
Last 2	one		Probe 22	>	Start						
Test P	attern	J.	Fast Test	>	Target Power %						
First-Li	nst		1	Reset	Test Stage						
âm			Nexation		Anton	Walls	0%03	Deviate	m Loakag		
											(X) Cancel
											A Print
Mode		Tool iD	#9: None			15 M	lar 2018 0	8:20 S	stem 1	Status	NORMAL.

The user enters the required data into the Test Range box.

The status box in the right upper corner displays information during the testing process:

- Name the number of the zone currently being tested
- Alias the name of the tested zone if it has an Alias set
- Start displays the initial temperature of the tested zone
- **Current** displays the current temperature of the tested zone
- **Target** displays the temperature the zone must reach during the test
- **Max Zone** displays the zone with the highest temperature reading at that time
- **Power** displays the current output of power of tested zone during its test
- Test Stage the point at which the test is at during its operation
- 3. Choose [**First Zone**] and [**Last Zone**] to open a dropdown menu, and choose the first zone and the last zone:



Self Diagnostic Tests - continued

📃 Select An Rem		
Probe 1		
Probe 2		
Probe 3		
Probe 4		
Probe 5		
Probe 6		_
Probe 7		
Probe 8		
Probe 9		
Probe 10		
Probe 11		
	Cancel	

4. Choose the Test Pattern box to open the test selection box:

🚞 Select An Rem
Fast Test
Full Test
Power Only
Cancel



NOTE

The user can also choose the [**First-Last**] button to automatically choose to test all zones.

The [Reset] button sets the zone selection back to its previous setting.

5. Choose [Start] to begin the test:



a) Choose [Cancel] to end the test at any point.



MAINTENANCE

b) Choose [**Skip**] to skip the test for any zone.

During testing, the zone display or displays show test. See Figure 8-3.



Figure 8-3 Zone display - Testing mode

8.3.1 Fast Test

Fast test checks current and power levels. The zone currently being tested is shown in the right hand box. This box will also show the start temperature and current temperature and the test stage. See Figure 8-4.

Test Range		Testing Rack Position 6	
First Zone	Probe 1	Name	Probe 6
Last Zone	Probe 22	Start Current	90 °C 90 °C
Test Pattern	Fast Test 📏	Max Zone	Probe 10
First-Last	Reset	Test Stage	Cooling 0

Figure 8-4 Fast test - information boxes

8.3.2 Full Test

The Full test checks that every zone is functioning correctly. It can be used:

- as an acceptance check
- to see that a new tool is wired up correctly
- as a maintenance aid, to check that a working tool is functioning correctly

The Full test will cool the whole tool. The first zone to be tested is heated to see if it will achieve the correct temperature. If the temperature is not reached, increasing amounts of power are applied to try to achieve the required level of temperature for the test.

The Full test information boxes show the same data as the fast test.

Test Range		Pres	Press Start to Test	
First Zone	Probe 1	Name	Probe 22	
Last Zone	Probe 22	Start	89 °C 89 °C	
Test Pattern	Full Test 💙	Max Zone	Probe 10	
First-Last	Reset	Test Stage	Finished	

Figure 8-5 Full test - information boxes


Power Test - continued

8.3.3 Power Test

Power test can only be used on current measuring cards, and it is designed as a maintenance aid only.

It checks that:

- the heater zones are functioning correctly
- that the feedback from current sense coils are consistent with tool's history file



IMPORTANT

The Power Test does not check for issues such as zone wiring errors.

The Power test criteria boxes also show Target and Power %.

Test Range		Testing Rack Position 18		
First Zone	Probe 1	Name	Probe 16	
		Alias		
Last Zone	Probe 22	Start		
		Current		
Test Pattern	Power Only >	Target		
		Power %		
First-Last	Beset			
		Test Stage	Power Test	

Figure 8-6 Power Test - information boxes

8.4 Interpret the Test Results

8.4.1 Satisfactory Test

If the diagnostic test finds no fault with any zone then the message "OK" is displayed. See Figure 8-7.



Figure 8-7 Zone display - satisfactory test

8.4.2 Unsatisfactory Test

If a problem is detected, an error message shows against the affected zone on the Testing screen. See Figure 8-8.

MAINTENANCE



		-	<u></u>	<u>6</u>	5					\triangleright	00	Ø	0
Test Ran	ge u		Probe 1	Crape	T	esting	Rack Pos Probe 6	an ition (i	Sump	standby	BOOM	O Start
Last Zon	0 9		Probe 22	>	Ca	Alas Start mont Zone	90 °C 90 °C Probe 10						
First-Last	1			Reset	Test 5	Rage	Cooling	0					↓ Skip
Zone			Results			Ang	6 W)	Un	Ohms	Deviation	n Leakog	•	
Probe 1 Probe 2		Hea TAC Hea TAC	ter Circuit T Wring Test Open Circuit ter Circuit T Wring Test Open Circuit	est: OK : Wann TFC est: OK : Wann TFC		1.6/	N 36	41	148R	*0% *0%	0mA		
Probe 3		Hea Tr Che	ter Circuit T C Wiring Tes ck fer Rever	est: OK 4: Fail sed T/C		1.6/	× 9	avv	14998	+0%	0m/		X Cancel
Probe 4 Probe 5		Hes U Hes T	ter Circuit T C Wiring Tes ter Circuit T C Wiring Tes	est: OK it: OK est: OK it: OK		1.6/	N 38 N 40	877	140R 141R	-5% +0%	en/		- Drint
Mode	ESTING	Tool ID	#0: None					15 M	lar 2018 06	1:27 Sy	stem	Status	ALARM

Figure 8-8 Results on the Testing screen

A zone in green has passed the test successfully. A zone in yellow has a warning. A zone in red has failed the test.

Seven columns are displayed with the following information:

- Zone shows the zone number
- **Results** displays either "Zone Test OK" or an error message
- Amps shows how much current was measured as a result of applying a set voltage
- Watts derived from measured current and the given system voltage
- **Ohms** derived from measured current and the given system voltage
- **Deviation** shows the difference between the current readings and readings that have been saved
- Leakage shows if any leakage current to ground was measured

The user can scroll through the zones with the scrollbar to the right of the error messages.

For more information about error messages on the Testing screen, see "Table 8-1 System Diagnosis Error Messages" on page 8-13.

Results can also been seen on the Display screen. See Figure 8-9.



Figure 8-9 Zone error messages during testing



	Table 6-1 System Diagnosis Error Messages				
Error Message	Description				
Below 0 or Reversed T/C	May be caused by a reversed thermocouple. Note : if the test was carried out at an ambient temperature below 0°C, the controller would not work with the resulting negative temperature readings.				
Failed to React Correctly	Unexpected results. This message is followed by further error messages.				
FUSE	Check card fuse.				
Heater / T/C Common with Zone NN?	Crosswiring fault between displayed zones. Could be either heater or thermocouple wiring at fault.				
Heating Test Failed	Temperature did not rise by the set number of degrees within the heating period. This may be caused by an open circuit heater, a pinched, shorted or dislodged thermocouple.				
No Mains Sync. Pulse	Likely due to an error in the supply wiring.				
N/Z	No card was detected in the rack at the slot identified with the displayed zone.				
REV	Temperature appeared to be decreasing when power was applied.				
T/C	Thermocouple detected as being open circuit. Check thermocouple wiring for displayed zone.				
T/C Interaction with Zone NN?	Different zone(s) to the one being tested had an unacceptable rise in temperature, greater than Bad Rise set in test values. Indicates faulty thermocouple positioning or close zone proximity.				
User Skipped Test	The test for this zone was skipped while it was being tested.				
User Stopped Test	The test was aborted.				

8.5 System Diagnosis Error Messages



8.6 Print the Test Results

The user can print the results of the Testing process with the [Print] button:



A message box opens:

0	Information
Prin	iting please wait



The output will be sent to the designated printer or to a USB memory stick.

NOTE

The user must choose the default print setting from the [**Printers**] screen. All output is sent directly to this default after the user chooses the [**Print**] button. No printer settings box will open.

See "5.15 Configure a Printer" on page 5-49 for more information.



8.7 Training and Demonstration Mode

The controller has the Demo mode to use for training or demonstration purposes. Demo mode feeds every zone within the selected tool with a stream of prerecorded temperature data. The console appears to be working, and it gives a real trace when the Graph screen is selected.



NOTE

The controller will not communicate with the associated controller cabinet when in Demo mode. *Mold-Masters* recommends that the system is idle when Demo mode is in use.

8.7.1 Enter or Leave Demo Mode

1. Choose [ToolStore]:



2. Choose the required tool:

Display	ToolStore	章	Graph Pictures	Shutdow	ni Stavitup	Standby Boos	. 0
	Bank G	Bank 7	Eank 8	Bank 0		Bank 10	O Set
	Barik 1	Bank 2	Bank 3	Bank 4	1	Bank S	<u>.</u>
Teak #	Tool 10	Taol Barre	Taol Nates	Last Holdier	Sequence	Connection	Lnad
		160		05:06 23/02/13		Demo Moda	A
2	2	bench-thai		14:40 01/11/17		Serial Port	Save
3	3			17:51 01/11/17		Serial Port	195
4	4	0		09:00 02/11/17		Serial Port	Backup
5	s	test		08:48 02/11/17		Serial Port	
6	6	8		08:50 02/11/17		Serial Port	<u>ii</u>
7	1023	14		08:52 02/11/17		Serial Port	Delete
.0	8	Amodeard		10:34 02/11/17		Serial Port	
9							Cancel
10	3	test		14:44 09:01/19		Serial Port	
ii i		tesMS		11:33 27:02/18		Serial Port	
82						Serial Port	
13							
Mode	RUN	Tool ID #9: test5		27 Feb 201	111-52 S	ystem Status	ALARM

- 3. Choose the corresponding box in the Connection column.
- 4. Choose [Set]:



5. Enter password, if required.





Enter or Leave Demo Mode - continued

A selection box opens:

Serial P	ort		
Demo M	lode		



NOTE

The tool must be loaded before its connection can be changed. A message box appears to warn the user if the selected tool is not loaded.

6. Choose [Demo Mode].

A warning box opens:



To leave Demo mode, repeat steps 1 to 4 then choose [Serial Port].





CAUTION

Do not disconnect the console if your system is using cycle-synchronized probes.

It is not recommended to run the system without a console unless it is an emergency situation. If the console must be disconnected, ensure that is disconnected for the shortest possible amount of time.

The following procedure shows how to change the console with the controller in Run mode, although it is preferable to shut down the controller first.

8.8.1 Remove the Console

1. Disconnect the data lead.



2. Choose [Stop] to stop the console.





Remove the Console - continued

3. Disconnect the power connector.



4. Remove the console.





8.8.2 Reconnect the Console

1. Connect the power connector.



2. Check that the correct tool is selected.

다. Display	C) ToolStore	북표 영습 Apps Settings	Graph Pictures	Shutdo	wn Startup	Cl (2) Standby Boo	1
	Bank 6	Eank 7	Eank 8	Bank	9	Bank 10	- O - Set
	Bank t	Bank 2	Bank 3	Hank	4	Bank S	<u>.</u>
Took e	Tual ID	Titol Barer	Taul Hotes	Last Multivel	Sequence	Oncector	Lond
	- X	160		05:06 23/02/18		Demo Mode	A.
2	2	bench-thai		14:40 01/11/17		Serial Port	Save
9	э			17:51-01/11/17		Serial Port	- PD
4	4	12		08:00 02/11/17		Serial Port	Backup
5	5	test		08:48 02/11/17		Serial Port	
6	6	13		08:50 02/11/17		Serial Port	Û
1	1023	14		08:52 02:11/17		Serial Port	Delete
8	8	- 4modcard		10:3402/11/17		Serial Port	×
.8							Cancel
10	э	test		14:44 00/01/18		Scrial Port	
- 11		tesMS		11:33 22/02/19		Serial Port	
12						Serial Port	
13							
Mode	RUN	Tool ID #0: tests		27 Feb 20	18 11:52 5	System Status	ALARM

3. Choose [Run]:





Reconnect the Console - continued

4. Connect the data cable.









8.9 Service and Repair The Controller WARNING - HIGH VOLTAGE

Always isolate the controller at source before you open the unit to inspect it or replace fuses.

CAUTION

External cables should be checked to see that there has been no damage to the flexible conduit, plugs or sockets. If the flexible conduit has been damaged or if there are any exposed conductors, it must be replaced.

Any internal cable forms that flex to accommodate opening doors should be checked to see that there is no fraying or damage to cable insulation.

Only use ceramic body fuses on control cards. Never use glass-bodied fuses.

8.9.1 Replacement Parts

Mold-Masters does not expect that you will need to repair any controller parts at board level other than fuses. In the unlikely event of any board failure then we provide an excellent repair and exchange facility for all our customers.

8.9.2 Cleaning and Inspection



CAUTION

If the fan filters become clogged, the flow of cooling air is reduced and overheating of the unit may result.

Every environment suffers some degree of contamination, and it is necessary to inspect the fan filters at regular intervals. *Mold-Masters* recommends monthly inspection. Clogged filters must be replaced. Replacement filters can be obtained from *Mold-Masters*.

In some models the filter is located in the fan tray, which is accessed from the front of the controller at the very bottom. Remove the two retaining screws and slide the tray out. See Figure 8-10.



Figure 8-10 Fan tray with filter



Cleaning and Inspection - continued

In other models, the filter accessed from a side panel. See Figure 8-11.



Figure 8-11 Side filter locations

Any excess dust that has entered into the cabinet may be removed with a light brush and vacuum cleaner.

If the equipment is subject to vibration, we recommend you use an insulated screwdriver to check that no terminals have become loose.





8.10 Fuses and Overcurrent Protection WARNING - HIGH VOLTAGE

Always isolate your controller at source before you open the unit to inspect it or replace fuses.

There are supply fuses for four separate functions, and a miniature circuit breaker mounted on the front panel offers general overcurrent protection for the complete unit.

8.10.1 Replacement Fuses

If any fuse has ruptured, it must be replaced with a new fuse that has identical characteristics. See Table 8-2, Table 8-3 and Table 8-4 for the correct fuse types.

8.10.2 Console Fuse

The console is supplied via a separate fuse used in an in-line fuse holder which will be found close to the main busbars.

Table 8-2 Console Fuse Specifications			
Fuse	20mm Anti-surge		
Rating	2 A		

8.10.3 Power Supply Unit Fuse

The power supply unit is mounted on top of the upper chassis plate behind the termination rail. It has an integral supply fuse.

Table 8-3 Power Supply Unit Fuse Specifications			
Fuse	20mm Anti-surge		
Rating	6.3 A		

8.10.4 Fan Fuse

The M2 Plus controller has a single fan to assist cooling. The fan has a separate supply fuse.

Table 8-4 Fan Fuse Specifications		
Fuse	20mm Anti-surge	
Rating	6.3 A	



8.10.5 Controller Card Fuses

CAUTION

Only use ceramic body fuses on control cards. Never use glass bodied fuses.



The current controller card has protection fuses for both the thermocouple input and for the heating load output.

If the fuse LED indicator shows that the output fuse has ruptured, the card may be easily removed and the fuse changed.

Table 8-5 Output Fuse Specifications					
Output Fuse Type	32mm Ceramic FF Ultra Fast				
Card Type	Z6	Z4	Z2	Z1	
Rating	5A	15A	20A or 32A	40A	

If the thermocouple [T/C] LED indicator shows an open thermocouple circuit, then the input fuse may have ruptured.

Table 8-6 Input Fuse Specifications			
Input Fuse Type	Surface mount		
Fuse	Nano Ceramic Very Fast		
Rating	62mA		



CAUTION

Section 9 - Troubleshooting

WARNING

Ensure you have fully read "Section 3 - Safety" before troubleshooting any issues with the controller.

CAUTION

The fuse detection circuit requires a continuous low level current through a high impedance bleed resistor to maintain the alarm condition.

As a result the load circuit is still connected to the mains voltage supply and it is not safe to attempt to repair or replace the fuse without first isolating the circuit.

The control system has several features that provide an early diagnosis of faults in the control system, the tool heaters and thermocouple sensors:

- If the system detects any abnormal condition, it displays a warning message on the Display screen.
- If a zone temperature is seen to deviate from the actual setting beyond the alarm limits then the display will change to white text in red box and generate a remote alarm.
- If the system detects a malfunction in one or more of the control zones, then it displays an error message on the Display screen in place of a temperature value.

9.1 Controller Card Indicators



WARNING

The shrouded terminals on the Euro back board are live, unless the power supply is switched to OFF.

Zone control cards also have their own LED indicators that give a state-ofhealth display and which can be seen through the cabinet windows.

FUSE – Should normally be unlit. It lights up to show that an output fuse has failed.

GF – Should be normally be unlit. It lights up to show that the card has detected a ground fault on one of the zones controlled by this card.

LOAD (L1 to L2/L6) - The Load LED(s) should normally be lit. They pulse to show that there is a regulated supply begin delivered to the load.

SCAN – This LED flashes briefly as the controller scans each card in sequence.

TC – Should be normally be unlit. It lights up to show that the card has detected an open-circuit fault on the thermocouple circuit.

To remove a card from its slot, pull the red handles forwards and gently pull the card out. There is no need to switch off the main supply.



9.3 Beacon and Sounder Extension

A switch is also provided to mute the sounder at any time.

A beacon and sounder extends any second stage temperature alarm or fatal error alarm. Fixing the reason for the alarm condition automatically stops the beacon / sounder.

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NOTE

No reminder is given to show that the sounder is muted when the system is healthy.

Recurrence of subsequent alarm conditions will cause the beacon to light up but will not create an audible alarm.

9.2 System Warning Messages

These messages also warn of an abnormal condition.

Table 9-1 System Warning Messages			
Warning Message	Abnormal Condition		
FAIL	The zone under test has failed.		
MAN	The control zone is in Manual mode.		
S #	The zone is slaved to another control zone, where # represents the number of that zone. For example, S 2 means the zone is slaved to Zone 2. The same power is being sent to both zones. In the Display screen, the setpoint displayed on the selected zone is the same as that on the slave zone.		
TEST Displayed when the zone is in Diagnostic Test mode.			
WARN	Displayed if a temperature interaction is found between zones during a test.		



	Table 9-2 Fault and Warning	Messages		
Error Message	Cause	Action		
AMPS	The controller is unable to supply the current request. Note: This error message is most likely to be seen if the particular zone is set as a Spear type.	 Isolate system supply, check loom and check heater wiring continuity. Check the heater resistance against other known good zones to see that it is not noticeably higher than average. 		
ERR!	Little or no temperature rise has been detected in that zone. When the console starts to apply power it expects to see an equivalent heat rise at the thermocouple. If the thermocouple has been trapped and pinched in the tool or cable then the console cannot see the full heat rise that occurs at the tip. If left uncorrected there is a danger that the zone could overheat and damage the tip. The circuit maintains the output at whatever level it reached when the monitor circuit detected the fault.	 Check thermocouple wiring, which may be reversed. Heater wiring may be faulty or element may be open circuit. 		
FUSE	 I he output fuse for that zone has failed. IMPORTANT: Read hazard warnings at the start of Section 8. IMPORTANT: A fuse can only fail due to a fault external to the controller. Identify and rectify the fault before replacing the fuse. Note: If the fuse in question is mounted on a control card then it is safe to unplug the board in order to isolate the circuit and replace the fuse on the card. 	 Replace the fuse with one of the same rating and type [High Rupture Current load fuse]. NOTE: The blown fuse is located on the control card. 		
GND HELP	 The system has detected an earth fault. There is a system failure and the console does not know how to respond. This alarm may occur if an older model console is connected to a later version cabinet. If the early version console does not recognize an alarm that has been generated by a later model control card, then it cannot display an appropriate alarm message. The console software has a routine to check incoming messages and it flags up a HELP message if such a condition arises. 	 Check your heater wiring for a low impedance path to earth. Make a note of the serial numbers for both the controller and console. Also note the console software date on Information screen. Contact your supplier with this information. 		
HTR!	The heater resistance is not what is expected or the heater is open circuit.	Check heater resistance is correct with a meter.		

9.4 Fault and Warning Messages



	Table 8-1 Fault and Warning Messages					
Error Message	Cause	Action				
HIGH / LOW	The waterflow sensor has detected a high flow rate. The waterflow sensor has detected a low flow rate.	 Waterflow is a monitored condition only. These messages will not cause a pause or shutdown of the system. The coolant water system should be checked for blockages and leaks to ensure that overheating does not occur. 				
LINE	No mains supply synchronization pulses being received. The three-phase supply is used in a crossover detection circuit to generate timing pulses for accurate phase control and firing the triac. If the phase detection fails on one or two phases then there is no pulse to use to measure phase angle and the LINE error message is generated. All circuits on the healthy phases will continue to work normally.	 There is a phase detection circuit on each card and a common phase detection circuit on all other controller types. Although a fault in such circuits may cause the LINE error message, such fault is very rarely seen. The most common error is either the absence of one phase or, if a plug has been rewired incorrectly, a swapped phase and neutral. If a LINE error message occurs then switch off and isolate the controller and check supply wiring for presence of all three phases. 				
LINK	The console is switched to a remote controller with a network link but it cannot communicate with the remote unit. The console can display the appropriate zones for the particular tool but it cannot relay any temperature information. It shows a LINK fatal error in place of the actual temperature.	Check that the network link is good and / or the remote controller is still switched on and available.				
LOAD	In a Normal System The zone detects a potentially higher current draw than its maximum specification.	 Isolate the system power supply, and check the resistance of the tool. 				
	In a Spear-Seki System No load on that zone. Only occurs when in the manual closed loop mode where the current is preset. The current sensing circuit has not detected a current flow. The zone is flagged as not having a load.	 Isolate the system power supply, and check the connections between the controller and the tool heaters. Also check the heater for continuity. 				
OVER	The RTD zone has detected a temperature above 99°C. RTD circuits can only read from 0-99°C so a fault is likely and needs to be investigated. Note : no control zones are affected.	 Check that a different RTD has not been fitted. 				

Fault and Warning Messages - continued



	Table 8-1 Fault and Warning Messages				
Error Message	Cause	Action			
N/Z	The console has detected a control card but the card cannot communicate with the console.	 If all zones show N/Z and no cards show / flash their SCAN LEDs, check the communication lead between the console and the controller cabinet. If only one or two zones show N/Z, check the card for faults. 			
NONE	The console has detected a control card that has no settings.	 This error message may be seen briefly during switch on, but it should disappear after the initial card scan. If the message persists then you may need to reapply the correct card settings. 			
REV	The card has detected an abnormal input at the thermocouple termination that indicates a shorted or reversed thermocouple.	 If the REV alarm persists then you should switch off the controller and investigate the malfunctioning zone. Alternatively you could slave the malfunctioning zone to a good zone until you have time to clear the fault. 			
RTD	The RTD monitor cannot see an input. (RTD is open circuit)	Check the RTD and its wiring for a broken connection.			
T/C	An open circuit thermocouple (T/C) has been detected and no auto response has been selected in the T/C Open Error column on the Settings screen.	 For immediate recovery: Slave that control zone to an adjacent zone OR change to open loop control. When the controller is free, check to see whether the input fuse on the control card has ruptured. If the fuse is good, then check the wiring for faults or replace the thermocouple. 			

Fault and Warning Messages - continued



Section 10 - Hot Runner Controller Wiring Details

10.1 Three Phase Designation - Star / Delta Option



WARNING

Ensure you have fully read "Section 3 - Safety" before connecting the controller.



WARNING - HIGH VOLTAGE

Please take extreme care when connecting the controller to the threephase supply.

Do not change the supply wiring until the controller has been disconnected from all electrical supplies.

If you change the configuration from Star to Delta, then the neutral wire must be disconnected and made safe in order to protect from a live back feed.



CAUTION

Incorrect connection to a Star / Delta configuration can damage the controller.

The following standards only apply to controllers wired to *Mold-Masters* standard. Other specifications may have been stated when the controller was ordered. Please refer to the supplied specification details.

The controller is normally supplied in either a Star or Delta supply. Some models may have a dual supply option which accepts either Star or Delta 3-phase supply.



IMPORTANT

The Delta supply cable does not have a neutral wire.

Cable colors may vary. Always wire up according to the cable markings. See Table 10-1.

Table 10-1 Cable Markings			
Cable Marking Supply Description			
L1	Phase 1		
L2	Phase 2		
L3	Phase 3		
N	Neutral*		
Earth Symbol	Earth		

*The Delta supply does not have a neutral wire.



10.2 Connect the Star / Delta Option

If the cabinet has the dual supply option, there are two places in the cabinet that must be altered to switch between Star and Delta supply.

At the upper connection blocks, change the Star / Delta crosslinks using a single 3-way link for Star supplies or three 2-way links for Delta supplies. The upper connection blocks are accessed from the front of the cabinet, and they are located just below the top of the cabinet. At the base of the cabinet is the mains connector strip that will accept a Star or Delta supply cable.

Update the supply-voltage rating label on the back of the controller after changing the connection of the supply input voltage.

See "10.2.1 Set Power Rail to Star Configuration" and "10.2.3 Set Power Rail to Delta Configuration" for further information.

10.2.1 Set Power Rail to Star Configuration



WARNING

Ensure that the controller has been isolated from all power sources before the wiring is changed.



Figure 10-1 Connect the neutral - position shown by blue arrow





Figure 10-2 Install the 3-way link

10.2.2 Star Supply Wiring



WARNING

Ensure that the controller has been isolated from all power sources before the wiring is changed.



IMPORTANT

Use only a 5 core supply cable for Star connection.



Figure 10-3 Star supply wiring





WARNING

Ensure that the controller has been isolated from all power sources before the wiring is changed.



Figure 10-4 Remove the neutral - position shown by blue arrow



Figure 10-5 Install the three 2-way links



10.2.4 Delta Supply Wiring

WARNING

Ensure that the controller has been isolated from all power sources before the wiring is changed.



IMPORTANT

Use only a 4 core supply cable for Delta connection.



Figure 10-6 Delta supply wiring

10.3 Loom Thermocouple Cables



CAUTION

Ensure the correct rating of cable is used.

The thermocouple cable can use a multicore cable or a conduit with individual conductors. Refer to Table 10-2 for color information.

Table 10-2 Thermocouple Conductor Colors					
Type Positive Negative					
J	White	Red			
К	K Yellow Red				

10.4 Loom Power Cables



CAUTION

Ensure the correct rating of cable is used.

A power cable can use a multicore cable or a conduit with individual conductors. Refer to Table 10-3 for more color information.

Table 10-3 Power Cable Conductor Colors					
Three Phase Type	Supply	Return			
Star or Delta	Brown	Yellow			



10.5 Alarm Output / Auxiliary Input

An optional cabinet connector provides an alarm output from an internal set of relay contacts. Using an external power source, the cabinet can initiate a number of warning devices whenever any zone goes into an alarm state.

This is commonly used for beacons, audible alarms or informing the molding machine. In order to capture fleeting alarm conditions, the relay is held on for about 15 seconds after the alarm condition is cleared. The contacts are rated for 5A at 240V.



Figure 10-7 HAN4A connector

Table 10-4 Alarm / Auxiliary Pin Connections			
Pin	Connection	Input / Output	
1	Auxiliary input signal	Standby	
2	Auxiliary input ground		
3	Alarm 240v contact 1	Normally Open	
4	Alarm 240v contact 2	Contacts	

An optional input can be accepted through the same connector. It may be used for cycle synch spear tips, Inhibit mode, remote Boost or Standby or any other user definable function. For exact details, consult the specification for your particular model.

10.6 Serial Port

A male 9-way D-panel connector can be provided for an RS-232 serial port, which is used to communicate with a remote computer for data collection.



Figure 10-8 RS-232 serial port (9 pin male) The pin outs can be found in Table 10-5:



Serial Port - continued

Table 10-5 Serial Port Pin Connections					
Pin	Pin Connection				
1	-				
2	Transmit				
3	Receive				
4	-				
5	Ground				
6	-				
7	Handshake				
8	-				
9	-				

10.7 USB Port

A USB port is provided which enables certain functions such as:

- backup and restore tool settings
- save tool test results
- printer output

Table 10-6 USB-A Port Pin Connections		
Pin Connection		
1	VCC (+5 V)	
2	Data- (D-)	
3	Data+ (D+)	
4	GND	



Figure 10-9 USB-A port

10.8 Filter Option

In countries where noise across power lines is a concern, *Mold-Masters* recommends that an inline filter is fitted. Please contact *Mold-Masters* for details.



10.9 Wiring Schematic

Figure 10-10 Wiring schematic





Section 11 - Water Manifolds



WARNING

Ensure you have fully read "Section 3 - Safety" before installing or connecting systems to the controller.

11.1 Introduction

The M2 Plus controller provides a compact system for monitoring the coolant system within a mold.

The standard system includes a controller cabinet with the following:

- analogue input cards
- · other control cards as required
- one or more water manifolds with flow sensors and / or pressure sensors
- sufficient data cable to link the manifolds to the cabinet

11.2 Installation



The coolant system should be plumbed in by a qualified fitter ensuring that the flexible coolant pipes are not trapped by moving parts or kinked by being stretched around corners or similar obstructions.

There should be a main flow and return shutoff valve provided so that the water manifolds may be easily isolated for repair or maintenance.

Do not use any liquid sealant that may contaminate the coolant circuits.

The water manifolds should be firmly mounted in a position that will not be subjected to excess heat, vibration or other undue stress.

The cables that connect the water manifold to the controller are marked for identification and should be connected to the appropriately marked sockets on the sensors and the controller.

The cables should be adequately supported using suitable cable tray or individual cable cleats in accordance with the current IEEE Regulations for Electrical Installations.



11.3 Monitor Coolant Properties

Three different coolant properties can be monitored:

1. Temperature

- · there is a choice of two main cards to monitor water temperature
- the WT4 card has 12 thermocouple inputs
- the 12RTD has 12 resistive temperature device inputs and is often the preferred device for this application

2. Flow

- many analogue devices give a standard 0-20 mA output that is proportional to the measured water flow
- any one of these devices may be connected to one or more of the eight channels available on the AI8 analogue card

3. Pressure

- many sensors that give a 0-20 mA output
- they can be connected independently to an AI8 card

11.4 Display for Water Flow Zones

Figure 11-1 shows a Display screen with water flow zones and cavity zones.

The Display screen and the Graph screen work the same way for water flow zones as for other types of zones.



Figure 11-1 Display screen with water flow zones

For a description of the information displayed on water flow zones, see "Flow Zone Panel Display" on page 11-3.

For more information on how to detect and configure these zones, see "11.6 Detect and Configure Water Flow Zones" on page 11-4.



Display for Water Flow Zones - continued

Table 11-1 Flow Zone Panel Display			
Display	Description	Notes	
Cavity 4	Green on black display indicates healthy zone.	Will display "N/Z" if communications fail. Will display warning or alarm conditions with color and message.	
26°C ← •	The cavity card is being used to monitor temperature.		
+1.0 D	The Delta difference in temperature.		
Flow 1	The flow card has healthy communications with the console.	Will display "N/Z" if communications fail. Will display warning or alarm conditions with color and	
4.9		message.	
5.0L	The set flow rate.	In liters or gallons, as set.	
73.0 %	The actual level of valve openness, in percent.	100% = fully closed valve.	
10173 Re	The Reynolds alarm number.		
Flow 2	This zone shows "MAN" as it is a closed loop system.		
MAN	The set level of valve openness, in percent.		
74%			
0.0 %			





11.5 Configuration

IMPORTANT

Probe and manifold heater zones need to be setup before the user can start coolant monitoring.

Once the manifold has been installed, the controller may be switched on and setup.

To detect and setup the cards for flow and sensor channels and the control zones see "11.6 Detect and Configure Water Flow Zones" on page 11-4.

To configure the flow zones, see "11.7 Configure Water Flow Zones" on page 11-7.

11.6 Detect and Configure Water Flow Zones

The console will detect the analogue cards in the system.

1. Choose [ToolStore]:



2. Choose a blank tool slot:

	Bank 6	Bar	*7	Bank B	Bar	k9	Bank 10	Detect
	Dank 1	Der	nik Z	Bank 3	Ba	#4	Bank 5	8
Tool #	Tasi ID	Tack None	Tor	i Notes	Last Modifier	Sequence	Connection	Restore
5	5	402+SVG	24 (AVITY			Demo Mode	A
6	8	40zone	32 cavity	+ water + IO			Demo Mode	Save
7	7	60zone	48 Ca	iny + 30A			Demo Mode	
8	в	6020me	48 Ca	villy + 30A			Demo Mode	
9	9	8 zene	8 Cavi	ty + MFIO			Demo Mode	
10	10	All Zones					Serial Port	
11	-11	NPE_WATERFLO					Serial Port	Delete
12	12	waterflow					Serial Port	\mathbf{x}
13	13	testy			12:50 13/04/18		Demo Mode	Cancel
14	14	linus			18:44 12/04/18		Serial Port	
15								
16	°							
17						-		

3. Choose [Detect]:



4. Enter password, if required.



5. Enter tool name:



The Analogue Input cards are detected and presented as a number of flow or pressure sense channels.

Card	Туря	AMPESS	Homen Power	Ground Protection	othet.	Speed	Gener	Display Graup	Statup Stap	States		: 1 01
(104)	10-1	25						1				rec.
P	Cavity 1	# 135			0.0			1				Confi
E	Cavey 2	# 135	_		0.0			1				
	Cavity 3	# 135			0.0			1				Bare
State .	Cavity 4	# 125			0.0			1				
- E	Cavity 5	# 135			0.0			<u>.</u>				
	Cavity 6	# 135	_		0.0			-1C			8	
	Cavity 7	# 135			0.0			1.				
	Cavity 8	# 135			0.0			1				
	Cavity S	# 135			0.0			1				X
-	Cavity 10	# 135			0.0			1				Cerv
	Cavity 11	#135			0.0			1				A
	Cavity 12	#135			0.0			- 8.				Prin
	Flow 1	#135				Auto	1-15 km	13				

Figure 11-2 Analogue input cards and manifold in ToolStore

The system will automatically detect 12 manifold zones.

6. If the number of actual zones is less than 12, set any extra zones to unused.



WATER MANIFOLDS

If the water manifold is like any of the following 4-port, 8-port or 12-port versions, the controller will show 16 cavities and 12 flow channels even though the manifold has only 4, 8 or 12 ports.



All unused zones must be set as follows.

7. To configure a 4-port water manifold, set the Type of cavities 5 to 12 to "Not Used", and set the Type of flows 5 to 12 to "Not Used".

Cert	Туре	Rick	Maximum Surpoint	Ministratio Surgeshift	Madesara Perent	Ground Protoction	Offset Vistor	Special	Beeser	Chaptery Group	Startup Utage	Shatidown Stagel	Readings Zwg
-	Cavity I	# 150	200,0	120.0			0.0			1		1	
- E	Cavity 2	# 150	200.0	129.0			0.0			1			
	Cavity 3	# 150	200.0	120.0			0.0			1			
diate .	Cavity 4	# 150	200.0	120.0			0.0			1			
1 E		# 150											
5		# 150											
		# 150											
		#150											
		# 150											
		#150											
		# 150											
		# 150											



8. To configure an 8-port water manifold, set the Type of cavities 9 to 12 to "Not Used", and set the Type of flows 9 to 12 to "Not Used".

Cert	Турн	Rick Allevise	Manimum Surpoint	Ministration Surgestern	Madenari Perer	Ground Protection	Offset Vistor	Spend	Beeser	Despiser Group	Startus Iltege	Shahdrovn STogel	Finadings Zwg
-	Cavity I	# 150	200,0	120.0			0.0			1			
- E	Cavity 2	# 150	200.0	129.0			0.0			1			
105	Cavity 3	# 150	200.0	120.0			0.0			1			
diate .	Carity 4	# 150	200.0	120.0			0.0			1			
1 E	Cavity 5	# 150	200.0	120.0			0.0			1			
8-	Cavity 6	# 150	200.0	129.0			0.0			1			
	Cerity 7	# 150	200.0	120.0			0.0			1			
	Cavity 8	# 150	290.0	120.0			0.0			- 1			
		# 150											
		# 150											
		# 150											
		# 150											

A 12 port water manifold has all the correct cavities enabled upon detection.

Cert	Туре	Rick AMPres	Managers Surpoint	Ministratio Surgeoixed	Madesara Pererer	Ground Protoction	Offset Value	Spend	Beeser	Despiny Group	Startup Utage	Shatidawa Shaga	Readings Avg
	Cavity I	# 150	200,0	120.0			0.0			1			
	Cavity 2	# 150	200.0	129.0			0.0			1			
und a	Cavity 3	# 158	200.0	120.0			0.0			1			
Auto	Carity 4	# 150	200.0	120.0			0.0			1			
1 E	Cavity 5	# 150	200.0	120.0			0.0			1			
8	Cavity 6	# 150	200.0	129.0			0.0			1			
	Cevilty 7	# 150	200.0	120.0			0.0			1			
	Cavity 8	#150	290.0	120.0			0.0			- 4			
	Cavity 9	# 150	290.0	129.0			9.0			- 10			
	Cavity 10	# 150	200,0	120.0			0.0			1			
	Cavity 11	# 150	200.0	120.0			0.0			1			
	Cavity 12	# 150	200.0	120.0			0.0			1			

i

NOTE

page 5-5.

You can set the flow zones to [**Monitor**] to monitor the temperature of the flow zones.

For more information on setting zone types, see "5.3.1 Set Zone Types" on

You can set the flow zones to [**Special**] if the flow control option is available.

11.7 Configure Water Flow Zones

Flow zones can have some parameters that are set individually. Other settings are configured for all flow zones.

11.7.1 Configure Water Flow Parameters - Zone by Zone

1. Choose [Settings]:





2. Choose the required zone or zones:

Display	C) ToolStore	축로 Apps	CC Bestings	Graph	Dictures		Shutdo	erri Star	S Tup Si	00 andby	() Biest	0
Cret	Тури	Bernall There	Dies.P. Temp	Stack. Romp	biaster Zona	viani Hgh	Warn Low	Alartsi High	Alarm Leve	Asietta Pow	4	O Set
	Cavity 12					5.0	5.0	25.0	25,0			:68
	Flow 1					1.0	1.0	2.0	2.0			Config
	Flow 2					1.0	1.0	2.0	2.0			
	Flow 3					1.0	1,0	2.0	2.0			Ranne
	Flow 4					1.0	1.0	2.0	20			
	Flow 5					1.0	1.0	2.0	2.0			
	Flow B					1.0	1.0	2.0	2.0			
	Flow 7					1.0	1.0	2.0	2.0			
	Flow B					1.0	1.0	2.0	2.0			
	Flow 9					1.0	1.0	2.0	20			×
	Flow 10					1.0	1,0	2.0	2.0			Cancel
	Flow 11					1.0	1.0	2.0	2.0			A
	Flow 12					1.0	1.0	2.0	2.0			Print
	Gavany Cl					5.0	5.0	25.0	25.0			
									ACC ACCORD			
lode	STOPPED	Zone Sel	ection Activ				03 May 2	918 16:21	Syste	em s	tatus 🔡	ORMAL

3. Choose the parameter column:

Display	D ToolStore	註 Apps	CE Settings	Graph	ික Pictures		Shetdo	an star	tup St	00 andby	GG BOOM	١
Carl.	Туре	Does1 Time	Slock. Temp	Illach Biarap	Master Zoni	Warn 14gh	Vin Lov	Alarni High	Alana Low	Auron Perer	4	O Set
	10.000				1	5.0	5.0	25.0	25.0			62
	Flow T	2				1.0	1.0	2.0	2,0			Config
	Flow 2					1.0	1,0	2.0	2.0			
	Flow 3					1,0	1.0	2.0	2,0			Pre-
	Flow 4					1.0	1.0	2.0	2.0			Made
	Flow 5					1.0	1.0	2.0	2.9			
	Flow 6					1.0	1.0	2.0	2,0			
	Flow 7					1.0	1.0	20	2.0			
	Flow E					1.0	1,0	2.0	2.0			
	Flow 9					1.0	1.0	2.0	2.0			×
	Filow 10					1.0	1.0	2.0	2.0			Cancel
	Flow 11					3.0	1.0	2.0	2.0			A
	Flow 12					1.0	1.0	2.0	2,0			Pitt
	Gaily B					5.0	5.0	25.0	25.0			
	1											
Node		Zone Sol	ection Activ	N			03 May 2	018 16:20	Syste	m s	tatus 🕺	ORMAL

4. Choose [Set]:



- 5. Enter the required value or choose the required option.
- 6. Repeat for each parameter that requires adjustment.


1. Choose [Settings]:



2. Choose [Config]:



3. Enter password, if required.

The Settings box opens:

ⓒ운 Settings					
System Settings					
User Admin	User Access	Oate/Time	Printers	Network	Network Share
System Config					
Tool Settings					
Guadio	Oc svg				
H Back					

4. Choose [System Config] from System Settings.

The System Config box opens:

Mow Global Set	Terror terror
Allow Global Set	Select option from list
Allow Toolload	
allow Standby	
Slanking Delay	
Baud Rate	
Calibrate Touch	
	CK

- 5. Choose the required settings.
- 6. Enter the required values or options.



7. Choose [**OK**] to accept the new value or choose [**Back**] to return to the System Config screen without saving.

11.7.3 Configure Tool Settings for Flow Zones

1. Choose [Settings]:



2. Choose [Config]:



3. Enter password if required.

The Settings box opens:

ⓒ定 Settings					
System Settings					
User Admin	User Access	Date/Time	Printers	Network	Network Share
System Config					
	~	.			
Guadio	SVG	Tool Config			
- Back					

4. Choose [Tool Config] from Tool Settings.

The Tool Config box opens:

Button Two	Select option from list
Display Mode	
Flow Units	
Ground Warn Limit	
nput Timer	
	Action
	✓ OK 📄 View



5. Choose [Flow Units]:

isplay Mode	Flow Units
low Units	Select the desired units for the flow annes
aput fimer	
Power Mode	
Power Alarm Delay	Litres Gallons
	Action III Have

- 6. Enter the required value or option.
- 7. Choose [**OK**] to accept the new value or choose [**Back**] to return to the Tool Config screen without saving.



IMPORTANT

The user must save the tool in the ToolStore to save these changes permanently. See "6.11 Save a Tool" on page 6-21 for more information.

11.7.4 Configure the Delta-T Values for the Flow Zones

The Delta-T values are calculated by measuring the temperature of the incoming water and comparing it to the temperature of the water for each cavity (flow channel) when the water returns from the mold. For each water manifold, cavity 13 measures the temperature of the incoming water.

1. Select the cavity zones. (Cavities 1 to 4 are selected in the following image.)

Cert	Турн	Rick -	Management Surpoint	Melenen Setpont	Matterart Perent	Ground Protection	Offset Visker	Spend	Berner	Degetary Group	Startup Stage	Shuhdrove STage	Finalings Avg
-	Cavity 1	#150	290,0	129.0			0.0			1			
E	Cavity 2	#150	200.0	120.0			0.0			1			
	Cavity 3	# 150	290.0	120.0			0.0			1			
diam'r	Cavity 4	#150	200.0	120.0			0.0			1			
E		# 150											
		# 150											
1000		# 150											
		# 150											

2. Select the Set button.



3. Enter the password, if required.



The Configure Card Slot dialog box opens:

Туре	Panel Colour Picker	_	
Not Used			
Probe			-
Manifold			
Spear	Delta T And Energy S	etup	
	Module ID	150	>
Monitor	Cavity Zone	None	>
Special	Flow Zone	None	>

4. Select [Cavity Zone]

A zone selection box opens:



- 5. Select the name of the incoming water cavity zone (for example, "Inlet 1", and select the OK button.
- 6. Repeat the previous steps to link the remaining flow zones.

11.7.5 Set the Flow Zone Parameters

1. Choose [Settings]:





2. Choose the flow zone(s):

C Display	C) ToolStore	章章 Apps	Settings	Graph	6 Pictures		Shuldo	AN Star	tup SI	00 andby	Boost	O
Carl	Тури	Durat Tatar	Do.a. Terty	Elsocit. Risinge	Master Zene	Warm High	Warn Leve	Alarta Nagh	Aliansi Lonv	Alarm Pew	2	O Set
	Cavity 11					5.0	5.0	25.0	25.0			168
	Flow 1					1.0	1.0	2.0	2.0			Coving
	Flow 2					1.0	1.0	2.0	2.0			
	Flow 3					1.0	1.0	2.0	2.0			Races
	Flow 4					1.0	1.0	2.0	2.0			
	Flow 5					1.0	1.0	2.0	2,0			
	Flow 6					1.0	1.0	2.0	2.0			
	Flow 7					1.0	1.0	2,0	2.0			
	Flow 8					1.0	1.0	2.0	2.0			
	Flow 9					1.0	1.0	2.0	2.0			×
	Flow 10					1.0	1.0	2.0	2,0			Cancel
	Flow 11					1.0	1.0	2.0	2.0			A
	Flow 12					1.0	1.0	2.0	2.0			Print
	Calify 18	1				5.0	5.0	25.0	25.0			
	10					1		-	-			
Mode	STOPPED	Zone Sel	ection Activ	10			03 May 2	018 16:21	Syste	om s	tatura 🗾	NORMAL

3. Choose [Set]:



4. Enter password, if required.

The Configure Card Slot box opens:

Туре	Panel Colour Picker	-	-
Not Used			
Probe			
_ Manifold			
Spear	Reynolds Number Setup		
Contraction of the	Cavity Zone	None	>
Monitor	Pipe Diameter (Inches)	0.50	>
Special	Reynolds Alarm	4000	>
	Valve Control Setup		
	Control Zone	None	>

5. Choose [Cavity Zone].



6. Choose an associated cavity zone (for example, Cavity 2).



7. Choose [Pipe Diameter (Inches)]:



- 8. Enter the pipe diameter, in inches.
- 9. Choose [Reynolds Alarm].

A keypad opens:



- 10. Enter the Reynolds number alarm value.
- 11. Repeat the previous steps for each flow zone.



11.8.1 Configure Flow Zone Output

Flow zone output must be set properly for closed loop operation.

1. Choose [Settings]:



2. Choose flow zones and choose the column [Output]:

Display	D ToolStore	\$ ⊊≣ Apps	CC Settings	i <u>ca</u> Graph	50 Pietar	. G	s Shutde	iwn Start	LIP 618		
Carel	Тури	Rach.	House ware	Ground Protection	TC officient	Speed	Secor	Output	Display Group	Eteriop 1 Stage	् Set
1	Flow 1	T	100				Type J	PWM	0		62
AND	Flow 2	ž	100				Type J	PWM	0		Contig
	Flow 3	з	100				Type J	PWA	0		
	Flow 4	4	100				Type J	PWM	0		Ranne
1000	Gate 1	5						-	1		3/0465
SVO	Gifte 2	6							3		
	Gitte 3	7							-1		
	Gate 4	0							- T		
	Gate 5	. 9							1		
	Gate N	10							1		
	Gate 7	11							1		Cancel
	Gets 8	12							- 1		a
	Gite 9	13							1		Print
	Gabe 10	34							- E		
								1000			
Mode		Tool ID #	3: M2P-Vari	ent			13 Jan	2022 17:00	Syster	n Status	ALARM

3. Choose [Set]:



An output selection box opens:

0-10V	
4to20mA	
PWM	





NOTE

The default value is set as PWM [pulse width modulation].

4. Choose the system's valve type or choose [**Cancel**] to return to the Settings screen.

11.9 Set the Flow Rate

From the Display screen,

1. Choose the required zone or zones:

Display ToolSt) 🚉 lore Apps :	ිම් 🖂 Settings Graph	50 Pictures	Shutdown	n Startup Sta	ndby Docst	0
Cavity 1	Cavity 2	Cavity 3	Cavity 4	Flow 1	Flow 2	Flow 3	O Set
24.8	26.0	24.2	25.6	1.5	LOW	4.5	۵
25°C	25°C	25°C	25°C	2.5L	4.5L	4.5L	zoom
						83.0 %	↔ Rangs
Flow 4	Flow 1	Flow 2	Flow 3	Flow 4			
5.6	MAN	MAN	MAN	MAN			Zone
5.5L	100%	100%	83%	72%			
72.0 %	0.0 %	0.0 %	0.0 %	0.0 %			zone
							X Cancel
							- Drint
Mode	Zone Select	ion Active		05 Apr 20	18 14:47 Facto	ry Status	NORMAL

2. Choose [Set]:



A keypad opens:

	n de la co			
Value	🖌 Set	1	Add	_i Subtra
Esc	,	•	•	Delete
	•	•	•	
	1	a l	•	Enter
ott				1

- 3. Enter the required flow rate.
- 4. Choose [**Enter**] to accept the new rate or choose [**Esc**] twice to return to the previous screen without changing the flow rate.



11.10 Turn Flow Zones Off and On

The user can also choose to turn flow zones off or on with the process from Section 11.9.

Choose [Off] or [On] from the keypad, as applicable.



Section 12 - Optional Cards

Extra facilities that can be fitted to the M2 Plus controller.

12.1 16DLI - 16 Channel Digital Logic Input Card

- The Digital Logic Input card can be supplied wherever there is need to accept a digital input.
- The input logic values are determined by software programming and they are not a user available function.

12.2 WT3 12 Channel RTD Input Card

- This card is used for cooling water measurement and display.
- The 12RTD is set up as a Special in the Configure Card Slot box.
- The measured temperature is displayed on the Display screen with a range of 0 to 99°C and resolution of 0.1°C.
- The RTD card has a proactive function which switches the operating mode to off if the detected temperature reaches the high level alarm point.

12.3 WT4 12 Channel Thermocouple Card

- This card can accept up to 12 zones for either J or K-type thermocouples.
- It provides channel monitoring with warnings and alarms.
- Monitored zones display as a normal cavity zone with actual temperature constantly displayed.
- The set temperature in the second box displays the nominal expected temperature.
- The lower and upper alarm levels are set around the set temperature.

12.4 AI8 - Analogue Input Cards

- The analogue input card has eight inputs that are used to read analogue output devices with an output range between 4 20mA.
- These inputs are usually associated with coolant flow detector devices that are calibrated for particular flow rates.
- If an analogue input card is detected by the auto detect procedure, the Settings screen displays an Analogue Input column.
- After selecting the flow zones and the Analogue Input column, choosing [**Set**] displays a range of devices that are known to match the analogue input.

12.5 AI04 - 4 Channel Analog Control Card

• 4 channel analog output card (PWM, 0-10V, 4-20mA).



Section 13 - Quad IO Options



WARNING

Ensure that you have fully read "Section 3 - Safety" before setting up or using this feature with the controller.

13.1 Quad IO Screen

The M2 Plus controller has the capability to accept Quad IO cards. If this option is available to the user, the parameters can be configured from the Settings screen.

1. Choose [Quad IO]:



The Quad IO Configuration box opens:

1	Them	410	Ov/Oper	N.S.W.
1	0	Fian	4	Ing Disable
2	0	Standay	2	Temp Dist.
3	0	Startup	3	Boost
40	0	Step		Inactive

Four inputs and four outputs are listed. The delay time and action columns are user configurable.



NOTE

The [**Accept**] and [**Cancel**] boxes stay greyed out and unavailable until the user changes a configurable parameter.

The user can also set a delay time for Quad IO inputs. The delay time is the time taken to start an action [**Run**], [**Standby**], [**Startup**] or [**Stop**] when a rigger is applied via the IO card. The delay time is set in minutes.



Quad IO Screen - continued

2. Choose the [Delay time], if required.

A keypad opens:



- 3. Enter the required delay time.
- 4. Choose an action box from the input column.

A selection box opens:

🗄 Select An item	
Inactive	
Boost	
Shutdown	
Passkey	
Machine OK	
Inj Confirm	
Sequence	
Cancel	

5. Choose the corresponding action box from the output column.

A selection box opens:

😑 Select An Rem				
Inactive				
Hot Runner				
Cavity Alarm				
Water Flow				
Stopped				
Controller Alarm				
Pressure Alarm				
Warn Alarm				
Inj Disable Ext				
Controller Ready				
Controller Heating				
Canoel				





Quad IO Screen - continued



NOTE

The [**Accept**] and [**Cancel**] boxes become available and the parameter(s) turn blue in color after any change is made by the user. See Figure 13-1.

uad IO	Configuratio	n		
Input	Delay Time	Action	Output	Action
1	0	Run	1	Inj Disable
2	0	Standby	2	Temp Dist.
3	0	Startup	3	Water Flow
4	0	Stop	4	Inactive

Figure 13-1 Quad IO Configuration box - parameter changed

6. Choose [Accept] to confirm the setting or [Cancel] to return to the original setting.

The changed parameters turn black in color to indicate they are saved.

7. Choose [Back] to return to the Settings screen.

For more information about Quad IO inputs and outputs, connections and remote access see "Section 13 - Quad IO Options" on page 13-1.

Table 13-1 IO Card Display Screen Panel					
Display	Description	Notes			
	The IO card has healthy communications with the console.	Will display "N/Z" if communications fail. Will display warning or alarm conditions with color and message.			
23 ² 25°C	The IO card is being used to monitor temperature.	Set temperature used as a monitor point only. Warning settings are above and below set temperature.			
0000 ← ●	State of inputs.	Read left to right.			
0010	State of outputs.	Read left to right.			



13.2 Quad IO Card Reset Timer

13.2.1 Set the Quad IO Reset Timer

The Quad IO card has an internal reset mechanism which de-energizes all output relays if it loses communication with the console. The timer can be set according to operation requirements.

1. Choose [Settings]:



2. Choose [Tool Config]:



- 3. Enter password, if required.
- 4. Choose Quad IO Reset Timer from the options list. See Figure 13-2.

Power Alarm Delay QuadIO Reset Time Second Startup Soak Timer	Guide Reart Time Onlay in seconds to reset the Guide output it moved messages are detected		
Stack Mold Standby Temp	Time (Sec.) 0 >		
	Action		

Figure 13-2 Choose Quad IO Reset Timer

5. Choose [Time (Secs.)].

A keypad opens:

Time (Sect.)			-
			Delate
	•	Ŀ	
	•	•	844

6. Choose [**OK**] to accept the new value or choose [**Back**] to return to the System Config screen without saving.





Each input circuit requires an incoming pair that is volt-free and normally open. The incoming pair must go to short circuit (or close) to trigger the required command.

Table 13-1 Quad IO Inputs				
Option	Description			
Boost	Puts the controller into Boost mode.			
Inactive	This input will not be used and remains inactive.			
Inj Confirm	This input is used to confirm that Inj Disable is functioning correctly.			
	If input is detected and no Inj Disable signal is given, the system enters a safe mode until the fault is fixed.			
	A manual reset is then needed to unlock the controller.			
Machine OK	When closed, console can go to Run mode or Startup mode.			
	When opened, the console is put into Stop mode with Mold Protect.			
Passkey	Responds to an external cardkey reader, which is used to simulate User level authentication.			
	A passkey input then allows any operation which would normally require a User / Level 1 password.			
Sequence	This input can be used to initiate a sequenced startup, if one has been configured and is currently selected.			
	The input can last for a few seconds to initiate a start sequence and then removed.			
	The sequence can be forced through its stages in a reduced time if the user applies and removes input in quick succession.			
Shutdown	Puts the controller into Shutdown mode.			

See Table 13-1 for a list of the optional inputs.



13.4 Quad IO - Outputs

Each output group is a single-pole changeover relay element that is rated at 240 volts, 1 Amp maximum. It comprises a common or moving contact (MC) that is connected to a normally closed (NC) contact when de-energized. When the controller activates any output channel the normally closed (NC) and moving contact (MC) go to open circuit while the normally open (NO) and moving contact (MC) go to short circuit.

See Table 13-2 for a list of optional outputs.

Table 13-2 Quad IO Outputs					
Option	Description				
Boost	Output is given if the controller is put (locally or remotely) into Boost mode.				
Cavity Alarm	Output is given if any cavity zone (usually an RTD sensor) deviates from its set temperature enough to generate a second stage alarm.				
Controller Alarm	Output is given if any alarm is generated. Mimics the secondary output alarm / beacon.				
Controller	Output is given if the controller is delivering heat in any mode.				
Heating	Output is lost when the controller is put to Stop.				
Controller	Output is given if the controller is ready to start.				
Ready	There must not be an alarm condition that stops the machine from operation for this output to be given.				
Controller Soaking	Output is given if the controller is held in Soak mode.				
Hot Runner	Output is given if any probe (nozzle) or manifold deviates from its setpoint enough to generate a second stage alarm.				
Inactive	Output will not be used and remains inactive.				
Inj Disable	Output is seen if the system is idle.				
	Output is cleared once the system has started up and gone into Run mode.				
	Output is given if system has an out-of-limits alarm ONLY. No other alarm will cause output to be given.				
Inj Disable Ext	Output mimics Injection Disable in order to provide two identical outputs.				
IO5 Tool Confirm	Output is given if the tool requested by the IO5 is the currently loaded tool.				
Pressure Alarm	Output is given if any pressure sensor gives a pressure reading that deviates from its setpoint enough to generate a second stage alarm.				
Stopped	Output is given if the controller is automatically put into Stop mode by any alarm condition.				
	It is not activated if the controller is manually put to Stop mode by the user.				
Temp Dist	Output is given if any Fatal Error occurs, for example Fuse or T/C.				
Warn Alarm	Output is given if the controller is in Warning Alarm status.				
Water Flow	Output is given if any flow sensor gives a flow reading that deviates from its nominal setpoint enough to generate a second stage alarm.				



13.5 Quad IO - Default Connections

The standard interface is a Harting STA 20 pin female connector within an H-A16 housing.

Input / output channels can be individually configured to assume different functions.

See Table 13-3 for a list of default IO connections.

Table 13-3 Default IO Connections					
Description	STA 20 Pin No.	Circuit	Default Input Function	Default Output Function	Wire Color
Input 1	1	Input 1	Go to Run Mode		Black
Input 1	2				White
NO Contact 1	3	Output 1		Injection	Red
MC Contact 1	4			Disable	Green
NC Contact 1	5				Orange
Input 2	6	Input 2	Go to Standby		Blue
Input 2	7		Mode		White/Black
NO Contact 2	8	Output 2		Temperature	Red/Black
MC Contact 2	9	1		Disturbance	Green/Black
NC Contact 2	10				Orange/Black
Input 3	11	Input 3	Go to Startup		Blue/Black
Input 3	12		mode		Black/White
NO Contact 3	13	Output 3		Boost	Red/White
MC Contact 3	14				Green/White
NC Contact 3	15				Blue/White
Input 4	16	Input 4	Go to Stop Mode		Black/Red
Input 4	17				White/Red
NO Contact 4	18	Output 4		Spare /	Orange/Red
MC Contact 4	19]		Inactive	Blue/Red
NC Contact 4	20				Red/Green



13.6 Remote Tool Selection

The IO5 card can enable remote tool loading. These extra functions connect to the remote machine using either a HAN16A connector or an AMP 183040 circular connector. See Figure 13-3.



Figure 13-3 Connectors

See Table 13-4 for pin connections.

Table 13-4 Pin Connections				
Pin	Function			
1	"Tool Load" signal from molding machine to ask console to load tool			
2	address 1			
3	address 2			
4	address 4			
5	address 8			
6	address 16			
7	address 32			
8	address 64			
9	address 128			
10	spare			
11	"Tool Loaded"	Normally Open		
12	signal from	Common		
13	console to molding machine	Normally Closed		
14	GND			

13.7 Remote Tool Loading

The IO5 can be used in two ways to enable remote tool loading.

13.7.1 Static Remote Tool Load

The static method is enacted by simply connecting appropriate "load" and "tool ID" pins to ground. The tool is loaded and feedback is ignored.

Load Tool 10 – connect, "load pin", and "tool id pins" to ground - connect pins 1, 3, and 5 to 14

Load tool 19 - connect pins 1, 2, 3 and 6 to 14



This sequence allows a degree of control and feedback.

The dynamic method sends a change tool command by connecting the "load" and "tool ID" pins to ground.

It then watches for a successful tool load before it ends the tool load process. The process can be repeated to load another tool, if required.

	Table	13-5	shows	an	exam	ple	of	this	process.
--	-------	------	-------	----	------	-----	----	------	----------

	Table 13-5 Dynamic Remote Tool Load Process							
Step	Action	Remote Machine	Local Console					
1	Selects a tool and initiates tool load.	Connects pin 14 (ground) to pins 3 and 5 (address 2+8 = 10) and pin 1 ("tool load").	Console checks to valid tool settings If "no" then there is no change in "Tool Loaded" signal.	o see that it has in that tool bank. If "yes" then it disables "Tool Loaded" signal. (pins 11 and 12 go "Closed" while pins 12 and 13 go "Open")				
2	Console cannot find any config settings for selected tool.	Machine sees that no tool change has occurred. It may flag an error to await operator intervention. Process ends.	The console displays an error message - "No Tool Found".	Process skips step 2 and goes to step 3.				
3	Console can find a tool and loads it.	Waits for "Tool Loaded" signal.	Loads Tool 10 and indicates process is finished by enabling "Tool Loaded" signal. (pins 11 and 12 go "Open" and pir 12 and 13 go "Closed")					
4	Process ends.	Sees "Tool Loaded" signal from console and disconnects pins 1, 3 and 5 from ground (pin 14).	Console loses the command.	"Change Tool"				



Section 14 - Sequence Valve Gate Option



WARNING

Ensure that you have fully read "Section 3 - Safety" before setting up or using this feature with the controller.

14.1 Introduction

The Sequence Valve Gate (SVG) card operates in a cyclic manner. It can open and close any of 12 remote gates up to four times during each cycle.



Figure 14-1 SVG card

Each zone is individually configurable to open and close in response to:

- Time to the nearest 1/100th second from receiving a cycle-start signal
- Position of the main barrel screw feed
- Pressure from a remote sensor located within the mold cavity
- A combination of these three triggers

Each zone has one digital output to activate a valve gate and two digital inputs to accept feedback signals, one to confirm that the associated gate is closed and another to confirm it is open.

14.2 Further Inputs

The card also has further inputs that affect the overall control.

There are four digital inputs which comprise

- · the Cycle Start input
- an Enable input which is closed while all systems are ready to continue molding
- two user definable inputs for other functions

There are three analogue inputs:

- two inputs are primarily used to receive a signal which is proportional to the physical position of two different screw feeds
- the third input is reserved for future development



14.3 Setup

The user must set up the number of open / close operations and the triggers for these actions to enable SVG functionality. The required parameters are:

- the number of zones under control
- the number of times the gates need to open and close during a complete cycle
- the configuration of the screw sensor to use barrel position for gate control

14.3.1 Configure SVG Card Type

1. Choose [Settings]:



2. Choose the zone or zones to be configured:

Cisplay	C) ToolStore	‡⊒e Apps	CC Settings	Graph Graph	Picture		Shel	deneri -	Startup	00 Standay	() Beest	١
Caral	Туре	Fort Address	Alina	iii	CC Open Moda	Selpart	Sharefuy Temp	livesi Tecqu	Decest. Tiese	Disch Temp	Elec- Banj	0 5et
-	Manifold 9	- 38	MANS	1 2	Normal	489	150	0	90	0	5°F/m	102
4400	Marifold 10	34	MAN 10	81 23	Normal	400	150	0	00	0	5°Fim	Covilia
	Manifold 11	35	MAN 11	- 3	Normal	489	150	0	99	ø	5°F/m	10000
	Marifold 12	35	MAN 12		Normal	489	150	0	90	0	S°F/m	Range
	Gate 1	45				02						
(SVO)	Gate 2	-46				0%						
	Gate 3	47				0%						
	Gate 4	48				0%						
	Gate 5	49				0%						
	Gate 6	50				0%						×
		51										Cancel
		52										8
		53										Print
		54									- 1	H
	2		1		j i					-		
lode 5	ICPPED	Zone Sele	ction Active				03 Ma	y 2018 2	2:09	Login	Status	DEMO

3. Choose [Set]:



4. Enter password, if required.



Configure SVG Card type - continued

The Configure Card Slot box opens:

Not Used Probe Manifold SVG Mode Select SVG Mode Standard	type	Panel Colour Picker		-
Probe Manifold Sycan Wonitor	Not Used			-
Manifold SVG Mode Select SVG Mode Standard	_] Probe			
SVG Mode Select SVG Mode Standard SVG Mode Standard	Manifold			
Monitor	Spear	SVG Mode Select	1	_
Y Special	Monitor	SVG Mode	Standard	>
	Special			

- 5. Choose [**Special**] as the card type.
- 6. Choose [OK] to accept the change and return to the Settings screen.

14.4 Configure SVG Mode

The SVG option of the M2 Plus controller can be used in two different modes:

- **Standard mode** user can configure motion control for gates. See "14.5 Standard Mode" on page 14-3 for more information.
- **Relay Output mode** a high temperature alarm from zones linked to specific gates produces a digital output, which can be sent to an external device. See "14.9 Relay Output Mode" on page 14-30 for more information.

14.5 Standard Mode

14.5.1 Global Settings

The user can configure settings that apply to all the gates. See Table 14-1.

	Table 14-1 SVG Global Settings					
Setting	Description					
Graph Mode	Choose type of graph based on time or position.					
Max Cycle TimeSet how long the cycle lasts. Used to display the graph.						
Monitor Time Set timeout value for the LS sensor to detect an error.						
Number of StepsSet number of steps [between 1 and 4].						
Valve Disable	Enable to only allow the pins to open if console is in Run mode and zones are in limits.					
Valve Type	Choose the valve type being used: single or dual.					



Global Settings - continued

After the card has been configured as [Special],

1. Choose [Settings]:



2. Choose [Config]:



3. Enter password, if required.

The Settings box opens:

िंद्ध Settings System Settings				
User Admin	User Access	Date/Time	Printers	Network Share
O				
System Config				
Tool Settings	~ °	4		
QuadIO	SVG	Tool Config		
🗲 Back				

4. Choose [SVG] from Tool Settings.

The SVG options box opens:

Graph Mode Max Cycle Time	Select option from list
Monitor Time	
Number Of Steps	
Valve Disable	
Valve Type	
	Action
	✓ OK i≣ View



Global Settings - continued

5. Choose the required setting:

Number Of Steps Select the number of steps you require
🗸 OK 🔶 Back

- 6. Choose the required value or option.
- 7. Choose [OK].
- 8. Choose [**Back**] to return to the Settings screen after all the required parameters have been set.



14.5.2 View or Print the SVG Settings

The current SVG settings are available to view or print.

1. Choose [Settings]:



2. Choose [Config]:



3. Enter password, if required.

The Settings box opens:

ලිළි Settings				
System Settings				
User Admin	User Access	Date/Time	Printers	Network Share
System Config				
Tool Settings				
QuadiO	SVG	Tool Config		
🗲 Back				

4. Choose [**SVG**] from Tool Settings.

The SVG options box opens:

Graph Mode	Et a sulla face face
Max Cuela Time	Select option from Int.
Max Cycle Time	
Monitor Time	
Number Of Steps	
Valve Disable	
Valve Type	
	Action



View or Print the SVG Settings - continued

5. Choose [View] from the Options list screen.



The SVG view screen opens:

Changes .	Connect Selling	
Graph Mode	Time	
Mex Cycle Time	10 Sees.	
Monitor Time	1000 ms	
Number Of Steps	3	
Valve Disable	Enable	
Valve Type	Dual	
		E Part Back

The user can print the SVG settings from this screen.

6. Choose [Print].

A message box opens:

•	Information
Print	ing please wait



NOTE

The user must choose the default print setting from the [**Printers**] screen. All output is sent directly to this default after the user chooses the [**Print**] button. No printer settings box will open.

See "5.15 Configure a Printer" on page 5-49 for more information.



14.6 Configure SVG Input - Digital

From the Display screen:

1. Choose any one of the SVG gates:



2. Choose Set:



3. Enter password, if required.

The gate trigger box opens. It lists the open / close steps for all of the SVG gates detected.

4. Choose [Inputs]:





Configure SVG Input - Digital - continued

The SVG Input Configuration box opens:

Digit	ar inputs		Anatogue Inp	uts
1	Used	1	Designation	Sensor Selap
A	Disabled	1	Disabled	
в	Disabled	2	Disabled	
1	Disabled	3	Disabled	
2	Disabled			
з	Disabled			

5. Choose [**Used**] from the Digital Inputs table.

A selection box opens:



- 6. Choose [**Enabled**] or [**Disabled**] as required, or choose [**Cancel**] to return to the SVG Input Configuration box.
- 7. Repeat step 6 for all gates.
- 8. Choose [OK] to return to the open / close list.



14.7 Configure SVG Input - Analogue IMPORTANT

Ensure that the wiring is correctly configured or the screw input cannot be calibrated. See "Figure 14-7 AMP04 connector 1" on page 14-35.

From the Display screen,

1. Choose any one of the SVG gates:

	ToolStore	Apps	C Setting	<u>لك</u> همين	h Pieta	2 #85	sh		Startup	00 Standby	(A) Result	٢
												0
	11-5	1.8.6	B 4	HE V	12.6	18 A	H S N	1.8.9	0.0	1.7.2		Set
483	483	483	483	483	483	483	483	483	483	483	483	~
22.6 %	21.6 %	21.0 44	23.6 44	21.6 56	21.6 44	21.6 14	21.6 %	21.6 %	21.6 %	21.6 %	21.6 4	Q
0.28 🔺	0.28 🔺	0.28 A	0.28	0.28	0.28 A	0.28 A	0.24	0.38 A	0.28 A	0.22 A	0.28 A	Zoom
493	483	483	483	483	483	483	483	493	493	483	493	\leftrightarrow
482°F	482"F	482'F	482°F	482"F	482'F	482'F	482"F	482°F	482'F	482"F	48219	Ronge
22.6 46	22.4 %	21.0 %	22.0 %	21.4 %	22.0 %	22.6 %	21.4 %	21.6 %		21.6 %	22.0 %	
0.25 A	0.20 A	8-200 JA	0.75 A	0.20	0.225 PA	0.25 74	0.20 K	0.28 M	19.20	0.78 K	10 AL	~
525	525	525	525	525	525	525	525	525	525	525	525	Zone
527"F	527"F	527'F	527"F	527"F	527°F	527"F	527"F	527°F	527'F	527°F	527°F	<u> </u>
0.0	0.0 %	8.0 8.00	0.0 %	0.0 %	0.0	0.0	-	0.0 0.00	0.0 %	0.0 A 90.0	0.0	Znano
fote 1	feet 2	Sec. 3	6 4 4 B	6 eres 3	Sets: 6	Date 7	344 3	344.0	Dese IX	Tere 11	Set 19	
CLSE	CLSE	CLSE	CLSE	CLSE	CLSE	CLSE	CLSE	CLSE	CLSE	CLSE	CLSE	×
												Cancel
												~
171												
0												Print
180%												
Mode	RUN	Zone S	election Ac	tive			05	Jul 2018 21	1:34 <mark>Sy</mark>	stem	Status	DEMO

2. Choose Set:



3. Enter password, if required.



Configure SVG Input - Analogue - continued

The Gate Trigger box opens:

Gate	Step 1 Open Trigger	Step 1 Open Value	Step 1 Close Trigger	Step 1 Close Value
Gate 1	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 2	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 3	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 4	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 5	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 6	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 7	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 8	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 9	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 10	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 11	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 12	Time (abs)	0.00 secs	Time (abs)	0.00 secs

The Gate Trigger box lists the open and close steps for all of the SVG gates detected.

4. Choose [Inputs]:



The SVG Input Configuration box opens:

,	Used		Designation	Sensor Seta
A	Disabled	1	Disabled	
в	Disabled	2	Disabled	
1	Disabled	3	Disabled	
2	Disabled	-		
3	Disabled			

5. Choose [Designation] from the Analogue Inputs table.



A selection box opens:

Disabled	
Enabled	

- 6. Choose [Enabled] or [Disabled], as required.
- 7. Repeat step 6 for all analog inputs.
- 8. Choose [Sensor Setup] from the Analogue Inputs table.

The SVG Screw Calibration box opens:

🚊 SVG Screw Calibrat	tion				
Screw calibration			Calibration Procedure		
Actual Input	0.00V		1) Set unit for calibration		
Unit MM Inch			 Set maximum screw length. Move screw to forward position. Press Forward. 		
Max. Screw Length	1000 mm	>	6) Press Back. 7) Press OK to store settings.		
Forward	0.00V	d>			
Back	5.42V	⇔			
			-		
			OK Cancel		

Figure 14-2 SVG Screw Calibration box

9. Choose [Max. Screw Length].



Configure SVG Input - Analogue - continued

A keypad opens:



- 10. Enter the value for your system.
- 11. Follow the calibration procedure as shown on the Calibration Procedure box. See Figure 14-2.
- 12. Choose [**OK**] after calibration procedure is complete or choose [**Cancel**] to return to the SVG Input Configuration screen.



NOTE

A warning message appears if the screw calibration settings are invalid. Check sensors and retry calibration.



14.8 Gate Timing Options

Each valve gate can be programmed to have up to four steps. The valve will act according to these step settings.



NOTE

A step = the number of times the gate must open and close in one complete cycle.

Time (abs) = time absolute (time is relative to the start of cycle start input)

Time (inc) = time incremental (time is relative to the when the valve was opened)

14.8.1 Use Time Values Alone

Open the valve on an Absolute Time (relative to the start of the cycle) and close it on an Absolute Time value (relative to the start of the cycle):

Gate	Step 1	Step 1	Step 1	Step 1
	Open Trigger	Open Value	Close Trigger	Close Value
Gate 1	Time (abs)	0.00 secs	Time (abs)	1.10 secs

Open the valve on an Absolute Time (relative to the start of cycle) and close it on at incremental time (relative to the when the valve was opened):

Gate	Step 1	Step 1	Step 1	Step 1
	Open Trigger	Open Value	Close Trigger	Close Value
Gate 1	Time (abs)	0.50 secs	Time (inc)	2.25 secs

14.8.2 Use Screw Position Alone

Open the valve on screw position and close it on the screw position:

Gate	Step 1	Step 1	Step 1	Step 1
	Open Trigger	Open Value	Close Trigger	Close Value
Gate 1	Screw	2.0 mm	Screw	5.5 mm





14.8.3 Use a Combination of Time and Position

NOTE

The two parameters move in opposite directions. A time trigger starts at zero and counts **up** as the screw closes. A screw position triggers starts at full length and counts **down** while the screw closes.

Open the valve on an Absolute Time (relative to the start of cycle) and close it on screw position:

Gate	Step 1	Step 1	Step 1	Step 1
	Open Trigger	Open Value	Close Trigger	Close Value
Gate 1	Time (abs)	0.50 secs	Screw	5.0 mm

Open the valve on position of the screw and close it on an Absolute Time (relative to the start of cycle):

Gate	Step 1	Step 1	Step 1	Step 1
	Open Trigger	Open Value	Close Trigger	Close Value
Gate 1	Screw	0.6 mm	Time (abs)	2.00 secs

Open the valve on screw position and close it on an incremental time (relative to the when the valve was opened):

Gate	Step 1	Step 1	Step 1	Step 1
	Open Trigger	Open Value	Close Trigger	Close Value
Gate 1	Screw	3.0 mm	Time (inc)	5.00 secs


14.8.4 Set Gate Open Points

Gate close points can be chosen from these two parameters:

- a fixed point in time or
- a nominated screw position

From the Display screen,

1. Choose one zone:

	C: Too is tore	Apps	86 Setting	<u>الم</u> 14 م	h Pietr	a ures	sh	utdavan 1	Startup	00 Standby	(A) Beast	0
												0
2-1	0.5	1.0.0	2.4	111.5	1.8.6	34 V	11-3	1.8.9	10.05	1.8.22		Set
483	483	483	483	483	483	483	483	483	483	483	483	
482*F	482*F	482%	482°F	482°F	482°F	482'F	482°F	482°F	482'F	482*5	482%	Q
0.28 A	0.22 A	0.28 A	0.28 A	0.22 A	21.0 %	0.28 A	0.21 A	0.28	0.22 A	0.22 A	21.0 G	Zoom
0.46	1.214	2.2	0.46	1.8.12	0 B	11-19	1.8.20	- # E	11-52	1.8.45	8 X	
483	483	483	483	483	483	483	483	483	483	483	483	\leftrightarrow
482°F	482°F	482°F	482°F	482°F	482'F	482'F	482°F	482°F	482°F	4821	48219	Rongo
22.6 46 0.28 A	21.6 % 0.28 Å	21.6 % 0.25 A	221.6 % 0.28 A	21.6 %	22_6 % 0.28 A	21.6 % 0.28 A	21.6 %	21.6 % 0.26 A	•	21.4 %	22_0 % 0.28 A	~
9-1	86.2	N ² N J		10.5	898.3	- 96.7	101	B ¹ B J	\$5.25	898.22	* 5	7104
525	525	525	525	525	525	525	525	525	525	525	525	
527'F	527"F	527'F	527"F	527°F	527"F	527"F	527"F	527"F	527'F	527*1	527°F	\sim
0.00	0.0 A 99.0	0.0 ×	0.00	0.0 0.00 A	0.00	0.00	-	0.00 0.00	0.00 A	0.0	0.0	Zone
Date: 1	feet 2	244-2	Day 4	free 3	204-0	Dec. 7	244-3	201.0	Des R	5444 M	2014-12	
CLSE	CLSE	CLSE	CLSE	CLSE	CLSE	CLSE	CLSE	CLSE	CLSE	CLSE	CLSE	×
										<u> </u>		Cancel
1011												୍ଞ
0												Print
180%												
•												
Mode	RUN	Zone S	iclection Ac	tive			05	Jul 2018 21	1:34 <mark>Sy</mark>	stem.	Status	DEMO

2. Choose [Set]:



3. Enter password, if required.



The Gate Trigger box opens:

Gate	Step 1 Open Trigger	Step 1 Open Value	Step 1 Close Trigger	Step 1 Close Value
Gate 1	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 2	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 3	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 4	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 5	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 6	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 7	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 8	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 9	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 10	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 11	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 12	Time (abs)	0.00 secs	Time (abs)	0.00 secs



NOTE

This box defaults to absolute time [Time (abs)] at 0 seconds.

4. Choose all of the gates:

Gate	Step 1 Open Trigger	Step 1 Open Value	Step 1 Close Trigger	Step 1 Close Value
Gate 1	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 2	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 3	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 4	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 5	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 6	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 7	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 8	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 9	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 10	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 11	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 12	Time (abs)	0.00 secs	Time (abs)	0.00 secs



5. Touch anywhere in the Open Trigger column:

Gate	Step 1 Open Trigger	Step 1 Open Value	Step 1 Close Trigger	Step 1 Close Value
Gate 1	Time (abs)	0.00 secs	Time (inc)	0.00 secs
Gate 2	Time (abs)	0.00 secs	Time (inc)	0.00 secs
Gate 3	Time (abs)	0.00 secs	Time (inc)	0.00 secs
Gate 4	Time (abs)	0.00 secs	Time (inc)	0.00 secs
Gate 5	Time (abs)	0.00 secs	Time (inc)	0.00 secs
Gate 6	Time (abs)	0.00 secs	Time (inc)	0.00 secs
Gate 7	Time (abs)	0.00 secs	Time (inc)	0.00 secs
Gate 8	Time (abs)	0.00 secs	Time (inc)	0.00 secs
Gate 9	Time (abs)	0.00 secs	Time (inc)	0.00 secs
Gate 10	Time (abs)	0.00 secs	Time (inc)	0.00 secs
Gate 11	Time (abs)	0.00 secs	Time (inc)	0.00 secs
Gate 12	Time (abs)	0.00 secs	Time (inc)	0.00 secs

6. Choose [Set]:



A selection box opens:

📋 Select An I	tern
Off	
Time (abs	4)
Screw	
Input A	
Input B	
Input 1	
	Cancel

7. Choose the open trigger. In this example, [Time (abs)] is chosen.

NOTE

The user can also set single zones or all zones to [Off], if required.



The screen returns to the Gate Trigger box.

8. Choose [Cancel] to deselect all gates:



9. Choose the first gate:

Gate	Step 1 Open Trigger	Step 1 Open Value	Step 1 Close Trigger	Step 1 Close Value
Gate 1	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 2	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 3	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 4	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 5	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 6	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 7	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 8	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 9	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 10	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 11	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 12	Time (abs)	0.00 secs	Time (abs)	0.00 secs

10. Choose the corresponding box in the [Open Value] column:

Gate	Step 1 Open Trigger	Step 1 Open Value	Step 1 Close Trigger	Step 1 Close Value
Gate 1	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 2	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 3	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 4	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 5	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 6	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 7	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 8	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 9	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 10	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 11	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 12	Time (abs)	0.00 secs	Time (abs)	0.00 secs



11. Choose [Set]:



A keypad opens:



- 12. Enter the open time for the first gate. In this example, 0.5 seconds is entered.
- 13. Repeat steps 8 to 11 until all gate opening times are set.



ΝΟΤΕ

If screw position is chosen as the trigger, a keypad opens and the user enters the distance (in mm).



14.8.5 Set Gate Close Points

Gate close points can be chosen from these three parameters:

- a fixed point in time
- a period of time after opening
- a nominated screw position

One simple option is to select [**Time (inc)**], which allows all gates to be set in a single step. All gates stay open for the same amount of time.

1. Choose all of the gates:

Gate	Step 1 Open Trigger	Step 1 Open Value	Step 1 Close Trigger	Step 1 Close Value
Gate 1	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 2	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 3	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 4	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 5	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 6	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 7	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 8	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 9	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 10	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 11	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 12	Time (abs)	0.00 secs	Time (abs)	0.00 secs

2. Touch anywhere in the Close Trigger column:

Gate	Step 1 Open Trigger	Step 1 Open Value	Step 1 Close Trigger	Step 1 Close Value
Gate 1	Time (abs)	0.50 secs	Time (abs)	0.00 secs
Gate 2	Time (abs)	1.50 secs	Time (abs)	0.00 secs
Gate 3	Time (abs)	2.50 secs	Time (abs)	0.00 secs
Gate 4	Time (abs)	3.50 secs	Time (abs)	0.00 secs
Gate 5	Time (abs)	4.50 secs	Time (abs)	0.00 secs
Gate 6	Time (abs)	5.50 secs	Time (abs)	0.00 secs
Gate 7	Time (abs)	6.50 secs	Time (abs)	0.00 secs
Gate 8	Time (abs)	7.50 secs	Time (abs)	0.00 secs
Gate 9	Time (abs)	8.50 secs	Time (abs)	0.00 secs
Gate 10	Time (abs)	9.50 secs	Time (abs)	0.00 secs
Gate 11	Time (abs)	10.50 secs	Time (abs)	0.00 secs
Gate 12	Time (abs)	11.50 secs	Time (abs)	0.00 secs



Set Gate Close Points - continued

A selection box opens:

Fime (abs) Fime (inc) nput A nput B nput 1
Fime (inc) nput A nput B nput 1
nput A nput B nput 1
nput B nput 1
nput 1
Cancel

- 3. Choose the close trigger. In this example, [Time (inc)] is chosen.
- 4. Choose all the gates and touch anywhere in the Close Value column:

Gate	Step 1 Open Trigger	Step 1 Open Value	Step 1 Close Trigger	Step 1 Close Value
Gate 1	Time (abs)	0.50 secs	Time (inc)	1.10 secs
Gate 2	Time (abs)	1.50 secs	Time (inc)	1.10 secs
Gate 3	Time (abs)	2.50 secs	Time (inc)	1.10 secs
Gate 4	Time (abs)	3.50 secs	Time (inc)	1.10 secs
Gate 5	Time (abs)	4.50 secs	Time (inc)	1.10 secs
Gate 6	Time (abs)	5.50 secs	Time (inc)	1.10 secs
Gate 7	Time (abs)	6.50 secs	Time (inc)	1.10 secs
Gate 8	Time (abs)	7.50 secs	Time (inc)	1.10 secs
Gate 9	Time (abs)	8.50 secs	Time (inc)	1.10 secs
Gate 10	Time (abs)	9.50 secs	Time (inc)	1.10 secs
Gate 11	Time (abs)	10.50 secs	Time (inc)	1.10 secs
Gate 12	Time (abs)	11.50 secs	Time (inc)	1.10 secs

5. Choose [Set]:





Set Gate Close Points - continued

A keypad opens:



6. Enter the required time value. In this example, 1.1 seconds is entered.

i

NOTE

If screw position is chosen as the trigger, a keypad opens and the user enters the distance (in mm).

The screen returns to the Gate Settings box and the user can view the SVG sequence. See Figure 14-3.

Gate	Step 1 Open Trigger	Step 1 Open Value	Step 1 Close Trigger	Step 1 Close Value
Gate 1	Time (abs)	0.50 secs	Time (inc)	1.10 secs
Gate 2	Time (abs)	1.50 secs	Time (inc)	1.10 secs
Gate 3	Time (abs)	2.50 secs	Time (inc)	1.10 secs
Gate 4	Time (abs)	3.50 secs	Time (inc)	1.10 secs
Gate 5	Time (abs)	4.50 secs	Time (inc)	1.10 secs
Gate 6	Time (abs)	5.50 secs	Time (inc)	1.10 secs
Gate 7	Time (abs)	6.50 secs	Time (inc)	1.10 secs
Gate 8	Time (abs)	7.50 secs	Time (inc)	1.10 secs
Gate 9	Time (abs)	8.50 secs	Time (inc)	1.10 secs
Gate 10	Time (abs)	9.50 secs	Time (inc)	1.10 secs
Gate 11	Time (abs)	10.50 secs	Time (inc)	1.10 secs
Gate 12	Time (abs)	11.50 secs	Time (inc)	1.10 secs

Figure 14-3 Programmed SVG sequence

For this SVG sequence, the six gates are set to operate sequentially at 1 second intervals, and they stay open for 1.1 seconds.



Set Gate Close Points - continued

The user can print the Gate Settings box settings from this screen.

7. Choose [Print].

A message box opens:

i Information	
Brinting places wait	
Printing please wait	



NOTE

The user must choose the default print setting from the [**Printers**] screen. All output is sent directly to this default after the user chooses the [**Print**] button. No printer settings box will open.

See "5.15 Configure a Printer" on page 5-49 for more information.



14.8.6 View or Test the SVG Sequence

The user can preview a graph of the programmed sequence with the **[Preview]** button.



IMPORTANT

The Preview option is only available if all gate settings are based on time.

There is no simulation to show opening and closing relationships when Screw (position) is a set option for open and / or close.

1. Choose [Preview]:



2. The Preview graph opens:



3. Choose [**Exit**] to close the screen and return to the Gate Settings box.

The user can also test the open and close sequence through a single cycle with the [**Run Once**] button.

4. Choose [Run Once]:





14.8.7 Troubleshooting

The user can open or close a single gate or specific gates for testing or troubleshooting purposes when in Manual mode.

From the Display screen,

1. Choose one zone:



2. Choose [Set]:



The Gate Trigger box opens:

Gate	Step 1 Open Trigger	Step 1 Open Value	Step 1 Close Trigger	Step 1 Close Value
Gate 1	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 2	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 3	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 4	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 5	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 6	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 7	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 8	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 9	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 10	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 11	Time (abs)	0.00 secs	Time (abs)	0.00 secs
Gate 12	Time (abs)	0.00 secs	Time (abs)	0.00 secs



Troubleshooting - continued

3. Choose [Manual]:



The Manual mode screen opens. See Figure 14-4.

Gate	Pin State	Open Sensor	Close Sensor
Gate 1	Closed	Inactive	Inactive
Gate 2	Closed	Inactive	Inactive
Gate 3	Closed	Inactive	Inactive
Gate 4	Closed	Inactive	Inactive
Gate 5	Closed	Inactive	Inactive
Gate 6	Closed	Inactive	Inactive
Gate 7	Closed	Inactive	Inactive
Gate 8	Closed	Inactive	Inactive
Gate 9	Closed	Inactive	Inactive
Gate 10	Closed	Inactive	Inactive
Gate 11	Closed	Inactive	Inactive
Gate 12	Closed	Inactive	Inactive

Figure 14-4 SVG Manual mode screen



Troubleshooting - continued

4. Choose the required gate or gates:

Gate	Pin State	Open Sensor	Close Sensor
Gate 1	Closed	Inactive	Inactive
Gate 2	Closed	Inactive	Inactive
Gate 3	Closed	Inactive	Inactive
Gate 4	Closed	Inactive	Inactive
Gate 5	Closed	Inactive	Inactive
Gate 6	Closed	Inactive	Inactive
Gate 7	Closed	Inactive	Inactive
Gate 8	Closed	Inactive	Inactive
Gate 9	Closed	Inactive	Inactive
Gate 10	Closed	Inactive	Inactive
Gate 11	Closed	Inactive	Inactive
Gate 12	Closed	Inactive	Inactive

5. Choose [Open Pin] to move the pin to the open position:





Troubleshooting - continued

The Manual mode screen changes:

Gate	Pin State	Open Sensor	Close Sensor
Gate 1	Open	Inactive	Inactive
Gate 2	Closed	Inactive	Inactive
Gate 3	Closed	Inactive	Inactive
Gate 4	Closed	Inactive	Inactive
Gate 5	Closed	Inactive	Inactive
Gate 6	Closed	Inactive	Inactive
Gate 7	Closed	Inactive	Inactive
Gate 8	Closed	Inactive	Inactive
Gate 9	Closed	Inactive	Inactive
Gate 10	Closed	Inactive	Inactive
Gate 11	Closed	Inactive	Inactive
Gate 12	Closed	Inactive	Inactive

This change is also shown on the Display screen:

Display	C) ToolStore	, 年 Apps	ැලිළ Setting	ica s Grap	h Pict	5 #105	Sh	U utdown 1) Startup	00 Stanciby	(2) Boost	١
TIP 1	TIP 2	10.1	TP-4	TIP 5	T12 6	TUP 7	F 12° 0	TIP 9	102.10	TIP 11	10.15	
437	437	437	437	437	437	437	437	437	437	437	437	
437°F	437°F	437°F	437'F	437°F	437'F	437°F	437'F	437°F	437°F	437°F	437'F	
12.0 %	12.0 %	12.0 %	12.0 %	12.0 %	12.0 %	12.0 %	12.0 %	12.0 %	12.0 %	12.0 %	12.0 %	
0.08 A	0.08 A	0.08 A	0.08 A	0.08 A	0.08 A	0.08 A	0.08 A	0.08 A	0.08 A	0.68 A	0.08 A	
	10 14	10 15	10 10	19 0	109 10	TP 13	10.20	19 2	10 2	19.3		~
437	437	437	437	437	437	437	437	437	437	437	437	
4377	4371	4377	4371	4377	4371	43/7-	43/1	4377	43/1	4377	43/1-	Mode
0.08 A	0.08 A	0.08 A	0.08 A	0.08 A	0.08 A	0.08 A	0.08 A	0.08 A	0.08 A	0.08 A	0.08 A	~
HIN 1	NN 2	HIN 2	BIN 4	HIN 5	NH 6	HIN 7	WIN 9	HW 9	NIN 10	HWN 11	NW 12	
114	114	114	114	114	114	114	114	114	114	114	114	Page
489°F	489'F	489°F	489'F	489'F	489'F	489°F	489'F	489'F	489'F	489'F	489'F	
29.2 %	29.2 16	29.2 %	29.2 %	29.2 %	29.2 %	29.2 %	29.2 %	29.2 %	29.2 94	29.2 %	29.2 %	× .
0.53 A	0.53 A	0.53 A	0.53 A	0.53 A	0.53 A	0.53 A	0.53 A	0.53 A	0.53 A	0.53 A	0.53 A	Page
Cate 1	Gate 2	Cate 3	Cate 4	Cate 5	Gata 6	Cate 7	Cute 8	Cate 9	Cate 10	Cate 11	Cute 12	
OPEN	CLSE	CLSE	CLSE	CLSE	CLSE	CLSE	CLSE	CLSE	CLSE	CLSE	CLSE	17
												Display
												_
STEEL												8
0												Print
180°F												
Mode	RUN	SVC M	anual Mode				05	Jul 2018 14	M7 Sv	utern _ c	Labus	DEMO

6. Choose [Close Pin] to return pin to the closed position:





14.9 Relay Output Mode

In Relay Output mode, a high temperature alarm will trigger the gate to send a 24V DC signal to a connected external destination.

After the card has been configured as [Special]:

1. Choose [SVG Mode].

A selection box opens:

Standard		
Relay Outp	out	

2. Choose [**Relay Output**] or choose [**Cancel**] to return to the Settings screen:

Туре	Panel Colour Pi	icker	- 10
Not Used			_
Probe			-
Manifold			-
Spear	SVG Mode Selec	ct	
Monitor	SVG Mode	Relay Output	>
Special			



Relay Output Mode - continued



NOTE

On the Settings screen, the column [**Relay Output Zone**] appears between the [**Alarm Heater**] and [**Alarms Active**] columns. See Figure 14-5.

Display	ToolStore	도 Apps	CCC Settings	Grap	ah Pic		Shuldo	num St.	ertup St	00 andby	(C) Rooat	٩
Cent	Тури	niam Tigh	August Law	Aberti Tow	Aliens Heater	Hetary Output Zone	Aaran Activa	Alarta Timo	Macanaan Delpost	Mineretari Delipsoint	Man Pa	O Set
	Manifold 8	40.0	-10.0	Auto	Off	None	C.B.I	0	900.0	200.0		391
-	Manifold 9	40.0	40.0	Auto	Off	None	C.BJ	0	800.0	200.0		Config
4400	Manifold 10	40.0	40.0	Auto	08	None	C.RJ	0	1000.0	200.0		0.843
	Manifold 11	40.0	40.0	Auto	Off	None	C.BJ	0	900.0	200.0		Ratter
	Manifold 12	40.0	40.0	Auto	Off	None	C.BJ	0	0,006	200.0		all states
	Gete 1											
E SVC	Gate 2											
	Gete 3											
	Getz 4											
	Gate 5											×
	Gate 6											Cancel
	1											9
												Print
	-						-					
Mode 5	TOPPED	Zone Sel	ection Acti	/0			03 May	2018 20 0	8 Syst	in St	atus	DEMO

Figure 14-5 Settings screen - Relay Output Zone column

The user must now link the probe zones to the gate.

3. Choose the required zone or zones:

Cisplay	D ToolStore	tion Apps	CC Settings	Graph	Picture		Sheet	eleven -	Startup	DO. Standay	CO Beest	0
Coni	Туро	Fack Autorss	/ikua	18	No. Opens Monto	Sulpaint	Shouthy Temp	Bread Texap	Depat Tiese	Disch Temp	flieð Ranj	O Set
-	Manifold 9	33	MANS	10	Normal	489	150	0	- 99	0	5'Fim	192
44400	Marifold 10	34	MAN 10	8 3	Normal	400	150	0	90	0	5°F.m	Covilia
	Marifold 11	35	MAN 11		Normal	489	150	0	90	0	S*F.m	22
	Marifold 12	36	MAN 12	1	Normal	489	150	0	99	0	5°F/m	Range
- the st	Gate 1	45				9%						dedee:
SVO	Gate 2	46				0%						
State of	Gate 3	N				0%						
	Gate 4	48				0%						
	Gate 5	49				0%						
	Gate 6	50				0%						×
		51										Cancel
		52										8
		53										Print
		54										
					ĵ 📃							
lode -	TOPPED	Zone Sek	oction Active		1		63 Mi	v 2018 2	2:09	Login	Status	DEMO

4. Choose the corresponding zones in the Relay Output Zone column.



Relay Output Mode - continued

5. Choose [Set]:



6. Enter password, if required.

A selection box opens:



7. Link the zone or zones with the required gate or choose [**Cancel**] to return to the Settings screen without linking the zones to a gate.

The Relay Output Zone column populates with the chosen gate number. See Figure 14-6.

Cisplay	C TeolStore	슬프 Apps	(C) Settings	Crap Grap	h Pic	년 tures	Shutdo	wn Sta	> rtwp St	00 andby	Boost	0
Cert	Туре	Nurr High	Alarm Low	Alarm Parar	Alaren Heater	Relay Output Zane	Alarms Active	Aların Time	Maximum Selpcint	Minimum Selpcint	Ma Fe	O Set
	Probe 1	40.0	40.0	Auto	Off	Gate 2	C,B,I	0	800.0	200.0		තිදී
44400	Probe 2	40.0	40.0	Auto	Off	Gate 2	C.R.I	0	800.0	200.0		Config
	Probe 3	40.0	40.0	Auto	Off	Gate 2	C,B,I	0	800.0	200.0	1	
	Probe 4	40.0	40.0	Auto	Cff	Gate 2	C.R.I	0	800.0	200.0		Range
	Probe 5	40.0	40.0	Auto	Off	None	C.B.I	0	800.0	200.0		
4000	Probe 6	40.0	40.0	Auto	Off	None	C,B,I	0	800.0	200.0		
	Probe 7	40.0	40.0	Auto	Cff	None	C,B,I	0	800.0	200.0		
	Probe 8	40.0	40.0	Auto	Off	None	C,B,I	0	800.0	200.0		
	Probe 9	40.0	40.0	Auto	Off	None	C.R.I	0	800.0	200.0		
4400	Probe 10	40.0	40.0	Auto	Off	None	C,R,I	0	800.0	200.0		×
	Probe 11	40.0	40.0	Auto	Off	None	C.B.I	0	800.0	200.0		Cancel
	Probe 12	40.0	40.0	Auto	Off	None	C.B.I	0	800.0	200.0		æ
	Probe 13	40.0	40.0	Auto	Cff	None	C,B,I	0	800.0	200.0		Print
44/00	Probe 14	40.0	40.0	Auto	Off	None	C.R.I	0	800.0	200.0	1	
Mode		Zone Sele	ection Acti	və 🛛			03 May 2	2018 20:05	Syste	im si	atus	DEMO

Figure 14-6 Gate shown in Relay Output column



Relay Output Mode - continued

The action of the Relay Output zone can now be set by the user.

From the Display page,

8. Choose the required zone or zones:

Display	ToolStee	- Acces	Selling	is Grag	h Pick	3	Sh	uidown	D Starles	00 Standby	(2) Boost	6
												0
111	1.2.2	-18.2	B ² B	1.6.7	°T 6	11.5	19.1		19.4	10.1	10.0	Set
482	482	482	482	482	482	482	482	482	482	482	482	
21.2 5	21.2 18	21.2 54	21.2 3	21.2 3	21.2 14	21.2 %	21.2 3	21.2 15	21.2	21.2 10	21.2 5	Q
0.20 🔨	0.20 A	0.25 A	0.20 A	9.20 A	0.25 A	0.28 A	0.28 A	0.28 A	6.23 A	0.28	0.28 4	Zoom
1.6 2	19.10	10.0	19.4	-9.6	10.00	19.5	10.00	11.2	19.8	10.05	10.54	
482	482	482	482	482	482	482	482	482	482	482	482	
21.2 10	21.2 10	21.2 14	21.2 12	21.2 19	21.2 14	21.2 %	21.2 10	21.2 12	21.2 10	21.2 10	21.2 12	\$1604GG
0.39 🔨	8.20 A	6.28 A	0.28 /	0.20 A	0.28 A	0.28 A	0.26 A	0.28	6.25 A	0.26 A	0.28 4	
10.1	85.4	PEG	45.4	8.8.2	18.5	45.7	1917	18.7	PEG	18.52	89.52	
282	282	282	282	282	282	282	282	282	262	282	282	
103.0 %	100.0 %	300.0 44	103.0	100.0 00	310.0 16	100.0	100.0 0	200.0 %	100.0 %	100.0 %	100.0 %	
6.30 A	6.20 A	6.20 A	6.30 A	6.20 A	6.20 A	6.30 A	6.20 A	6.20 A	6.25 A	6.30 A	6.20 A	
UKE 1	- Http://2	Sete :	UKE 4	Jake 5	litte L	3.11						
	011		011	011-2		10015						×
						100 1						Cencel
						-						А
												Print
Mode		Tool IC) 45: 40z +S	20			03 1	4ay 2018 20	k.07 Sy	stem	Status	DEMO

9. Choose [Set]:



A selection box opens:

🗄 Select An Item		
Output On		
Output Off		
Automatic		
	Cancel	

- 10. Choose one of the following options:
 - Output On the output is manually set to ON
 - Output Off the output is manually set to OFF
 - Automatic the sytem decides when to set the output to ON or OFF based on the setpoint and the threshold



14.10 External Wiring Connections

14.10.1 Outputs

There is one HAN24E female connector for every 12 zones.

For each pair the higher numbered pin is at ground the lowered numbered side will energize at 24V DC when the controller calls for that valve to open.

14.10.2 Output Rating

Each output is rated at 5A 24V DC.

SVG Output—12 Zones





14.10.3 Inputs (North American Version) Connector 1



Figure 14-7 AMP04 connector 1

Table 14-2 Connector 1 Inputs					
Circuit	Pins	Description	Format		
Screw Position	3 (-) and 4 (+)	Accepts a voltage source input that relates to the main screw position.	0 to 10 Volts		
		A calibration routine within the controller adjusts actual input to actual screw position.			
Start Trigger	1 and 2	Sees a closed condition as a signal to start the timer on the valve sequence.	Normally open pair (dry contact)		

Connector 2



Figure 14-8 AMP04 connector 2

Table 14-3 Connector 2 Inputs					
Circuit	Pins	Description	Format		
Input A	1 and 2	Accepts a closing signal that can be used as a trigger for one or more gates.	Normally open pair (dry contact)		
Input B	3 and 4	Accepts a closing signal that can be used as a trigger for one or more gates.	Normally open pair (dry contact)		



14.10.4 Inputs - European Version

A HAN16 connector provides interconnection for the control inputs. See Table 14-4 for more information.

Table 14-4 HAN16 Connector Inputs				
Circuit	Pins	Description	Format	
Alarm Output	5 and 13	Goes to closed when an alarm condition is generated.	Normally open pair	
Analogue Input 1	6+ and 14-	Accepts a current source input that relates to a main screw position. A calibration routine within the controller adjusts actual input to actual screw position.	4 to 20 mA	
Analogue Input 2	7+ and 15-	Accepts a voltage source input that relates to the main screw position. A calibration routine within the controller adjusts actual input to actual screw position.	0 to 10 volts	
Analogue Input 3	8+ and 16-	Accepts a voltage source input that relates to the secondary screw position. A calibration routine within the controller adjusts actual input to actual screw position.	0 to 10 volts	
Start Trigger	1 and 9	Sees a closed condition as a signal to start the timer on the valve sequence.	Normally open pair	
Trigger A	2 and 10	Not normally used – reserved for future use.	Digital Input A	
Trigger B	3 and 11	Not normally used – reserved for future use	Digital Input B	
Enable	4 and 12	Sees a closed condition as a signal that the injection machine is ready to start working. Any other signals present are ignored until the [Enable] is present.	Normally open pair	

14.11 Handshake Inputs (Optional)

The SVG controller can use handshake inputs from sensors in the actuator.

The SVG cabinet is large enough to be fitted with a high density connector, such as the HAN72D, that could be used to accept feedback signals.

This is an optional feature available upon request.





WARNING

Ensure that you have fully read "Section 3 - Safety" before setting up or using this feature with the controller.

IMPORTANT

The Fitlet2 option is specifically configured for each customer's system. Always contact your Mold-Masters representative for technical support or in the event of breakdown.

15.11.1 Fitlet2 - Introduction

The Fitlet2 option provides M2 Plus software functionality and options, and it allows the customer to access the software interface via a remote display. No console is provided with this option.

15.11.2 Fitlet2 - External Connections

The Fitlet2 system has the following ports:

- USB
- HDMI
- compact USB •
- power connection •
- Ethernet (2 ports)
- Com port

See Figure 15-1.



Figure 15-1 Fitlet2 ports



15.11.3 Fitlet2 - Screen Layout

The screen layout used for this option is identical to the TS12 console, but the Fitlet2 option has the capability to show up to 498 zones. See "4.8 Zone Display Options (TS12 Console)" on page 4-13 to view the screen layout.



NOTE

The Fitlet2 option allows users to store up to 120 images. Multiple images can be associated with a single tool.

15.11.4 Fitlet2 - Upgrade Software

Software for the Fitlet2 option can be upgraded with the same procedure that is used to upgrade M2 Plus controller software. See "8.1 Upgrade Software" on page 8-1.



NOTE

For the Fitlet2 option, insert the USB memory stick with the software upgrade into the USB port on the controller cabinet.

15.11.5 Fitlet2 - Connection

The Fitlet2 is connected to the user's external device via an Ethernet cable. Ethernet port 1/2 on the Fitlet2 is specifically configured for the customer. See "Figure 15-1 Fitlet2 ports" on page 15-1.

- 1. Insert an Ethernet cable into the preconfigured Ethernet port.
- 2. Connect the Fitlet2 to the display device.
 - Ensure the Fitlet2 is powered up. A green light at the front of the device indicates that the Fitlet2 is on. See Figure 15-2.
 - Ensure the display device is also on.



Figure 15-2 Fitlet2 power indicator light



Fitlet2 - Connection - continued

1. Use your chosen VNC application to locate the Fitlet2 within your network, as in the example below:



2. Choose [Connect].



NOTE

In the event that the *Mold-Masters* screen does not automatically display after a VNC connection is established, insert the Ethernet cable into the static port and consult the troubleshooting guide supplied with your system.

If further assistance is required, please contact your *Mold-Masters* representative.





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