

Altanium Matrix2

User Guide

Issue: v 1.1 — July 2015

This product manual is intended to provide information for safe operation and/or maintenance. Husky reserves the right to make changes to products in an effort to continually improve the product features and/or performance. These changes may result in different and/or additional safety measures that are communicated to customers through bulletins as changes occur.

This document contains information which is the exclusive property of Husky Injection Molding Systems Limited. Except for any rights expressly granted by contract, no further publication or commercial use may be made of this document, in whole or in part, without the prior written permission of Husky Injection Molding Systems Limited.

Notwithstanding the foregoing, Husky Injection Molding Systems Limited grants permission to its customers to reproduce this document for limited internal use only.

Husky® product or service names or logos referenced in these materials are trademarks of Husky Injection Molding Systems Ltd. and may be used by certain of its affiliated companies under license.

All third-party trademarks are the property of the respective third-party and may be protected by applicable copyright, trademark or other intellectual property laws and treaties. Each such third-party expressly reserves all rights into such intellectual property.

© 2015 Husky Injection Molding Systems. All rights reserved.

General Information

Telephone Support Numbers

North America	Toll free	1-800-465-HUSKY (4875)
Europe	EC (most countries)	008000 800 4300
	Direct and Non-EC	+ (352) 52115-4300
Asia	Toll Free	800-820-1667 or +800-4875-9477
	Direct:	+86-21-3849-4520
Latin America	Brazil	+55-11-4589-7200
	Mexico	+52-5550891160 option 5

For on-site service, contact the nearest Husky Regional Service and Sales office.

For non-emergency questions and issues, e-mail Husky at techsupport@husky.ca.

Husky Regional Service and Sales Offices

For the nearest location, please visit www.husky.co.

Product Upgrades

Upgrades are available that can improve output, reduce cycle times, and add functionality to Husky equipment.

To see what upgrades are available, visit www.husky.co or call the nearest Husky Regional Service and Sales Office.

Ordering Spare Parts

All spare parts for Husky equipment can be ordered through the nearest Husky Parts Distribution Center or online at www.husky.co.

Ordering Additional Manuals

Additional copies of this manual and other documentation can be purchased through the nearest Husky Regional Service and Sales office.

Table of Contents

General Information	iii
Telephone Support Numbers	iii
Husky Regional Service and Sales Offices	iii
Product Upgrades	iii
Ordering Spare Parts	iii
Ordering Additional Manuals	iii
Chapter 1: Introduction	1
1.1 General Safety	1
1.1.1 Safety Signs	2
1.2 Purpose of the Equipment	3
1.3 Restrictions of Use	3
1.4 Input Wiring (Conventional)	3
1.5 Environmental Operating Specification	4
1.6 Equipment Ratings	4
1.7 Technical Specifications	4
1.8 Controller Lifting Instructions	5
Chapter 2: Hot Runner Temperature Control	9
2.1 Types of Temperature Control	9
2.1.1 Open Loop Control	9
2.2 Configuring Zones	9
2.2.1 Configuring a Zone for Zero Cross Control	10
2.2.2 Configuring a Zone for Phase Angle Control	10
2.3 Determining the Heater Size	10
2.4 Thermocouple Types and Color Codes	11
Chapter 3: Connecting the System to the Mold	13
3.1 Prior to Startup	13
3.2 Connecting to the Power Source	13
3.3 Startup Procedure Checklist	14
Chapter 4: Altanium Operator Interface	15
4.1 General Layout	15
4.1.1 Altanium Operator Interface	15
4.1.2 Home Screen	15
4.1.3 Altanium Buttons	16

4.1.3.1	Controller Function Buttons.....	17
4.1.3.2	System Status Field.....	17
4.1.3.3	Navigation Buttons.....	18
4.1.3.4	Alarm Buttons.....	19
4.1.3.5	System and User Management Buttons.....	19
4.1.4	Dialog Box Buttons.....	19
4.1.5	System Modes.....	20
4.1.6	View Buttons.....	22
4.1.7	Shortcut Buttons.....	23
4.1.7.1	Creating a Shortcut Button.....	23
4.1.8	Screen Buttons.....	23
4.2	Multi Group View Screen.....	27
4.2.1	Changing the Header Color.....	30
4.3	Selecting a Language.....	31
4.4	Printing to a File.....	32
4.4.1	Print Report Descriptions.....	34
4.5	Network Settings.....	35
4.6	Supply Voltage Screen.....	36
4.6.1	Viewing the Supply Voltage.....	36
4.6.2	Configuring the Supply Voltage.....	39
4.7	Using Online Help.....	41
 Chapter 5: Security and Administration.....		43
5.1	User Management and Security Screens.....	43
5.1.1	Manage Users.....	48
5.1.2	User Preferences.....	49
5.1.3	Auto Logout.....	49
 Chapter 6: Mold Setups.....		51
6.1	Mold Setup Screen.....	51
6.1.1	Creating a New Mold Setup Folder.....	53
6.1.2	Creating a New Mold Setup File.....	53
6.1.3	Saving Changes to a Mold Setup File.....	54
6.1.4	Discarding Changes to a Mold Setup File.....	54
6.1.5	Saving the Current Mold Setup File as a New File.....	54
6.1.6	Loading an Existing Mold Setup File.....	55
6.1.7	Deleting Files.....	55
6.1.8	Copying Files.....	55
6.1.9	Renaming Files.....	55
6.1.10	Transferring Data to the Network.....	56
6.1.11	Transferring Data Using a USB Storage Device.....	56

Chapter 7: Making Adjustments	57
7.1 Zone Selection	57
7.2 Creating a Group	58
7.3 Graphical View Screen Overview	59
7.4 Text View Screen Overview	63
7.4.1 Zone Selection in the Text View Screen	65
7.4.2 Sorting	65
7.5 Quick Set Screen	66
7.5.1 Frequently Used Fields	66
7.5.2 Zone Edit Fields	67
7.5.3 Setpoint Limits	67
7.5.4 Manual Standby Fields	68
7.5.5 Manual Boost Fields	68
7.5.6 Remote Standby Fields	69
7.5.7 Remote Boost Fields	69
7.5.8 Advanced Settings Fields	70
7.5.9 Control Settings Fields	70
7.5.10 Changing a Zone Name	71
7.5.10.1 Changing Multiple Zones Names	71
7.5.11 Changing a Setpoint	72
7.5.12 Changing the Alarm Window	72
7.5.13 Changing the Abort Window	72
7.5.14 Changing the Output Mode Setting	73
7.5.15 Zone Slave	73
7.5.15.1 Using the Automatic Slave Function	73
7.5.15.2 Manually Slaving One Zone to Another Zone	74
7.5.15.3 Changing the Regulation Mode	74
7.5.16 Setpoint Limits	75
7.5.16.1 Changing the Normal Setpoint and Limits	75
7.5.16.2 Changing the Manual Standby and Remote Standby Setpoint Limits ..	75
7.5.16.2.1 Changing the Manual Standby Setpoint Limits	76
7.5.16.2.2 Changing the Remote Standby Setpoint Limits	76
7.5.16.3 Changing the Manual Boost Setpoints and Limits	77
7.5.16.4 Changing the Remote Boost Setpoints and Limits	77
7.5.17 Changing the Sensor Assignment (Thermocouple)	78
7.5.18 Changing the Priority Control Mode (PCM) Setting	78
7.5.19 Changing the Earth Leakage Check	78
7.5.20 Changing the Automatic Manual Control (AMC) Setting	79
7.5.21 Changing the Output Power Limit Setting	79
7.5.22 Changing the Zone Control from ART to PID	79
7.5.22.1 Changing P, I or D Parameter Values	80
7.6 Active Reasoning Technology (ART)	80

7.6.1	ART Process Screen.....	80
7.6.1.1	Using the Manual ART Function.....	82
7.7	PID Control.....	82
7.7.1	Typical PID Values.....	83
7.7.2	Possible Causes of Oscillation.....	83
Chapter 8: Mold Diagnostics		85
8.1	Testing the Mold.....	85
8.1.1	Running a Mold Diagnostics Test.....	87
8.1.2	Setting the Zone Cooling Time.....	87
8.1.3	Setting the Maximum Test Time.....	88
8.2	Diagnostics Results.....	88
8.2.1	Test Results Screen Values.....	89
8.2.2	Automatic Thermocouple Rewiring.....	90
8.3	Cross-Talk Screen.....	91
8.4	Temperature Graphs Screen.....	91
Chapter 9: Heating the Mold		95
9.1	Heater Circuit Test.....	95
9.1.1	Startup.....	95
9.2	Earth Leakage/Wet Heater Bake Out System.....	96
9.2.1	Earth Leakage Limit.....	96
9.2.1.1	Setting the Earth Leakage Limit.....	96
9.2.2	Configuring the Length and Number of Bake Out Cycles.....	97
9.3	Soft Start Routine.....	97
9.3.1	Enabling Soft Start.....	98
9.3.2	Disabling Soft Start.....	98
9.3.3	Adjusting the Soft Start Minimum Limit.....	98
9.4	Alarm Screen.....	98
9.4.1	Opening the Alarm Screen.....	99
9.4.2	Alarm States.....	100
9.4.3	Clearing Alarms.....	100
9.5	Event History Screen.....	101
9.5.1	Filtering Events.....	102
9.6	Alarm and Event Icons.....	102
9.7	Alarm Conditions — Warning Errors.....	103
9.8	Abort Conditions — Shutdown Errors.....	104
Chapter 10: System Setup Screen		107
10.1	System Setup Screen.....	107
10.1.1	Force Temperature Units To Option.....	113
10.1.2	Data Collection.....	113
10.1.3	Changing the Units of Measure.....	114

10.1.4	Changing the Energy Usage and Units	114
10.1.5	Changing the Grid Size and the Group Offset.....	115
10.1.6	Changing the Number of Zones in the System.....	115
10.1.7	Standby Timer Settings.....	115
10.1.7.1	Setting the Manual Standby Duration Timer	115
10.1.7.2	Setting the Remote Standby Duration Timer.....	116
10.1.7.3	Setting the Remote Standby Delay Timer	116
10.1.7.4	Changing the Remote Standby Input Mode	116
10.1.7.5	Standby Operation Description	117
10.1.8	Boost Timer Settings	118
10.1.8.1	Setting the Manual Boost Duration Timer.....	118
10.1.8.2	Setting the Remote Boost Duration Timer	118
10.1.8.3	Setting the Remote Boost Delay Timer	119
10.1.8.4	Changing the Remote Boost Input Mode	119
10.1.8.5	Boost Operation Description	119
10.1.9	Power Deviation Settings.....	120
10.1.10	Power Limiting.....	123
10.1.11	Monitor Zone Settings.....	123
10.1.12	Options and Licensing.....	124
10.1.13	Diagnostics Export	126
10.1.14	Part Counting	126
10.1.14.1	Setting Up Part Counting	126
10.1.14.1.1	Resetting the Part Counter	127
10.1.14.1.2	Sack Full Output Optimization	128
10.1.15	Remote Load.....	129
10.1.15.1	Setting Up Remote Load.....	129
10.1.16	Zone Alarm Control	131
10.1.17	Mold Cooling Enable	133
10.2	Staged Startup and Shutdown.....	134
10.2.1	Enabling or Disabling Staged Startup	134
10.2.2	Enabling or Disabling Staged Shutdown	135
10.2.3	Staging Screen	135
10.2.4	Setting the Staged Temperature and Power Setpoints	138
10.2.5	Holding a Stage Setpoint	138
10.2.6	Setting Soak Timers	138
Chapter 11: Mold Picture View.....		141
11.1	Loading a Mold Picture View Graphic	141
11.1.1	Mapping a Network Drive	141
11.1.2	Loading a Mold Picture View Graphic	141
11.2	Using the Mold Picture View Toolbar	144
11.3	Configuring a Mold Picture View.....	145
11.3.1	Edit Mode.....	146

11.3.2	Configuring a Zone Information Panel	146
11.3.2.1	Creating a Zone Information Panel	146
11.3.2.2	Moving a Zone Information Panel	147
11.3.2.3	Editing a Zone Information Panel	148
11.3.2.4	Creating a Leader Line	149
11.3.3	Changing the Color of a Leader Line	150
11.3.4	Deleting a Leader Line	150
11.3.5	Deleting a Zone Information Panel	151
11.3.6	Exiting Edit Mode	151
 Chapter 12: Data Recording		153
12.1	Process Trend Screen	153
12.1.1	Viewing the Process Trend	153
12.2	Process History Screen	155
12.2.1	Curve Data Point	157
12.2.2	Setting the Timeframe	157
12.2.3	Setting the Date and Time Range	158
12.2.3.1	Changing the Date and Time Range Old	158
12.2.3.2	Changing the Date and Time Range New	158
12.2.4	Changing the Zone Displayed on the Process History Screen	158
12.3	Process Targets Screen	160
12.3.1	Filtering by Units	161
 Chapter 13: System Options		163
13.1	Configuring the Digital I/O	163
13.1.1	Turning an I/O Option On or Off	164
13.2	Cable Connections	164
13.3	Input/Output Connector Pin-Out Description	165
13.3.1	Input Base Connector ID	166
13.3.2	Output Base Connector ID	166
13.3.3	Part Count Base Connector ID	167
13.3.4	Remote Load Base Connector ID	168
 Chapter 14: SPI Protocol Option		169
14.1	SPI Command Summary	169
14.1.1	Echo	169
14.1.2	Process Setpoint	170
14.1.3	Process Value	170
14.1.4	Alarm Active Status	170
14.1.5	Alarm 1 Setpoint	171
14.1.6	Alarm 2 Setpoint	171
14.1.7	Alarm 1 Reset	171
14.1.8	Controller Status	172

14.1.9	Manual Percent Output.....	173
14.1.10	Open/Closed Loop	173
Chapter 15: Maintenance.....		175
15.1	Altanium System.....	175
15.2	Card Layout Screen	176
15.2.1	Troubleshooting Using the Card Layout Screen.....	176
15.3	Servicing the Altanium System	178
15.3.1	Altanium X/H-Series Card Cage	179
15.3.2	Replacing an Intelligent Control Card (ICC2 or ICC3)	180
15.3.3	Replacing a Blown Fuse on an Intelligent Control Card (ICC2 or ICC3)	181
15.4	Replacing an Altanium Matrix2 Display Module	182
15.4.1	Disconnecting the Display Module.....	182
15.4.2	Connecting the Display Module.....	184
15.4.3	Mounting the Display Module Remotely	184
15.5	Replacing the Motherboard Battery.....	185
15.6	Calibrating the Thermocouple Inputs	186
15.7	Cleaning the System	187
15.7.1	Cabinet	187
15.7.2	Touch Screen	187
Chapter 16: UltraSync-E, If Equipped.....		189
16.1	Connecting the Controller.....	189
16.2	UltraSync-E Screens	190
16.2.1	UltraSync-E Home Screen Buttons	190
16.3	UltraSync-E Home Screen	191
16.3.1	Control Modes Buttons	192
16.3.2	Manual Control Buttons	193
16.3.3	Ready Conditions	193
16.3.4	Control Bar Status Indicators.....	194
16.3.5	Datalog Values	194
16.4	UltraSync-E Setup Screen.....	195
16.4.1	Monitoring.....	195
16.4.2	Other Settings.....	196
16.4.3	Setup Buttons.....	196
16.4.3.1	Signals	197
16.4.3.1.1	Permit Calibration.....	197
16.4.3.1.2	Permit Disengaging	198
16.4.3.1.3	Engaged Mode Commands.....	198
16.4.3.2	Maintenance	199
16.4.3.3	Tool.....	200
16.4.3.4	Pullback.....	201
16.5	UltraSync-E Opening Profile and Closing Profile Screens.....	202

16.5.1	Closing Profile Graph	203
16.5.2	Opening	204
16.6	Servo I/O Screen	204
16.6.1	Inputs.....	205
16.6.2	Outputs.....	207
16.6.3	Configurable Signals	208
16.6.4	Safety Signals	209
16.7	Calibrating the UltraSync-E.....	210
16.8	Troubleshooting.....	210
16.8.1	Drive Fault (Error Code #).....	210
16.8.2	Alarm: Position Deviation Limit Exceeded	213

Chapter 1 Introduction

This User Guide includes general warnings and cautions to avoid injury to personnel and damage to the system. These warnings and cautions are not intended to be, nor are they all-inclusive to every condition or application that may occur during operation. Maintenance and safety procedures remain the sole responsibility of the individual and his or her company.



IMPORTANT!

Some manuals may contain addendums that detail new or updated information. Before reading a manual, make sure to review all available addendums located at the end of the manual.

1.1 General Safety



WARNING!

Electrical shock risk - de-energize controller prior to connecting, disconnecting or servicing the controller, hot runner or mold.



WARNING!

Electrical hazard - risk of shock or personal injury. ALWAYS ensure the screw on the back of the top portion of the controller, marked with the general warning symbol, is installed when controller is energized. This is the grounding point for the top cover to the chassis. Removal of this screw could cause an unsafe condition unless proper precautions are taken such, as Lock Out Tag Out (LOTO).



WARNING!

Gas/vapor hazard - risk of respiratory injury. Certain processed materials could release harmful gas, vapors or dust. Install an exhaust system according to local codes. Plastic degrades with prolonged exposure to the setpoint temperature. Do not leave machine and controller unattended.

- The system should only be installed by qualified personnel in accordance with local codes.
- The safety of any system incorporating this equipment is the responsibility of the assembler of the system.
- Only persons with a thorough knowledge of the system's operation and capabilities should operate the system.
- Read all of these instructions before connecting power and turning on the system.
- Follow all warnings and instructions marked on the system.
- Unless specifically explained in this manual or directed by Husky, do not attempt to repair the system. Doing so could result in damage to the system, or serious personal injury.
- Only use the specified input supply voltage that is indicated on the identification label attached to the power input cable and/or the cabinet

NOTE: If unsure of the appropriate supply voltage, call the nearest Husky Regional Service and Sales office.

CAUTION!

Mechanical hazard - risk of damage to the equipment. NEVER allow the fan inlets or outlets on the unit to become blocked. This is where the system's cooling airflow enters and exits. If this area of the mainframe becomes cluttered and insufficient airflow results, damage may occur to the system.

CAUTION!


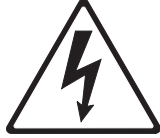
When switching OFF the system wait 30 seconds before switching the main disconnect back ON. Failure to wait 30 seconds may result in communication issues.

1.1.1 Safety Signs

Safety signs clearly mark potentially hazardous areas in or around equipment. For the safety of personnel involved in equipment installation, operation and maintenance, use the following guidelines:

The following safety symbol may appear on safety signs:

NOTE: Safety signs may include a detailed explanation of the potential hazard and associated consequences.

Safety Symbol	General Description of Symbol
	<p>General This symbol indicates a potential personal injury hazard. It is usually accompanied by another pictogram or text to describe the hazard.</p>
	<p>Hazardous Voltage This symbol indicates a potential hazard that may cause death or serious injury and will appear on any panel that, if removed, will expose the user to more than 40 VAC.</p>

1.2 Purpose of the Equipment

Husky controllers are designed to control the process temperature for injection molding applications only.

Contact your nearest Husky Regional Service and Sales office if you plan to use a Husky product for anything other than its intended use.

1.3 Restrictions of Use

Husky injection molding equipment must never be:

- used for any purpose other than that described in [Section 1.2](#), unless otherwise approved by Husky
- operated or serviced by personnel unfamiliar with the inherent risks and necessary precautions related to controllers

1.4 Input Wiring (Conventional)

The following table summarizes the wiring conventions used.

Description	Wire Color	
Neutral	Blue	
Earth/Ground	Green	Green/Yellow
Line	Black	Black

Description	Wire Color	
Line	Brown	Red
Line	Gray	White

**DANGER!**

Electrocution and/or mechanical hazard - risk of death or serious injury and possible damage to the equipment.

Incorrectly wiring the controller could cause death or serious injury and/or damage to the controller or hot runner. Only qualified personnel should connect the electrical power supply. All work must conform to applicable local electrical codes.

1.5 Environmental Operating Specification

For Indoor use only.

- Operating Temperature: 5 to 40 °C (41 to 104 °F)
- Operating Humidity: 90% RH maximum
- Altitude: up to 2000 m (6562 ft)
- Pollution Degree: PD2
- Overvoltage Category: OVIII

1.6 Equipment Ratings

Ratings for the entire Altanium Controller can be found on the nameplate attached to the back of the controller.

The following are the equipment ratings for the Altanium Matrix2 Operator Interface only:

- Supply Voltage: 100 to 240 VAC +/- 10%, single phase
- Frequency: 47 to 63 Hz
- Power Rating: 100 W (typical)

1.7 Technical Specifications

The dimensions and weight of the controller can change based on the controller configuration.

The following are the technical specifications for the Altanium Matrix2 Operator Interface only:

- Width: 430 mm (17 in)
- Height: 420 mm (16.5 in)
- Depth: 380 mm (15 in)
- Weight: 17.9 kg (39.5 lb)

1.8 Controller Lifting Instructions

Use the follow steps when lifting the Altanium controller. The lifting device (crane or forklift) and straps that are used vary in lifting ability and lengths, depending on whether the Altanium is a single, double, or triple stack controller. See the table that follows for the correct lifting ability and lengths.

Altanium Controller	Webbed Straps Rated 2903 kg (6400 lb)	Ratchet Strap	Lifting Device (Lifting Ability)
Single Stack	Two, 2.44 m x 25.4 mm (8 ft x 1 in.)	One, 1.52 m (5 ft)	227 kg (500 lb)
Double Stack	Two, 3.66 m x 25.4 mm (12 ft x 1 in.)	One, 1.83 m (6 ft)	454 kg (1000 lb)
Triple Stack	Two, 3.66 m x 25.4 mm (12 ft x 1 in.)	One, 2.44 m (8 ft)	907 kg (2000 lb)

- 1.** Place each of the webbed straps under the controller. See the table for the correct strap lengths.
 - a.** For single stack controllers, the webbed straps go under the equipment from left to right.
 - b.** For double and triple stack controllers, the webbed straps go under the equipment from front to back.
- 2.** Bring the straps up and above the Altanium controller and attach them to the lifting device.

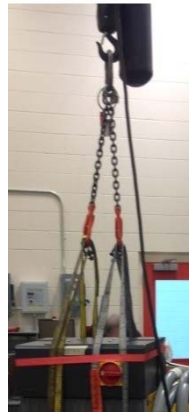


Figure 1-1 Attaching Straps to Lifting Device

- a. Make sure the straps are positioned between the caster wheels and the retaining brackets under the base of the controller.

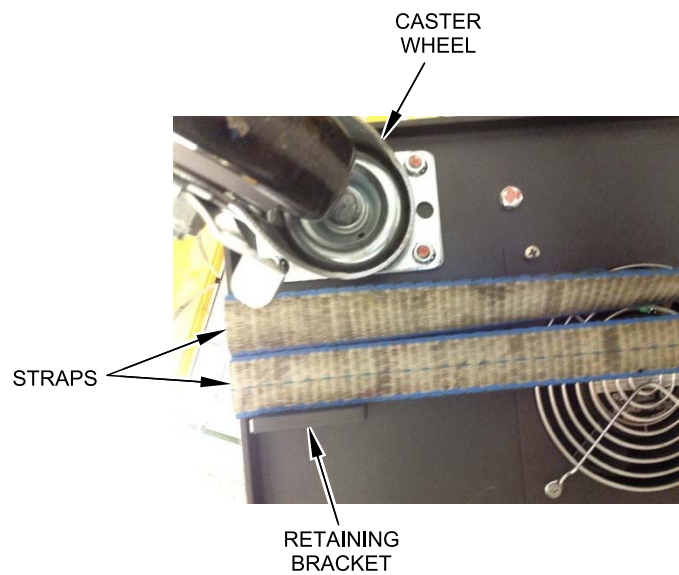


Figure 1-2 Positioning Straps

- b. Make sure the straps are not pinching or crushing any cables attached to the controller.

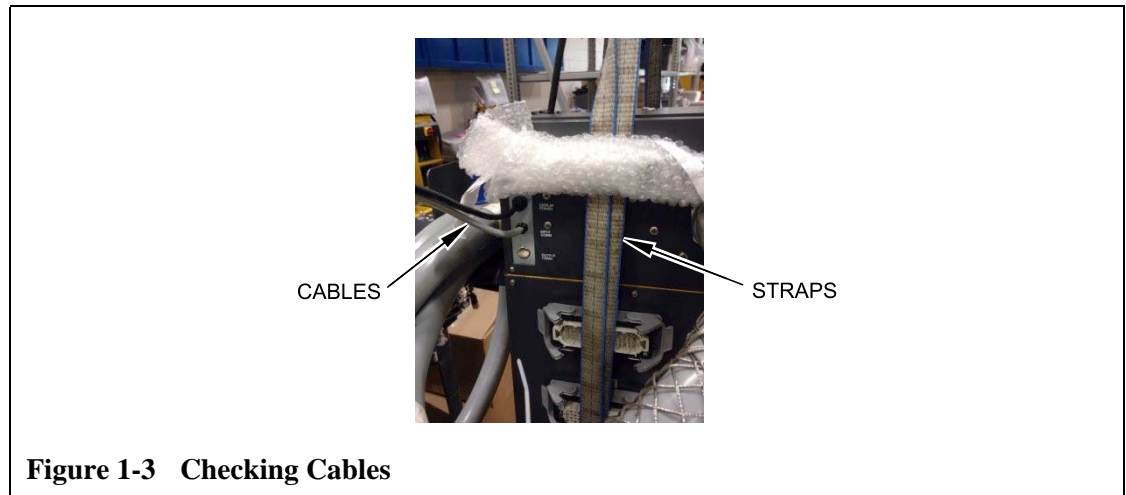


Figure 1-3 Checking Cables

3. Use the lifting device to apply enough upward force on the straps to remove the slack, but do not lift the controller at this time.
4. Place the ratchet strap around top of the controller, holding the four ends of the webbed straps. Do not tighten the ratchet strap at this time.
NOTE:The ratchet strap keeps the controller from tipping when the controller is lifted.
5. Place cloth or other cushioning material between the ratchet strap and the controller to keep the finish of the controller free from rubs and scratches.

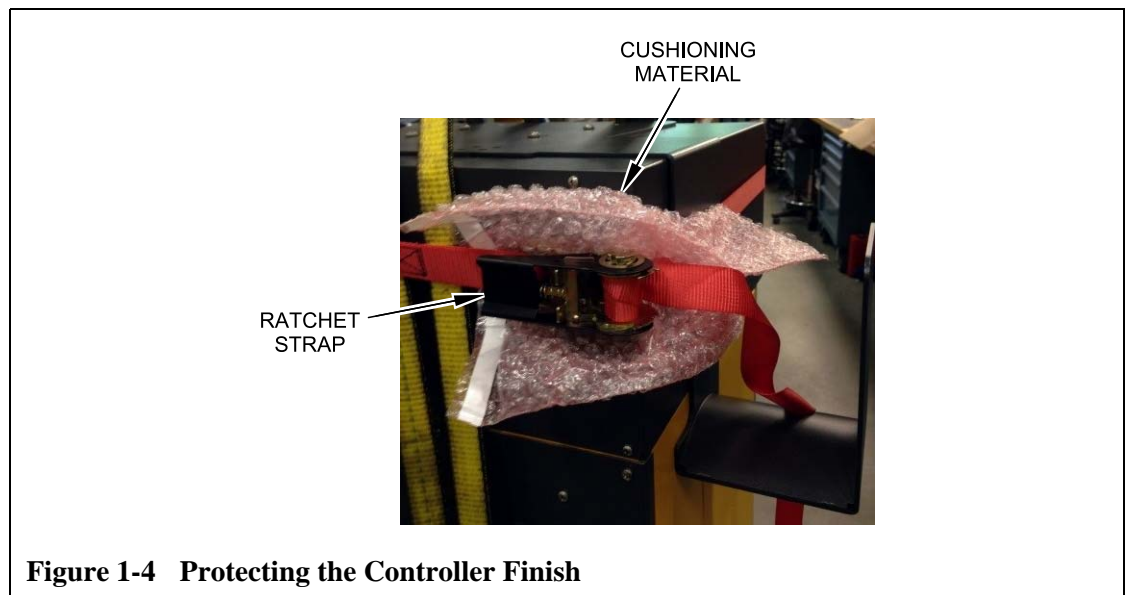


Figure 1-4 Protecting the Controller Finish

6. Tighten the ratchet strap.
7. Use the lifting device to slowly lift the controller off the ground a few inches.
8. Check the webbed and ratchet straps to ensure the controller will not tip.
9. Move the controller to the new location.
10. At the new location, slowly lower the controller to the ground.
11. Remove the ratchet straps, cushioning material and webbed straps from the controller.

Chapter 2 Hot Runner Temperature Control

This guide is designed to make sure that users receive the maximum possible benefit from the use of the Altanium Hot Runner Control Systems.

The Altanium controllers were designed as a processor's tool for hot runner molding. The fundamental criteria required to operate a hot runner mold is controlling the process temperature so that it is as consistent and repeatable as possible with respect to the process setpoint. The closer to the setpoint the process temperature is maintained at, the lower the setpoint temperature may be set. This equates to less cooling time required (energy in - energy out), and faster cycle times.

2.1 Types of Temperature Control

The Altanium controller uses two basic types of control:

- Open loop control with no thermocouple feedback.
- Closed loop control with thermocouple feedback. Closed loop can be sub-categorized as follows:
 - Internal Thermocouple - Located inside and as part of the heater assembly.
 - External Thermocouple - Located close to but not actually part of a single heater assembly, and may even be allocated to a group of heaters to form a zone.

2.1.1 Open Loop Control

Without a thermocouple, it is not possible to control the temperature inside the mold, only the amount of power supplied to the heater. Altanium maintains this power output accurately with a resolution of 0.1%. This method of control is called manual regulation.

Open loop control is normally associated with tip heaters, where the physical size of the tip precludes the use of an internal thermocouple.

2.2 Configuring Zones

In an effort to match the energy input requirements of differing types of loads, it is necessary for the output power delivered to the heaters to be adjusted over a range of 0 to 100%. The Altanium controller can be set up to achieve this by using either Zero Cross Control or Phase Angle Control.

2.2.1 Configuring a Zone for Zero Cross Control

This method defines how the power to each heater is averaged over a period of time. This is achieved by switching between complete half cycles of the heater supply voltage using a snubberless TRIAC as a switching device.

2.2.2 Configuring a Zone for Phase Angle Control

This method defines how the power to each heater is adjusted, by varying the point in each half cycle at which the snubberless TRIAC (switching device) is turned on.

In either control method, the Altanium controller recalculates the power output requirements for the entire system every 250 milliseconds to obtain the maximum control resolution. By combining either of the above control methods with the Active Reasoning Technology (ART) control algorithm, it is possible to achieve accurate temperature control with the expectation of control accuracy of ± 1 digit under steady state conditions.

2.3 Determining the Heater Size

Hot runner molds can have a number of different types of heating elements:

- Integral, which is a part of the probe.
- Cartridge, which is slid into the probe or directly into the mold steel.

In the manifold, a series of cartridge heaters or bent tubular style heaters are normally used.

The wire inside an element is typically made of nickel-chrome, which is then surrounded by magnesium oxide. The size of this wire and number of turns determine its resistance, which in turn determines its wattage (the amount of energy). This determines its performance in the mold. Undersize heating elements (too little wattage) create a serious problem when the control asks for power and none is available. In almost all cases it is better to be oversize than undersize in a hot runner mold.

The Altanium controller will provide wattage, resistance or amperage information for heaters, if equipped with X ICC² or X ICC³ cards. Alternatively, this information can be determined using Ohm's Law. The diagram and formulas that follow demonstrate how.



WARNING!

Electrical hazard - risk of death or serious injury. Disconnect all electrical power from the mold and controller prior to performing this test.

1. Using a multimeter, set the selector to measure resistance.
2. Place the (red) positive lead onto the first wire from the heating element and place the (black) negative lead from the meter onto the second wire (these may be pins on a connector, or the zone output fuses in the system as long as they are connected to the heating element).

The meter will now display a resistance in ohms. Note this measurement on a piece of paper.

Ohm's Law says:

$$\text{Amps} = \text{Watts} / \text{Volts}$$

$$\text{Amps} = \text{Volts} / \text{Resistance}$$

$$\text{Resistance} = \text{Volts} / \text{Amps}$$

$$\text{Watts} = \text{Volts} \times \text{Amps}$$

Example: If the resistance is 12.5 ohms, and the input voltage is 240 volts, divide 240 by 12.5 to calculate the maximum amperage draw on that heating element:

$$240 / 12.5 = 19.2 \text{ amps}$$

$$19.2 \text{ Amps} \times 240 \text{ volts} = 4,608 \text{ watts.}$$

In hot runner molding, some portions of Ohm's law are more useful than others. We have only presented here those laws that apply.

Input voltage	24 V	110 V	208 V	220 V	240 V
Resistance	20 Ω	20 Ω	20 Ω	20 Ω	20 Ω
Amperage	1.2 A	5.5 A	10.4 A	11.0 A	12.0A
Watts	28.8 W	605.0W	2163.2 W	2420 W	2880 W

2.4 Thermocouple Types and Color Codes

Altanium controllers use the ANSI color code for all thermocouples. The following table is provided as reference for hot runners and cables that follow other color code standards.

Code	Type	International Color Code (BS4937 Part 30:1993)	BRITISH (BS1843:1952)	U.S. ANSI	GERMAN DIN
J	Iron/ Constantan/ (Copper-Nickel)	Overall Black	Overall Black	Overall Black	Overall Blue
		+ ve - ve Black White	+ ve - ve Yellow Blue	+ ve - ve White Red	+ ve - ve Red Blue
K	Nickel- Chromium/ Nickel-Aluminum	Overall Green	Overall Red	Overall Yellow	Overall Green
		+ ve - ve Green White	+ ve - ve Brown Blue	+ ve - ve Yellow Red	+ ve - ve Red Green

Chapter 3 Connecting the System to the Mold

This chapter outlines various checks to make prior to starting up the system.

3.1 Prior to Startup



DANGER!

Electrocution hazard— contact with hazardous voltages will cause death or serious injury. Make sure that the system is completely disconnected from the power source.

- Clean up any water, oil, dirt, cleaning fluids etc. that may have spilled during a mold change or since the last production run.
- Make sure the display module is mounted to either the controller or remotely. For more information, refer to [Section 15.4.2](#) or [Section 15.4.3](#).
- Make sure the cooling fan is free from obstructions.
- Check all of the cable connections between the system and the mold (if required). Make sure all of the cables are free from wear or damage.
- Check that the earth/ground connection is in good condition. Verify the system and the mold have the same ground reference.

3.2 Connecting to the Power Source

To connect the power source, do the following:



DANGER!

Electrocution hazard— contact with hazardous voltages will cause death or serious injury. Make sure that the system is completely disconnected from the power source.

1. Connect the thermocouple and power output cables (if required).
2. Using an Ohmmeter, touch one test lead to the mold and the other to the mold ground terminal on the system. Resistance must be less than 1 Ω .
3. Make sure the main input power disconnect is in the OFF position.
4. Connect the controller to the power source.

3.3 Startup Procedure Checklist

To startup the controller, perform the following procedures in order:

Item	Step	✓
1	Connect power/thermocouple cables between the mold and controller (if required).	
2	Connect the I/O box or option cables (if required).	
3	Connect the controller to the power source.	
4	Switch the controller ON.	
5	Login to the system (if required).	
6	Select the required mold setup.	
7	Verify the mold setup is the correct one by checking the name and setpoints in the preview window.	
8	Correct any faults found during diagnostics.	
9	Touch START to run the system.	
10	Check that the controller is functioning correctly by monitoring the Graphical View/Text View screen.	

NOTE: There are no controller to mold interconnection details included in this User Guide. If this information is required, please call the nearest Husky Regional Service and Sales office.



IMPORTANT!

When turning off the system, wait 30 seconds before turning the main disconnect switch back on. Turning the system off and on incorrectly may result in system communication problems.

Chapter 4 Altanium Operator Interface

This chapter provides a brief overview of the functionality of the Altanium system and provides information about the following:

- Altanium operator interface
- Altanium buttons
- Altanium status
- Language selection

4.1 General Layout

The operator interface consists of a touch-sensitive display screen.

4.1.1 Altanium Operator Interface

The Altanium operator interface is a high-resolution color LCD display covered by a transparent touch screen. This display offers the advantages of high definition and a wide viewing angle, even in poor lighting conditions.

CAUTION!

Mechanical hazard – risk of equipment damage. Use a finger to operate the touch screen. Do not use a screwdriver, pen, or any other tool to touch the screen as this may damage the touch screen.

Use the touch screen to change settings on the Altanium operator interface. This display is referred to as the Altanium for the remainder of this guide.

4.1.2 Home Screen





The Home screen provides a single area to navigate to all other screens in the system. The Home screen can be accessed from any other screen in the system by touching the Home button in the system header. The system screen selections on the Home screen are organized into groups: Views, Shortcuts, Common Screens, Heat Screens, and System Configuration Screens.




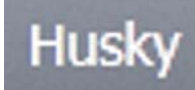
4.1.3 Altanium Buttons

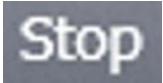
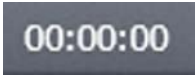
Altanium has a system header and a footer that are visible on every screen throughout the system.

4.1.3.1 Controller Function Buttons





Button	Description
	Touch the Stop button to switch off the power to all zones, regardless of system condition.
	Touch the Start button to switch on the power to the zones that have a setpoint displayed.
	Touch the Standby button to place the system in standby. If a timer is active, the time remaining is displayed in the status bar. This button is not available during ART.
	Touch the Boost button to place the system in boost mode. If a timer is active, the time remaining is displayed in the status bar. This button is not available during ART.

4.1.3.2 System Status Field

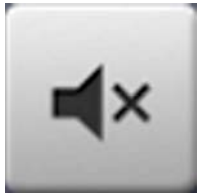

Button	Description
	<p>At Temperature indicates the following:</p> <ul style="list-style-type: none"> Flashes when the controller is heating zones up to the setpoint temperature. Solid when all automatic zones are 'At temperature'. Off if the controller is in the 'Stop' state.
	<p>Company Name is displayed.</p>

Button	Description
	<p>System Mode. For a description of each system mode, refer to Section 4.1.5.</p>
	<p>System Timer. Displays the timer value.</p>

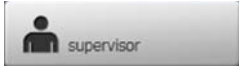


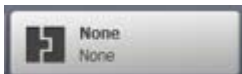

4.1.3.3 Navigation Buttons

Button	Description
	<p>Touch the Back button to display the previous screen (maximum of 10 screens back). Note: The Home Screen is not included as part of the navigation history.</p>
	<p>Touch the Forward button to display the next screen (maximum of 10 screens forward). The Home Screen is not included as part of the navigation history.</p>
	<p>Touch the Home button to display the Home screen.</p>
	<p>The Screen Indicator displays an Icon of the screen that is currently being viewed. If a Zone Data screen (Neo2 View, Multi Group View, Graph View, or Text View) is displayed, this becomes a Configuration button that when touched changes the screen to display more or less zone information.</p>

4.1.3.4 Alarm Buttons

	<p>Touch the Silence Horn button to silence the audible alarm.</p>
	<p>Touch the Alarm Status button to access the Alarm screen. The time and a description of the highest priority active alarm will be displayed. If an alarm is active, the Triangle Icon (Warning) will turn yellow and the background of the button will flash red.</p>




4.1.3.5 System and User Management Buttons

	<p>Displays the name of the current user logged in. Touch the User Log off/Log on button to display the User Login dialog box. This button toggles between Login and Logout</p>
	<p>Touch the Help button to launch the PDF viewer and display the User Guide on the screen.</p>
	<p>Touch the Print button to open the Print dialog box containing the available printing choices.</p>
	<p>The Mold Setup Info button displays the currently loaded mold and associated mold folder. The upper word is the name of the mold folder. The lower word is the name of the mold setup file. Touch this area to display the Mold Setup screen.</p>
	<p>Touch the Language Selection button to display and select the available screen languages.</p>

4.1.4 Dialog Box Buttons

The following buttons are available in Altanium dialog boxes.

Table 4-1 Dialog Box Buttons

Screen	Description
	Accept
	Cancel
	Exit

4.1.5 System Modes

The system mode is displayed in the status bar on each screen.






System Mode	Description
Stop	The system is stopped and no power is being applied to the heaters.
Running	The system is heating up to or maintaining the normal setpoint.
Manual Standby	The user pressed the Manual Standby button and the system is heating to the manual standby setpoint.
Remote Standby	An external signal has activated the remote standby mode and the system is heating up to the remote standby setpoint.
Delay Standby	The system is delaying for a set period of time before entering the remote standby mode.
Manual Boost	The user pressed the Manual Boost button and the system is heating to the manual standby setpoint.
Remote Boost	An external signal has activated the remote boost mode and the system is heating up to the remote boost setpoint.
Delay Boost	The system is delaying for a set period of time before entering Remote Boost mode.
ART	The Active Reasoning Technology (ART) tuning process is active.
Calibration	A user is calibrating the thermocouple inputs for each zone.
Diagnostics	The mold diagnostics process is active.
Firmware Update	A firmware update is in process on the selected control cards.
Bake Out Cycle 1	The system is baking out moisture in the mold. This is the first attempt.

System Mode	Description
Bake Out Cycle 2	The system is baking out moisture in the mold. This is the second attempt.
Bake Out Cycle 3	The system is baking out moisture in the mold. This is the third attempt.
Bake Out Cycle 4	The system is baking out moisture in the mold. This is the fourth attempt.
Bake Out Cycle 5	The system is baking out moisture in the mold. This is the fifth attempt.
Soft Start	The system is heating all zones up to setpoint in a gradual and even manner.
Soft Start to Manual Standby	The user pressed the manual standby button while the system was in the soft start process.
Soft Start to Remote Standby	While the system was in the soft start process, an external signal was activated to attempt to heat all zones up to the remote standby setpoint.
Stage x Active (Heating)	All zones assigned to stage x (1-4) are heating to the stage setpoint.
Stage x Active (ART)	The ART process is running on only the zones assigned to stage x.
Stage x Soaking (Heating)	After heating up, the system will maintain the stage x setpoint until the soak timer expires.
Stage x Active (Cooling)	All zones assigned to stage x are cooling to the stage setpoint.
Stage x Soaking (Cooling)	After cooling down, the system will maintain the stage x setpoint until the soak timer expires.
Stage 4 Running Indefinitely	The system will remain in stage 4 until the user presses the Start button to heat the zones to the normal setpoint.
Bake Out Check	The system is searching for any bake out conditions on any zone. These bake out conditions would be less severe than a earth leakage.
Earth Leakage Check	The system is searching for any earth leakage conditions on any zone.
Circuit Test	The system is verifying that there are no heater circuit faults (open circuit, short circuit, leakage or wrong heater) on any zones.

4.1.6 View Buttons

The Altanium views display zone data in various formats. Touch the desired view button to open the associated view screen.


Table 4-2 Views Buttons

View Button	Description
	<p>Touch the Neo2 View button to display the Neo2 View screen.</p>
	<p>Touch the Multi Group View button to display the Multi Group View screen, which contains zones organized into groups and allows individual control of each group.</p>
	<p>Touch the Graphical View button to display the Graphical View screen, which contains a graphical representation of zone data.</p>
	<p>Touch the Text View button to display the Text View screen, which contains a textual representation of zone data.</p>
	<p>Touch the Mold Picture View button to display the Mold Picture View screen, which provides a visualization of the mold or hot runner system layout using an imported image file.</p>

4.1.7 Shortcut Buttons

The Altanium shortcut buttons provide a link to the **Quick Set** screen for those zones that are assigned to the associated group represented by the button. A maximum of ten shortcut buttons can be displayed at once on the **Home** screen.

Table 4-3 Shortcut Button

Shortcut Button	Description
	Touch the shortcut button to open the Quick Set screen and automatically select the zones assigned to the group associated to the shortcut.

4.1.7.1 Creating a Shortcut Button

To create a shortcut button, do the following:

On the **Quick Set** screen, select a group of zones. Touch the Group Name parameter and assign a group name to the selected zones. For each group created, a shortcut button appears on the **Home** screen. For more information about creating a group, refer to [Section 7.2](#).

4.1.8 Screen Buttons

The Home screen provides a single area for a user to navigate to all other screens in the system. The Home screen can be accessed from any other screen in the system by touching the Home button in the System Header.

Table 4-4 Screen Buttons



Screen	Description
Common Screens	
	Alarms
	Event History

Table 4-4 Screen Buttons (Continued)








Screen	Description
	Process Targets
	Process Trend
	Process History
Heat Screens	
	Quick Set
	ART Process
	Zone Calibration
	Zone Slot

Table 4-4 Screen Buttons (Continued)


Screen	Description
	Card Layout
	Mold Diagnostics
	Diagnostics Results
	Energy Display
	Supply Voltage
	Staging
System Configuration Screens	
	System Setup

Table 4-4 Screen Buttons (Continued)









Screen	Description
	Network Setup
	Mold Setup
	Digital I/O
	User Management
	Servo I/O This functionality is optional and the button appears on the Home screen if the system is equipped with UltraSync-E control.
UltraSync-E Screens (If Equipped)	
	Main

Table 4-4 Screen Buttons (Continued)

Screen	Description
	Profile
	Setup

4.2 Multi Group View Screen

Use the **Multi Group View** screen to view all user configured zone groups. Each group has its own controls for synchronously turning all zones in the group on or off, and putting them into standby or boost mode.

NOTE:For information about creating groups, refer to [Section 7.2](#).



IMPORTANT!

The **Stop**, **Start**, **Standby**, and **Boost** buttons at the top left corner of the screen apply to all zones and will override the group settings.

Touch the column heading to sort the information in that column. A red line at the top of the column header indicates the information is in ascending order. A red line at the bottom of the column header indicates the information is in descending order.

NOTE:Touching the top right screen icon toggles the multi group view screen between a two column view and a one column view.

Select a single zone or a block of zones to automatically open the **Quick Set** screen with that zone or block of zones selected.

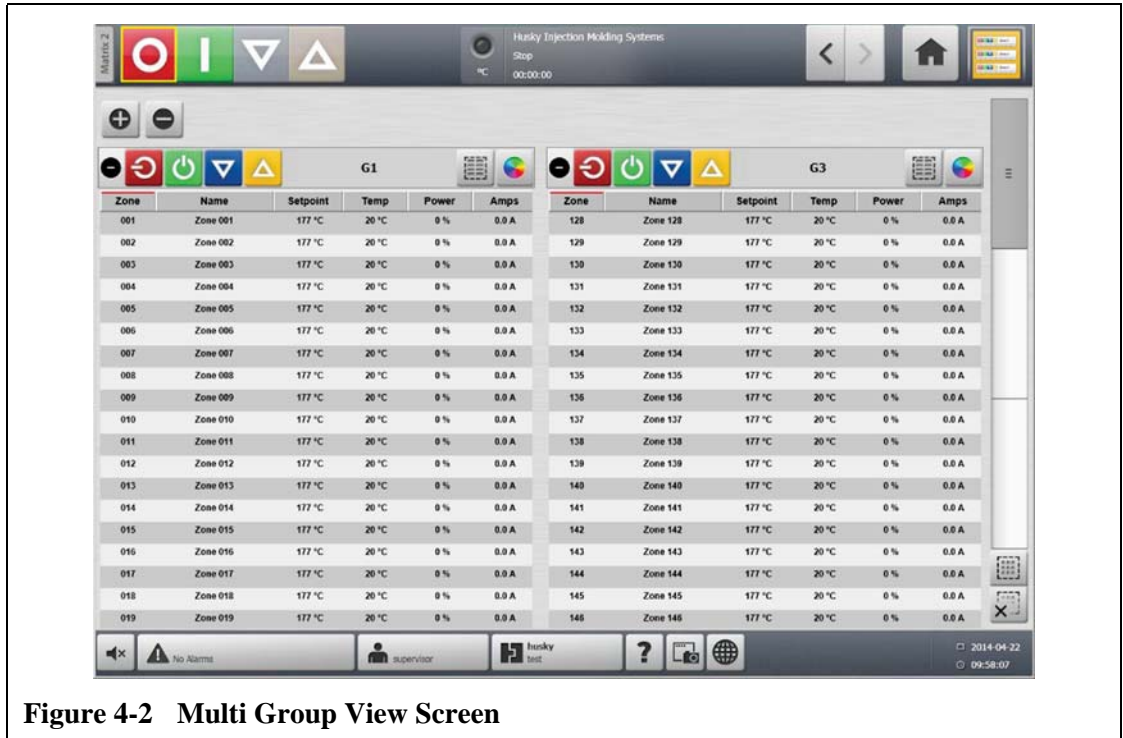


Figure 4-2 Multi Group View Screen

Table 4-5 Multi Group View Screen Buttons











Button	Description
	Expands all group information lists.
	Collapses all group information lists.
	Expands the related group information list. If this button is green, the actual temperature for all zones is within the lower alarm limit. If this button is black, the actual temperature for all zones is not within the lower alarm limit.

Table 4-5 Multi Group View Screen Buttons (Continued)

Button	Description
	<p>Collapses the related group information list.</p> <p>If this button is green, the actual temperature for all zones is within the lower alarm limit.</p> <p>If this button is black, the actual temperature for all zones is not within the lower alarm limit.</p>
	<p>Turns off the zones in that group if they are on.</p>
	<p>Turns on the zones in that group if they are off.</p>
	<p>Sets the zones in this group to manual standby. Multiple groups can be placed in standby at once. This button will be inactive if any groups are in boost mode.</p>
	<p>Sets the zones in this group to manual boost. Multiple groups can be placed in boost at once. This button will be inactive if any groups are in standby mode.</p>
	<p>Opens the Quick Set screen. Opening the Quick Set screen automatically selects all zones in the group.</p>
	<p>Opens the Color dialog box.</p>

4.2.1 Changing the Header Color

Users can assign a header color to a group displayed on the **Multi Group View** screen. For more information about creating a group, refer to [Section 7.2](#).

To change the header color, do the following:

1. On the **Multi Group View** screen, touch the **Color Change** button.

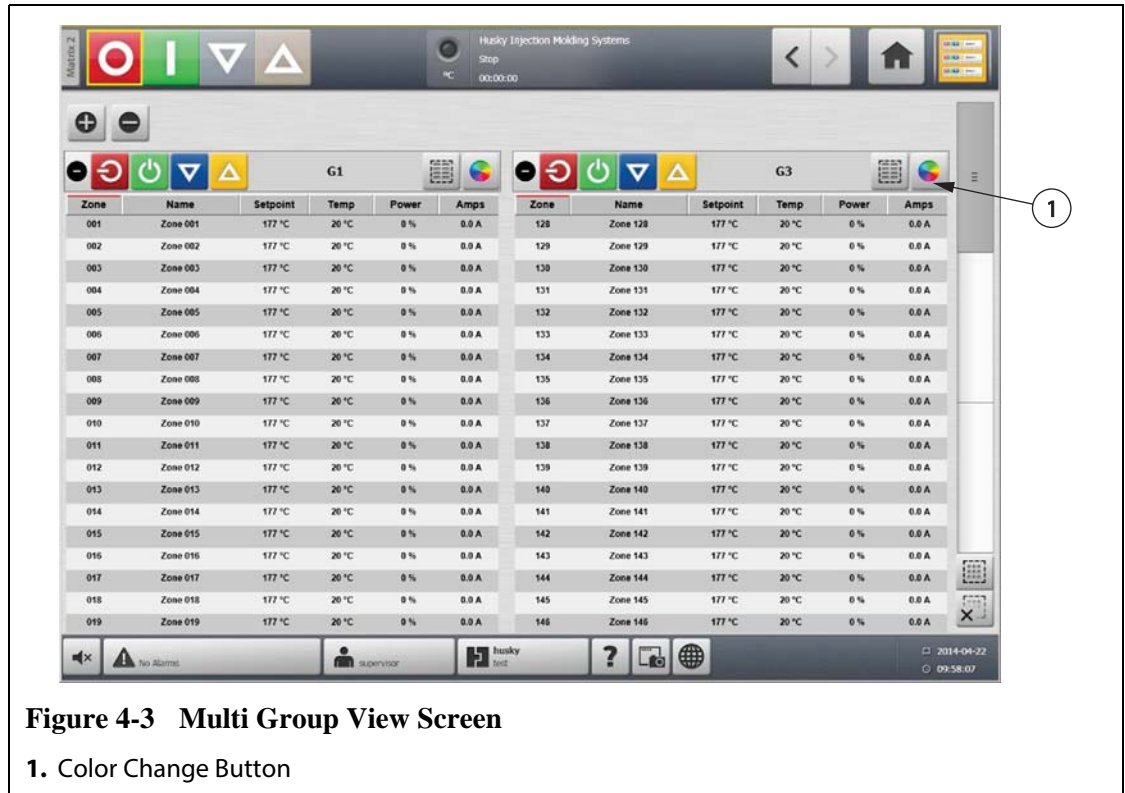


Figure 4-3 Multi Group View Screen

1. Color Change Button

2. Touch the desired color.

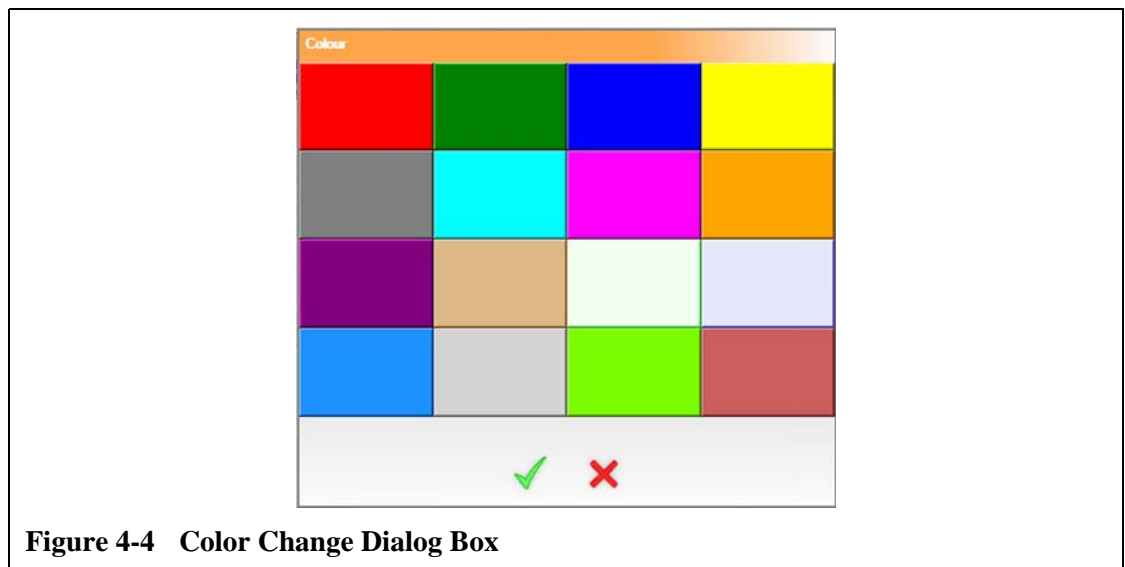


Figure 4-4 Color Change Dialog Box

3. Touch the **Accept** button.

4.3 Selecting a Language

Altanium screens are available in several languages. The default language is English. Each screen contains a globe icon which displays the available languages.

To select a language, do the following:

1. Touch the **Language Selection** button. The Language dialog box appears.

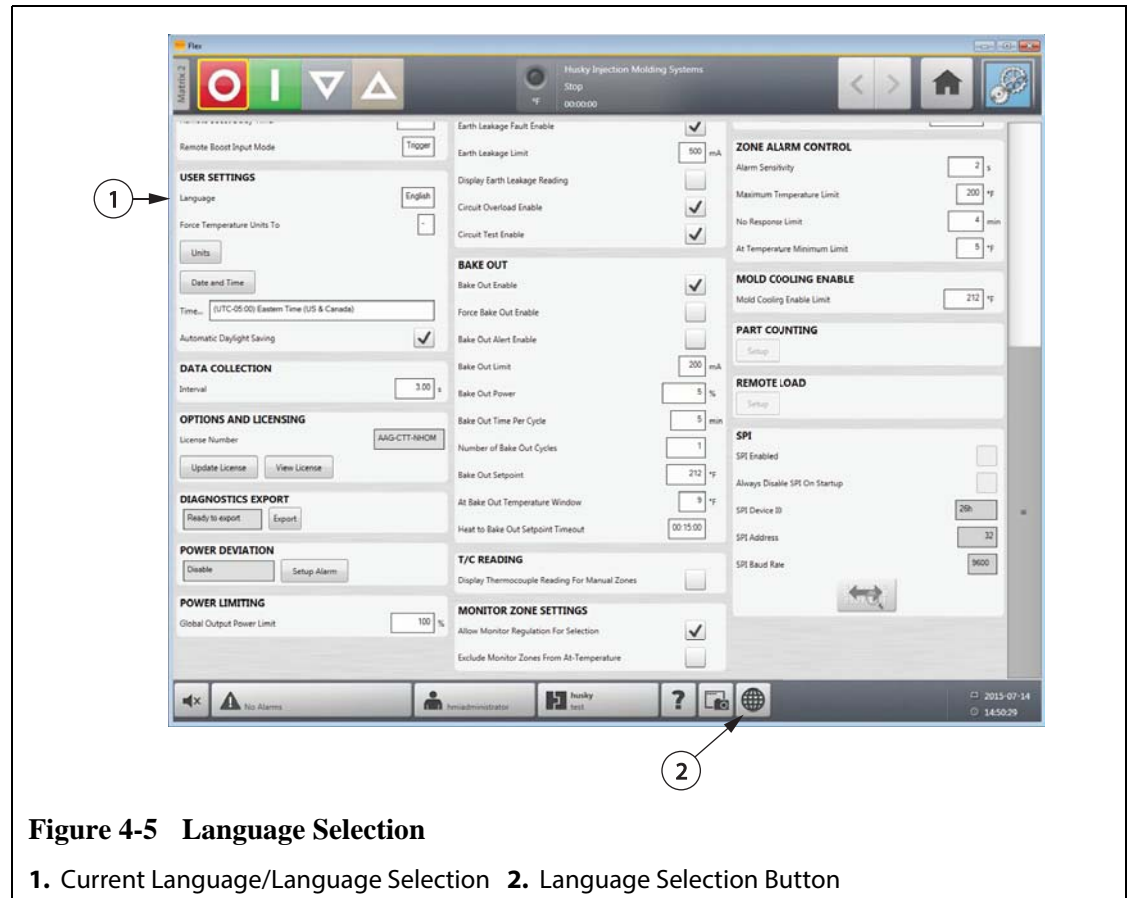
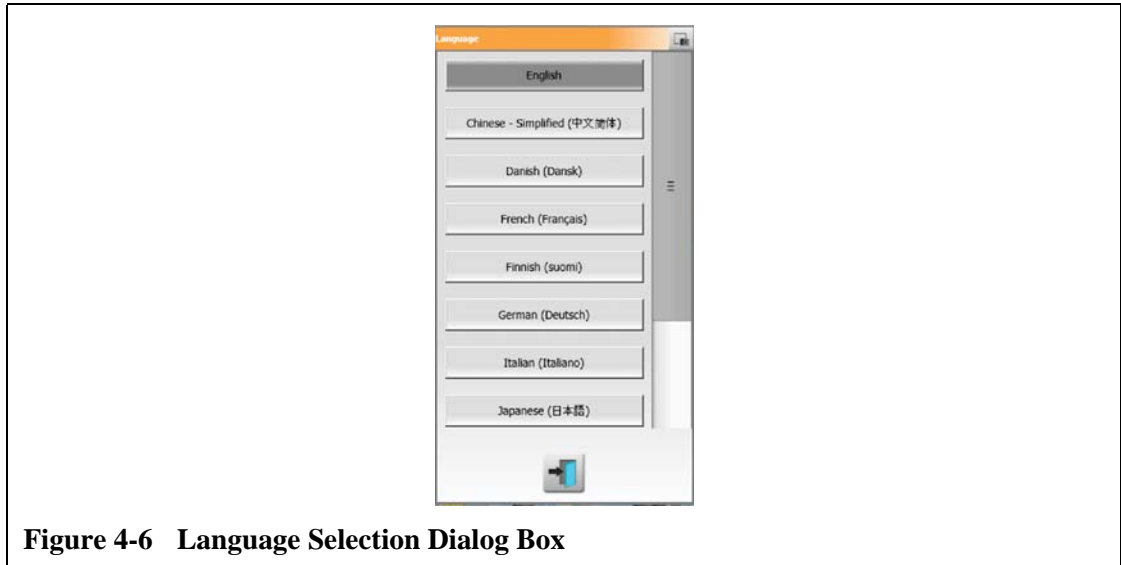


Figure 4-5 Language Selection

1. Current Language/Language Selection
2. Language Selection Button

2. Touch the desired language.



3. Touch the **Close** button.

4.4 Printing to a File

To open the **Print** dialog box, touch the **Print** button on any Altanium screen. For more information, refer to [Section 4.1.3.4](#). Files will be saved in System\Reports folders.

To print a single file, do the following:

1. Touch the **Print** button.
2. Select the desired report type.
3. Select the desired file format.
4. Touch the **Accept** button to save the selected content to a System\Reports folder.
5. Copy the content saved to a USB drive or Network as desired.

Continuous Printing allows the user to set up print reports at specified intervals. Users can select the type of report to be generated (Reports Type) and File Format. Users can also specify print interval and duration time. Files will be generated after each interval timer expires. At the specified duration time, or when the user clicks the **Stop** button, continuous printing will be terminated. The generated files contain the same information as with single file printing.

To print to a file using the Continuous Printing feature, do the following:

1. Expand the **Continuous Printing** button.
2. Select the desired report type.
3. Select the desired file format.
4. Select the desired print interval.
5. Select the desired print duration.

6. Touch the **Start** button to initiate the continuous printing.
7. Copy the content saved to a USB drive or Network as desired.

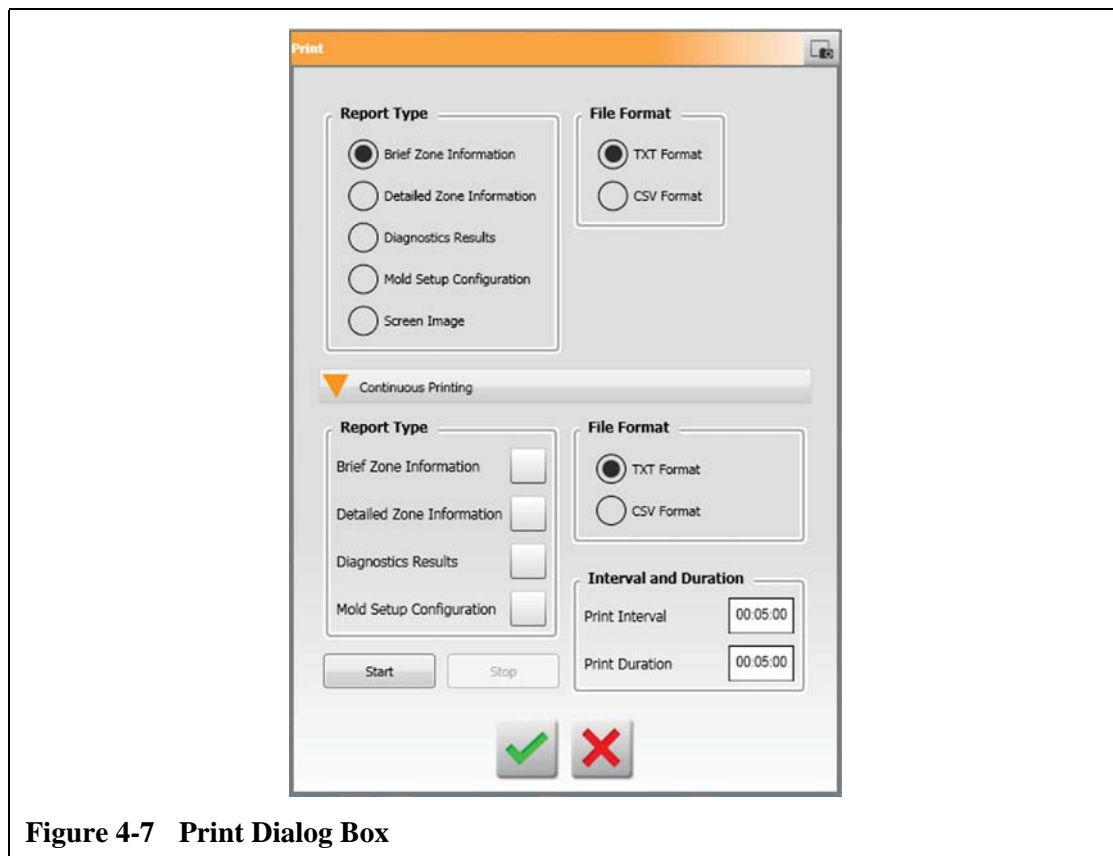


Figure 4-7 Print Dialog Box

Table 4-6 Print Dialog Box Item Descriptions

Item	Description
Report Type	Select the types of information to print: <ul style="list-style-type: none"> • Brief Zone Information • Detailed Zone Information • Diagnostics Results • Mold Setup Configuration • Screen Image
File Format	Select the file format to print. Select one of the following: <ul style="list-style-type: none"> • TXT format • CSV format
Accept Button	Saves changes made in the print dialog box and starts the printing process.
Cancel Button	Cancels the selected printing request.

4.4.1 Print Report Descriptions

This section provides a description of each print report.

Generated files will automatically be saved to one of the following paths:

- System\Reports\Zones
- System\Reports\Diagnostics
- System\Reports\Setups
- System\Reports\Screens

Print Report Type	Description
Brief Zone Information	From the Text View screen, print the following columns to file: <ul style="list-style-type: none"> • zone number • setpoint and units • actual temperature and units
Detailed Zone Information	From the Text View screen, print the following to file: <ul style="list-style-type: none"> • Zone Number • Zone Name • Setpoint • Temperature • Power • Amperage • Alarm Limit • Abort Limit • Regulation Mode • Watts • 240V Watts • Volts AC • Resistance
Diagnostics Results	From the Test Results screen, print the following to file: <ul style="list-style-type: none"> • Zone Number • Zone Name • Sensor • Fuses • T/C • Amperage • Volts AC • Watts • Resistance • Wiring • Isolation • Earth Leakage • Bake Out • Time

Print Report Type	Description
Mold Setup Configuration	<ul style="list-style-type: none"> • Zone Number • Zone Name • Setpoint • Minimum Setpoint Limit • Maximum Setpoint Limit • Power Limit • Alarm • Abort • AMC • PCM • Regulation • Manual Standby Setpoint • Remote Standby Setpoint • Manual Boost Setpoint • Remote Boost Setpoint • Sensor input • Slave To • Output (Zero Cross or Phase Angle) • Earth Leakage Enable • Control (PID or ART) • P (Proportional) • I (Integral) • D (Derivative)
Screen Image	Saves the current user interface screen to file in an image file format (.png).

4.5 Network Settings

On the **Network Setup** screen, the user can enter the network path for the shared network folder for uploading files from or downloading files to the controller, in the format \\server\shared folder. The controller uses the following network user credentials:

User Name: husky

Password: husky

To modify the network settings, do the following:

1. On the **Home** screen, touch the **Network Setup** button.
2. Touch the Network Locations field and enter the required information.
3. Touch the **Accept** button.

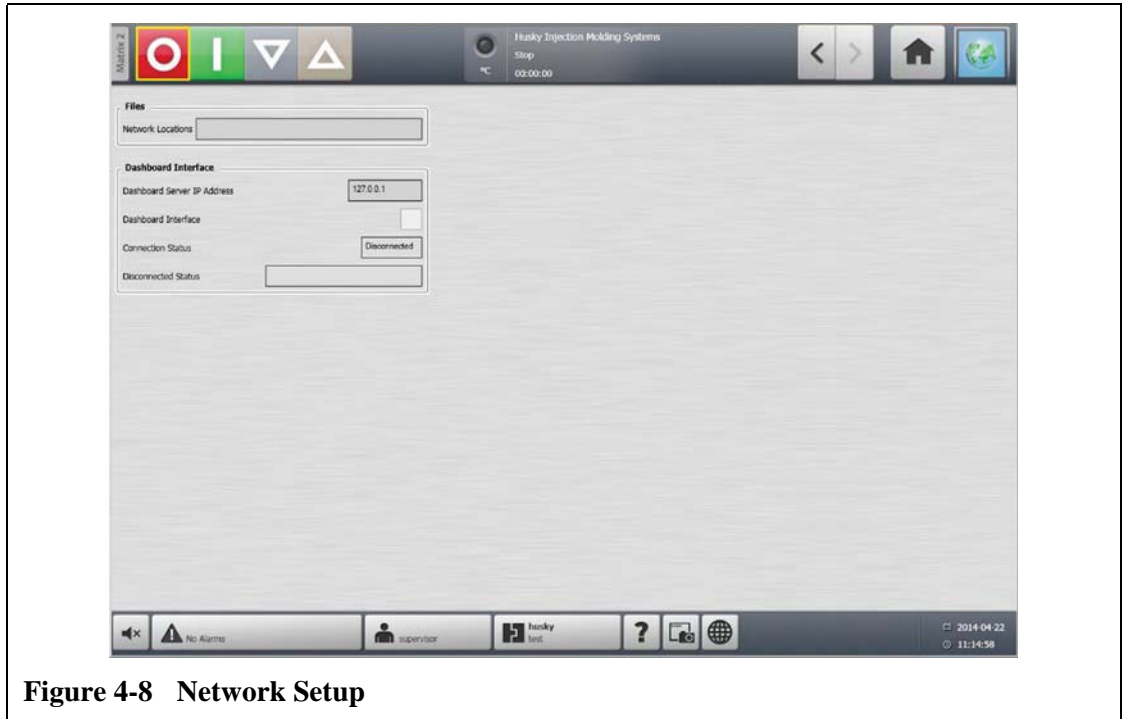


Figure 4-8 Network Setup

4.6 Supply Voltage Screen

The **Supply Voltage** screen displays a graphical view of the phase pairs based on the Supply Configuration parameter selected in the **System Setup** screen:

- Delta 3PH
- Wye 3PH+N
- Single Phase
- Integrated TX

4.6.1 Viewing the Supply Voltage

To view the **Supply Voltage** screen, do the following:

On the **Home** screen, touch the **Supply Voltage** button. The **Supply Voltage** screen displays for the type of configuration selected.

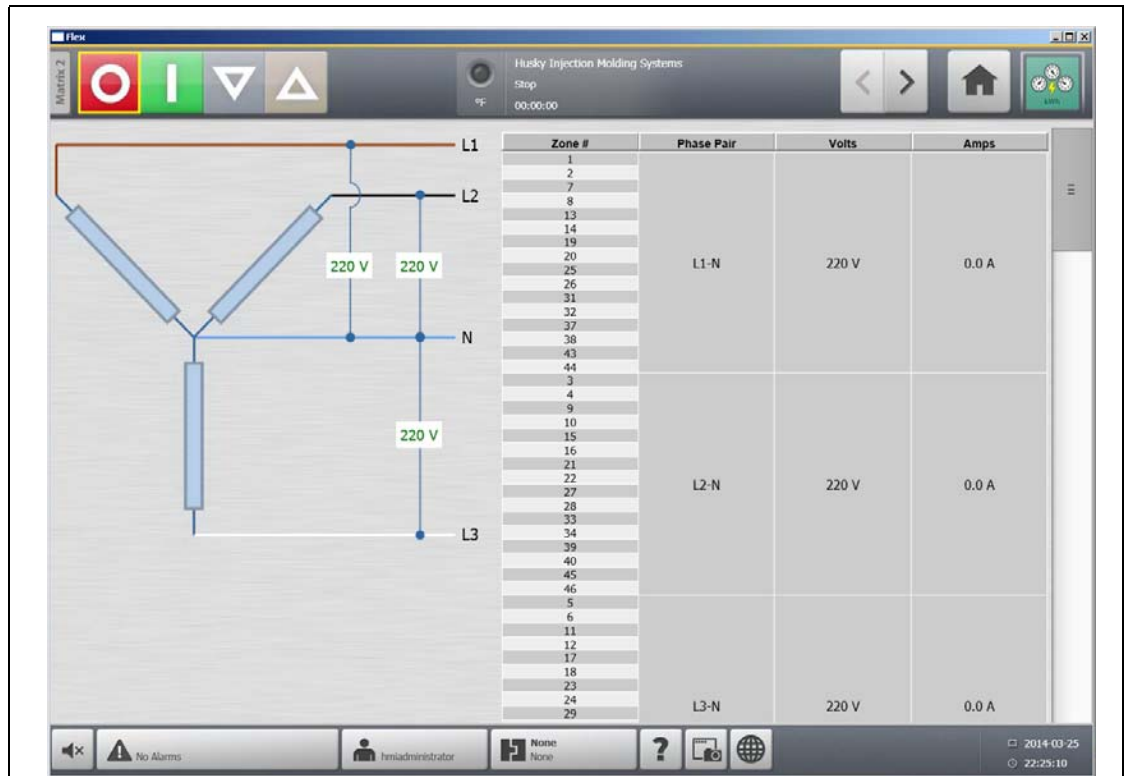


Figure 4-9 Wye 3PH+N Supply Voltage Screen

Item	Description
Schematic	The image is a visual representation of the supply configuration
Zone #	Zone number of all the zones associated with a phase pair
Phase Pair	Phase pair label associated with the supply configuration graphic
Volts	The average voltage value for all the zones associated with a phase
Amps	The average amperage value for all the zones associated with a phase

NOTE:The amperage value displayed shows one decimal place for systems with ICC² cards installed and two decimal places for systems with ICC³ cards installed. Both voltage and amperage values display “---” if the voltage and amperage is not calibrated for all the zones associated with a particular phase. The amperage value also displays “---” if all of the zones associated with a particular phase are XL or HL cards.

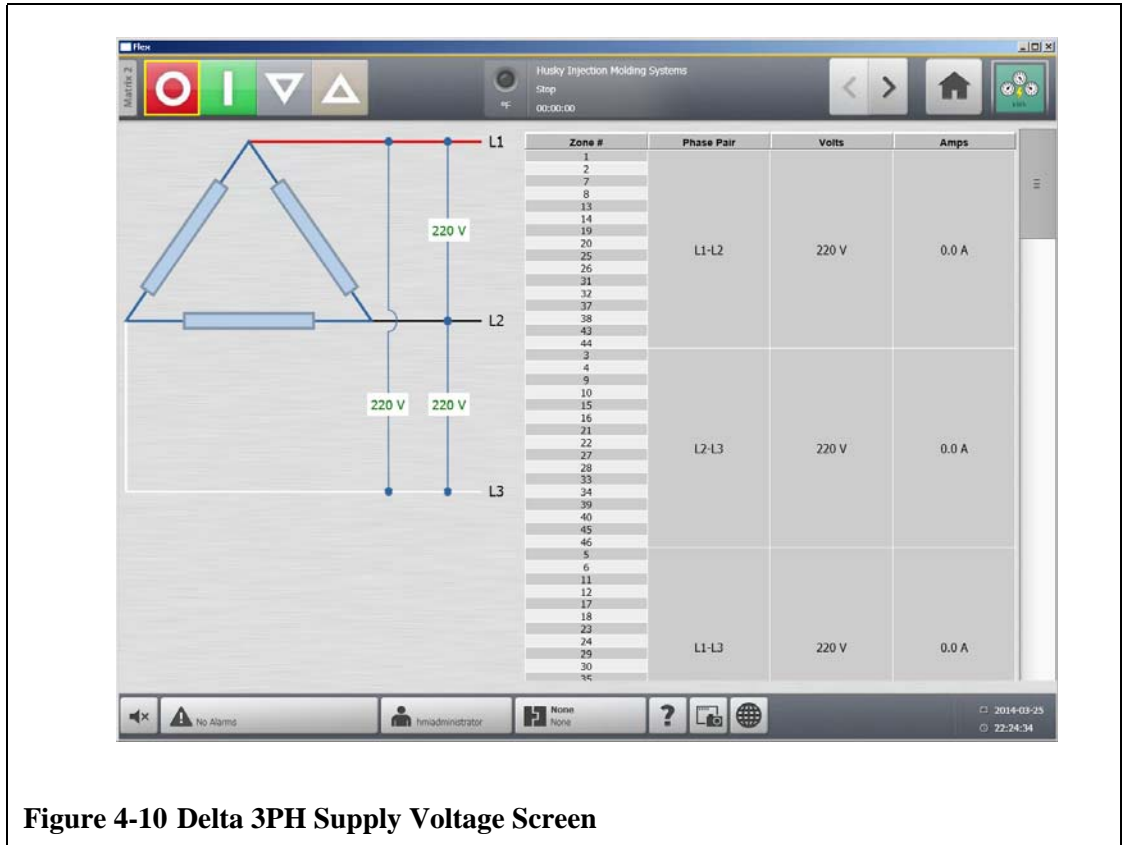


Figure 4-10 Delta 3PH Supply Voltage Screen

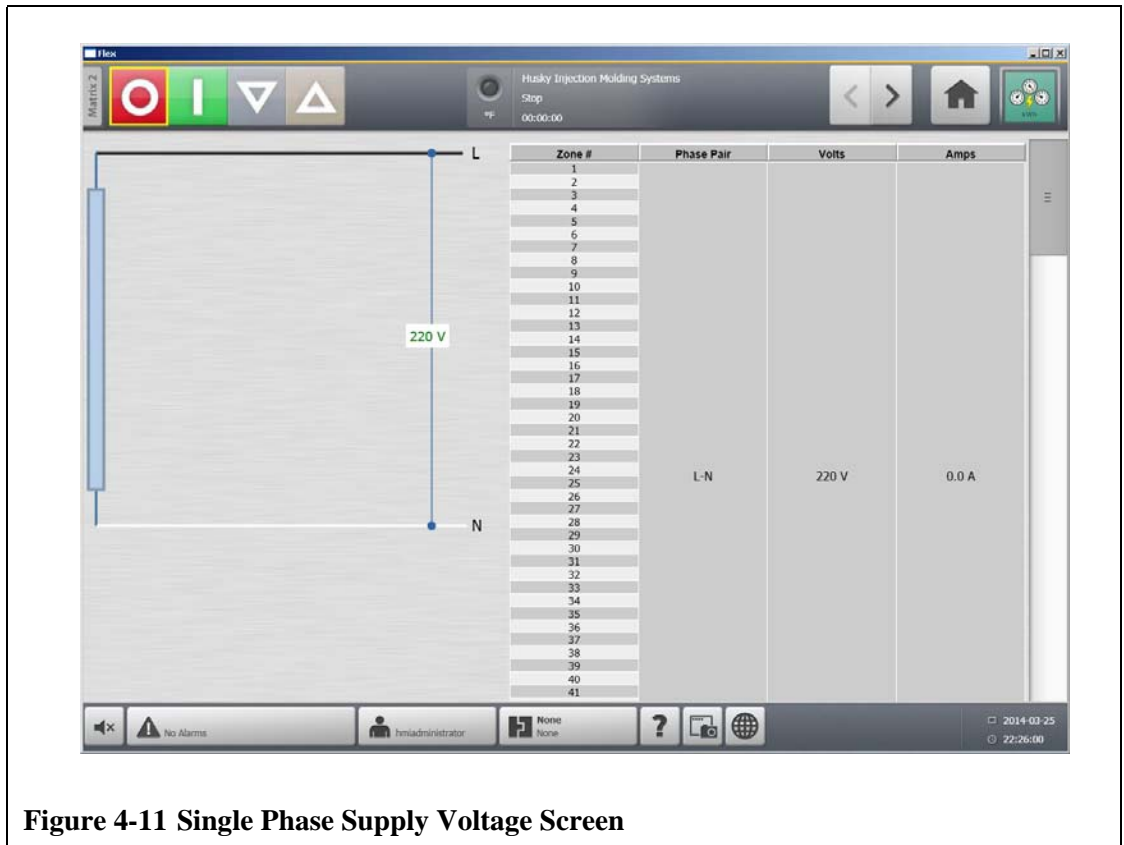


Figure 4-11 Single Phase Supply Voltage Screen

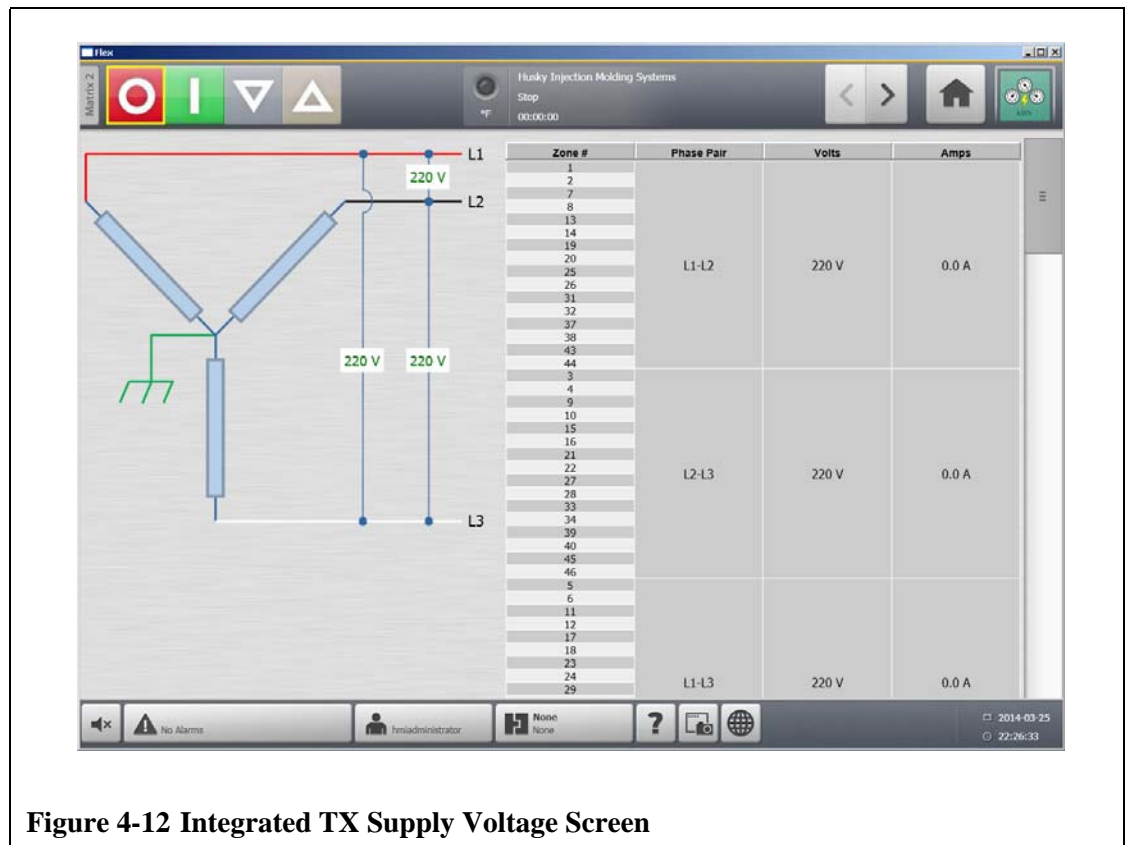


Figure 4-12 Integrated TX Supply Voltage Screen

4.6.2 Configuring the Supply Voltage

The Altanium system is configured at the factory for the supply configuration. If the system is shipped to another location where the power configuration is different (for example: another country), the setting may need to be changed.

To configure the supply voltage, do the following:

1. On the **Home** screen, touch the **System Setup** button.
2. Under **Voltage Settings**, touch the **Supply Configuration** field.

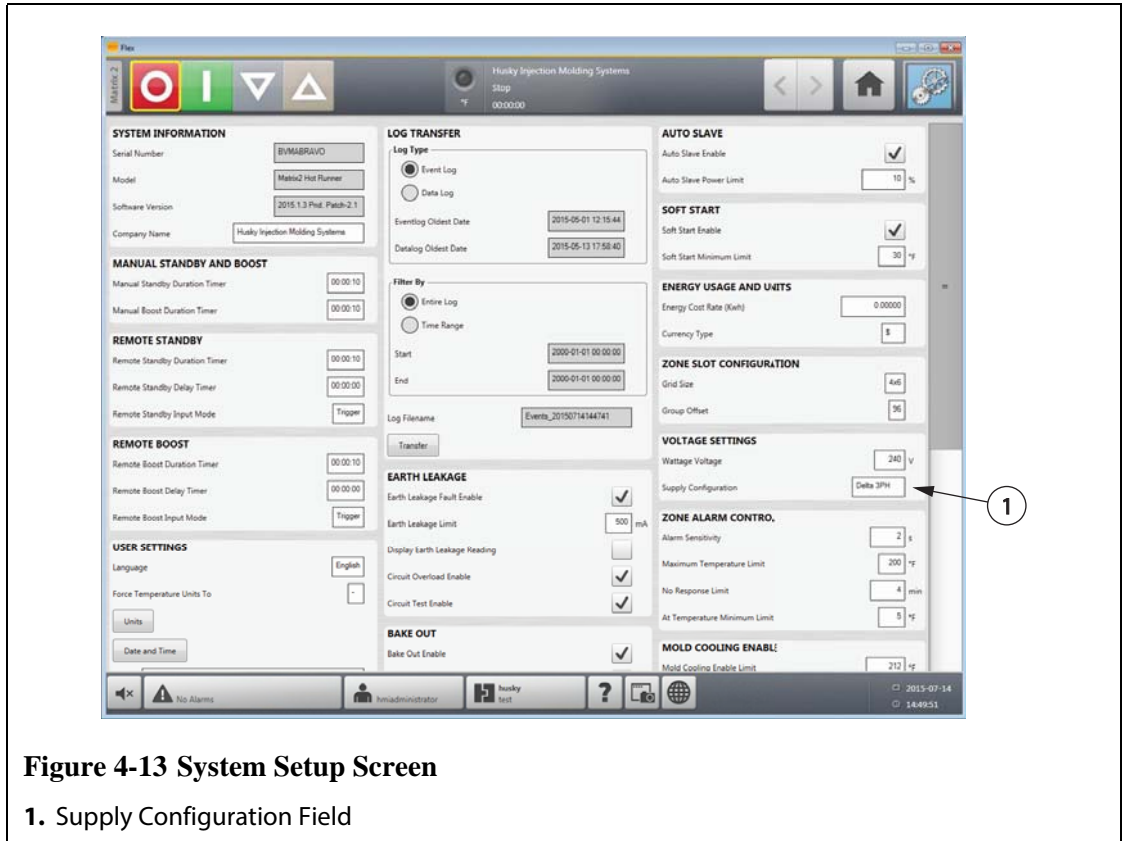


Figure 4-13 System Setup Screen

1. Supply Configuration Field

3. Select the correct supply configuration.

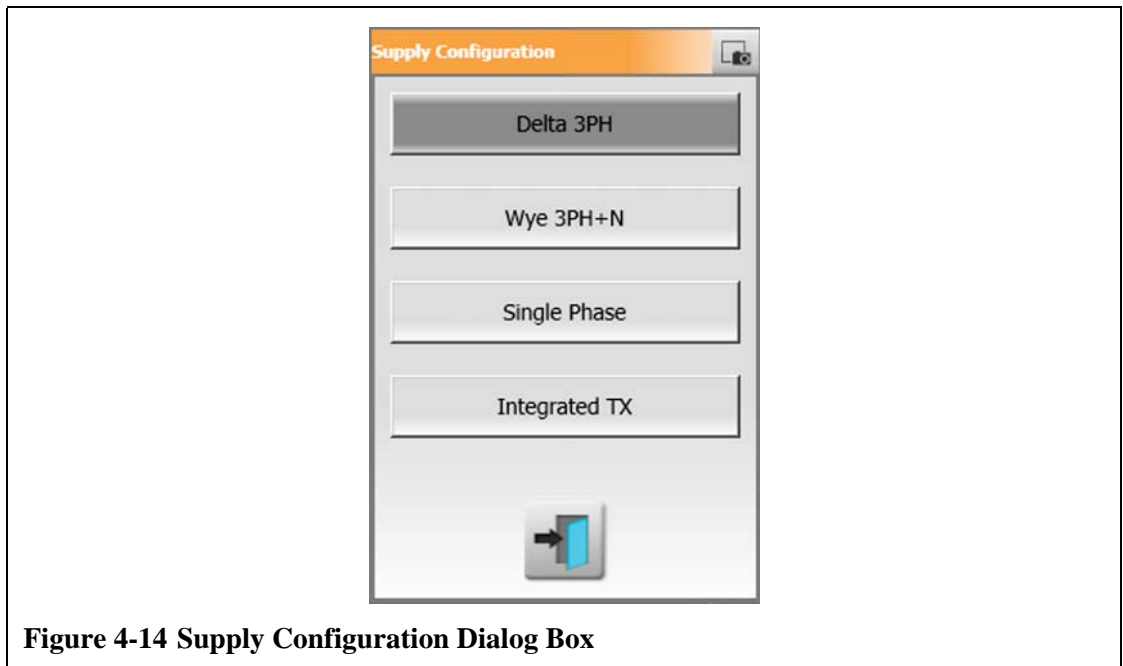


Figure 4-14 Supply Configuration Dialog Box

4.7 Using Online Help

The online help consists of a pdf file of the Altanium Matrix2 User Guide.

To use the online Help, do the following:

1. Touch the **Help** button on any Altanium screen.
2. To close the pdf file, touch the **Exit** button.

Chapter 5 Security and Administration

This chapter describes user management functions.

5.1 User Management and Security Screens

Roles are assigned to allow users access to different features by limiting certain screens to each role level.

Table 5-1 User Roles

Role	Definition
Operator	Edit screen data as defined by Administrator
Supervisor	Edit screen data, including extended responsibility of certain screens as defined by Administrator
Administrator	All the features of Supervisor plus the ability to create, delete, rename and assign all roles

The system administrator manages users and controls security settings for each user. Administrators have the ability to add a user, change a user password, and delete a user using the **User Management** screen.

To manage users and control user security settings, do the following:

1. Log in with Administrator privileges.
2. On the **Home** screen, touch the **User Management** button.
3. Touch the **Screen Security** button.



Figure 5-1 User Management Screen

1. Screen Security Button

4. On the **Security** screen, select a user type (Administrator, Supervisor, Operator, or Default User) for each of the following settings.

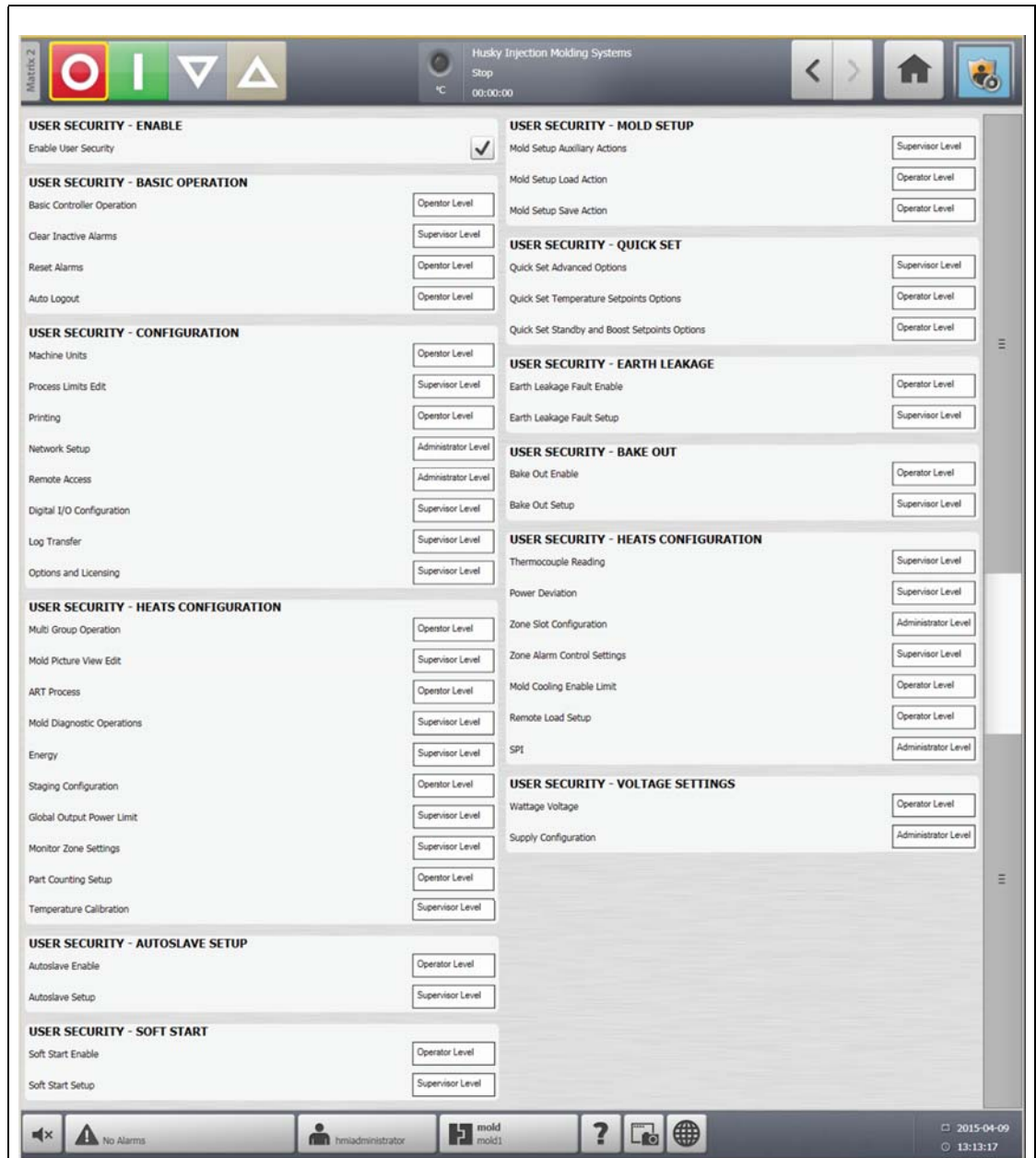


Figure 5-2 Security Screen (Composite)

Item	Description
Enable User Security	Permission to enable/disable the user security feature.
Basic Controller Operations	Permissions to operate the major controller function buttons: Stop, Start, Standby, and Boost. Stop is always available. This setting also grants permission to operate the UltraSync-E control mode buttons. For more information about buttons, refer to Section 4.1.3 .
Clear Inactive Alarms	Permission to clear audible alarms on the Alarms screen.
Reset Alarms	Permission to reset audible alarms on the Alarms screen.

Item	Description
Auto Log Out	Permission to configure the auto logout parameter in the User Management screen
Machine Units	Permission to change the controller units of measurement and the Force Temperature Units parameter on the System Setup screen.
Process Limits Edit	Permissions to operate functions on the Process Targets screen; however, the Default user has permission to change the Grid Selection field.
Printing	Permission to operate the print feature.
Network Setup	Permission to operate network setup functions and the dashboard application parameters on the Network Setup screen.
Remote Access	Permission to operate the Remote Service Assistant utility on Network Setup screen.
Digital I/O Configuration	Permission to configure the digital I/O on the Digital I/O screen.
Log Transfer	Permission to download the event log or data log in the Log Transfer section of the System Setup screen.
Options and Licensing	Permission to load a license file that enables the options a user has purchased.
Multi Group Operations	Permission to operate the Multi-Group screen functions.
Mold Picture View Edit	Permission to use the edit function on the Mold Picture View screen.
ART Process	Permission to operate the ART screen functions.
Mold Diagnostic Operations	Permission to operate the Mold Diagnostic screen functions.
Energy	Permission to manage the Altanium energy settings on the Energy Display screen.
Staging Configuration	Permission to configure all the parameters in the Staging screen.
Global Output Power Limit	Permission to configure the global output power limit parameter in the System Setup screen
Monitor Zone Settings	Permission to configure the parameters in the Monitor Zone Settings area of the System Setup screen.
Part Count Setup	Permission to setup part counting on the System Setup screen.
Temperature Calibration	Permission to use the parameters in the Calibration screen to calibrate temperatures.
Autoslave Enable	Permission to enable the autoslave function on the System Setup screen.
Autoslave Setup	Permission to set up autoslave settings on the System Setup screen.
Soft Start Enable	Permission to enable soft start on the System Setup screen.

Item	Description
Soft Start Setup	Permission to set up soft start on the System Setup screen.
Mold Setup Auxiliary Actions	Permission to view files (mold setups, images, txt files and PDF documents) and operate the following buttons on the Mold Setup screen: Create Folder, Delete, Copy, Paste, and Rename.
Mold Setup Load Action	Permissions to load a mold setup configuration file and to create a new mold setup configuration file on the Mold Setup screen.
Mold Setup Save Action	Permission to save changes to mold setup files and use the Save As function on the Mold Setup screen.
Quick Set Advanced Options	Permissions to make changes to the fields in the following sections on the Quick Set screen: Frequently Used, Zone Edit, Advanced Options, and Control Settings.
Quick Set Temperature Setpoints Options	Permission to change the fields in the Setpoint Limit Section on the Quick Set screen.
Quick Set Standby and Boost Setpoints Options	Permission to change the fields in the Manual Standby, Manual Boost, Remote Standby and Remote Boost sections on the Quick Set screen.
Earth Leakage Fault Enable	Permission to select and clear the System Earth Leakage Enable check box on the System Setup screen.
Earth Leakage Fault Setup	Permission to operate the following fields on the System Setup screen: <ul style="list-style-type: none"> • Earth Leakage Fault Enable checkbox • Earth Leakage Limit field • Display Earth Leakage Reading check box • Circuit Overload Enable check box • Circuit Test Enable check box
Bake Out Enable	Permission to enable the bake out function on the System Setup screen.
Bake Out Setup	Permission to configure the bake out function on the System Setup screen.
Thermocouple Reading	Permission to select and clear the Display Thermocouple Reading for Manual Zones check box on the System Setup screen.
Power Deviation	Permission to select the Setup Alarm button in the Power Deviation section on the System Setup screen.
Zone Slot Configuration	Permissions to operate the Zone Slot Configuration fields on the System Setup screen and the fields on the Zone Slot Configuration screen.
Zone Alarm Control Settings	Permission to configure all the parameters in the Zone Alarm Control area of the System Setup screen.
Mold Cooling Enable Limit	Permission to change this parameter in the Mold Cooling Enable area of the System Setup screen.

Item	Description
Remote Load Setup	Permission to configure all the parameters in the Remote Load Setup dialog. This option must be purchased before the user can access this dialog.
SPI	Permission to configure parameters in the SPI area of the System Setup screen. This option must be purchased before the user can modify some of these parameters.
Wattage Voltage	Permission to change this parameter in the Voltage Settings area of the System Setup screen.
Supply Configuration	Permission to configure the supply configuration in the Voltage Settings area of the System Setup screen.

5.1.1 Manage Users

HMI Administrators have the ability to create a user, change a user’s password, and delete a user using the **User Management** screen.




To manage users, do the following:

1. Log in with Administrator privileges.
2. On the **Home** screen, touch the **User Management** button.
3. Choose the desired function.
4. Fill in the fields as applicable.



Figure 5-3 Manage Users

1. Add User
2. Change User Settings
3. Delete User

Button	Description
	Touch the Add User button to add a user to the system.
	Touch the Change User Settings button to modify the user name, password or user role for a given user.
	Touch the Delete User button to remove a user from the system.

5.1.2 User Preferences

If a user is logged onto the system and makes changes to the unit of measurement or language selection, these values will be saved to that user's profile after logout and will be recalled the next time the same user logs in again.

5.1.3 Auto Logout

A system-wide timer will log the user off if there is no touch screen activity within a specified timeout period. The default setting is five minutes. The minimum value is 10 seconds.

To change the auto logout timeout period, do the following:

1. Log in with Administrator privileges.
2. On the **Home** screen, touch the **User Management** button.

3. Touch the timer, and enter the desired value.
 To edit settings for specified users, use the **Screen Security** screen.



Figure 5-4 Manage Users

1. Auto Logout Timer
2. Screen Security Button

Chapter 6 Mold Setups

A mold setup contains the process parameters required by Altanium to operate the hot runner system for that particular mold. On the **Home** screen, touch the **Mold Setup** button to open the **Mold Setup** screen. This screen can also be accessed from any screen by touching the Mold Setup Info button in the system footer.

6.1 Mold Setup Screen

The **Mold Setup** screen is used to store and manage files such as mold setups, images, documents and reports. Files are organized in a tree structure and are stored in mold, system and user folders. Each mold folder allows the storage of mold setups, images and documents associated with that specific mold. The screen is divided into two panes. The left side contains all directories that are on the systems local hard drive and the right side displays all available directories and files from an external source, such as a USB disk or a network file share.

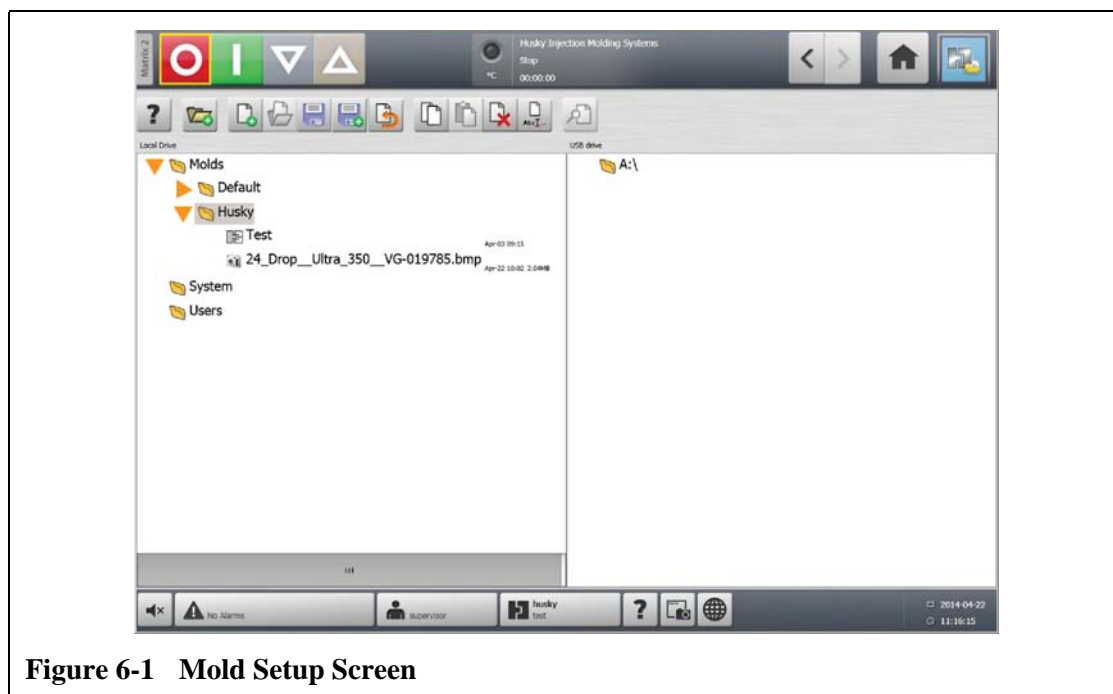


Figure 6-1 Mold Setup Screen

Table 6-1 Mold Setup Screen Item Descriptions

Item	Description
File Tree	<p>The local drive holds all stored data contained within the Mold Setup screen. To assist in better organizing and storing files, there are three root directories included by default. They are the mold folder, system folder and users folder.</p> <p>USB storage devices and network folders are displayed by default on the right, when connected to the system.</p>
Molds Folder	<p>The molds folder is used to manage files associated with a given Mold by storing them in a user defined sub folder. Touch the molds folder to display the sub folders. Touch each sub folder to display the mold setup files, images and PDF documents contained in the sub folder. The default folder is located within this directory and contains the master mold file that contains the factory default settings.</p>
System Folder	<p>Touch the system folder to display all reports and documents contained within the selected system folder.</p>
Users Folder	<p>Touch the users folder to display files associated with a given operator.</p>

Table 6-2 Mold Setup Screen Button Descriptions













Button	Description
	<p>Touch the Help button for a description of the mold setup icons.</p>
	<p>Touch the New Folder button to create a new tool (mold) subfolder in the Molds main folder.</p>
	<p>Touch the New Mold Setup button to create a new mold setup file. All new mold setup files are created based on the settings contained in the Default mold setup file. This button is not enabled unless a mold folder is selected.</p>
	<p>Touch the Load Mold Setup button to load a mold setup file. This button is not enabled unless a mold setup file is selected. The Default setup file cannot be loaded directly.</p>
	<p>Touch the Save Changes button to permanently save all changes to the currently loaded mold setup file. This action only pertains to the loaded mold setup file regardless of what is selected on the screen.</p>
	<p>Touch the Save As button to save the currently loaded mold setup file with a new name. This action only pertains to the loaded mold setup file regardless of what is selected on the screen.</p>

Table 6-2 Mold Setup Screen Button Descriptions (Continued)

Button	Description
	Touch the Discard Changes button to revert the currently loaded mold setup file to the state after it was last saved (using the Save Mold Setup button). All unsaved changes will be discarded. This action only pertains to the loaded mold setup file regardless of what is selected on the screen.
	Touch the Copy button to copy mold setups, images or documents from one folder or device to another.
	Touch the Paste button to paste mold setups, images, documents or notes from one folder or device to another.
	Touch the Delete button to delete a mold folder, mold setup, image or document. A confirmation message is shown. This button is not available unless a folder or file is selected.
	Touch the Rename button to display a keyboard to rename a mold folder, mold setup, image, note or document. This button is not enabled unless a file or folder is selected.
	Touch the Preview button to display mold setup files, images, notes and documents.

6.1.1 Creating a New Mold Setup Folder

Use a Mold Setup folder to store multiple mold setup files.

To create a new Mold Setup folder, do the following:

1. Touch the **New Folder** button.
2. Enter the name of the new mold folder.
3. Touch the **Accept** button.

The new Mold Setup folder is now displayed under the Molds directory.

6.1.2 Creating a New Mold Setup File

Once a Mold Setup folder has been created, a new mold setup file can be added to it.

When a new mold setup file is created, and the Default folder contains only the Default mold setup file, the factory default setup file is copied and used as a starting point.

If the Default folder contains a user supplied setup file named "New Setup", the new setup file is a copy of the 'new setup' file. The user can create this 'New Setup' file by first copying

an existing setup file, renaming the file to 'New Setup' then copying the file to the Default folder. The intention is to provide a user specified starting point for all setup files instead of the factory default.

To create a new mold setup file, do the following:

1. On the **Mold Setup** screen, touch the desired mold folder.
2. Touch the **New Mold Setup** button. A dialog box will open.
3. Enter the name of the new mold setup.
4. Touch the **Accept** button.

6.1.3 Saving Changes to a Mold Setup File

Once a Mold Setup file has been loaded, any changes made to it can be permanently saved.

To permanently save changes to a Mold Setup file do the following:

1. On the **Mold Setup** screen, touch the **Save Changes** button. This will display the **Mold Setup - Save** dialog box for confirming the mold and name of the file that the changes are to be saved to.
2. Touch the **Accept** button.

All changes have now been permanently saved to the currently loaded Mold Setup File.

6.1.4 Discarding Changes to a Mold Setup File

All changes to a mold setup file are held in the system's data base until they are permanently saved or discarded. Discarding changes will take the mold setup file back to its state after that last save was performed.

To discard changes to a Mold Setup file, do the following:

1. On the **Mold Setup** screen, touch the **Discard Changes** button. This will display the **Mold Setup - Discard** dialog box for confirming the mold and name of the file that the changes are to be discarded from.
2. Touch the **Accept** button.

All changes have now been permanently discarded from the currently loaded Mold Setup File.

6.1.5 Saving the Current Mold Setup File as a New File

Once a Mold Setup file has been loaded, it can be saved as a new file.

To save the currently loaded Mold Setup file as a new file, do the following:

1. On the **Mold Setup** screen, touch the **Save As** button. This will display the **Mold Setup - Save As** dialog box for confirming the mold and new name of the file.
2. Touch the **Accept** button.

6.1.6 Loading an Existing Mold Setup File

After a Mold Setup file has been created it is automatically loaded as the current Mold Setup in the system.

To load a different Mold Setup, do the following:

1. On the **Mold Setup** screen, select the Mold Setup folder that contains the Mold Setup file to be loaded.
2. Touch the name of the mold setup file to be loaded.
3. Touch the **Load Mold Setup** button to load the selected mold setup.

Once a mold setup is loaded, its name will be displayed at all times on the Mold Setup Info button in the System Footer.

6.1.7 Deleting Files

When a file or folder is no longer required on the internal disk, it can be deleted.

To delete a file or folder, do the following:

1. On the **Mold Setup** screen, touch the file or folder to be deleted.
2. Touch the **Delete** button.
3. A message appears asking to confirm the deletion. To continue, touch the **Accept** button. To cancel the deletion, touch the **Cancel** button.

6.1.8 Copying Files

Mold setups, images, documents or notes can be copied from one folder or device to another. Only files from folders with the same name or type can be copied into that folder. For example: a mold setup file can be pasted only into a mold setup folder.

To copy and paste a file, do the following:

1. On the **Mold Setup** screen, touch the file to be copied.
2. Touch the **Copy** button.
3. Navigate to the destination folder, and then touch the **Paste** button to create a copy of the file.

6.1.9 Renaming Files

To rename a file or folder, do the following:

1. On the **Mold Setup** screen, touch the file or folder to be renamed.
2. Touch the **Rename** button and enter the new name.
3. Touch the **Accept** button to save the name of the file.

6.1.10 Transferring Data to the Network

Use the **Mold Setup** screen to transfer Altanium data to the network. When Altanium is connected to the network, the network folder structure appears by default on the **Mold Setup** screen. The network folders disappear when a USB device is plugged in.

6.1.11 Transferring Data Using a USB Storage Device

Altanium data can be transferred using USB disks or USB CD-ROM drives. When one of these devices is plugged into the USB port, the folder structure of the USB storage device appears on the right side of the **Mold Setup** screen. The icon disappears when the device is unplugged. To load the files, copy and paste files from the USB disk to the local drive.

Chapter 7 Making Adjustments

Adjustments can be made to the process settings for a mold setup before starting the mold, or while the mold is running. This chapter explains how to use Altanium to monitor and modify the system.

Altanium allows zone data to be displayed in different graphical and textual formats. These include tabular views, images with text assigned to them and views that are divided into groups of zones.

7.1 Zone Selection

Multiple zones can be selected from the following screens:

- **Multi Group View**
- **Graphical View**
- **Text View**
- **Quick Set**
- **Art Process**
- **Mold Diagnostics Results**
- **Zone Calibration**
- **Zone Slot**
- **Staging**

Zone can also be selected from the following screens:

- **Neo2 View**
- **Mold Diagnostics**
- **Process Targets**

There are three methods to select zones within a screen:

- Touching an individual zone element. The individual zone will become selected.
- Touching the **Select All** button to select all the available zone elements.
- Using the Block function. The block function works by touching and holding a zone element for up to a second. This will highlight the zone yellow and/or place a gray border around it. A user can then touch any other zone element within the screen and the block of zones between the first and second selections will automatically be selected.

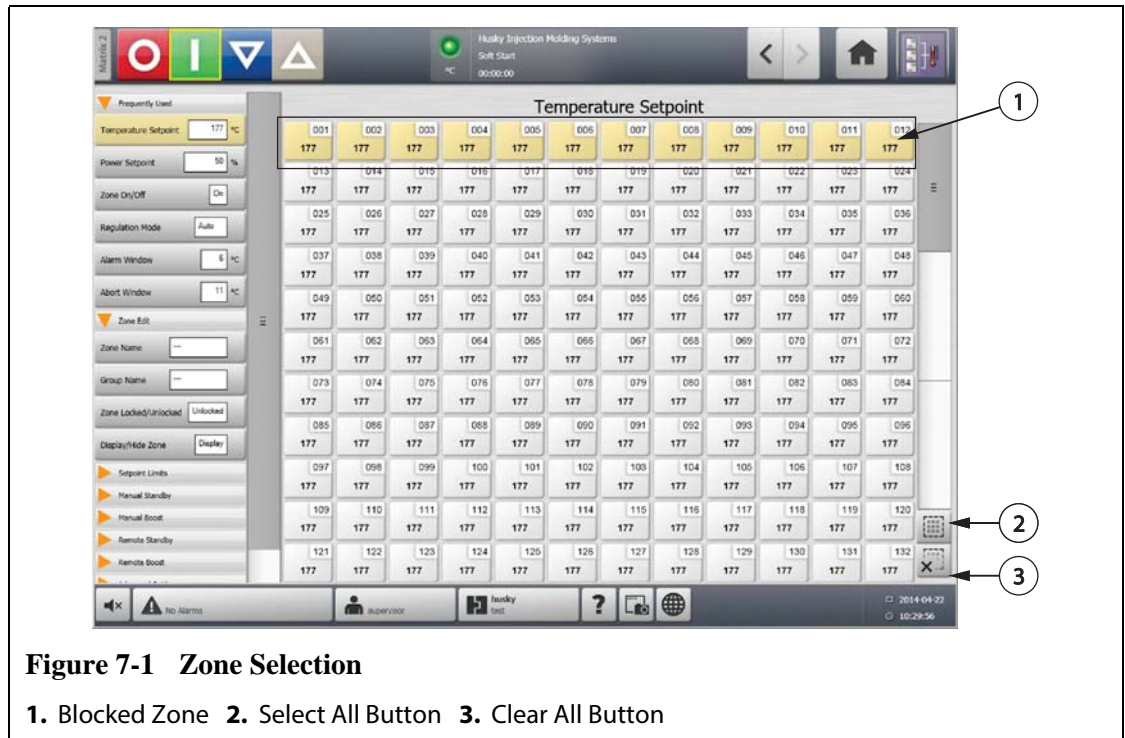


Figure 7-1 Zone Selection

- 1. Blocked Zone
- 2. Select All Button
- 3. Clear All Button

7.2 Creating a Group

Use the **Quick Set** screen to select multiple zones to form a group.

To create a group, do the following:

1. On the **Quick Set** screen, touch and hold the first zone to select for one second.
2. Touch the last zone to select. All zones in between will be selected and highlighted in yellow.
3. Touch the **Zone Edit** button.
4. Touch the **Group Name** field and enter a group name.

A shortcut to the newly created group appears on the **Home** screen and is displayed with the selected zones highlighted.

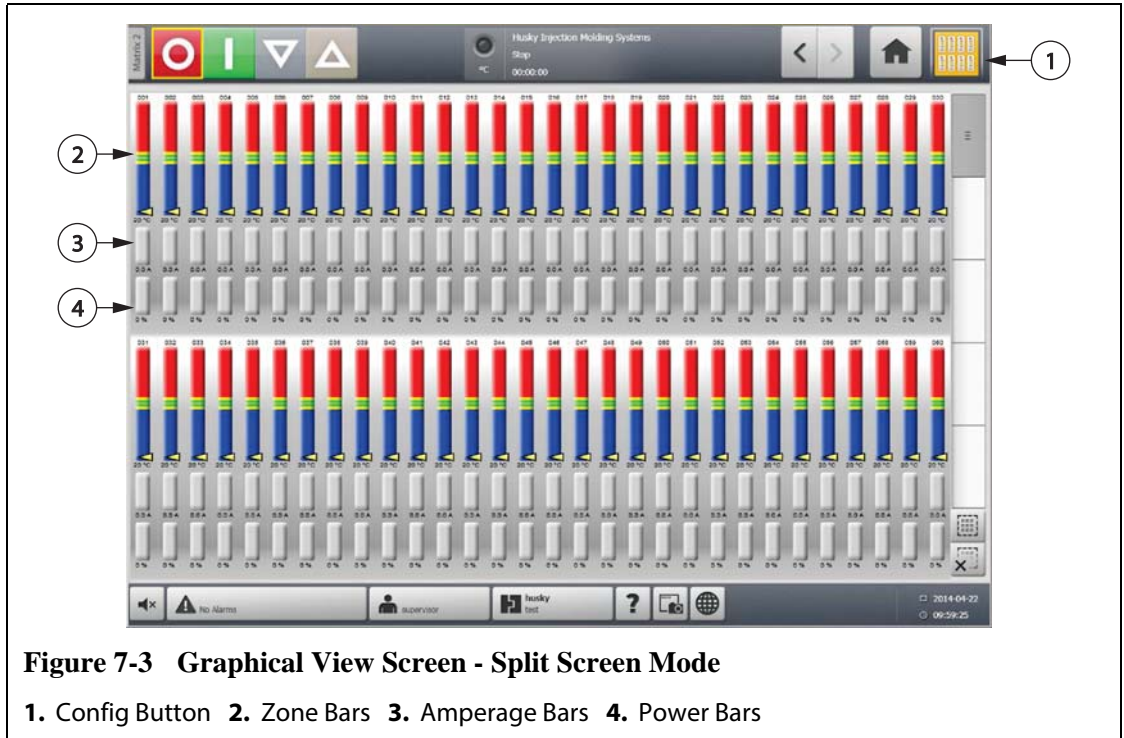


Figure 7-2 Quick Set Screen

1. Zone Edit 2. Group Name

7.3 Graphical View Screen Overview

The **Graphical View** displays zones in a graphical format. It is designed to provide an easy way to view the overall status of the mold without having to sort through detailed data. This screen can be accessed by touching the **Graphical View** button on the **Home** screen.






Item	Description
<p data-bbox="387 254 587 281">Temperature Bars</p> 	<p data-bbox="679 254 1485 352">Each individual bar on the screen represents a single zone of temperature control. Each bar is labeled above with the zone number. The text shown at the base of each bar is the actual temperature for that zone.</p> <p data-bbox="679 373 1318 401">The different colors in each bar have a different meaning.</p> <ul data-bbox="679 422 1485 814" style="list-style-type: none"> <li data-bbox="679 422 1273 449">• The green area represents the molding window. <li data-bbox="679 464 1209 491">• The white hairline represents the setpoint. <li data-bbox="679 506 1485 674">• An arrow represents the actual temperature. <ul data-bbox="735 537 1485 674" style="list-style-type: none"> <li data-bbox="735 537 1485 600">• If the arrow is yellow, the temperature is not within the graph range. <li data-bbox="735 615 1485 674">• If the arrow is black and splits the line, the temperature is at the setpoint. <li data-bbox="679 709 1422 737">• The yellow area in the zone bar represents the alarm window <li data-bbox="679 751 1485 779">• The red and blue areas in the zone bar represents the abort window. <li data-bbox="679 793 1326 821">• A blank gray bar indicates that the zone is turned off.
<p data-bbox="387 915 560 942">Amperage Bars</p> 	<p data-bbox="679 915 1485 1014">The amperage bars, directly below the zone bars, are light blue. These show the amperage being drawn by each heater. The text shown at the base of each bar is the actual current reading for that zone.</p>
<p data-bbox="387 1367 512 1394">Power Bars</p> 	<p data-bbox="679 1367 1485 1507">The power bars are located directly below the amperage bars. These show the percentage of power being applied to the heater. The text at the base of each bar is the actual power output percentage being delivered to that zone.</p> <ul data-bbox="679 1528 1485 1738" style="list-style-type: none"> <li data-bbox="679 1528 1485 1591">• If a zone is in Auto (closed loop) regulation, the bar will fill with orange depending on the percentage of power output. <li data-bbox="679 1606 1485 1669">• If a zone is in Manual (open loop) regulation, the bar will fill with green depending on the percentage of power output. <li data-bbox="679 1684 1485 1738">• If a zone is set to Monitor mode, the bar will remain grey (there is no power output for zones set to Monitor mode).

Table 7-1 Graphical View Screen Button Descriptions

Button	Description
Config Button	Touch this button to toggle between displaying zones in split or full screen mode. In split screen mode, zone graphs are displayed in two groups, one on the top and one on the bottom. In full screen mode the zone graphs take up the whole viewing area.
Scroll Bar	Use the scroll bar to scroll between pages within a screen. If all of the available data fits within a single page, then the scroll bar will not be displayed.
Select All	Touch this button to select all zones in the system. This will navigate to the Quick Set screen.
Clear All	Touch this button to clear all zone selections.

The **Graphical View** screen displays a maximum of 90 zones of information in split screen mode and 60 zones in full screen mode. Touch and drag the scroll bar to bring additional zones into view. The system always displays up to 60 or 90 zones at one time, depending on the screen mode.

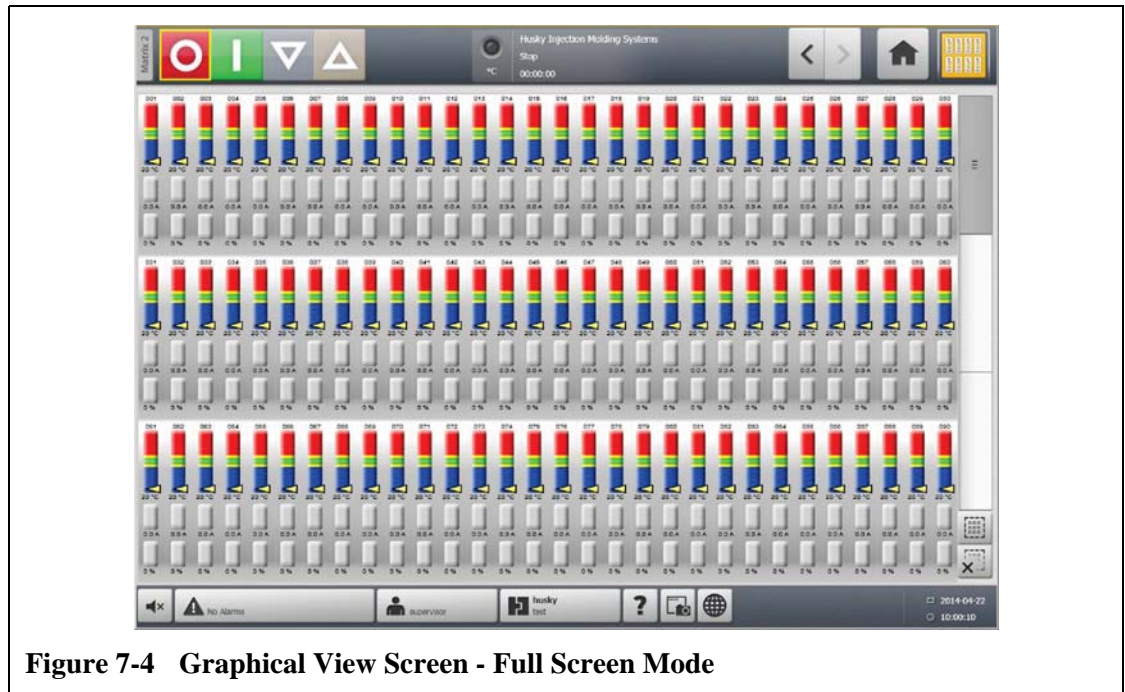


Figure 7-4 Graphical View Screen - Full Screen Mode

7.4 Text View Screen Overview

The **Text View** screen displays zone information in a textual format. It is used to access detailed data for each zone and provides the most comprehensive view of the process. This screen can be accessed by touching the **Text View** button on the **Home** screen.

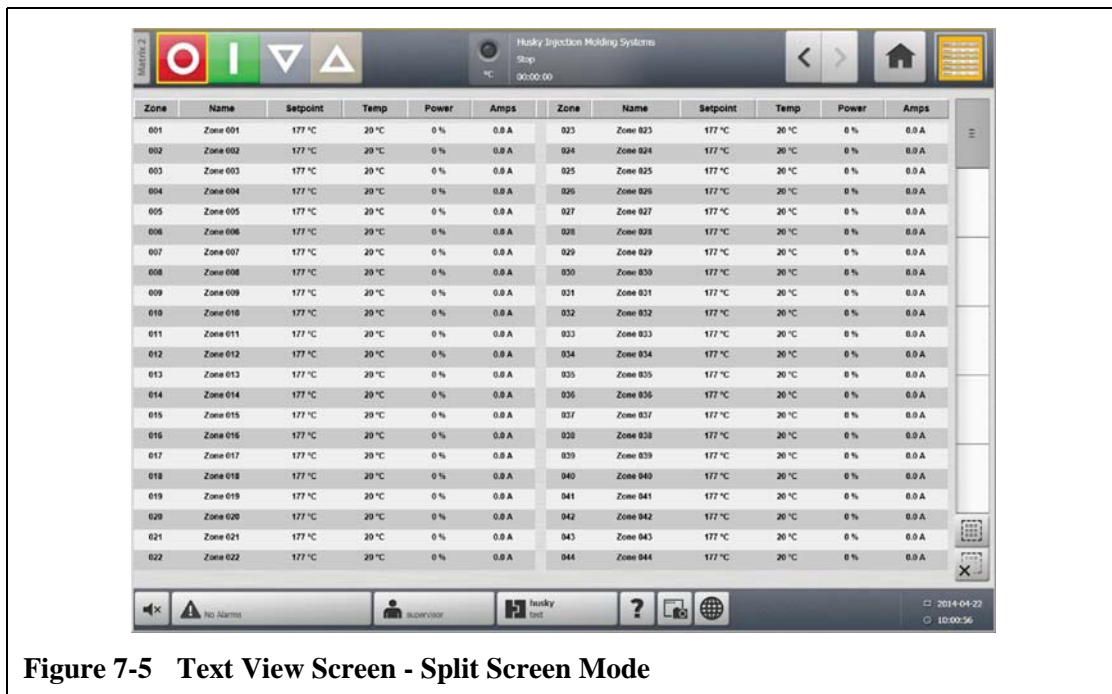


Figure 7-5 Text View Screen - Split Screen Mode

Table 7-2 Text View Screen Button Descriptions

Button	Description
Zone Row	Each row in the Text view represents a heating zone in the system. Touching anywhere within the row will navigate to the Quick Set screen
Column Header	<p>Each header in the Text view indicates what information is being displayed in each column. Touching the header will sort the values in the column by ascending or descending order. This is indicated by a red line at either the top or bottom of the header cell. The available parameters are as follows:</p> <ul style="list-style-type: none"> • Zone = Zone number • Name = Zone name • Setpoint = Zone setpoint • Temp = Actual temperature of zone • PWR = Power output to the heater • Leakage = Earth leakage (This column is only displayed when H cards are installed and the value has been selected for viewing in the System Setup screen.) • Amps = Current draw of heater (Values in this column are suppressed for XL and HL cards) • Alarm = Alarm window (Degrees above and below setpoint before an alarm condition is declared) • Abort = Abort window (Degrees above and below setpoint before an abort condition is declared) • Regulation = Control mode (Auto = T/C control, Manual = Fixed % output, Monitor = Temperature only - No power output) • Watts = Calculated wattage of each heater (Values in this column are suppressed for XL and HL cards) • 220VW = Derated heater wattage based on supply voltage vs. design voltage (Values in this column are suppressed for XL and HL cards) • VAC = Output voltage to heaters (RMS calculation based on power percentage being applied to the heater) $\sqrt{\% \text{ Power} \times \text{Input Voltage}}$ (Values in this column are suppressed for XL and HL cards) • Resistance = Calculated ohm reading for each zone (Must run mold diagnostics first) (Values in this column are suppressed for XL and HL cards)
Config	Touch this button to toggle between the split and full screen views. The split view configures the screen in two sections of 18 zones to maximize the number of zones that can be viewed on a page, while the full view reduces the number of zones to 18, but increases the available zone parameters that can be viewed
Scroll Bar	Use the scroll bar to scroll between pages within a screen. If all of the available data fits within a single page, then the scroll bar will not be displayed

Table 7-2 Text View Screen Button Descriptions (Continued)

Button	Description
Select All	Touch this button to select all zones in the system. This will navigate to the Quick Set screen
Clear All	Touch this button to clear all zone selections

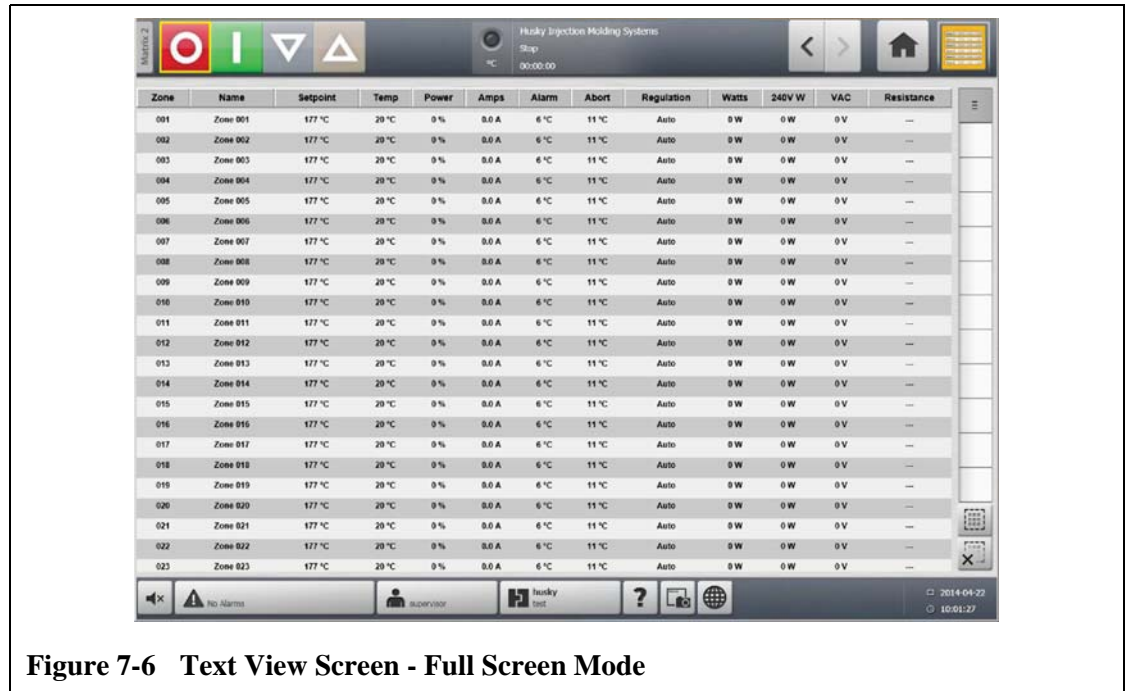


Figure 7-6 Text View Screen - Full Screen Mode

7.4.1 Zone Selection in the Text View Screen

Use the **Text View** screen to select one or multiple zones.

- To view one zone, touch the desired zone text.
- To view multiple zones, touch and hold the first zone for one second, and then touch the last zone.

7.4.2 Sorting

Information can be sorted on the **Text View** screen by selecting the header field of each column. Sorting can be in ascending or descending order. A red line denotes the current sorting.

Information can be sorted according to the dynamic columns (for example, current (Amps), voltage (VAC), etc.). This can be helpful when trying to figure out which zone is drawing the most current at any moment. The ability to select column headings in order to sort information is used throughout Altanium.

7.5 Quick Set Screen

Use the **Quick Set** screen to change any of the available zone settings. On the **Home** screen, touch the **Quick Set** button.

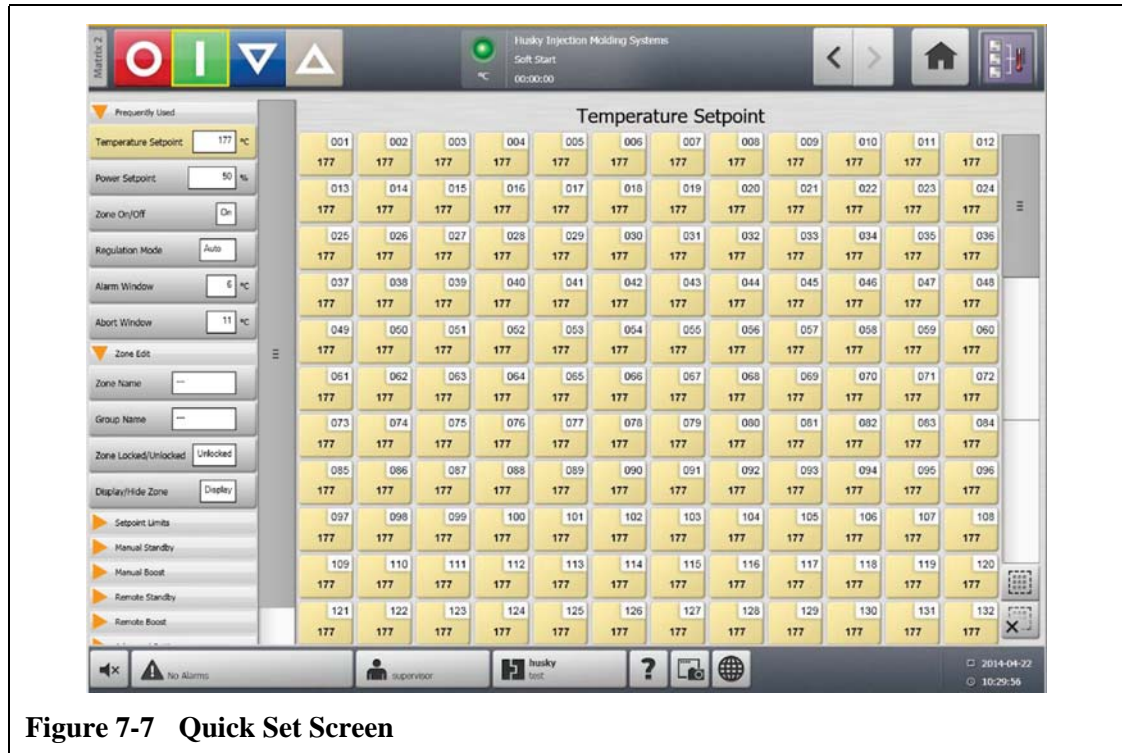


Figure 7-7 Quick Set Screen

7.5.1 Frequently Used Fields

Item	Description
Temperature Setpoint	Touch this field to display a keypad for adjusting a zone(s) setpoint in Auto or Monitor regulation.
Power Setpoint	Touch this field to display a keypad for adjusting the percentage of power output when a zone(s) is in Manual regulation.
Zone On/Off	Touch this field to turn the selected zone ON or OFF. A dialog appears and allows the user to choose a value. The default is ON.
Regulation Mode	This setting allows users to set the regulation mode for the selected zone. AUTO or Automatic (closed loop) means the system will use a thermocouple to control the temperature. MAN or Manual (open loop) means the system will only apply power (0 to 100%) to the heater and not look for thermocouple feedback. MON or Monitor means the system will only monitor the temperature of a thermocouple (no power output).

Item	Description
Alarm Window	Touch this field to display a keypad for adjusting the upper and lower alarm limits.
Abort Window	Touch this field to display a keypad for adjusting the upper and lower abort limits.

7.5.2 Zone Edit Fields

Item	Description
Zone Name	Touch this field to display a keyboard for assigning a custom name to a zone or group of zones.
Group Name	Touch this field to define a name for a group of selected zones. All zones assigned a group name are used to create group views in the Multi Group View as well as create a Shortcut Icon button in the Shortcut section on the Home screen.
Zone Locked/Unlocked	Touch this field to display a dialog to lock or unlock zone(s). If a zone(s) is locked, it will prevent any changes from being made to it from the Quick Set screen.
Display/Hide Zone	Touch this field to display a dialog to display or hide a zone(s). If hide is selected, the zone(s) will be removed from all the Zone Data View screens.

7.5.3 Setpoint Limits

Item	Description
Temperature Minimum	The minimum and maximum values limit what temperature the temperature setpoint can be changed to.
Temperature Maximum	
Power Minimum	The minimum and maximum values limit what temperature the power setpoint can be changed to.
Power Maximum	

7.5.4 Manual Standby Fields

Item	Description
Temperature Setpoint	The temperature all zones are set to when the Standby button is touched. This setting can be used to lower all zone temperatures to their manual standby temperature setpoint until the timer expires or the user touches the Standby button again. Possible values are 0 to 500°C or 32 to 932°F. The default value is 121°C or 250°F.
Temperature Minimum	Limits the range that can be entered for Standby temperature.
Temperature Maximum	
Power Setpoint	The power output all zones are set to when the Standby button is touched. This setting can be used to lower all zone power setpoints to their manual standby power setpoint until the timer expires or the user touches the Standby button again. Possible values are 0% – 100%. The default value is 10%.
Power Minimum	Limits the range that can be entered for Standby power.
Power Maximum	

7.5.5 Manual Boost Fields

Item	Description
Temperature Setpoint	The temperature all zones are set to when the Boost button is touched. This setting raises all zones to their manual boost setpoint until the timer expires or the user touches the Boost button again. Possible values are 0 to 500°C or 32 to 932°F. The default value is No Change.
Temperature Minimum	Limits the range that can be entered for Boost Temperature.
Temperature Maximum	
Power Setpoint	The power values all zones are set to when the Boost button is touched. This setting raises all zones to their manual boost setpoint until the timer expires or the user touches the Boost button again. Possible values are 0% – 100%. The default value is 90%.
Power Minimum	Limits the range that can be entered for Boost power.
Power Maximum	

7.5.6 Remote Standby Fields

Item	Description
Temperature Setpoint	Remote standby is initiated via a digital input signal from the IMM. This setting lowers all zones to their remote standby setpoint until the timer expires or the input is inactive. Possible values are 0 to 500°C or 32 to 932°F. The default value is 121°C or 250°F.
Temperature Minimum	Limits the range that can be entered for Remote Standby Temperature.
Temperature Maximum	
Power Setpoint	Remote standby is initiated via a digital input signal from the IMM. This setting lowers all zones to their remote standby setpoint until the timer expires or the input is inactive. Possible values are 0% – 100%. The default value is 10%.
Power Minimum	Limits the range that can be entered for Remote Standby Power
Power Maximum	

7.5.7 Remote Boost Fields

Item	Description
Temperature Setpoint	Remote boost is initiated via a digital input signal from the IMM. This setting raises all zones to their remote boost setpoint until the timer expires or the input is inactive. Possible values are 0 to 500°C or 32 to 932°F. The default value is No Change.
Temperature Minimum	Limits the range that can be entered for Remote Boost Temperature.
Temperature Maximum	
Power Setpoint	Remote boost is initiated via a digital input signal from the IMM. This setting raises all zones to their remote boost setpoint until the timer expires or the input is inactive. Possible values are 0% – 100%. The default value is 90%.
Power Minimum	Limits the range that can be entered for Remote Boost Power.
Power Maximum	

7.5.8 Advanced Settings Fields

Item	Description
Output Power Limit	Touch this field to display a keypad for adjusting the maximum percentage of power output that the system will be allowed to deliver to a zone(s).
Slaved To Zone	Slaving is sometimes necessary when a zone's thermocouple fails during normal operation. Once a master zone is specified, the zone is able to continue operation. The Slave To setting allows users to use the master zone's power output percentage for the selected zone. A value of None means that the selected zone is not slaved to any other zone.
Thermocouple Assignment	The number of the thermocouple to which the zone is connected.
Output Mode	Changes the power output modulation for a zone during normal operation. Choices are Zero Cross or Phase Angle.
Heater Type	Select one of the following heater types: none, tips, manifold, or sprue. These settings are used to configure the power deviation alarm.
AMC - Automatic Manual Control	Automatic Manual Control (AMC) allows Altanium to automatically apply a manual power output percentage to a heater based on a historical average in the event a thermocouple fails.
PCM - Priority Control Mode	The Priority Control Mode (PCM) controls how the controller will react in the case of an abort condition.
Earth Leakage Check	The E/L setting allows users to turn on and off the earth leakage checking feature for each zone.

7.5.9 Control Settings Fields

Item	Description
Control Mode	ART automatically adjusts the control algorithm to suit different heater requirements. If a zone is not controlling properly the system allows users to switch from the automatically adjusted ART algorithm to an algorithm that can be manually adjusted (PID).
P-Proportional	This is the proportional term value used by the control algorithm. Possible values are: 0 – 250.
I-Integral	This is the integral term value used by the control algorithm. Possible values are: 0 – 250.
D-Derivative	This is the derivative term value used by the control algorithm. Possible values are: 0 – 250.

7.5.10 Changing a Zone Name

Customize the name of each zone in the system to make it easier to find and make changes. Rename each zone to correspond with a cavity, gate, probe or manifold, or to any appropriate name.

To rename a zone, do the following:

1. Touch the zone to be renamed.
2. Touch the **Zone Name** field and enter a new zone name.

NOTE: Refer to [Section 7.5.10.1](#) for information about renaming multiple zones. To select commonly used zone names, use the following keys:

- zone
- probe
- tip
- nozzle
- sprue
- manifold
- bridge
- valve gate
- not used

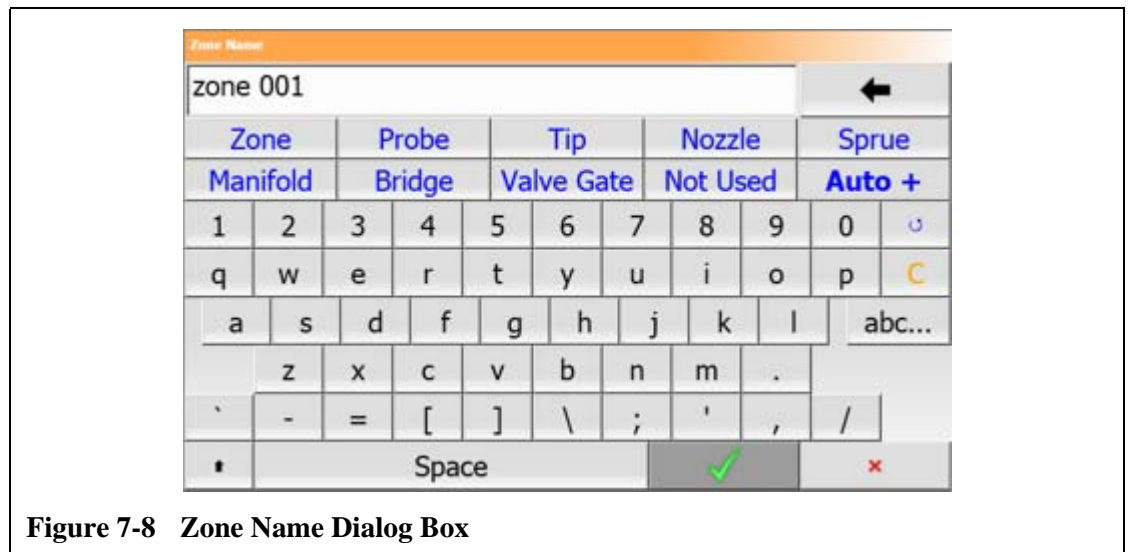


Figure 7-8 Zone Name Dialog Box

3. Touch the **Accept** button.

7.5.10.1 Changing Multiple Zones Names

Use the **Auto+** button to rename and number multiple zones. The **Auto+** button will number the selected zones from 001 to n, where n is the number of zones selected. For example, if renaming 7 zones, the **Auto+** button will rename the zones sequentially from 001 to 007.

To number and rename multiple zones, do the following:

1. Select the zones to be renamed.
2. Touch the **Zone Name** field and enter a new zone name for all the selected zones.

To select commonly used zone names, use the following keys:

- zone
- probe
- tip
- nozzle
- sprue
- manifold
- bridge
- valve gate
- not used

3. To rename and number all the selected zones, touch the **Auto+** button.

7.5.11 Changing a Setpoint

The setpoint temperatures for each of the heaters in the mold must be specified. The default setting is 177 °C (350 °F).

To change a setpoint of a zone, do the following:

1. Touch the zone to be changed.
2. Touch the desired setpoint field and enter a new setpoint value
3. Touch the **Accept** button.

7.5.12 Changing the Alarm Window

Specify how many degrees above or below the setpoint to initiate the alarm. The default setting is 6 °C (10 °F).

Alarm Example: Setpoint = 300 °F, Alarm = 10 ° F

An alarm is initiated above 310 °F or below 290 °F. If the setpoint is changed to 350°F, the alarm will be initiated above 360 °F or below 340 °F. The setting always represents an amount above and below the current setpoint.

To change the alarm setting for a zone, do the following:

1. Touch the zone to be changed.
2. Touch the **Alarm Window** field and enter a new value.
3. Touch the **Accept** button.

7.5.13 Changing the Abort Window

Specify how many degrees above or below the setpoint to initiate the abort and shut down. The default setting is 11 °C (20 °F).

Abort Example: Setpoint = 300°F, Abort = 20°F.

The abort will be initiated above 320 °F or below 280 °F and shut the zone or the system down based on the PCM directive. If the setpoint is changed to 350 °F, the abort will be initiated above 370 °F or below 330 °F. The setting always represents an amount above and below the current setpoint.

To change the abort setting for a zone, do the following:

1. Touch the zone to be changed.
2. Touch the **Abort Window** and enter a new value.
3. Touch the **Accept** button.

7.5.14 Changing the Output Mode Setting

In hot runner temperature control systems, there are two different methods for switching power output to the heaters; Zero Cross Control or Phase Angle Control. Each method has its own set of advantages, but generally they offer very similar results.

Altanium provides the flexibility to run each zone in either mode. The default setting is Zero Cross for all zones.

To change the output setting for a zone, do the following:

1. On the **Quick Set** screen, touch the zone to be changed.
2. Touch the **Output Mode** field to toggle between the Zero Cross and Phase Angle modes.

7.5.15 Zone Slave

Some of the most vulnerable components in the mold are the thermocouples. If a thermocouple fails, Altanium will initiate an alarm and display an error on the **Alarm** screen for the affected zone. At this point there are three choices:

1. Stop molding, remove the mold and repair the fault. This may not be desirable or even possible.
2. Switch the zone to Manual control mode and continue processing. This has limitations as Manual mode is not able to compensate for changes in the process that affect the heater's power requirements, i.e. shear heat.
3. Slave the faulty zone to another. Due to the symmetry in the design of hot runner molds, frequently there are other zones that have very similar thermal characteristics as the faulty zone. Altanium can apply the power output from a fully functioning zone to the zone with the defective thermocouple. This means that any processing changes that affect the power requirements of the heaters are automatically applied to the defective zone. It is similar to repairing the defective thermocouple without ever opening the mold.

7.5.15.1 Using the Automatic Slave Function

If a thermocouple malfunctions during operation of the mold, the Altanium Auto-Slave function will take over. Altanium constantly monitors the heaters in the mold and stores comparative data. This data is used to select an almost identical Master/Slave relationship for

every zone in the mold. If a thermocouple fails, Altanium will initiate an alarm and display an error on the **Alarm** screen.

Based on the comparative data stored, the system knows which zone to slave the faulty zone to so that it continues to operate in a closed loop control mode.

The only requirement is to see the error, then clear and reset the alarm. On the **Neo2 View, Multi Group View, Graphical View** and **Text View** screens, the number toggles between the original zone number and the zone to which it is slaved.

Once the error is cleared and reset, the slave value is persisted to the database. The **Quick Set** screen for that zone displays the zone it is slaved to. The Automatic Slave function can be disabled in the **System Setup** screen.

If the automatic slaving function is unable to find a suitable partner, the Automatic Manual Control (AMC) function is activated. If AMC is set to On, the system automatically switches the bad zone into Manual mode applying a calculated average power output to the heater. If AMC is Off, Priority Control Mode (PCM) is activated and shuts down either the zone or the system based on the PCM directive.

7.5.15.2 Manually Slaving One Zone to Another Zone

If a thermocouple is about to fail, it can be slaved to another zone before it fails completely. To manually slave one zone to another, do the following:



IMPORTANT!

Choose a master zone with similar heater characteristics. For example, a user may not want to slave a manifold zone to a tip zone. A zone cannot be slaved to itself; if this is attempted, Altanium will ignore the changes.

1. On the **Quick Set** screen, touch the zone to slave.
2. Touch the **Slave To Zone** field and enter the zone number of the master zone.
3. Touch the **Accept** button.

On the **Neo2 View, Multi Group View, Graphical View** and **Text View** screens, the color of the manual-slaved zone changes from white to dark blue and the zone and name toggles between the original zones information and the zone to which it is slaved.

7.5.15.3 Changing the Regulation Mode

Each zone can run in one of three regulation modes. The default setting is **Automatic**.

Regulation Mode	Description
Auto	In Automatic (closed loop) mode, the system will use a thermocouple to control the temperature.

Regulation Mode	Description
Man	In Manual (open loop) mode, the system will only apply power (0 to 100%) to the heater and not look for sensor feedback.
Mon	In Monitor mode, the system will only monitor the temperature of a thermocouple (no power output).

To change the zone regulation, do the following:

1. On the **Quick Set** screen, touch the zone to be changed.

CAUTION!

If a zone is placed in Monitor mode by mistake, the system will give no power output to that heater.

2. Touch the **Regulation Mode** field. A dialog appears with the three mode choices The user can either select one of them or cancel the operation.

7.5.16 Setpoint Limits

Altanium allows users to set a specific range where the operator is prevented from changing the setpoint beyond these limits.

7.5.16.1 Changing the Normal Setpoint and Limits

On the **Quick Set** screen, in the **Setpoint Limits** section, specify the temperatures to heat the heaters in the mold. The default setting is 177 °C (350 °F).

To change a normal setpoint and setpoint limits for a zone, do the following:

1. Touch the zone to change.
2. Touch the **Temperature Minimum** field and enter a value.
3. Touch the **Accept** button.
4. Touch the **Temperature Maximum** field and enter a value.
5. Touch the **Accept** button.
6. Touch the **Power Minimum** field and enter a setpoint value.
7. Touch the **Accept** button.
8. Touch the **Power Maximum** field and enter a setpoint value.
9. Touch the **Accept** button.

7.5.16.2 Changing the Manual Standby and Remote Standby Setpoint Limits

It may be necessary to lower the temperatures in the mold for a period of time. This can be done on the system header by selecting the **Manual Standby** button (or **Remote Standby** from a remote location as an option) without needing to change the normal setpoint. Specify

the desired temperatures for the heaters in the mold to cool down to when the system is in Standby; both manual standby and remote standby. The default setting for both the manual and remote standby setpoints is 121 °C (250 °F).

7.5.16.2.1 Changing the Manual Standby Setpoint Limits

To change a standby setpoint and standby setpoint limits for a zone, do the following:

1. Touch the zone to be changed.
2. Touch the **Temperature Setpoint** field and enter a value.
3. Touch the **Accept** button.
4. Touch the **Temperature Minimum** field and enter a value.
5. Touch the **Accept** button.
6. Touch the **Temperature Maximum** field and enter a value.
7. Touch the **Accept** button.
8. Touch the **Power Setpoint** field and enter a value.
9. Touch the **Accept** button.
10. Touch the **Power Minimum** field and enter a value.
11. Touch the **Accept** button.
12. Touch the **Power Maximum** field and enter a setpoint value.
13. Touch the **Accept** button.

7.5.16.2.2 Changing the Remote Standby Setpoint Limits

To change a remote standby setpoint and remote standby setpoint limits for a zone, do the following:

1. Touch the zone to be changed.
2. Touch the **Temperature Setpoint** field and enter a value.
3. Touch the **Accept** button.
4. Touch the **Temperature Minimum** field and enter a value.
5. Touch the **Accept** button.
6. Touch the **Temperature Maximum** field and enter a value.
7. Touch the **Accept** button.
8. Touch the **Power Setpoint** field and enter a value.
9. Touch the **Accept** button.
10. Touch the **Power Minimum** field and enter a value.
11. Touch the **Accept** button.
12. Touch the **Power Maximum** field and enter a setpoint value.
13. Touch the **Accept** button.

7.5.16.3 Changing the Manual Boost Setpoints and Limits

It may be necessary to raise the temperatures in the mold for a period of time. This can be done on the system header by selecting the **Manual Boost** button (or **Remote Boost** from a remote location as an option) without needing to change the normal setpoint. Specify the temperatures to heat the heaters in the mold to when the system is in Boost. The default setting is no chg (no change) which means nothing will happen when Boost is activated.

To change a boost setpoint and boost setpoint limits for a zone, do the following:

1. Touch the zone to be changed.
2. Touch the **Temperature Setpoint** field and enter a value.
3. Touch the **Accept** button.
4. Touch the **Temperature Minimum** field and enter a value.
5. Touch the **Accept** button.
6. Touch the **Temperature Maximum** field and enter a value.
7. Touch the **Accept** button.
8. Touch the **Power Setpoint** field and enter a value.
9. Touch the **Accept** button.
10. Touch the **Power Minimum** field and enter a value.
11. Touch the **Accept** button.
12. Touch the **Power Maximum** field and enter a setpoint value.
13. Touch the **Accept** button.

7.5.16.4 Changing the Remote Boost Setpoints and Limits

To change a remote boost setpoint and remote boost setpoint limits for a zone, do the following:

1. Touch the zone to be changed.
2. Touch the **Temperature Setpoint** field and enter a value.
3. Touch the **Accept** button.
4. Touch the **Temperature Minimum** field and enter a value.
5. Touch the **Accept** button.
6. Touch the **Temperature Maximum** field and enter a value.
7. Touch the **Accept** button.
8. Touch the **Power Setpoint** field and enter a value.
9. Touch the **Accept** button.
10. Touch the **Power Minimum** field and enter a value.
11. Touch the **Accept** button.
12. Touch the **Power Maximum** field and enter a setpoint value.
13. Touch the **Accept** button.

7.5.17 Changing the Sensor Assignment (Thermocouple)

The Sensor setting allows the operator to assign any thermocouple to control any heater. This is important in the instance where there may be mis-wired thermocouples or heaters in the mold.

For example, heater number 1 may be connected to thermocouple 5 and heater number 5 may be connected to thermocouple number 1. In this instance, the operator can manually switch the thermocouple inputs by changing the Sensor number in the Sensor field to the appropriate number.

NOTE:Altanium automatically accounts for mis-wired molds during Mold Diagnostics. This usually eliminates the need to make any adjustments.

To change the sensor assignment for a zone, do the following:

1. Touch the zone to be changed.
2. In the **Advanced Settings** section, touch the **Thermocouple Assignment** field and enter a value.
3. Touch the **Accept** button.

7.5.18 Changing the Priority Control Mode (PCM) Setting

If there is a malfunction during normal operation, the software will make every attempt to circumvent the problem. If this is impossible, it will initiate a shutdown sequence. Specify what to shut down if this happens.

In the case of an Abort condition, if the PCM is set to **Zone**, the controller will stop applying power output to the defective zone and continue to operate all other zones as normal. If the PCM is set to **System**, the controller will shutdown all power output to the mold (if the failure occurs on this zone). The PCM is zone selectable, so one zone may only shut itself OFF and another may shut down the mold. This setting is dependent on the zone and how critical it is to the mold. Usually the cavities are set to **Zone**, and the manifolds are set to **System**. The default setting is **System** on all zones.

To change the PCM setting for a zone, do the following:

1. Touch the zone to be changed.
2. Under **Advanced Settings**, touch the **PCM - Priority Control Mode** field to turn the PCM to **Zone** or **System**.

The optional Priority Control Mode (PCM) Digital Output

If the PCM digital output option is turned on, it will be activated **ONLY** when a zone set to **System** experiences an abort condition. It will remain in this state until the PCM error is reset.

7.5.19 Changing the Earth Leakage Check

When Started, Altanium checks for earth leakage conditions on every heater in the mold simultaneously. When necessary, it will initiate a low voltage, phase angle bake out on the faulty zone(s) to try to bake the moisture out of the heater(s).

Altanium allows users to turn **Earth Leakage Check** On or Off for the each zone. The default setting is "On" for all zones. Turning **Earth Leakage Check** off is only necessary under very special circumstances. To turn the **Earth Leakage Check** off globally for the entire system, please call the nearest Husky Regional Service and Sales office.

7.5.20 Changing the Automatic Manual Control (AMC) Setting

If a thermocouple malfunctions during normal operation, Altanium can automatically apply a manual power output percentage to the heater, based on the information gathered before the thermocouple failed. This feature is called Automatic Manual Control (AMC).

If a thermocouple fails and AMC is turned ON, the control changes the failed zone into manual mode and sets a manual power output, based on the previously recorded average power output to that heater. If AMC is turned OFF, the control skips to PCM (Priority Control Mode) and performs the designated task. The default setting is ON for all zones.

To change the AMC setting for a zone, do the following:

1. Touch the zone to be changed.
2. Under **Advanced Settings**, touch the **AMC - Automatic Manual Control** field.
3. Select **On** or **Off**.

7.5.21 Changing the Output Power Limit Setting

The **Output Power Limit** setting allows users to set the maximum amount of power that can be delivered to the heaters. The default power limit for all zones is 100%.

To change the **Output Power Limit** setting for a zone, do the following:

1. Touch the zone to be changed.
2. Under **Advanced Options**, touch the **Output Power Limit** field.
3. Select a value between 0% and 100%.
4. Touch the **Accept** button.

7.5.22 Changing the Zone Control from ART to PID

Altanium can automatically adjust the control algorithm to suit different heater requirements. This control method is referred to as Active Reasoning Technology (ART). In some cases, it may be necessary to switch from the automatically adjusted ART algorithm to an algorithm that can be manually adjusted. This control method is referred to as PID. When switching a zone from ART control to PID control, the user can manually enter values for the Proportional, Integral and Derivative parameters. The default control mode for all zones is ART.

To toggle the zone control between ART and PID, do the following:

1. Touch the zone to be changed.
2. Under **Control Settings**, touch the **Control Mode** field.
3. Select **ART** or **PID**.

7.5.22.1 Changing P, I or D Parameter Values

If rerunning ART on a zone has been attempted, and the required control has not been achieved, switch the zone to PID control and adjust the individual PID parameters to achieve the required control.



IMPORTANT!

The zone can be switched back to ART without losing information. The default settings for the PID are P-15, I-10 and D-2 on all zones.

To change the PID settings, do the following:

1. Touch the zone to be changed and switch the control mode to PID.
2. Touch the fields containing the values for the P, I or D parameters to display a keypad.
3. Enter the new value for the P, I or D parameter, and touch the **Accept** button.
4. If necessary, repeat the previous two steps to adjust the other PID parameters.

7.6 Active Reasoning Technology (ART)

Active Reasoning Technology (ART) is the science of applying microprocessor-based control systems to automatic decision making. It is a control method directed at an active or continuous learning process, which is tolerant to faulty functions and incorrect operation by intentionally circumventing the incorrect operation or failure.

Active Reasoning software combined with integrated hardware disseminates information and makes better process decisions than any modular single input, single output controller. The ability of all zones to interact with one another and understand the effects of that interaction is paramount. Totally automatic control is one advantage. During Altanium startup, the control looks at all zones individually, then looks at comparisons of all zones and determines any interaction between them. It tests for any earth leakages individually and as a whole. It then creates the necessary bake out and soft start routines to successfully and evenly heat the mold.

7.6.1 ART Process Screen

The **ART Process** screen is used to initiate the Active Reasoning Technology self tuning process and monitor its progress. This screen appears automatically after touching **START** if any zone in the currently loaded mold setup has not completed the ART process. The process can be manually initiated for any zones that it is felt are not controlling properly.

When ART is running, the system cannot be modified using the **Start**, **Standby** and **Boost** buttons. Touch the **Cancel Art** buttons to return to normal operation or touch the **Stop** button to cancel the ART process and stop the controller. Normal navigation is disabled until ART completes. Pending zones will undergo the ART process the next time the system is started.

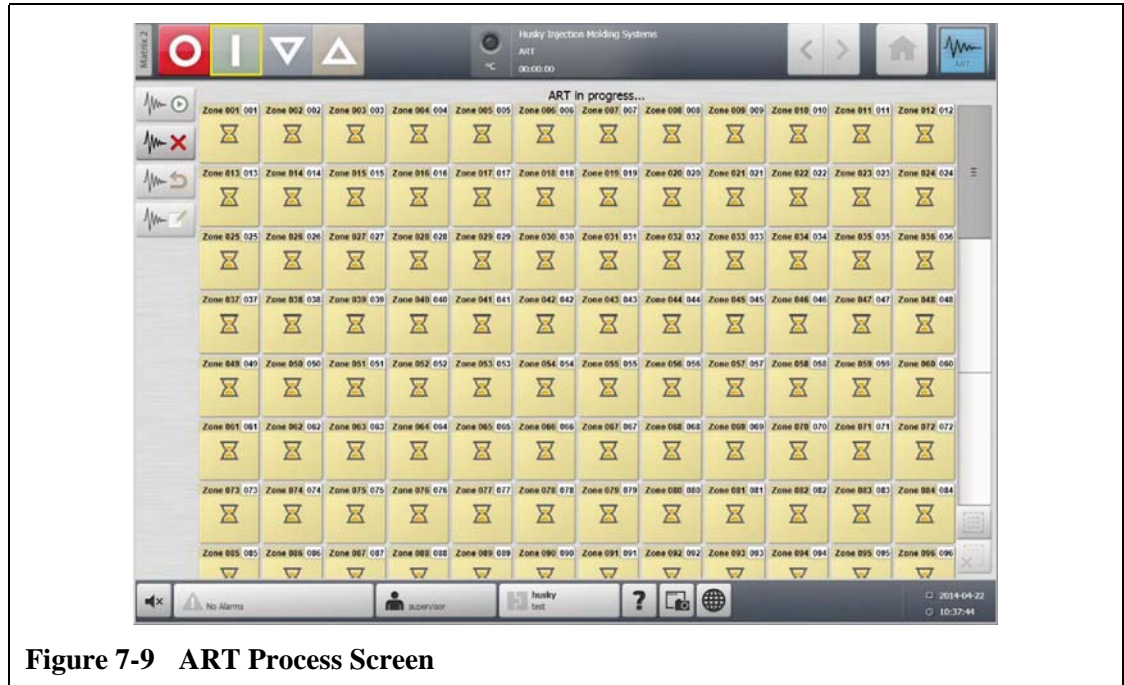


Figure 7-9 ART Process Screen

Table 7-3 ART Process Screen Item Descriptions

Item	Description
Status Text	The current ART status.
Zone Selection Grid	<p>The selection grid indicates the status of each zone.</p> <p>Yellow represents a zone that is selected.</p> <p>A yellow caution triangle marks a zone that cannot be ARTed (for example, a zone set to manual regulation mode or a zone with errors).</p> <p>An hourglass indicates ART is in progress.</p> <p>A green check mark represents a zone that has already been ARTed.</p> <p>A question mark represents a zone that is not ARTed.</p>

Table 7-4 ART Process Screen Button Descriptions

Button	Description
Start ART Process	Touch the Start ART Process button to start the ART process.
Cancel ART Process	Touch the Cancel ART Process button to stop the ART process.
Reset ART Process	Touch the Reset ART Process button to reset the ART parameters for the selected zones. The next time the system is started, it will perform the ART process on those zones again.
Edit ART Values	Touch the Edit ART Values button to open the Edit Art Values dialog box and view/change the ART parameters. ART values can be changed one zone at a time, while the controller is running.

Table 7-5 ART Status Descriptions

Symbol	Description
?	The question mark indicates ART has not been started or a zone has not been ARTed.
X	The X indicates a problem with the zone. This problem is preventing the ART process from beginning.
Hourglass	An hourglass indicates that the ART process is underway.
Checkmark	A checkmark indicates that the ART process is complete.

7.6.1.1 Using the Manual ART Function

Due to a change to a particular zone, such as the replacement of a heating element or thermocouple, an operator may need to reset the ART parameters for that zone. Poor control of the zone may also lead an operator to make this decision. For example, the temperatures may be consistently swinging over and under setpoint, yet not triggering an alarm. This is not to be confused with shear heat from the material, which appears as sudden increases in temperature with no undershoot.

Once the system is started, the ART process automatically begins on all zones that have not yet undergone the ART process. If a particular zone is not controlling properly when it has reached its setpoint, ART can manually be run on that zone.

When ART is run manually on a zone, Altanium deletes its knowledge base on that zone and recalculates the control process. It then stores this data and uses it to calculate the proper output to control this zone best at setpoint. Use this function sparingly and only permit highly qualified individuals to use it. The molding process may be interrupted if ART is run on several zones at one time, but this is rare. It is best to run ART on a zone once it is at setpoint.

To manually run ART on a zone, do the following:

NOTE:The system must be in RUN mode before the ART process can start.

1. Select the zone or zones to manually ART.
2. Touch the **Start ART Process** button to begin the ART analysis on the selected zone(s).
When all selected zones complete the ART process, a checkmark appears for each zone.
3. To cancel the ART process at any time, touch the **Cancel ART Process** button.

7.7 PID Control

Altanium offers the choice of using ART (automatic tuning), or PID (manual tuning). To use PID on a zone or zones, the following provides a simple explanation of each parameter (P, I, and D).

7.7.1 Typical PID Values

The following is a list of some typical PID values.

Table 7-6 PID Values

Proportional	Integral	Derivative	Type	Example
015	010	002	Fast	Probes or heaters with internally located thermocouples
050	020	000	Fast	
020	010	000	Fast	
015	015	000	Fast	
020	007	100	Medium	Probes or heaters with internally located thermocouples (larger mass)
020	005	200	Medium	
100	003	000	Slow	Manifolds or heaters with externally located thermocouples
075	003	150	Slow	

7.7.2 Possible Causes of Oscillation

It is possible to set the control terms incorrectly, inducing an oscillation. The following are the most common causes:

Table 7-7 Possible Causes of Oscillation

Cause	Description
"P" too large	Power change too great per °C of temperature change.
"I" too large	Power changing too quickly for the process to follow it.
"D" too large	Stepped power change too large for the rate of change of temperature.
Shear	An important issue often overlooked is the effect of shear in the material as it passes through the gating area. This can cause rises in temperature in excess of 33 °C (60 °F) under severe conditions. Therefore, if large temperature variations occur during molding, it is worth plotting this variation against the molding cycle time. As the controller cannot initiate additional cooling, it is only possible to minimize this effect with properly selected PID terms.

Chapter 8 Mold Diagnostics

Diagnostics is a useful tool for troubleshooting problems with a mold or for verifying the wiring integrity of a mold after maintenance has been performed. Diagnostics can also be used to analyze the thermal isolation between all the cavities in the mold.

8.1 Testing the Mold

To test the mold, do the following:

1. On the **Home** screen, touch the **Mold Diagnostics** button.
2. Make sure Altanium is in the stop state.
3. Select the desired zone(s).
4. Select the check box(es) for the desired test(s).
5. Touch the **Run Test** button.

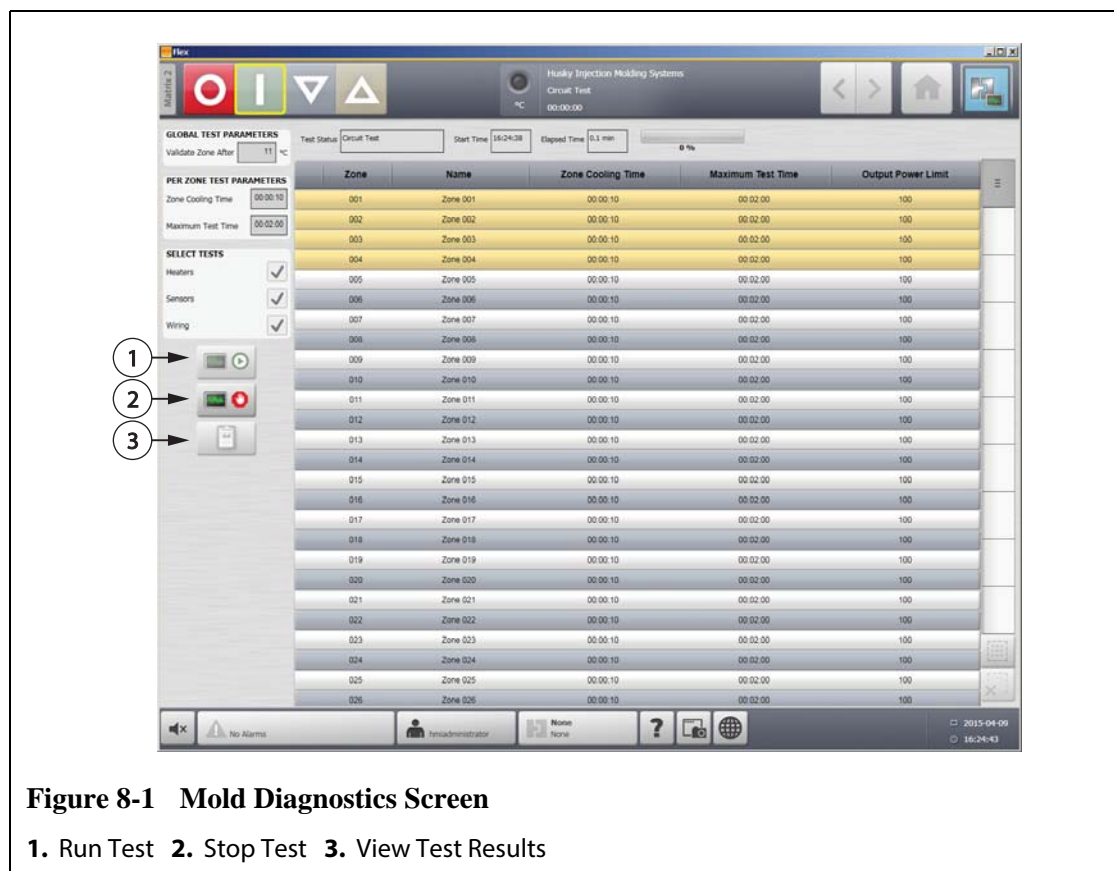


Figure 8-1 Mold Diagnostics Screen

1. Run Test 2. Stop Test 3. View Test Results

Table 8-1 Mold Diagnostics Screen Field and Button Descriptions

Field/Button	Description
Validate Zone After	The number of degrees that a zone must heat above its starting temperature to pass a test.
Zone Cooling Time	The amount of time to wait after completing a previous test before starting the next test.
Maximum Test Time	The maximum test duration.
Heaters	<p>Select the Test Heaters check box to test whether the selected zones are drawing current. A heater test will test the following:</p> <ul style="list-style-type: none"> • During heating, will record the maximum current and voltage, and will calculate the resistance. • Test for any blown fuses.
Sensors	<p>Select the Test Sensors check box to test whether the selected zone's thermocouple sensor is functioning properly. A sensor test will test the following:</p> <ul style="list-style-type: none"> • Test sensor operation. For example, if a thermocouple is lost or reversed.
Wiring	<p>Select the Test Wiring check box to test whether, for the selected zones, thermocouple and heater pairings are correct (1 to 1 and 2 to 2, etc.). A wiring test will test the following:</p> <ul style="list-style-type: none"> • Before conducting the cross talk test, Altanium will wait for the temperature to be below the threshold for the cross talk test. • During heating, will record the maximum current and voltage, and will calculate the resistance. • Test for the effectiveness of cross talk.
Run Test	Touch the Run Test button to start the selected tests. Only the selected zones will be tested.
Stop Test	Touch the Stop Test button to stop the test. A test that has been completed will be persisted to the database. The test results can be reviewed at a later time.
View Test Results	Touch the View Test Results button to open the Test Results screen. This can be done anytime during the test after the first zone has been tested, or after the test is completed.
Test Status	The current status of the test. During the test, it will display the zone that is being tested.
Start Time	The time that the test was started.
Elapsed Time	The amount of time that has passed since the test was started.

8.1.1 Running a Mold Diagnostics Test

To run a mold diagnostic test, do the following:

1. Before connecting any power to the controller or the mold, clean the mold and its surroundings.

CAUTION!

Risk of damage to the equipment — Do not rely on the possibility of a ground in the mold cables. Using a length of suitable wire, attach the mold to the mold ground connector on the Altanium mainframe.

2. For safety, verify the controller and mold share the same ground.
3. Check the mold wiring to verify there are no bare wires, frayed ends or cut insulation.
4. If thermocouple and power cables are present, connect them from the controller to the mold, checking them for a clean fit.
5. Connect the Altanium mainframe to the main input power and turn it ON via the main disconnect.
6. Log in to Altanium and load a mold setup.
7. Verify the zones to test are turned ON. Any zones turned OFF will not be tested.
8. On the **Home** screen, touch the **Mold Diagnostics** button.
9. Select the desired zone(s).
10. Select the test(s) to perform (heaters, sensors, wiring). By default, all tests are selected.
11. Touch the **Run Test** button.

8.1.2 Setting the Zone Cooling Time

On some molds, it may be necessary for the Altanium controller to wait a certain period before moving on to test the next zone. This additional time is needed in cases where, after the power has been removed, the thermocouple continues to heat longer than expected. This is common with large manifolds. If Altanium started testing the next zone before the previous zone's temperature stopped increasing, this could affect the test results.

To set the zone cooling time, do the following:

1. On the **Mold Diagnostics** screen, select the zone(s) to change.
2. Touch the **Zone Cooling Time** field.
3. Enter the zone cooling time in the format displayed (HHMMSS).
4. Touch the **Accept** button.

NOTE: The default setting is 10 seconds. Each mold setup can have its own set of delay times.

8.1.3 Setting the Maximum Test Time

On some molds, if there is a thermocouple wiring problem, a heater could be damaged during test. Specifically, some heaters in some configurations may not support the peak temperatures reached when full power is applied for the default test time. An extreme example is testing a hot runner without the cavity plate in position. If the heater is large, a short test time may not be long enough to heat up and result in a failed test. Operators can set the maximum test time for each zone to accommodate different types of heaters.

To set the maximum test time, do the following:

1. On the **Mold Diagnostics** screen, select the zone(s) to change.
2. Touch the **Maximum Test Time** field.
3. Enter the maximum test time in the format displayed (HHMMSS).
4. Touch the **Accept** button.

NOTE:The default setting is 2 minutes. Each mold setup can have its own set of maximum test times.

8.2 Diagnostics Results

To review the diagnostic test results, do the following:

On the **Home** screen, touch the **Diagnostics Results** button to open the **Test Results** screen.



Figure 8-2 Test Results Screen

1. Rewire
2. Cross-Talk
3. Temperature Graphs

Item	Description
Mold Diagnostics	Opens the Mold Diagnostics screen.
Rewire	Automatically reassigns all the sensors to their proper location based on the results of the test.
Cross-Talk	Opens the Cross-Talk screen.
Temperature Graphs	Opens the Temperature Graphs screen.
Start Time	Time the most recently conducted test was started.
Elapsed Time	Duration of the most recently completed test.

8.2.1 Test Results Screen Values

The following section describes the fields and buttons on the **Test Results** screen.

Item	Description
Zone	Zone number
Name	Zone name
Sen.	Indicates the number of the sensor being used for that zone.
Fuses	The fuses test will determine whether the fuse for that zone is operating correctly. Fuse values are displayed as follows: <ul style="list-style-type: none"> Question Mark: indicates the fuse for the zone was not tested. Check Mark: indicates the fuse for the zone passed the test. X: indicates the fuse for the zone failed the test.
T/C	The thermocouple test will determine whether the thermocouple for that zone is operating correctly. Thermocouple values are displayed as follows: <ul style="list-style-type: none"> Question Mark: indicates the thermocouple for the zone was not tested. Check Mark: indicates the thermocouple for the zone test passed. X: indicates the thermocouple for the zone failed the test because it was reversed or lost.
AMP	Current drawn by the heater during the test for each zone.
VAC	Line voltage reading taken during the test for each zone.
Watt	Power calculated for each zone based on the line voltage and current readings measured during the test.
OHM	Resistance calculated for each zone based on the line voltage and current readings measured during the test.

Item	Description
Wiring	<p>The wiring test tests for correct zone sensor assignment. This test determines whether sensor assignments match. If a sensor assignment does not match, the cross-talk findings test will fail.</p> <p>Wiring values are displayed as follows:</p> <ul style="list-style-type: none"> • Check mark: indicates the zone passed the wiring test. • X: indicates the zone failed the wiring test.
Iso.	<p>This test calculates cross-talk data that is used to describe how well a zone is isolated from adjacent zones. When heating one zone, adjacent zone temperatures should not increase.</p> <p>Iso. values are displayed as follows:</p> <ul style="list-style-type: none"> • 1 = Excellent isolation • 2 = Good isolation • 3 = Moderate isolation • 4 = Fair isolation • 5 = Poor isolation
E/L	<p>The earth leakage test tests for a earth leakage in each zone. Earth leakage values are displayed as follows:</p> <ul style="list-style-type: none"> • Question Mark: indicates the earth leakage for the zone was not tested. • Check Mark: indicates there is no earth leakage for that zone. • X: indicates there is a earth leakage for that zone.
B/O	<p>The bake out test tests for moisture in each heater. Bake out values are displayed as follows:</p> <ul style="list-style-type: none"> • Question Mark: indicates the bake out for that zone was not tested. • Check Mark: indicates the zone passed the bake out test. • X: indicates the zone failed the bake out test.
Time	Time taken to test each zone.

8.2.2 Automatic Thermocouple Rewiring

Thermocouples can be inadvertently cross-wired in the mold, where the thermocouple for one heater becomes connected with another heater, and vice versa.

The Altanium wiring test checks the thermocouple/heater wiring and determines whether the wiring is correct. When the test is complete and if an error was found, the zone with the error will have an x displayed in the wiring column. Also, the **Re-Wire** button on the **Test Results** screen will be enabled.

To automatically rewire thermocouples, do the following:

On the **Diagnostics Results** screen, touch the **Re-Wire** button to automatically reassign the mold thermocouples to their correct zones.

NOTE: This information is saved with the current mold setup.

8.3 Cross-Talk Screen

On the **Diagnostics Results** screen, touch the **Cross-Talk** button to open the **Cross-Talk** screen. Use this screen to view how much heat transfer is occurring between zones in the mold. A zone in a correctly wired mold with no thermal isolation issues will display 100%, all other zones will display 0%.

For example, Zone 9 finishes the test and shows 100%, but zone 10 shows 60%. If zone 9 increased 10 degrees during the test, zone 10 increased 60% of this 10 degrees, or 6 degrees, without having any energy applied.

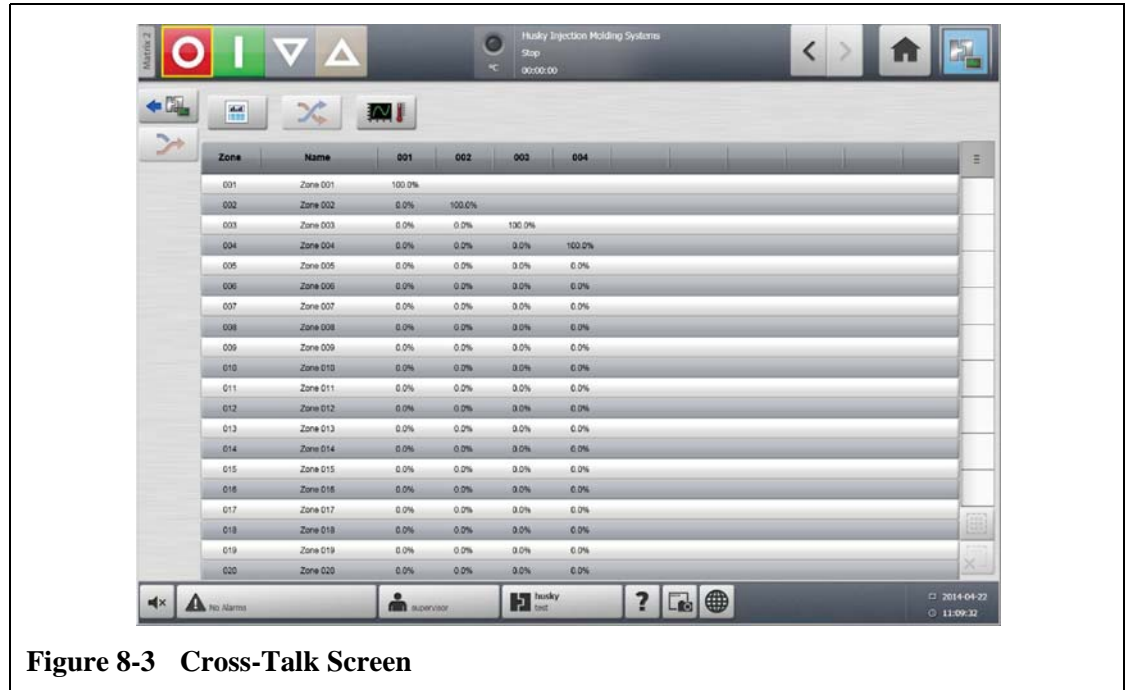


Figure 8-3 Cross-Talk Screen

Item	Description
Zone	The zone number.
Zone Name	The name of the zone.
Cross-Talk	The amount of cross-talk between zones.

To view the cross-talk information, do the following:

1. On the **Mold Diagnostics** screen, select the desired zones.
2. Touch the **View Cross Talk** button.

NOTE:A maximum of 10 zones at a time can be selected and viewed.

8.4 Temperature Graphs Screen

To open the **Temperature Graphs** screen, do the following:

On the **Diagnostics Results** screen, touch the **Temperature Graphs** button to open the **Temperature Graphs** screen. The **Temperature Graphs** screen displays a trace for each zone tested that represents the temperature rise over the duration of the test.

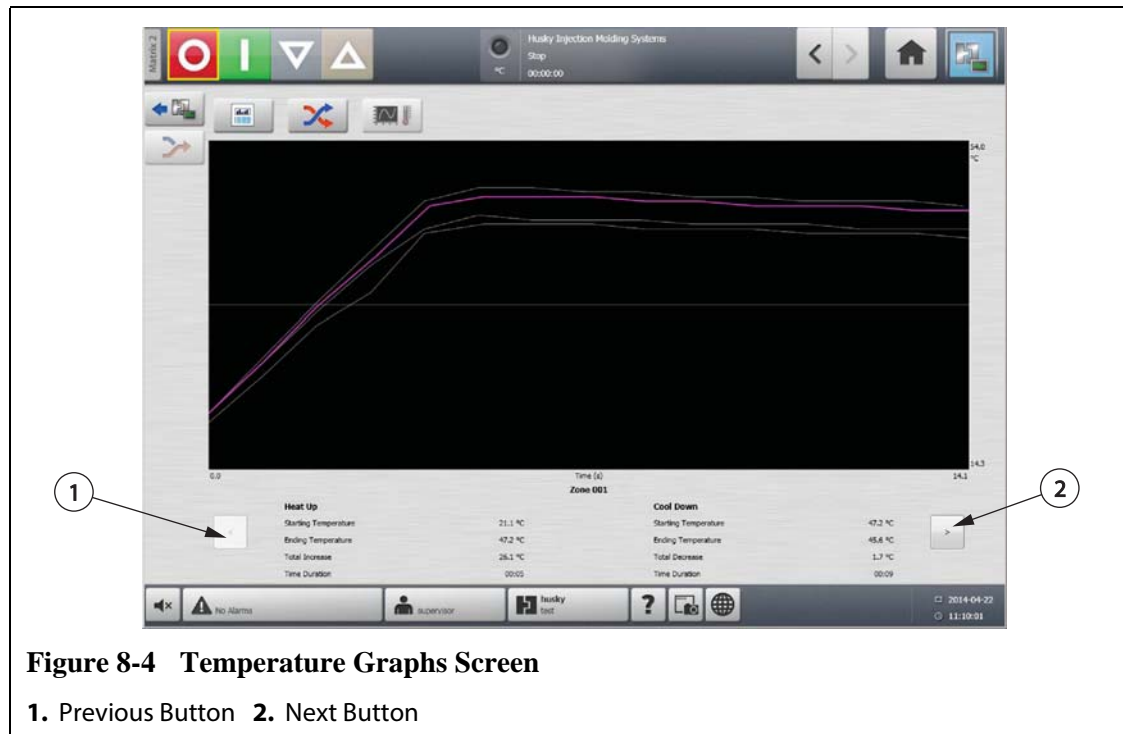


Figure 8-4 Temperature Graphs Screen

1. Previous Button 2. Next Button

Table 8-2 Temperature Graphs Screen Item Descriptions

Item		Description
Temperature Graph		<p>The temperature graph displays the recorded temperature rise over the duration of the test period for the selected zone. Touch the graph line to display the temperature and status of the location touched.</p> <ul style="list-style-type: none"> The purple graph line zone information is displayed in the Heat Up and Cool Down portion of the Temperature Graphs screen. Use the Previous and Next buttons to change which zone is displayed as a purple graph line. The grey graph line indicates the zone for which the information can be displayed on the Heat Up and Cool Down portion of the Temperature Graphs screen using the Previous and Next buttons.
Heat Up	Starting Temperature	The temperature of the zone when the zone started the heat up stage of the test.
	Ending Temperature	The temperature of the zone when the zone finished the heat up stage of the test.
	Total Increase	The increase in temperature of the zone while it was being heated.
	Time Duration	The time spent heating the zone.

Table 8-2 Temperature Graphs Screen Item Descriptions (Continued)

Item		Description
Cool Down	Starting Temperature	The temperature of the zone at the start of the cool down period.
	Ending Temperature	The temperature of the zone at the end of the cool down period.
	Total Decrease	The decrease in temperature of the zone during the cool down period.
	Time Duration	The time spent cooling the zone.

Table 8-3 Temperature Graphs Screen Button Descriptions

Button	Description
Prev	Displays the results of the previous zone if multiple zones are selected.
Next	Displays the results of the next zone if multiple zones are selected.

Chapter 9 Heating the Mold

This chapter describes how to start the Altanium system and check for any errors, and alarm conditions if they occur.

With all Altanium-to-mold connections made and mold cooling switched on, touch the **Start** button to start the system.



WARNING!

Please read this entire manual before attempting to startup the system. Call the nearest Husky Regional Service and Sales office with any questions.

9.1 Heater Circuit Test

9.1.1 Startup

On startup, H cards perform a heater circuit test on all zones before full power is applied, to minimize risk of damage to the controller or hot runner system. The duration of this test is 15 seconds and is carried out before the soft start routine is activated.

This test is critical for detecting the following heater circuit faults:

Faults	Description
Open Circuit	Occurs when a conductor is broken or comes loose and no current flows through the circuit it is associated with.
Short Circuit	Occurs when current travels along an unintended path as the result of a wiring error across the heater outputs, a pair of frayed conductors or a pinched wire.
Leakage	A low current short to ground that typically occurs when moisture is absorbed by a heater's insulation material.
Wrong Heater	This is a case when the heater exceeds the capacity of the zone it is connected to in the controller.

9.2 Earth Leakage/Wet Heater Bake Out System

Altanium is equipped with an advanced Earth Leakage/Wet Heater Bake Out system. From the moment the system is started, Altanium will constantly check for earth leakage conditions on every heater in the mold simultaneously. When necessary, it will initiate a low voltage bake out on the faulty zone(s) to try to bake the moisture out of the heater(s).

9.2.1 Earth Leakage Limit

For X Cards (ICC²):

- The system will declare an earth leakage error based on a user settable percentage limit, or if a zone has not gone through diagnostics, based on a default value of 0.2 amps.
- The system will declare a bake out error based on a user settable **Bake Out Limit** with a default value of 0.2 amps and an adjustable range from 0 to 5 amps. Any value of 0.2 amps or higher, but lower than the earth leakage limit, will trigger a bake out error.
- The calculated earth leakage limit or the default value is compared against the minimum limit and the lower of the two values is applied.

For H Cards (ICC³):

- The cards include a sensor specifically for monitoring leakage current in the heater circuit on a continuous basis. The system will declare an earth leakage error based on a user settable **Earth Leakage Fault Limit** with a default value of 500 milliamps and an adjustable range from 1 to 999 milliamps.
- The system will declare a bake out error based on a user settable **Bake Out Limit** with a default value of 200 milliamps and an adjustable range from 1 to 999 milliamps. Any value of 200 milliamps or higher, but lower than the earth leakage limit, will trigger a bake out error.

9.2.1.1 Setting the Earth Leakage Limit

To set the earth leakage limit, do the following:

1. On the **System Setup** screen, in the **Earth Leakage** section, touch the **Earth Leakage Limit** field.
2. Enter the desired value.
3. Touch the **Accept** button.

NOTE:For ICC² cards, the value is entered as a percentage that is used to calculate the earth leakage limit once the diagnostic process for a zone is complete. The range is from 0 to 100% with a default value of 10%. For ICC³ cards, the value is entered in milliamps. The range is from 1 to 999 mA with a default value of 500 mA.

9.2.2 Configuring the Length and Number of Bake Out Cycles

The low voltage bake out process will run up to five cycles, if necessary. The duration of each cycle can be set from one to 30 minutes. The system mode and system timer indicate the progress of each bake out cycle.

Once a bake out cycle is complete, the system diagnoses whether another bake out cycle is required. If the bake out alert enable parameter is turned on and, after the selected number of bake out cycles have finished, there is enough moisture in the system to warrant another bake out cycle, the system will automatically shut down and trigger a bake out alarm. If there is no more moisture in the system after the selected number of bake out cycles have finished, the soft start process will begin.

To configure the length of each bake out cycle, do the following:

1. On the **System Setup** screen, in the **Bake Out** section, touch the **Bake Out Time Per Cycle** field.
2. Enter the desired value.
3. Touch the **Accept** button.

To configure the number of bake out cycles, do the following:

1. On the **System Setup** screen, in the **Bake Out** section, touch the **Number of Bake Out Cycles** field.
2. Enter the desired value.
3. Touch the **Accept** button.

9.3 Soft Start Routine

During the soft start routine, all the Altanium zones warm up simultaneously, rising in temperature at the same rate. The soft start routine results in even thermal expansion and identical residence time on the material.

NOTE: Soft start is not active during staged startup.

Once the system is started, Altanium does the following:

1. After touching **Start**, Altanium begins the bake out process if necessary.
NOTE: If the ART process has not been completed, the **ART Process** screen appears when starting soft start.
2. The ART process begins if it has not already run.
3. **Soft Start** displays in the status bar. The power applied to the heaters varies from the probes to the manifold zones, the probes receiving less power and the manifolds receiving more. All of the zones increase in temperature at the same rate to make sure a smooth even thermal transfer within the mold. This helps to eliminate mold leakage.
4. Once all temperatures are near their setpoint, running is displayed in the system mode.

9.3.1 Enabling Soft Start

Once soft start is enabled, it will be applied the next time the mold heats are turned on.

To enable soft start, do the following:

1. On the **System Setup** screen, select the **Soft Start Enable** check box.

9.3.2 Disabling Soft Start

Once soft start is disabled, it will not be applied until the next time the mold heats are turned on.

To disable soft start, do the following:

1. On the **System Setup** screen, clear the **Soft Start Enable** check box.

9.3.3 Adjusting the Soft Start Minimum Limit

The soft start limit is used to calculate the window between the lowest temperature zone and the highest temperature zone in the system. This window is maintained throughout the soft start process and determines the gap between the coldest and hottest zones. Generally, lowering the soft start limit value decreases this gap, contributing to greater thermal uniformity of the hot runner system from a cold startup.

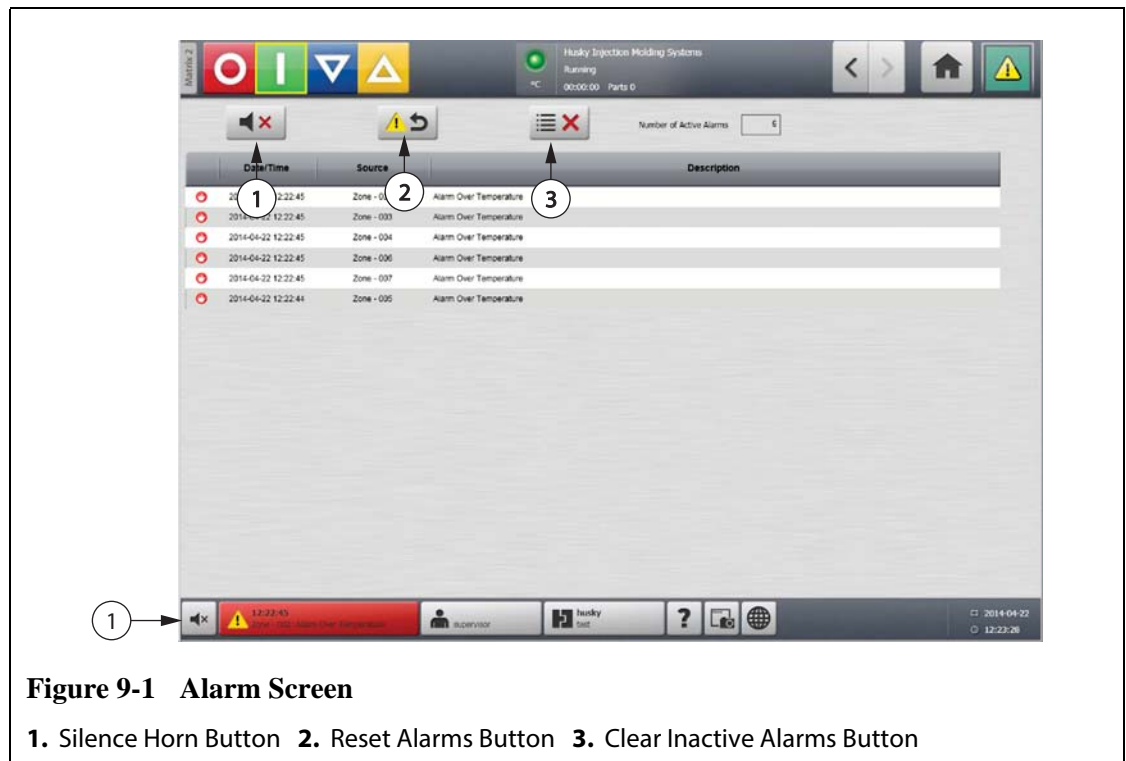
To adjust the soft start minimum limit, do the following:

1. On the **System Setup** screen, touch the **Soft Start Minimum Limit** field.
2. Enter the soft start minimum limit value.

9.4 Alarm Screen

The **Alarm** screen displays any errors that occur. When an alarm is active, an icon in the **Alarms** button in the system footer turns yellow and flashes red. Touch the **Alarm** button to open the **Alarm** screen.

NOTE:For a description of the alarm conditions displayed on the **Event History** screen and **Alarm** screen, refer to [Section 9.7](#). For a description of the abort conditions displayed on the **Event History** screen and **Alarm** screen, refer to [Section 9.8](#).

**Table 9-1 Alarm Screen Button Descriptions**

Button	Description
Silence Horn	Clears the audible alarm.
Reset Alarms	Resets the alarm light and error message.
Clear Inactive Alarms	Clears the inactive alarms.

Table 9-2 Alarm Screen Item Descriptions

Item	Description
Number of Active Alarms	Number indicates how many alarms are currently active.
Date/Time	Date and time that the alarm was triggered.
Source	Cause of the alarm.
Description	Description of the problem that triggered the alarm.

9.4.1 Opening the Alarm Screen

To open the **Alarm** screen, do one of the following:

- On the **Home** screen, touch the **Alarms** button.
- In the system footer, press the **Alarm Information** button.

9.4.2 Alarm States

Alarm states are as follows:

Alarm State	Description
Active	When an alarm first occurs it is assigned the active state.
Inactive Not Acknowledged	Press the Reset Alarms button and the alarm will be assigned the inactive not acknowledged state.
Inactive Acknowledged	Press the Clear Inactive Alarms button and the alarm will be assigned the inactive acknowledged state.

9.4.3 Clearing Alarms

If an error occurs, Altanium will turn on audible and visual alarms and display the alarm condition on the **Alarm** screen.

To clear an alarm, do the following:

NOTE: Before resetting an alarm, correct the source of the alarm.

- To silence an audible alarm, touch the **Silence Horn** button.
- To reset the alarm light and acknowledge the alarm, touch the **Reset Alarms** button.



9.5 Event History Screen

The **Event History** screen lists the zone alarms, alarms, warnings, setpoint changes, setup changes, HMI startup and out of specification events that have occurred previously.

To view the Event History screen, do the following:

On the **Home** screen, touch **Event History**.

NOTE:For a description of the alarm conditions displayed on the **Event History** screen and **Alarm Summary** screen, refer to [Section 9.7](#). For a description of the abort conditions displayed on the **Event History** screen and **Alarm Summary** screen, refer to [Section 9.8](#).

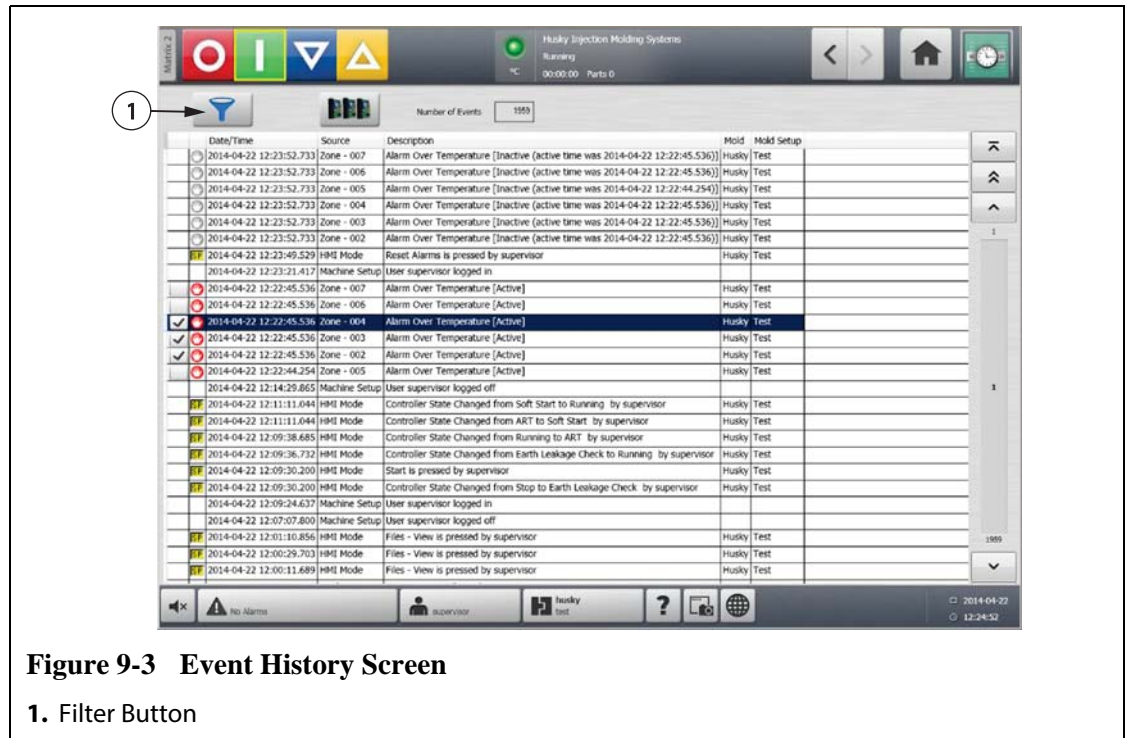


Figure 9-3 Event History Screen

1. Filter Button

Table 9-3 Event History Screen Item Descriptions

Item	Description
Number of Events	Number indicates how many events are listed on the Event History screen.
Filter	Selects the type of event displayed on the Event History screen. Event types include: <ul style="list-style-type: none"> • zone alarms • alarms • warnings • setpoint changes • setup changes • HMI startup • previously occurring out of specification events

Table 9-3 Event History Screen Item Descriptions (Continued)

Item	Description
Date/Time	Date and time that the event was triggered.
Source	Cause of the event.
Description	Description of the event.
Mold	Indicates the mold that is associated with the mold setup that was loaded when the event occurred.
Mold Setup	Indicates the mold setup that was loaded when the event occurred.

9.5.1 Filtering Events

Events can be filtered based on any type of event.

To filter events, do the following:

1. On the **Event History** screen, touch the **Filter** button.
2. Select the desired filter type(s).
3. Touch the **Exit** button.

9.6 Alarm and Event Icons

The following icons appear on the **Alarm** screen and the **Event History** screen.

Table 9-4 Icons






Icon	Description
	Warning is inactive.
	Warning is active.
	An alarm or zone alarm is active.

Table 9-4 Icons (Continued)

Icon	Description
	An alarm or zone alarm is inactive.
	A user has made a change. NOTE: This icon appears on the Event History screen, not on the Alarm screen.

9.7 Alarm Conditions — Warning Errors

Alarm conditions are displayed on the **Alarm** screen and the **Event History** screen. The following conditions cause the audible and visual alarms to initiate. Since they are warnings, they will not shut any part of the system down.

Table 9-5 Warning Errors

Warning	Description
Alarm Over Temp	A zone's actual temperature has exceeded its setpoint by the amount set for the alarm limit.
Alarm Under Temp	A zone's actual temperature has dropped below its setpoint by the amount set for the alarm limit.
Auto Slave Enabled	A zone has had its thermocouple become defective while running in automatic control mode. The system has AUTOMATICALLY SLAVED this zone to another one using data it collected before the thermocouple became faulty. The faulty zone is now being controlled by the power output from another similar zone. The master zone number will be displayed in the SLAVED TO ZONE box of the faulty zone in the Quick Set screen.
AMC Active	A zone has had its thermocouple become defective while running in automatic control mode. There was no match found for this zone in the mold by the Auto-Slave feature or the Auto-Slave feature is turned off. The zone has been setup to go into AMC (Automatic Manual Control) in this event. The zone is now being controlled in manual mode at a power percentage selected by the controller using data it collected before the thermocouple became faulty.
Power Deviation	The zone's power output value has deviated by an amount calculated by the power deviation algorithm. The power deviation algorithm is based on several factors, including a historical power average, heater type, changes to the power supplied to the unit, etc.

9.8 Abort Conditions — Shutdown Errors

Abort conditions are displayed on the **Alarm** screen and the **Event History** screen. The following conditions initiate the audible and visual alarms. Since they are shut down errors, they will cause a zone or system shut down situation based on the PCM setting.

Table 9-6 Shutdown Errors

Shut Down Error	Description
Abort Over Temp	A zone's actual temperature has exceeded its setpoint by the amount set for the abort limit.
Abort Under Temp	A zone's actual temperature has dropped below its setpoint by the amount set for the abort limit.
Circuit Overload	The current on this zone has risen above the maximum value allowed.
Configuration	Each zone's control parameters are compared to the values sent and received by each zone. If the values differ, then the system will automatically correct the problem. If the problem is not corrected after one minute, then the configuration alarm is triggered.
Control Card Over Temperature	A control card temperature has exceeded 76 °C (170 °F).
Fuse 1 Blown	Fuse 1 on this Intelligent Control Card (ICC ² or ICC ³) has blown and needs replacing.
Fuse 2 Blown	Fuse 2 on this Intelligent Control Card (ICC ² or ICC ³) has blown and needs replacing.
Earth Leakage Limit	ICC ² : If the calculated limit or default value is exceeded, the earth leakage error is triggered.
	ICC ³ : If the measured leakage level exceeds the Earth Leakage Fault Limit value, the earth leakage error is triggered.
Lost Thermocouple	This zone has a defective or open thermocouple.
Maximum Temp Limit	The temperature on this zone has risen above the maximum value allowed. This usually means the switching device has failed in the closed position and the zone ran away. The factory setting is 95 °C (200 °F) over the normal setpoint.
No Response	Altanium has been applying 96% to 100% power to this heater for a set amount of time, and the thermocouple connected to this zone is not responding. The thermocouple may be pinched or the heater power wires may be broken.
Over Current Limit	The current on this zone has risen above the maximum value allowed.
Receive Data Comm	This zone has stopped receiving data from Altanium.

Table 9-6 Shutdown Errors (Continued)

Shut Down Error	Description
Rev. Thermocouple	The positive and negative leads from the thermocouple have been switched or the connections are reversed. As power is applied, the temperature goes down instead of up. Correct this situation at the point where the wires are reversed.
Read Time Out	This zone has stopped transmitting data to Altanium.

Chapter 10 System Setup Screen

This chapter describes the functionality available within the **System Setup** screen, and provides instructions on setting some of the most commonly used system wide preferences.

To display the **System Setup** screen, touch **System Setup** on the **Home** screen. Items in this screen depend on the access rights of the user and the current state of the system.

10.1 System Setup Screen

Use the **System Setup** screen to configure system settings.

To access the **System Setup** screen, do the following:

On the **Home** screen, touch the **System Setup** screen.

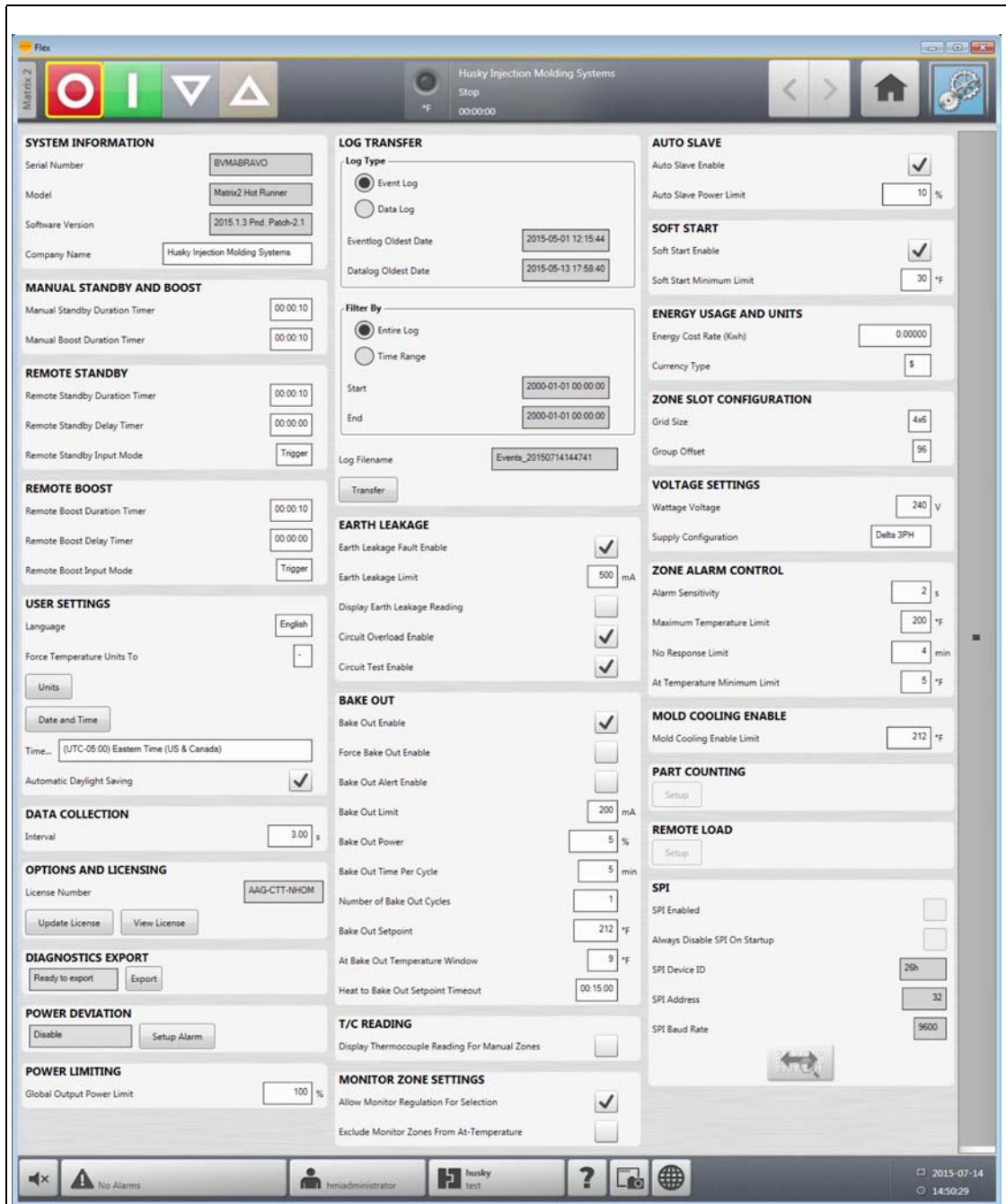


Figure 10-1 System Setup Screen (Composite)

Table 10-1 System Setup Screen Item Descriptions

Item	Description
Serial Number	The Serial Number is for informational purposes only. It is a number assigned to the system when it is manufactured. Husky support may ask for this number when troubleshooting or upgrading Altanium.
Model	Controller model name.

Table 10-1 System Setup Screen Item Descriptions (Continued)

Item	Description
Software Version	The Current Software Version is for informational purposes only. Husky support may ask for this number when troubleshooting or upgrading Altanium.
Company Name	Company name displayed on the status bar.
Manual Standby Duration Timer	Zone temperature decreases for a given time duration or until a set standby temperature is achieved.
Manual Boost Duration Timer	Zones temperature increases for a given time duration or until a set boost temperature is achieved.
Remote Standby Duration Timer	Once an external signal has activated the remote standby mode, the system cools down to the remote standby setpoint for the duration of the timer setting.
Remote Standby Delay Timer	Once an external signal has activated the remote standby mode, the system waits for a set period of time (delay period) until cooling down to the remote standby setpoint.
Remote Standby Input Mode	<p>The standby setting is enabled based on one of three settings: trigger, on/off, or direct.</p> <p>Trigger: Includes a delay timer and duration timer. If the D/I signal is lost, Standby or Boost mode continues until the duration timer elapses.</p> <p>On/Off: Includes a delay timer. If the D/I signal is lost, the controller returns to the running state.</p> <p>Direct: System enters Standby until the input signal is not active. If the input signal is active when the system is started it will immediately go into standby mode. Includes a delay timer.</p>
Remote Boost Duration Timer	Once an external signal has activated the remote boost mode, the system heats up to the remote boost setpoint for the duration of the timer setting.
Remote Boost Delay timer	The system will initiate the remote boost mode after a set period of time.
Remote Boost Input Mode	The boost setting is enabled based on one of three settings: a trigger, an on/off setting, or a direct signal.
Language	Language displayed on the user interface.
Force Temperature Units To	Forces the temperature units to specified settings.
Units	Units of measure (SI or Imperial) displayed on the user interface.
Date and Time	Current date and time displayed on the user interface.
Time Zone	Current time zone displayed on the user interface.
Automatic Daylight Saving	Automatic daylight savings on/off check box.
Interval	Specifies in seconds how often the process data will be sampled.

Table 10-1 System Setup Screen Item Descriptions (Continued)

Item	Description
License Number	License key is displayed.
Update License	Upload new license file from local, USB, and network drives.
View License	Display license information.
Power Deviation	Toggle this parameter on or off. If this parameter is toggled on, a power deviation will trigger a power deviation alarm.
Power Limiting	Controls the maximum output power delivered to each zone.
Log Transfer	Transfer data log or event log in CSV format to specified log file destination. The entire log is transferred or a time range can be set.
Earth Leakage Fault Enable	Toggle this parameter to turn earth leakage checking on or off.
Earth Leakage Limit	<p>For ICC² cards, a percentage used to calculate the earth leakage limit once the diagnostic process for a zone is complete. The control card uses a percentage of the current measured during the test to determine when to declare an earth leakage error.</p> <p>The parameter range is 0 to 100%. The default value is 10%.</p> <p>For ICC³ cards, the value is displayed in milliamps and has an adjustable range from 1 to 999 mA. The default value is 500 mA.</p>
Earth Leakage Fault Limit Default Value	<p>The value the system will use to determine the earth leakage limit if diagnostics have not been run on a zone. Only displayed if ICC² cards are installed.</p> <p>The parameter range is 0.0 to 5.0 amps. The default value is 0.2 amps.</p>
Earth Leakage Minimum Limit	The minimum earth leakage limit value. Only displayed if ICC ² cards are installed.
Display Earth Leakage Reading	Enables earth leakage displays when ICC ³ cards are installed.
Circuit Overload Enable	Enables or disables the circuit overload error. Displays only if ICC ³ cards are installed.
Circuit Test Enable	Enables the circuit test for ICC ³ cards.
Bake Out Enable	If this parameter is enabled, the system will run the bake out test and apply a low voltage to remove the moisture in a heater if required. Toggle this parameter on or off.
Force Bake Out Enable	Toggle this parameter on or off. If this parameter is on, each zone in the system is baked out upon startup.
Bake Out Alert Enable	<p>If this parameter is enabled, the system stops and generates an alarm for each zone with a bake-out condition that has not been cleared during the bake out cycle.</p> <p>If this parameter is disabled, the system exits the existing bake-out cycle and continues the startup sequence.</p>

Table 10-1 System Setup Screen Item Descriptions (Continued)

Item	Description
Bake Out Limit	<p>The system uses this value to assess whether a bake-out condition exists. Upon system startup, if any zone exceeds this limit, the system will enter bake-out mode.</p> <p>For ICC² cards, the parameter range is 0 to 5 amps. The default value is 0.2 amps.</p> <p>For ICC³ cards, the parameter range is 1 to 999 milliamps. The default value is 200 milliamps.</p>
Bake Out Power	<p>The system uses this value during the bake out process.</p> <p>The parameter range is 0 to 25%. The default value is 5%.</p>
Bake Out Time Per Cycle	<p>Length of the bake out cycle. The parameter range is 1 to 30 minutes. The default value is 5 minutes.</p>
Number of Bake Out Cycles	<p>The number of attempts to bake out the moisture in a heater. The parameter range is 1 to 5. The default value is 1.</p>
Bake Out Setpoint	<p>Specifies the bake out setpoint the zones must achieve during the bake out process. The default value is 100°C (212°F). Displays only if ICC³ cards are installed.</p>
At Bake Out Temperature Window	<p>During the bake out process, this parameter specifies the threshold that all zones must achieve before the bake out cycle value starts counting down. The default value is 5°C (9°F). Displays only if ICC³ cards are installed.</p>
Heat to Bake Out Setpoint Timeout	<p>Specifies the amount of time the zones are given to achieve the bake out setpoint. If the time period expires, a warning message displays the problem and what happens when the warning message is acknowledged. Displays only if ICC³ cards are installed.</p>
Display Thermocouple Reading for Manual Zones	<p>A global setting that controls whether the controller view screens display the thermocouple readings for zones in manual mode.</p>
Allow Monitor Regulation for Selection	<p>Enables the parameter that allows the change of the regulation mode to "Monitor" for any zones in the Quick Set screen.</p>
Exclude Monitor Zones from At-Temperature	<p>Enables the parameter that allows the exclusion of any zones set to "Monitor" regulation from the at-temperature determination by the system.</p>
Auto Slave Enable	<p>Toggle this parameter on or off.</p>
Auto Slave Power Limit	<p>This value is the limit used by the Auto Slave routine to determine if the average power output of a candidate zone is within the acceptable deviation of the slaved zone.</p>
Soft Start Enable	<p>Toggle this parameter on or off. If this parameter is on, the soft start process is applied upon startup.</p>
Soft Start Minimum Limit	<p>Once the soft start process is initiated, the system calculates the difference between the zone with the highest and lowest temperatures. If this difference is less than this parameter value, then this parameter value is applied to the soft start process.</p>

Table 10-1 System Setup Screen Item Descriptions (Continued)

Item	Description
Energy Cost Rate	Energy cost accumulated per Kwh.
Currency Type	Currency for energy cost rate.
Grid Size	To change the mainframe layout on the Card Layout screen, change the grid size.
Group Offset	Use the group offset setting to configure the linked systems. The default group offset setting is 96 zones.
Wattage Voltage	Insert the designed voltage rating of the heaters so the system can accurately calculate Watt Voltage.
Supply Configuration	Used to select the supply configuration parameter: Delta 3PH, Wye 3PH+N, Single Phase, or Integrated TX.
Alarm Sensitivity	The duration of time the system has to stay in an error condition before it is declared an alarm.
Maximum Temperature Limit	The number of degrees over the setpoint the Maximum Temperature Alarm is activated.
No Response Limit	A global setting that determines how long the system should apply 96% power or greater without a 5 degree rise in temperature before it is declared an alarm condition.
At Temperature Minimum Limit	Defines the minimum threshold for activating the At-Temperature signal.
Mold Cooling Enable Limit	Defines the threshold the system uses to determine when to activate or deactivate the Mold Cooling Enable output.
Part Counting	Used to automatically count up parts with the ability to set a sack full limit.
Remote Load	Used to select the mold setups that can be loaded directly from the injection molding machine.
SPI	If a device is attached to the SPI connector, this section allows the user to enable communication with the device and set communication protocol.

10.1.1 Force Temperature Units To Option

Users can select how the available temperature units are displayed using the **Force Temperature Units To** option: Degrees Celsius (C), degrees Fahrenheit (F), or degrees kelvin (K).

When C, F or K is selected, all temperature units in the system will be forced to be displayed in the respective unit, including all stored mold setups. If a dash is shown, then the user may select any of the temperature unit choices in the units dialog.

To select the temperature units of measure, do the following:

1. On the **System Setup** screen, under **User Settings**, touch the **Force Temperature Units To** button.
2. Select the desired unit.

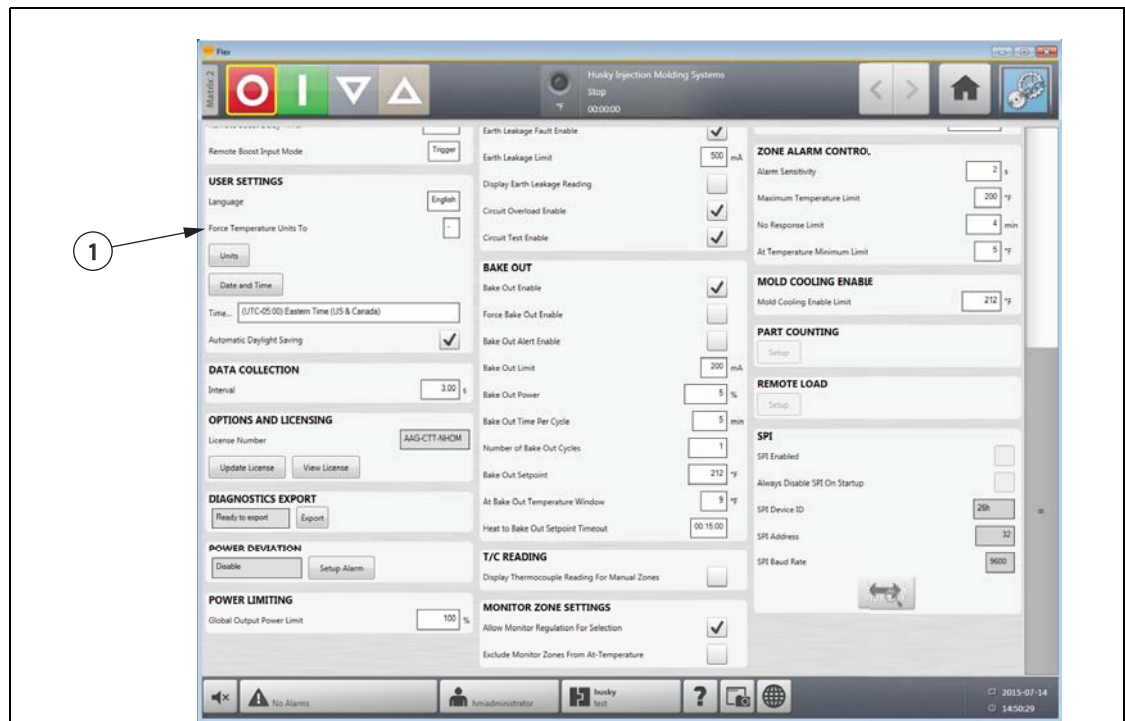


Figure 10-2 System Setup Screen - User Settings

1. Force Temperature Units To Button

10.1.2 Data Collection

Users can specify how often process data will be sampled.

To select the interval to sample process data, do the following:

1. On the **System Setup** screen, under **Data Collection**, touch the **Interval** button.
2. Enter the desired time interval in seconds.
3. Touch the **Accept** button.

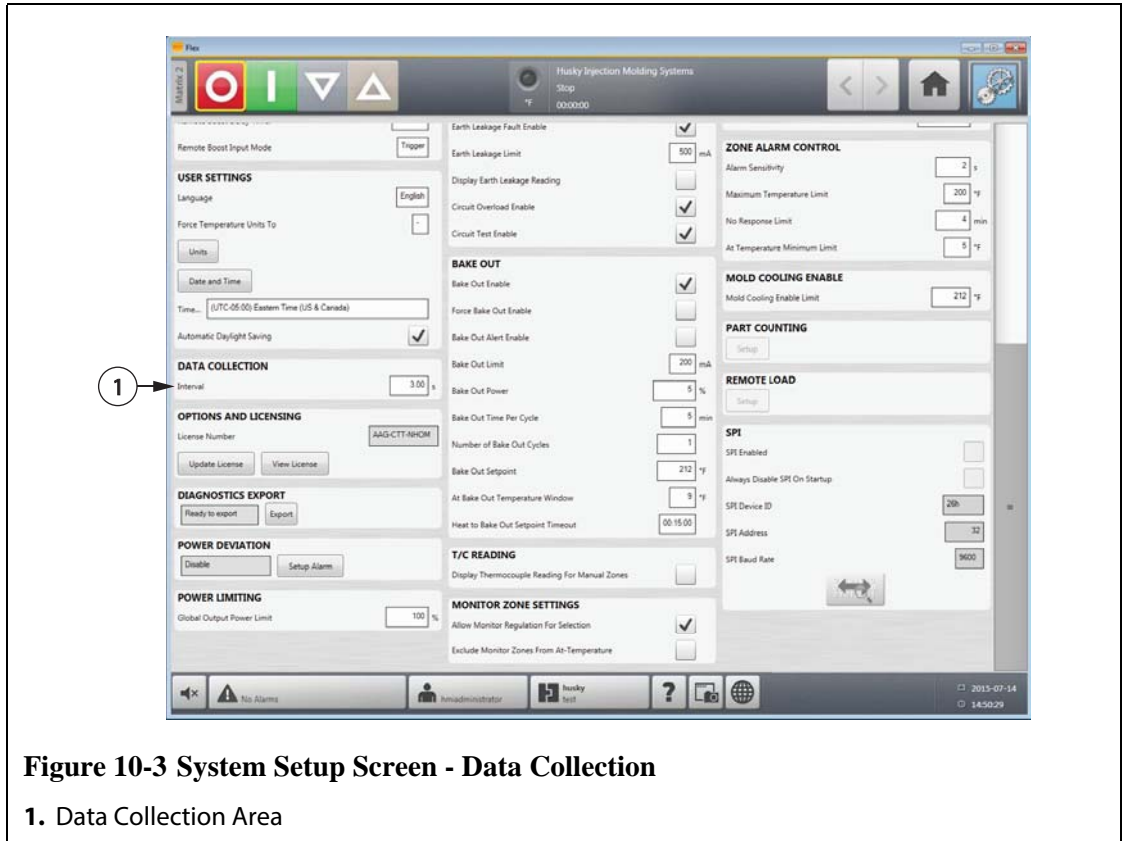


Figure 10-3 System Setup Screen - Data Collection

1. Data Collection Area

10.1.3 Changing the Units of Measure

Users can configure Altanium to display the international system of units (SI) or the imperial units of measure.

To change the units of measure, do the following:

1. On the **System Setup** screen, under **User Settings**, touch the **Units** button.
2. Change the desired units of measure.
3. Touch the **Exit** button.

NOTE: If Altanium is forced to a specified setting, only administrators can change the units of measure.

10.1.4 Changing the Energy Usage and Units

Energy accumulation data is updated every three seconds and presented in real time to the user on the **Energy Display** screen. Users can enter Energy Cost Rate (Kwh) and Currency Type through the **Energy Usage and Units** section in the **System Setup** screen.

To change the energy usage and units, do the following:

1. On the **System Setup** screen, under **Energy Usage and Units**, touch the **Energy Cost Rate (Kwh)** or **Currency Type** button as desired. A dialog box will open.
2. Change the desired units.
3. Touch the **Exit** button.

10.1.5 Changing the Grid Size and the Group Offset

To change the layout on the **Card Layout** screen, change the grid size. To configure the linked systems, change the group offset setting. The default group offset setting is 96 zones.

To change grid size, do the following:

1. On the **System Setup** screen, under **Zone Slot Configuration**, touch the **Grid Size** field.
2. Touch the desired grid size button.
3. Touch the **Group Offset** field.
4. Touch the desired group offset button.
5. Touch the **Accept** button.

10.1.6 Changing the Number of Zones in the System

Users may need to add or remove zones to an existing mold setup. If the mold running has fewer control zones than listed on the Altanium screen, users can remove the unused zones to make sure they are not displayed.

To change the number of zones in the system, do the following:

1. On the **Home** screen, touch the **Zone Slot** button.
2. Select the number of zones and/or slots to be enabled or disabled.
3. Touch the **Slot Enable** button.
4. Touch the **Accept** button.
5. Restart the Altanium controller.

10.1.7 Standby Timer Settings

To reduce the temperatures in the mold for a certain period of time, set the standby timers associated with each standby function. Once the system enters standby, the timer will start. When the timer finishes, the temperatures will return to the normal setpoint.

10.1.7.1 Setting the Manual Standby Duration Timer

The zone temperature decreases for a given time duration or until a set standby temperature is achieved.

To set the manual standby duration timer, do the following:

1. On the **System Setup** screen, under **Manual Standby and Boost**, touch the **Manual Standby Duration Timer** field.
2. Enter the time required in the format HHMMSS.
3. Touch the **Accept** button.

10.1.7.2 Setting the Remote Standby Duration Timer

The zone temperature decreases for a given time duration or until a set remote standby temperature is achieved.

NOTE:If the system is not equipped with the remote standby feature, only the **Manual Standby Duration Timer** setting is displayed on the **System Setup** screen.

To set the remote standby duration timer, do the following:

1. On the **System Setup** screen, under **Remote Standby**, touch the **Remote Standby Duration Timer** field.
2. Enter the time required in the format HHMMSS.
3. Touch the **Accept** button.

10.1.7.3 Setting the Remote Standby Delay Timer

The remote standby delay timer is a feature available with remote standby. Use the remote standby delay timer to protect the material from burning if the molding machine is stopped for a specified period. If the remote standby delay timer is set, Altanium will not decrease the temperatures until the delay time has elapsed.

For example, when the operator gate on the molding machine is opened, a signal to start the remote standby delay timer could be sent to Altanium. If the operator gate is closed before the delay time has elapsed, Altanium will not enter standby. If the operator gate remains open, Altanium then enters standby.

NOTE:If the system is not equipped with the remote standby feature, only the **Manual Standby Duration Timer** setting is displayed on the **System Setup** screen.

To set the remote standby delay timer, do the following:

1. On the **System Setup** screen, under **Remote Standby**, touch the **Remote Standby Delay Timer** field.
2. Enter the time required in the format HHMMSS.
3. Touch the **Accept** button.

10.1.7.4 Changing the Remote Standby Input Mode

The remote standby input mode setting is enabled based on one of three settings: trigger, on/off, or direct.

To change the remote standby input mode, do the following:

1. On the **System Setup** screen, under **Remote Standby**, touch the **Remote Standby Input Mode** field.
2. Select the desired setting.

NOTE: This setting will not appear if the remote standby option is not available on the system.

10.1.7.5 Standby Operation Description

Table 10-2 Manual Standby Operational Description

Manual Time	Delay Time	Remote Time	Input Mode	Cycle Enabled	Operation - STANDBY Button Select
0:00:00	----	----	----	----	System enters Standby indefinitely.
X:XX:XX	----	----	----	----	System remains in Standby until the timer expires.

To cancel the manual standby duration timer at any time, touch the **Start** or **Stop** buttons.

Table 10-3 Remote Standby Operational Description

Manual Time	Delay Time	Remote Time	Input Mode	Cycle Enabled	Operation - STANDBY Button Select
----	0:00:00	0:00:00	Trigger	----	System will not enter Standby since no timers are set.
----	0:00:00	X:XX:XX	Trigger	----	System immediately enters and remains in Standby until the timer expires.
----	X:XX:XX	X:XX:XX	Trigger	No	System delays for specified time and then enters Standby until the timer expires.
----	X:XX:XX	0:00:00	Trigger	No	System delays for specified time and then enters Standby indefinitely.
----	X:XX:XX	X:XX:XX	Trigger	Yes	System delays for specified time and then enters Standby until the timer expires. If the input signal changes state while delay timer is active, the delay timer is reset to the specified value.
----	X:XX:XX	0:00:00	Trigger	Yes	System delays for specified time and then enters Standby indefinitely. If the input signal changes state while the delay timer is active, the delay timer is reset to the specified value.

Table 10-3 Remote Standby Operational Description (Continued)

Manual Time	Delay Time	Remote Time	Input Mode	Cycle Enabled	Operation - STANDBY Button Select
----	0:00:00	0:00:00	ON/OFF	----	System enters Standby until the input signal is not active.
----	0:00:00	X:XX:XX	ON/OFF	----	System enters Standby until the input signal is not active or the timer expires.
----	X:XX:XX	X:XX:XX	ON/OFF	----	System delays for specified time and then enters Standby until the signal is not active or the timer expires.
----	X:XX:XX	0:00:00	ON/OFF	----	System delays for specified time and then enters Standby until the input signal is not active.
----	----	----	Direct	----	System enters Standby until the input signal is not active. If the input signal is active when the system is started, it will immediately go into Standby mode.

To cancel the remote standby duration timer at any time, touch the **Start** or **Stop** buttons.

10.1.8 Boost Timer Settings

To increase the temperatures in the mold for a certain period of time, set the boost timers associated with each boost function. Once the system enters boost, the timer will start. When the timer finishes, the temperatures will return to the normal setpoint.

10.1.8.1 Setting the Manual Boost Duration Timer

Use the manual boost duration timer setting to set a duration period for the zones to heat up to the manual boost setpoint limit.

To set the manual boost duration timer, do the following:

1. On the **System Setup** screen, under **Manual Standby and Boost**, touch the **Manual Boost Duration Timer** field.
2. Enter the time required in the format HHMMSS.
3. Touch the **Accept** button.

10.1.8.2 Setting the Remote Boost Duration Timer

The input option settings determine how the system reacts when it receives remote boost input.

NOTE: If the system is not equipped with remote boost, only the **Manual Boost Duration Timer** field is displayed on the **System Setup** screen.

To set the remote boost duration timer, do the following:

1. On the **System Setup** screen, under **Remote Boost**, touch the **Remote Boost Duration Timer** field.
2. Enter the time required in the format HHMMSS
3. Touch the **Accept** button.

10.1.8.3 Setting the Remote Boost Delay Timer

Use the remote boost delay timer to wait for a specified period before entering boost.

To set the remote boost delay timer, do the following:

1. On the **System Setup** screen, under **Remote Boost**, touch the **Remote Boost Delay Timer** field.
2. Enter the time required in the format HHMMSS.
3. Touch the **Accept** button.

10.1.8.4 Changing the Remote Boost Input Mode

The remote boost input mode setting is enabled based on one of three settings: trigger, on/off, or direct.

To change the Boost Input, do the following:

1. On the **System Setup** screen, under **Remote Boost**, touch the **Remote Boost Input Mode** field.
2. Select the desired setting.

NOTE: If the system is not equipped with remote boost, the Remote Boost Input Mode field will not appear.

10.1.8.5 Boost Operation Description

Table 10-4 Manual Boost Operational Description

Manual Time	Delay Time	Remote Time	Input Mode	Cycle Enabled	Operation - BOOST Button Select
0:00:00	----	----	----	----	System enters Boost indefinitely.
X:XX:XX	----	----	----	----	System remains in Boost until the timer expires.

Manual Boost can be cancelled at any time by touching the **Start** or **Stop** buttons.

Table 10-5 Remote Boost Operational Description

Manual Time	Delay Time	Remote Time	Input Mode	Operation - Boost Button Select
----	0:00:00	0:00:00	Trigger	System will not enter Boost since no timers are set.
----	0:00:00	X:XX:XX	Trigger	System immediately enters and remains in Boost until the timer expires.
----	X:XX:XX	X:XX:XX	Trigger	System delays for specified time and then enters Boost until the timer expires.
----	X:XX:XX	0:00:00	Trigger	System delays for specified time and then enters Boost indefinitely.
----	0:00:00	0:00:00	ON/OFF	System enters Boost until the input signal is not active.
----	0:00:00	X:XX:XX	ON/OFF	System enters Boost until the input signal is not active or the timer expires.
----	X:XX:XX	X:XX:XX	ON/OFF	System delays for specified time and then enters Boost until the input signal is not active or the timer expires.
----	X:XX:XX	0:00:00	ON/OFF	System delays for specified time and then enters Boost until the signal is not active.
----	----	----	Direct	System enters Standby until the input signal is not active. If the input signal is active when the system is started, it will immediately go into Standby mode.

Remote Boost can be cancelled at any time by touching the **Start** or **Stop** buttons.

10.1.9 Power Deviation Settings

The Power Deviation alarm notifies the operator when the power output percentage on any zone deviates a specified amount while running under normal conditions. This information can be used to detect plastic leaks in the nozzle bore or manifold pocket.

To setup or make a change to this feature, do the following:

1. On the **System Setup** screen, under **Power Deviation**, touch the **Setup Alarm** button.
2. Change the desired settings per [Table 10-6](#).
3. Accept changes and touch the **Exit** button.

NOTE: Before the Power Deviation routine can be executed, at least one zone in the system must be classified based on similar function and operation.

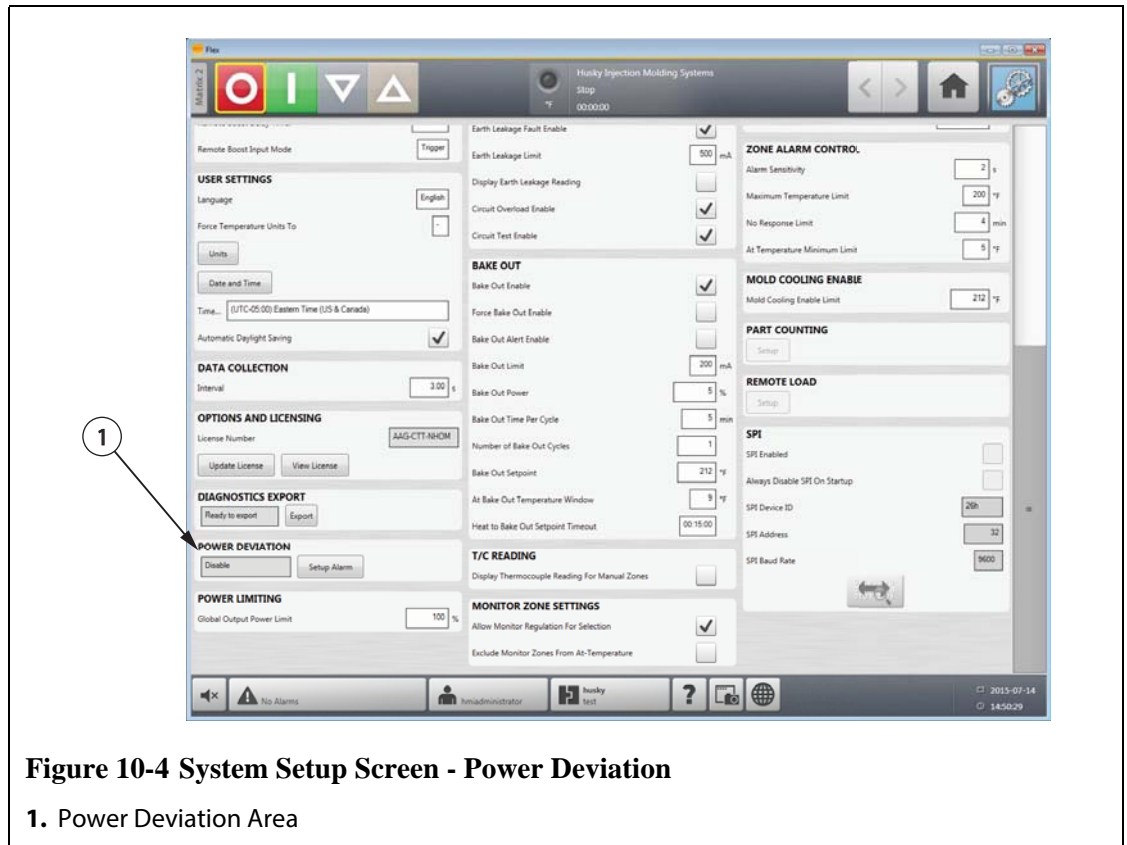


Figure 10-4 System Setup Screen - Power Deviation

1. Power Deviation Area

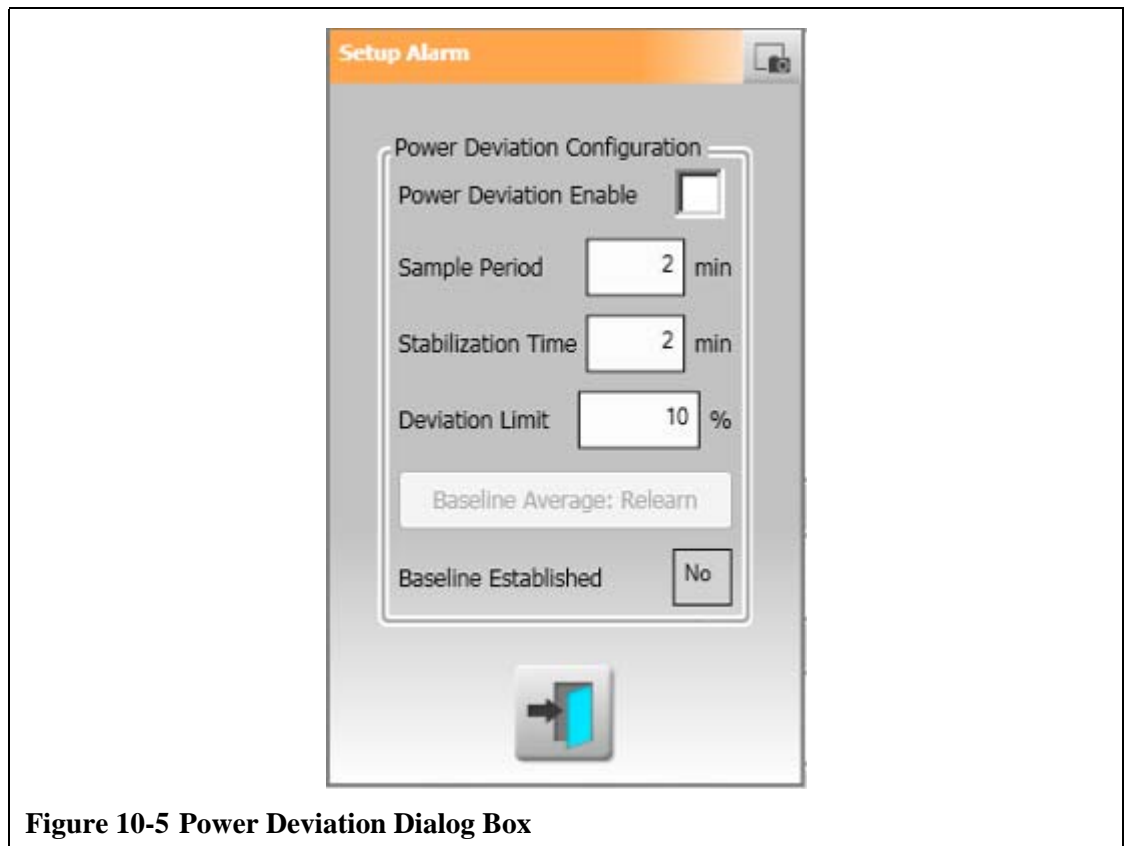


Figure 10-5 Power Deviation Dialog Box

Table 10-6 Power Deviation Settings

Setting	Description
Power Deviation Enable	Toggles the feature on or off.
Sample Period	Defines the amount of time the system will take to establish a baseline average power value (i.e. learn the mold). The default value is 2 minutes and the range is from 1-10 minutes.
Stabilization Time	Defines the amount of time the system will take, after all active zones have reached setpoint, before it will initiate the Sample (learning) Period. The default value is 2 minutes and the range is from 1-10 minutes.
Deviation Limit Field	This field is used by the system to determine the tolerance value that will be used for declaring an error. This value will only be used if the value calculated by the system cannot be used. The default value is 10% and the range is from 1-100% definable in 1% increments. This field is not accessible unless the user logs in and sets the controller function to true in the User Profiles screen and enables security.
Baseline Average Relearn Button	This button is used to start a new sample period in cases where the original sample time was not sufficient to establish good baseline average power values. This button is a manual override that should only be active after all active zones have reached setpoint and the Stabilization Time has expired.
Baseline Established Status Field	This field is used to determine if a baseline has already been done for the currently loaded mold setup.

10.1.10 Power Limiting

Power Limiting is used to control the maximum output power delivered to each zone. The output power limit for each zone can be set from 0% to the Global Output Power Limit value. If the Global Output Power Limit value is adjusted lower than the zone setting then the power limit for each zone is automatically trimmed by the system to not exceed the global value.

To set the global output power limit, do the following:

1. On the **System Setup** screen, under **Power Limiting**, touch the **Global Output Power Limit** field.
2. Enter the desired limit.
3. Touch the **Accept** button.

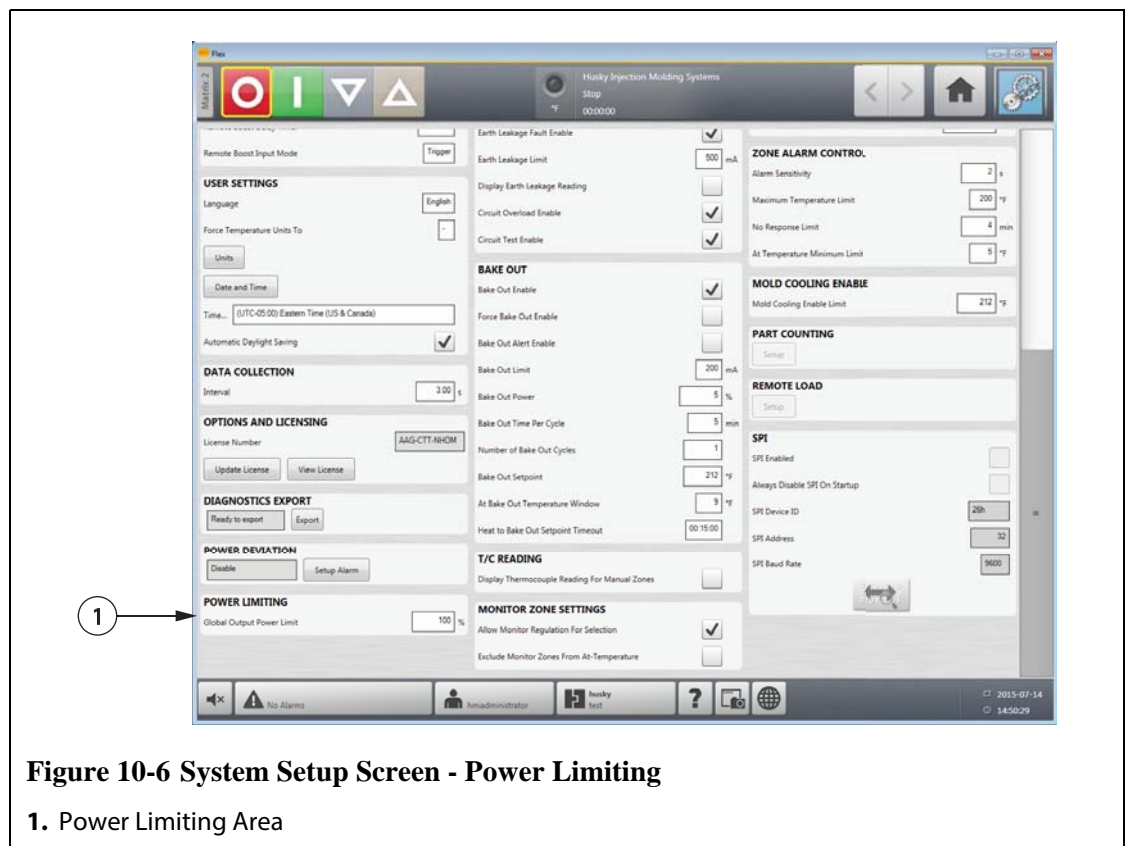


Figure 10-6 System Setup Screen - Power Limiting

1. Power Limiting Area

10.1.11 Monitor Zone Settings

Allow Monitor Regulation For Selection - This parameter allows the user to change the regulation mode to 'Monitor' for any zones in the **Quick Set** screen. If a zone is already in 'Monitor' regulation when this parameter is de-selected, the system will automatically change the regulation mode to 'Automatic'.

Exclude Monitor Zones From At-Temperature - This parameter allows the user to exclude any zones set to 'Monitor' regulation from the at-temperature determination by the system. By default monitor zones are included in the at-temperature determination.

To select the monitor zone settings, do the following:

1. On the **System Setup** screen, under **Monitor Zone Settings**, select the desired field(s).
2. Touch the **Accept** button.

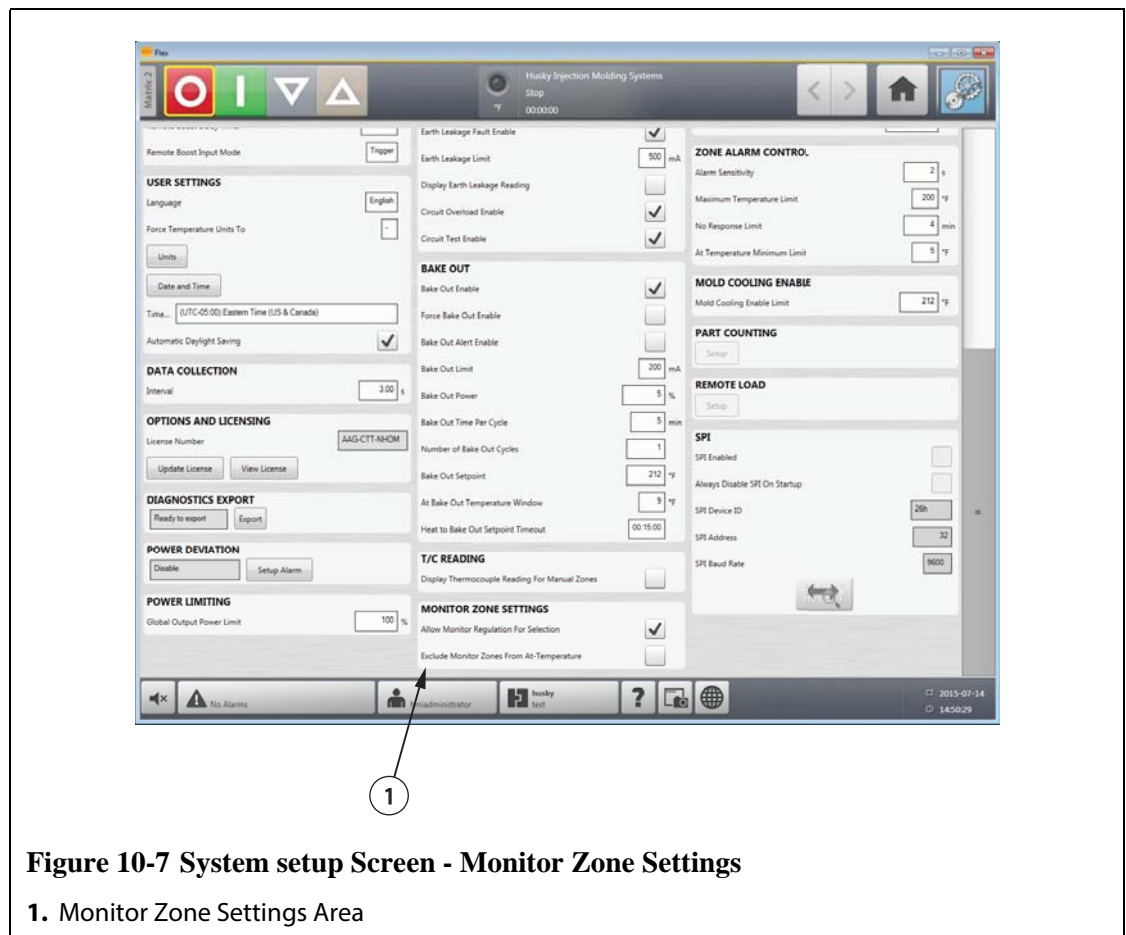


Figure 10-7 System setup Screen - Monitor Zone Settings

1. Monitor Zone Settings Area

10.1.12 Options and Licensing

Users receive a factory-set license key which contains licensing information. Four user-selectable options are included with each controller via the **Digital I/O screen**. For information on configuring options, refer to [Section 13.1](#).

Users can purchase additional options such as 8 I/Os, All I/Os, Remote Load, Part Count and SPI interface by contacting Husky for an electronic license file.

To view existing licensing information, do the following:

1. On the **System Setup** screen, under **Options and Licensing**, select **View License**.
2. A View License dialog box appears.

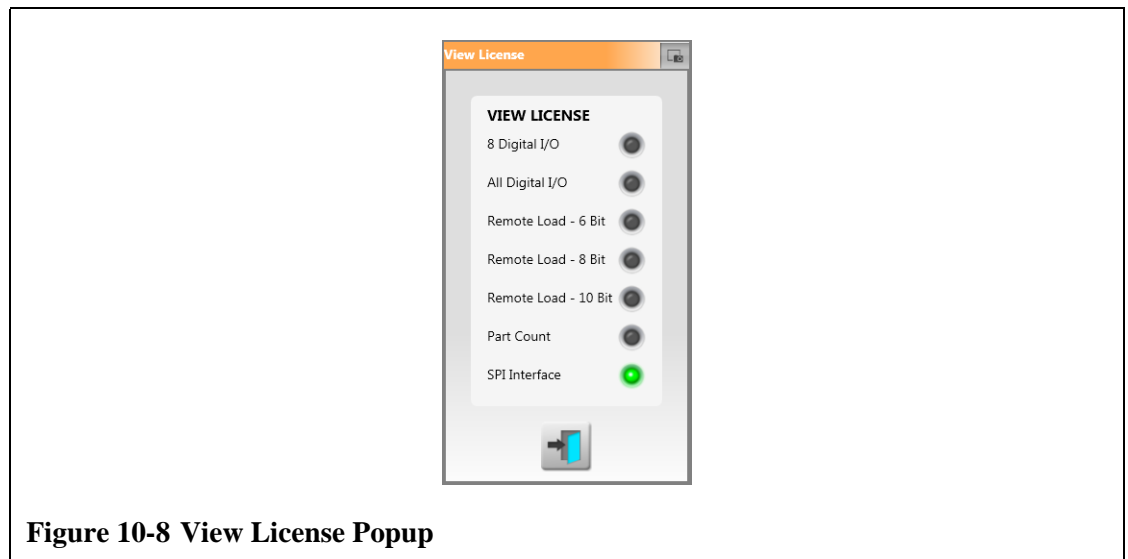


Figure 10-8 View License Popup

Users can update license files from local, USB and network drives.

To update licensing information, do the following:

1. On the **System Setup** screen, under **Options and Licensing**, select **Update License**.
2. Upload the new license as applicable.
3. Once updated, a confirmation dialog box appears on screen.
4. Touch the **Accept** button.

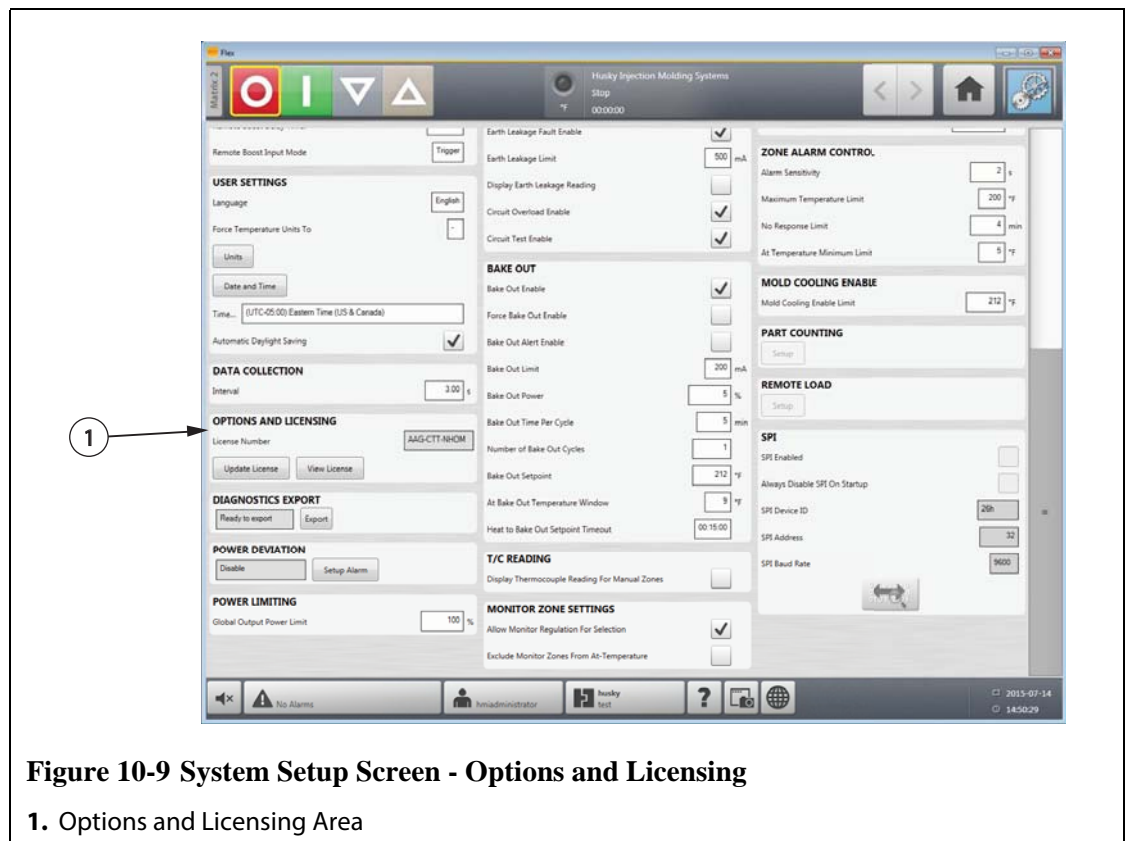


Figure 10-9 System Setup Screen - Options and Licensing

1. Options and Licensing Area

10.1.13 Diagnostics Export

Diagnostics Export allows users to export diagnostics files to a USB drive. This feature is intended for Husky Technical Support use only. Please contact Husky for assistance if required.

10.1.14 Part Counting

Optional digital inputs and an output are available to automatically count up parts, including the ability to set a sack full limit. This eliminates the need for users to manually calculate when sack is full.

10.1.14.1 Setting Up Part Counting

To set up Part Counting, do the following:

1. On the **System Setup** screen, under **Part Counting**, select **Setup**. A dialog box appears.
2. Select **Assign Heater Types** if not previously done. This will bring up the **Quick Set** screen. For more information refer to [Section 7.5.8](#).

NOTE: The Heater Type parameter must be set to Tips for all zones that pertain to a cavity in the mold. If no zones have a Heater Type parameter assigned, an error message will appear.

3. Select **Part Counting Enable**.
4. Enter the desired **Sack Full Limit** to specify how many parts are required for the system to consider the sack full. This number can be adjusted from 1 to 1,000,000.
5. Select **Configure Digital I/O** if not previously done. This will bring up the **Digital I/O** screen. For more information on configuring digital inputs/outputs refer to [Section 13.1](#).

The Parts in Sack parameter will display the current number of parts in the sack. The current number of parts will also be displayed in the system header.

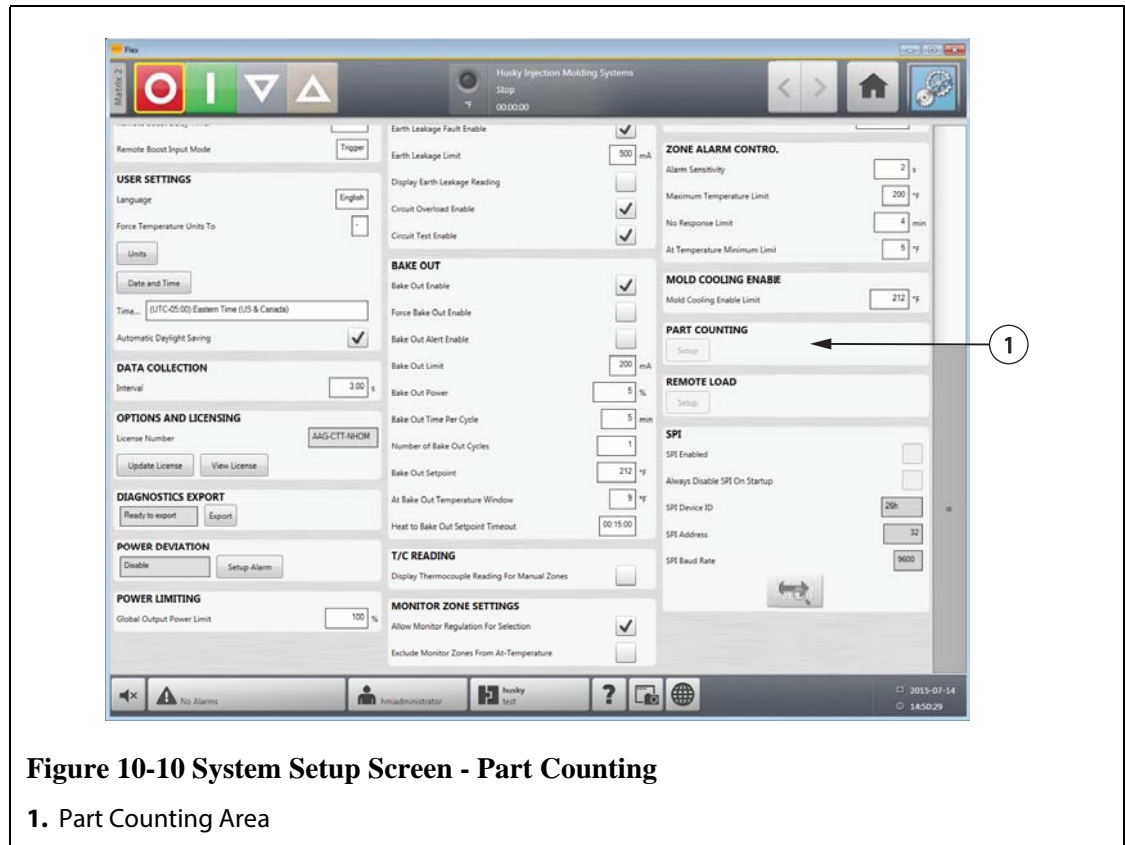


Figure 10-10 System Setup Screen - Part Counting

1. Part Counting Area

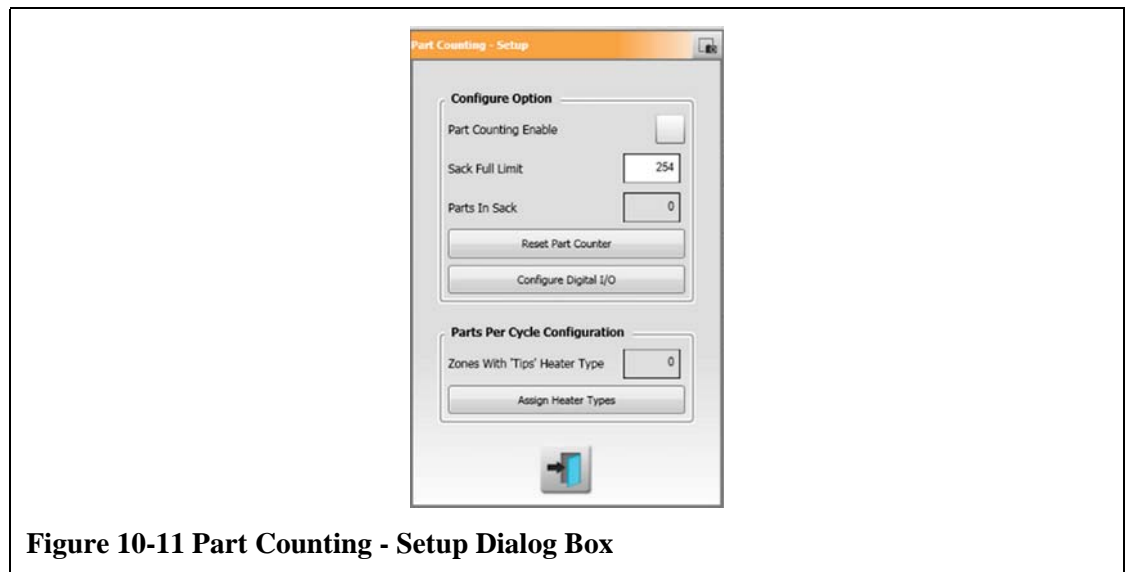


Figure 10-11 Part Counting - Setup Dialog Box

10.1.14.1.1 Resetting the Part Counter

When activated, Digital Input 8 (Reset Parts Counter) will automatically reset the **Parts in Sack** parameter and **Parts** display on the system header to zero when the current part count is greater than or equal to the sack full limit. For more information on configuring digital inputs/outputs refer to [Section 13.1](#).

To manually reset the Part Counter, do the following:

On the **Part Counting - Setup** dialog box, touch **Reset Part Counter**. The **Parts in Sack** parameter and **Parts** display on the system header will be reset to zero.

10.1.14.1.2 Sack Full Output Optimization

The system will automatically adjust the Sack Full Limit if an abort condition error occurs while the system is in the 'Running' state and the PCM parameter is set to 'Zone' on the **Quick Set** screen.

To allow the system to optimize the sack full limit, do the following:

1. On the **Quick Set** screen, set the **PCM - Priority Control Mode** to **Zone**. The system will automatically adjust the sack full limit when an abort condition error occurs. The following are abort condition errors:
 - Abort Over Temperature
 - Abort Under Temperature
 - Fuse 1 Blown
 - No Response
 - Lost T/C
 - Reverse T/C
 - Fuse 2 Blown
 - Earth Leakage
 - Over Maximum Temperature Limit
 - Over Current Limit
 - Configuration
 - Receive Data Communication
 - Read Time Out
 - Control Card Over Temp

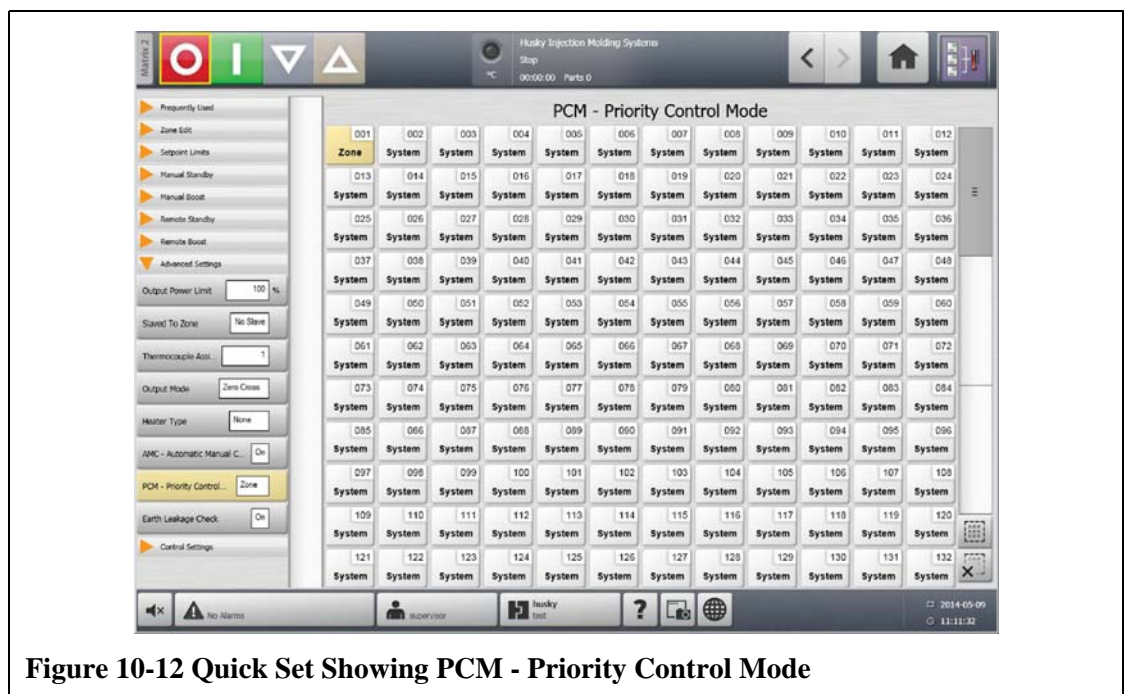


Figure 10-12 Quick Set Showing PCM - Priority Control Mode

10.1.15 Remote Load

Mold setups can be loaded directly from the injection molding machine. Using the Remote Load option, the injection molding machine can signal the controller on one of up to 1023 input combinations to indicate which mold setup to load. The system uses combinations of:

- Six binary inputs, allowing the user to assign a mold setup to each one of 63 possible combinations.
- Eight binary inputs, allowing the user to assign a mold setup to each one of 255 possible combinations.
- Ten binary inputs, allowing the user to assign a mold setup to each one of 1023 possible combinations.

10.1.15.1 Setting Up Remote Load

To set up Remote Load, do the following:

1. On the **System Setup** screen, under **Remote Load**, select **Setup**. A **Remote Load Setup** dialog box appears.

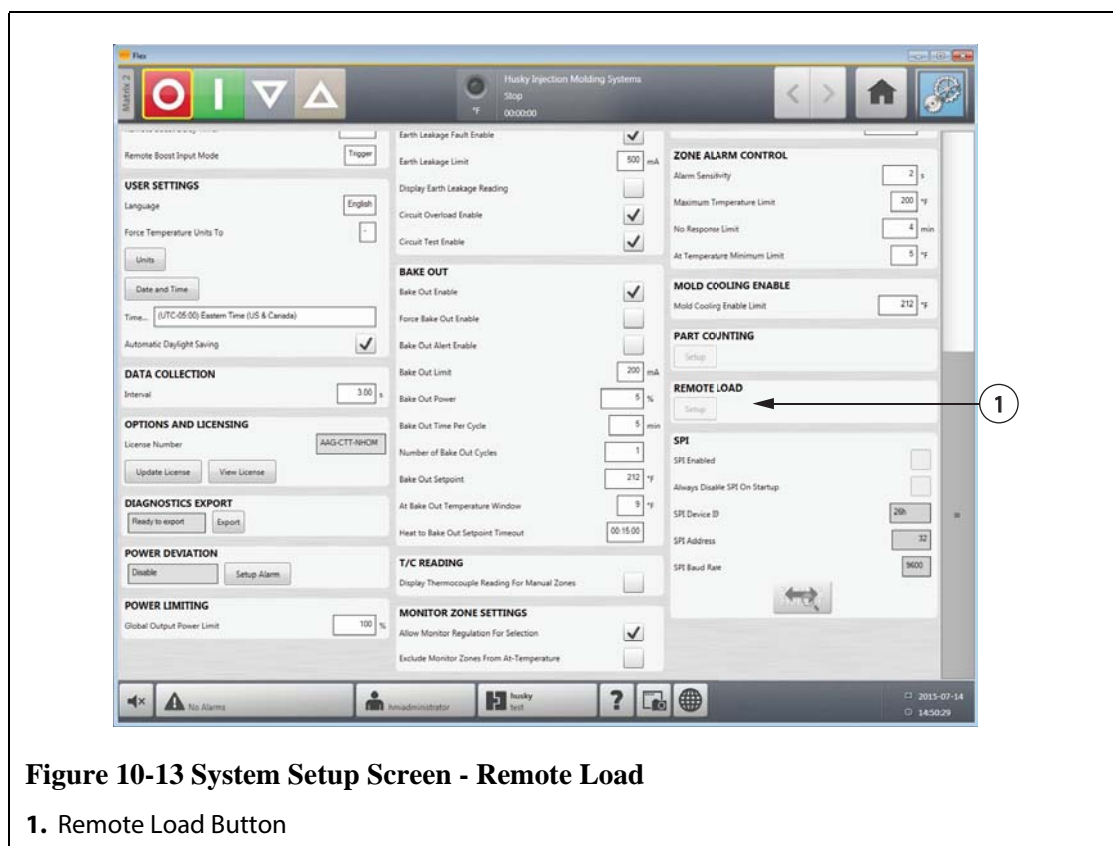


Figure 10-13 System Setup Screen - Remote Load

1. Remote Load Button

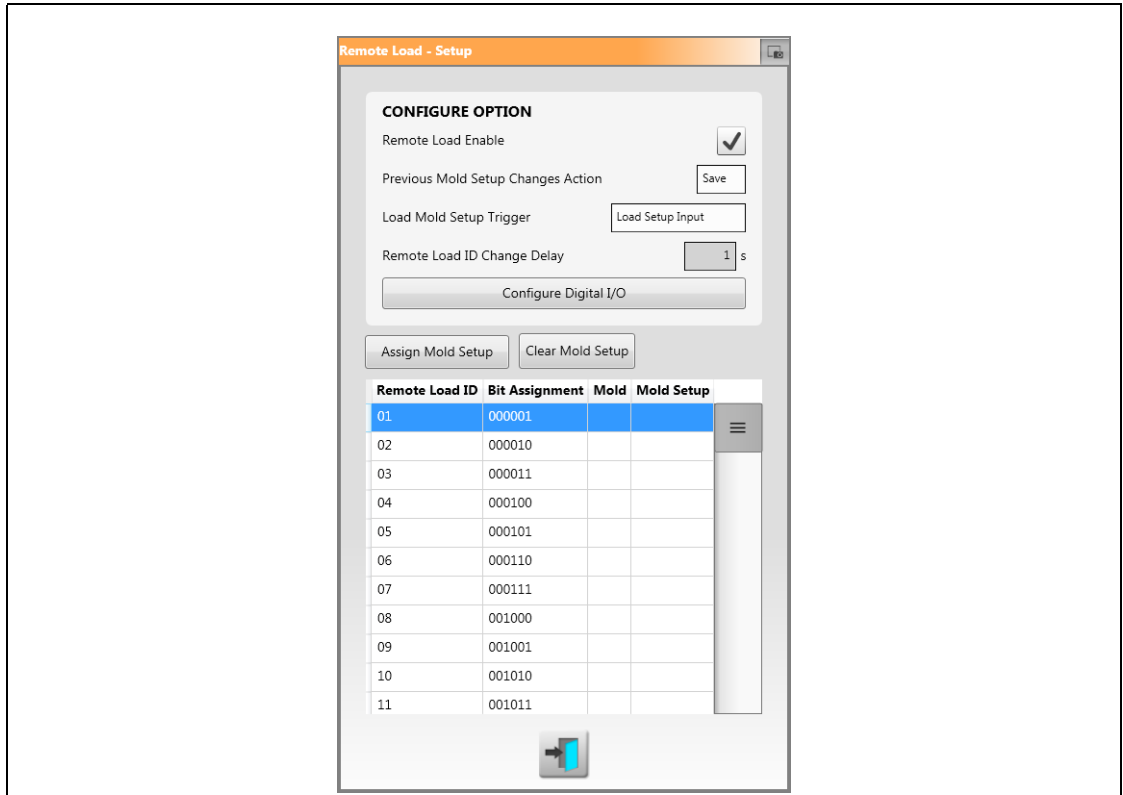


Figure 10-14 Remote Load - Setup Dialog Box

2. Select the **Remote Load Enable** check box.
3. Select **Configure Digital I/O** if not previously done. This will bring up the **Digital I/O** screen. For more information on configuring digital inputs/outputs refer to [Section 13.1](#).

NOTE: The user can specify what to do with any previous changes made to the current mold setup. When a request has been initiated to load another mold setup, the system will use this parameter to either save or discard the changes.

4. Select any of the 63 rows that do not already have a mold setup assigned. Press the **Assign Mold Setup** button to start the assignment process. The **Assign Mold Setup** dialog displays the folder structure for the local hard drive only. The Network and USB buttons will not display anything when they are pressed.

NOTE: Only one mold setup can be selected at a time.



Figure 10-15 Remote Load - Assign Mold Setup Dialog Box

5. Touch the **Accept** button to use the mold setup file selected. The new mold setup selected will be displayed. This now means that whenever the applicable remote load ID is requested this is the mold setup that will be loaded.
 6. To clear the association, select the desired row and press the **Clear Mold Setup** button.
- NOTE:** A mold setup cannot be assigned to more than one remote load ID. If the user attempts to do this the previous association will be removed automatically and the new association will be added.

10.1.16 Zone Alarm Control

To set the zone alarm control values, do the following:

1. On the **System Setup** screen, under **Zone Alarm Control**, touch the desired field.
2. Enter the desired value.
3. Touch the **Accept** button.

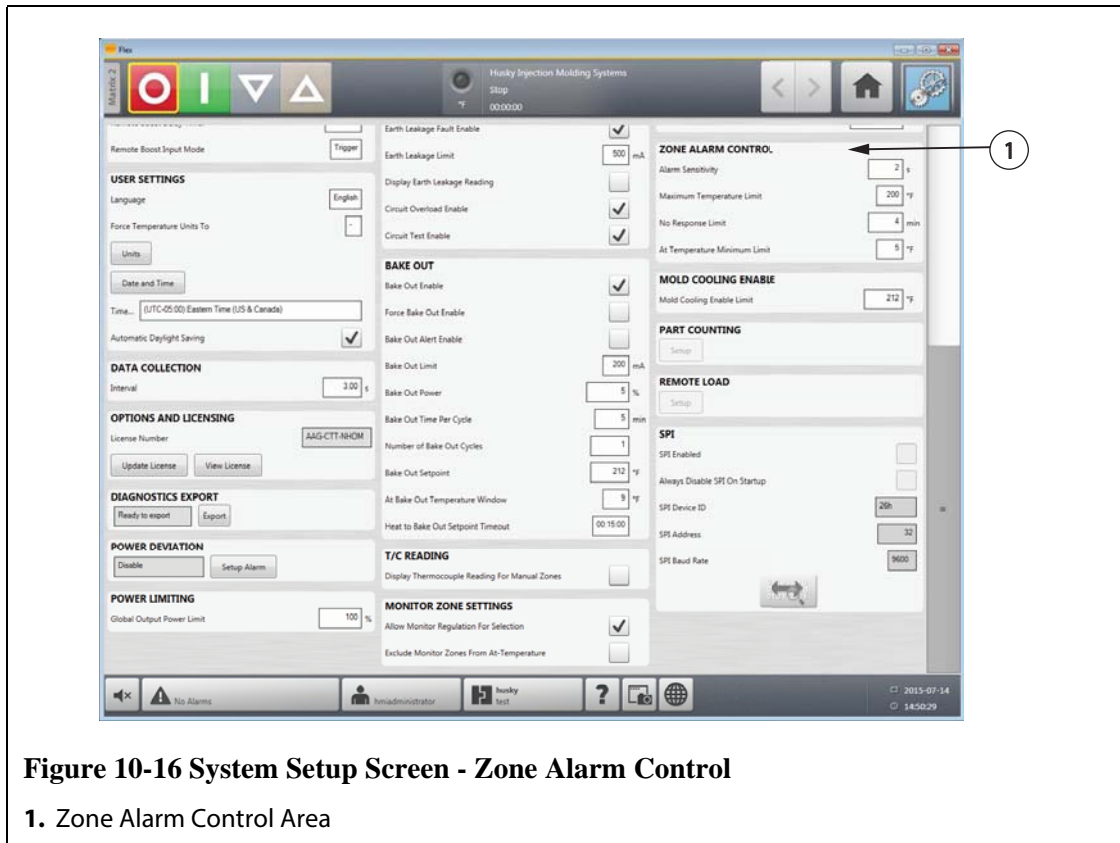


Figure 10-16 System Setup Screen - Zone Alarm Control

1. Zone Alarm Control Area

Table 10-7 Zone Alarm Control Settings

Setting	Description
Alarm Sensitivity	Determines the duration of time the system has to stay in an error condition before it is declared an alarm. The default value is 2 seconds and the valid range is from 2 to 60 seconds.
Maximum Temperature Limit	This value is interpreted as the number of degrees over the setpoint the Maximum Temperature Alarm is activated. This alarm is used as a failsafe warning if an Abort Over Temperature alarm is ignored. The default value is 111°C and the valid range is 1 to 500°C.

Table 10-7 Zone Alarm Control Settings (Continued)

Setting	Description
No Response Limit	This is a global setting that determines how long the system should apply 96% power or greater without a 5 degree rise in temperature before it is declared an alarm condition. The default value is 4 minutes and the valid range is 2 to 15 minutes.
At Temperature Minimum Limit	<p>This value defines the minimum threshold for activating the At-Temperature signal. The At-Temperature signal is activated based on following:</p> <p>When all active zone temperatures are higher than the lower alarm limit.</p> <p>If the alarm band setting is lower than the At-Temperature Minimum Limit value, then the At-Temperature Minimum Limit value is used to activate the At-Temperature signal.</p>

10.1.17 Mold Cooling Enable

The Mold Cooling Enable Limit defines the threshold the system uses to determine when to activate or deactivate the Mold Cooling Enable output.

Digital output 5 is activated when this output's In Use checkbox is selected and all automatic zones have exceeded the Mold Cooling Enable Limit. This output is de-activated once the system is in the 'Stop' state and all automatic zones have cooled down past the same limit.

To set the Mold Cooling Enable value, do the following:

1. On the **System Setup** screen, under **Mold Cooling Enable**, touch the **Mold Cooling Enable** field.
2. Enter the desired value.
3. Touch the **Accept** button.

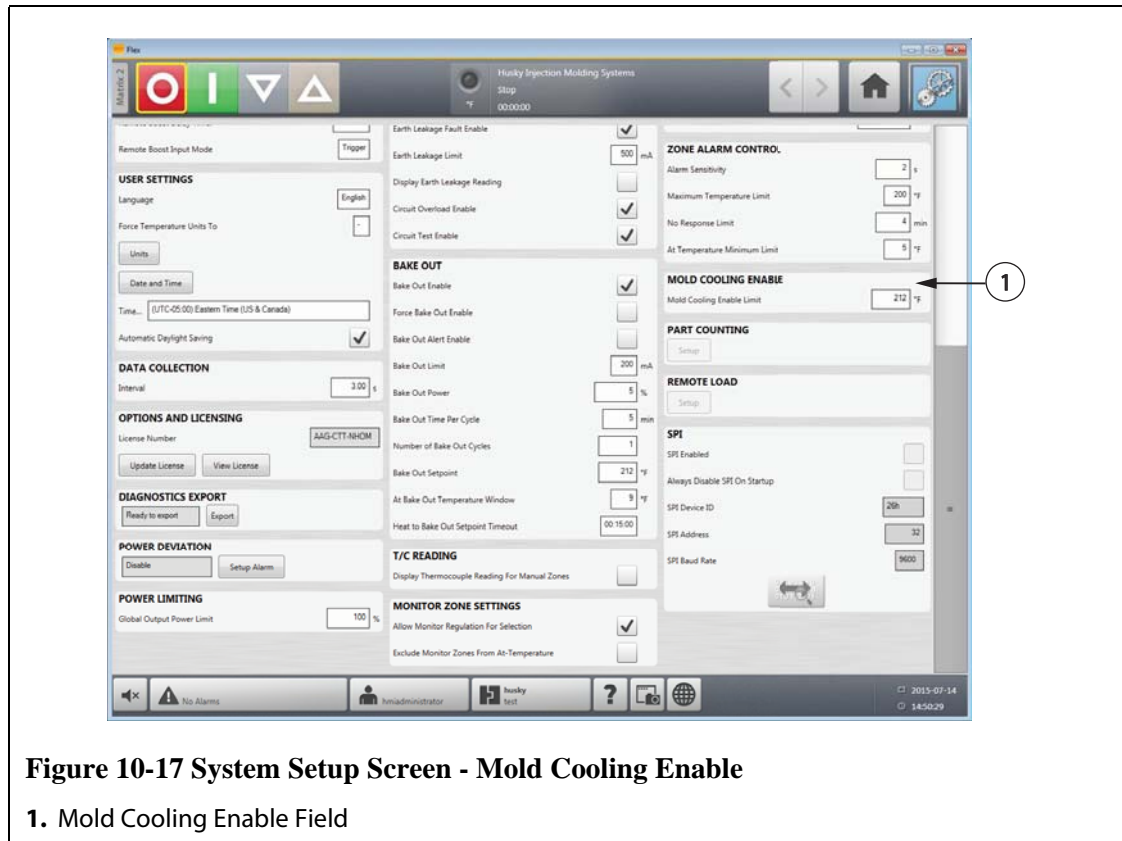


Figure 10-17 System Setup Screen - Mold Cooling Enable

1. Mold Cooling Enable Field

10.2 Staged Startup and Shutdown

This feature allows the system to heat or cool zones in a predetermined order by using stages. Zones can be assigned to any of the 4 stages and can be configured with a separate set point for each stage. A timer can also be configured for each stage which will allow all the zones to “soak” for a user definable amount of time. The hot runner system must be heated and cooled in a specific order to prevent problems such as misalignment and leaking.

10.2.1 Enabling or Disabling Staged Startup

Users can enable or disable the staged startup feature on the **Staging** screen. The staged startup process is used to control how the temperatures in the system heat up.

To enable or disable staged startup, do the following:

1. On the **Staging** screen, do the following:
 - To enable staged startup, select the **Staged Startup Enable** check box.
 - To disable staged startup, clear the **Staged Startup Enable** check box.
2. Touch the **Accept** button.

10.2.2 Enabling or Disabling Staged Shutdown

Users can enable or disable the staged shutdown feature on the **Staging** screen. The staged shutdown process is used to control how the temperatures in the system cool down.

To enable or disable staged shutdown, do the following:

1. On the **Staging** screen, do the following:
 - To enable staged shutdown, select the **Staged Shutdown Enable** check box.
 - To disable staged shutdown, clear the **Staged Shutdown Enable** check box.
2. Touch the **Accept** button.

10.2.3 Staging Screen

Use the **Staging** screen to assign zones to stages, set stage setpoints and enter soak timers for each stage.

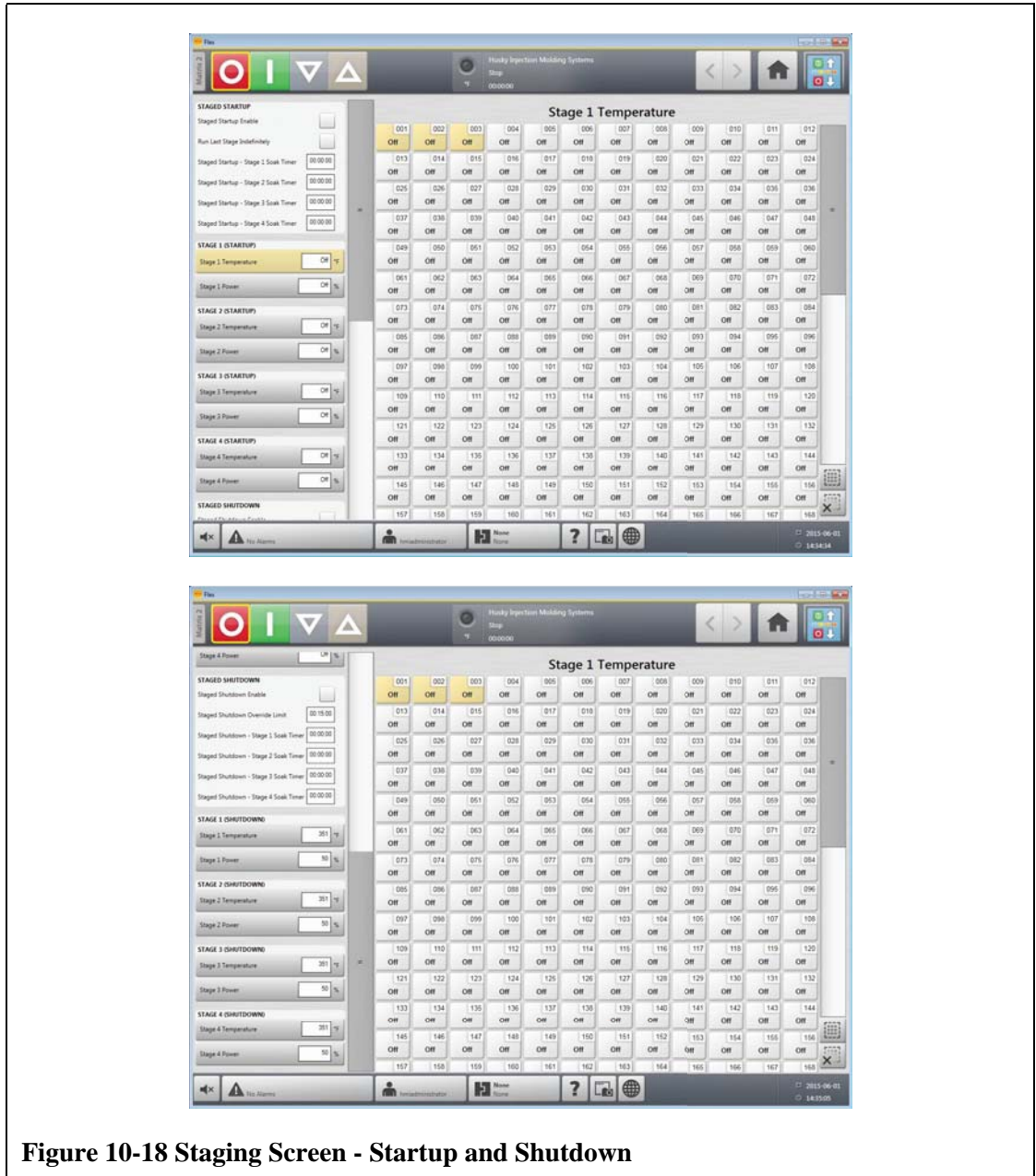


Figure 10-18 Staging Screen - Startup and Shutdown

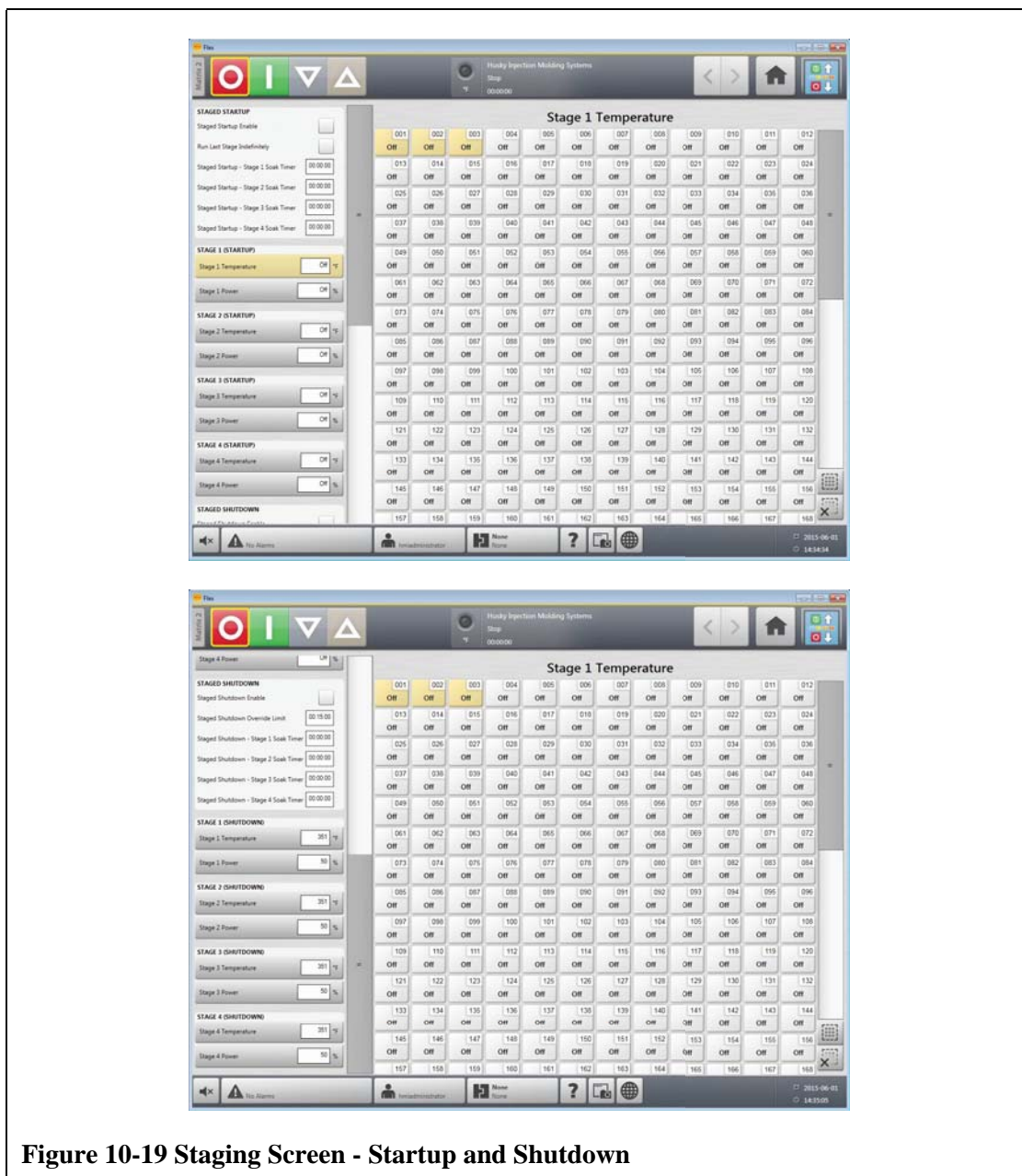


Figure 10-19 Staging Screen - Startup and Shutdown

Item	Description
Staged Startup Enable	Enables or disables the staged startup sequence.
Run Last Stage Indefinitely	If this setting is enabled, all zones in the last assigned stage will not change to their normal setpoint once all zones have achieved the stage setpoint and the soak timer has expired.
Stage x Soak Timer	The amount of time at each stage the zones “soak” at their stage setpoints before the next stage begins.
Stage x Temperature	The temperature setpoint that the zone heats to during stage x.
Stage x Power	The setpoint that is used when zones are in manual regulation during stage x.

Item	Description
Staged Shutdown Enable	Enables or disables the staged shutdown sequence.
Staged Shutdown Override Limit	The staged shutdown override limit is used during staged shutdown. If all the zones in the stage have not cooled down to the stage setpoint within the override time limit, the system will automatically move on to the next stage. If no zones are assigned to the next stage, then the system will shut itself off.

10.2.4 Setting the Staged Temperature and Power Setpoints

Use the **Staging** screen to assign temperature and power to any or all of the four stages.

To assign zones to a stage, do the following:

1. On the **Staging** screen, select the desired zones.
2. Touch the **Stage 1 Temperature** field.
3. Enter the desired temperature.
4. Touch the **Stage 1 Power** field.
5. Enter the desired power.
6. To assign zones to the other stages, repeat the above steps for each stage.

10.2.5 Holding a Stage Setpoint

Use the hold setting to use the previous stage setpoint as the value for the selected stage setpoint. Use the **Staging** screen to assign the hold setting.

To set the hold setting, do the following:

1. On the **Staging** screen, select the desired zones.
2. Touch the **Stage 1 Temperature** field.
3. Touch the **Hold** button.

10.2.6 Setting Soak Timers

At the end of each stage during staged startup or shutdown, when all zones have reached their stage setpoints, they can be left to “soak” for a specified time before the next stage begins. Use the **Staging** screen to change the soak time lengths.

NOTE:It is not necessary to assign a soak time to each stage. To avoid a delay between when a stage has reached setpoint and before the following stage is activated, set the timer to 00:00:00.

To set soak timers, do the following:

1. On the **Staging** screen, touch the desired Soak Timer field.

NOTE:It is not necessary to select zones to set the soak timer.

2. Enter the time required in the format HHMMSS. Soak timers have a range of 00:00:00 to 23:59:59.
3. Touch the **Accept** button.
4. Repeat the steps above for each stage that requires a soak time.

Chapter 11 Mold Picture View

This chapter describes how to use the mold picture view.

11.1 Loading a Mold Picture View Graphic

Load a mold picture view graphic from one of the following locations:

- the local drive
- a USB drive
- the network

11.1.1 Mapping a Network Drive

If loading a mold picture view graphic from the network, make sure Altanium is mapped to a valid network drive.

To map a network drive, do the following:

1. On the **Home** screen, touch the **Network Setup** button.
2. In the **Network Locations** field, type a valid network location.

11.1.2 Loading a Mold Picture View Graphic

Altanium is capable of displaying up to five different images in the mold picture view. Use this procedure to upload new mold picture view graphics.

To load a mold picture view graphic, do the following:

1. On the **Home** screen, touch the **Mold Picture View** button.

NOTE: If changing an existing mold picture view graphic, touch the name of the view containing the mold picture view graphic to be changed.

2. Touch the name of the view to upload the new mold picture view graphic.



3. Touch the **Edit** button.
4. Touch the **Change View Settings** button.



5. Touch the **Select File Name** button.

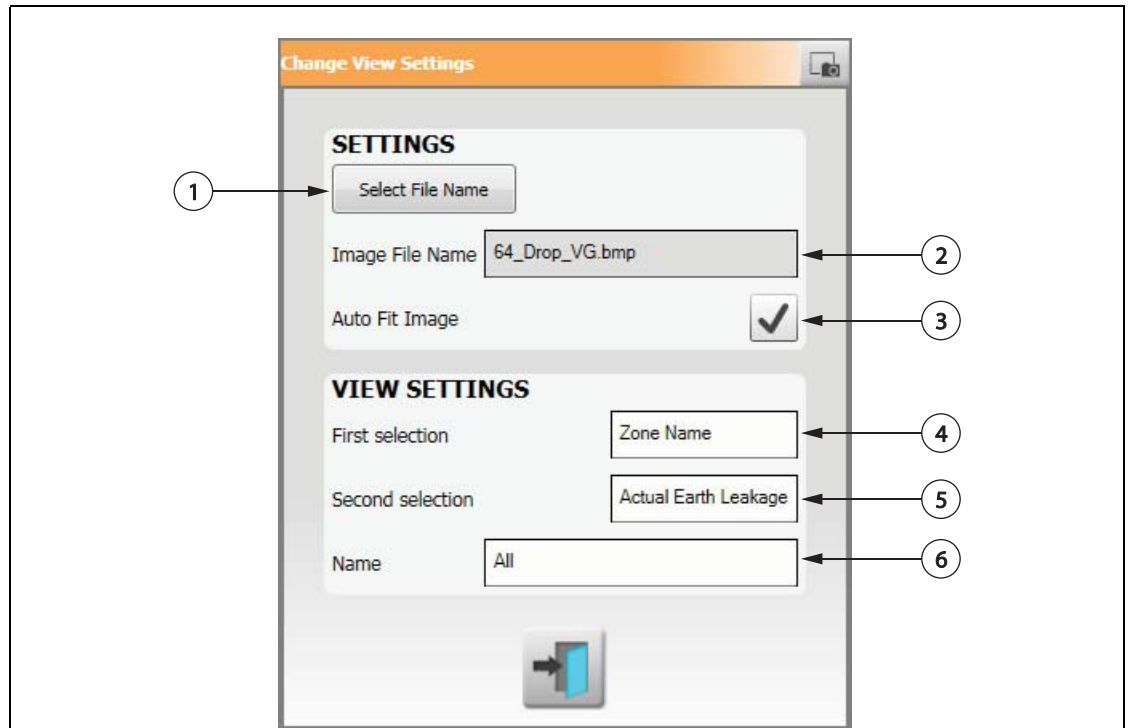


Figure 11-3 Change View Settings Dialog Box

1. Select File Name Button 2. Image File Name Field 3. Auto Fit Image Check Box 4. First Selection Field 5. Second Selection Field 6. Zone Number

6. Touch one of the following file locations buttons:
 - Touch the **Local** button to navigate to a graphic file stored on Altanium.
 - Touch the **Network** button to navigate to a graphic file stored on the network.
 - Touch the **USB** button to navigate to a graphic stored on the USB drive.
7. Navigate to the desired image.
8. Select the desired image.
9. Touch the **Accept** button.

NOTE: To automatically increase the size of the image to fit on the **Mold Picture View** screen, select the **Auto Fit Image** check box.

10. Touch the **Accept** button.

11.2 Using the Mold Picture View Toolbar

Use the **Mold Picture View** toolbar to change the view of the mold picture view graphic. To hide/show the **Mold Picture View** toolbar, touch the screen.

NOTE:The **Mold Picture View** toolbar is not available in **Edit** mode.



Figure 11-4 Mold Picture View Screen

1. Zoom Out Button **2.** Zoom In Button **3.** Fit Width Button **4.** Fit Height Button **5.** Original Size Button **6.** Mold Picture View Graphic **7.** Views

Toolbar Button	Definition
Zoom Out Button	Demagnifies the mold picture view graphic.
Zoom In Button	Magnifies the mold picture view graphic.
Fit Width Button	Fits the mold picture view graphic to the widest width possible while retaining the entire graphic on the screen.
Fit Height Button	Fits the mold picture view graphic to the tallest height possible while retaining the entire graphic on the screen.
Original Size Button	Fits the mold picture view graphic to the default size.
Views	Selects the mold picture view graphic associated with that view.

11.3 Configuring a Mold Picture View

Configure a **Mold Picture View** to add zone information panels and leader lines to the uploaded mold picture view graphic.

To configure the **Mold Picture View**, make sure Altanium is in **Edit** mode. To hide/show the **Edit** toolbar, touch the screen.



11.3.1 Edit Mode

To put **Mold Picture View** into **Edit** mode, do the following:

1. On the **Mold Picture View** screen, touch the **Edit** button.



Figure 11-6 Mold Picture View Screen

1. Edit Button
2. Views

11.3.2 Configuring a Zone Information Panel

Each **Zone Information Panel** provides three pieces of information about a zone. A **Zone Information Panel** always contains a zone number. The other two pieces of information displayed on a **Zone Information Panel** can be chosen from the following list:

- Zone Name
- Current Temperature Setpoint
- Actual Temperature
- Power Output
- Amperage

NOTE: Actual earth leakage is an option when ICC³ cards are installed and the display earth leakage parameter is set.

11.3.2.1 Creating a Zone Information Panel

A **Zone Information Panel** provides information about a zone. To create a **Zone Information Panel**, select a zone and then configure a **Zone Information Panel** to display the desired information about the zone selected.

To create a **Zone Information Panel**, do the following:

1. Make sure **Mold Picture View** is in **Edit** mode.
2. Touch the **Choose Heat Zone** button.

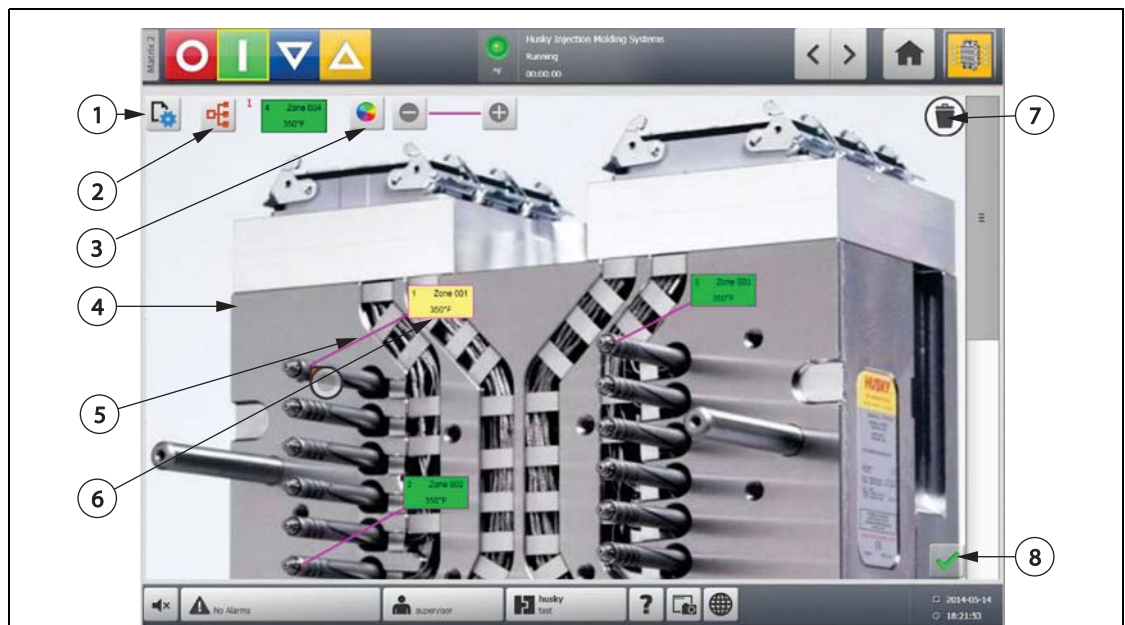


Figure 11-7 Mold Picture View Screen in Edit Mode

1. Change View Settings Button
2. Choose Heat Zone Button
3. Leader Line Color Button
4. Mold Picture View Graphic
5. Leader Line
6. Zone Information Panel
7. Delete Button
8. Accept Button

3. Select the desired heat zone. A **Zone Information Panel** will be created for each heat zone selected.
4. Touch the **Accept** button.

11.3.2.2 Moving a Zone Information Panel

Once a **Zone Information Panel** is created, it can be placed anywhere on the mold picture view graphic.

To move a **Zone Information Panel**, do the following:

1. Make sure **Mold Picture View** is in **Edit** mode.
2. On the **Mold Picture View** screen, touch and drag the **Zone Information Panel** to the desired location on the mold picture view graphic.

11.3.2.3 Editing a Zone Information Panel

In addition to the zone number, a zone information panel also contains two of the following pieces of information:

- Zone Name
- Current Temperature Setpoint
- Actual Temperature
- Power Output
- Amperage

NOTE: Actual earth leakage is an option when ICC³ cards are installed and the display earth leakage parameter is set.

To change the content displayed on a zone information panel, do the following:

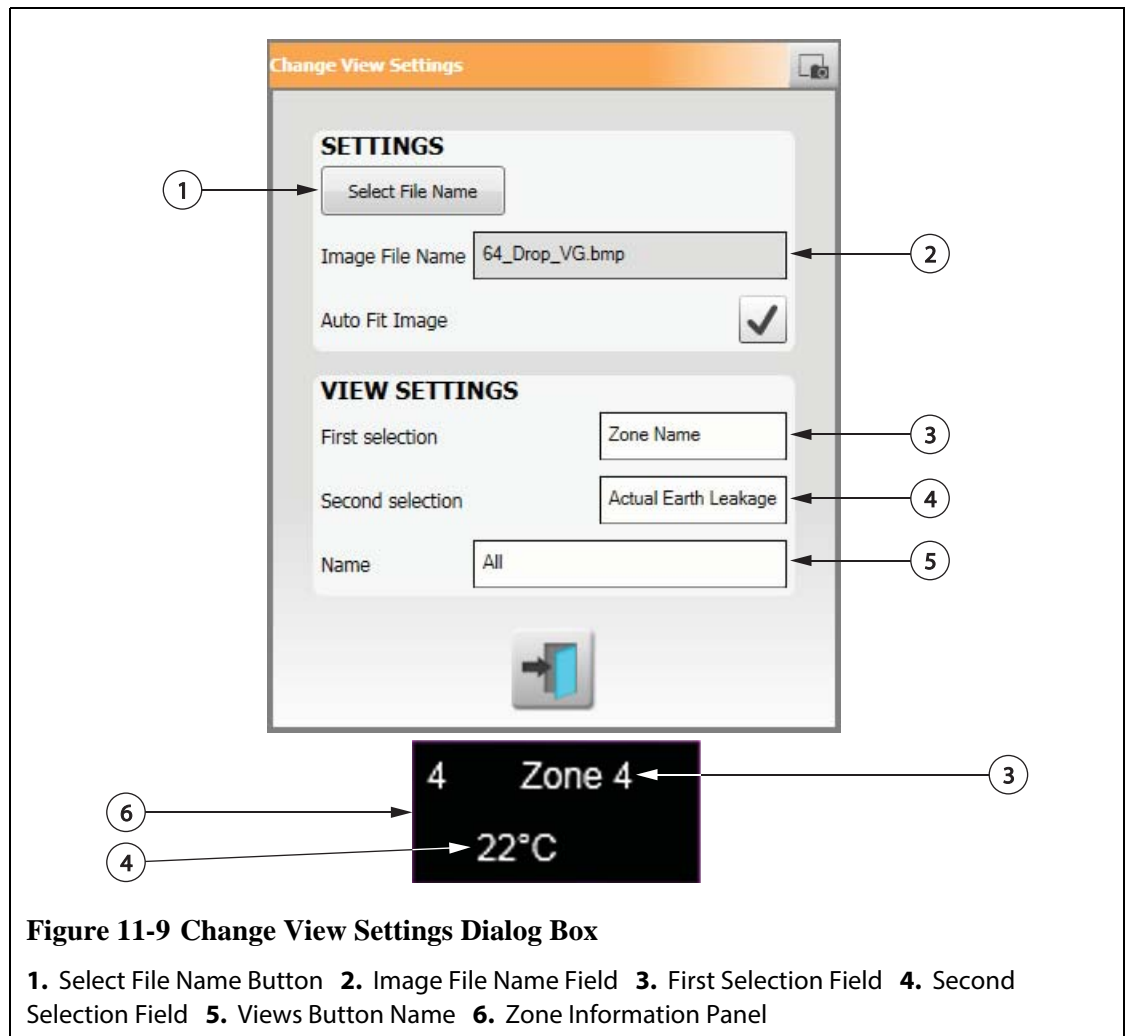
1. Make sure **Mold Picture View** is in **Edit** mode.
2. On the **Mold Picture View** screen, touch the **Zone Information Panel** to be changed.
3. Touch the **Change View Settings** button.



Figure 11-8 Mold Picture View Screen in Edit Mode

1. Change View Settings Button
2. Choose Heat Zone Button
3. Leader Line Color Button
4. Mold Picture View Graphic
5. Leader Line
6. Zone Information Panel
7. Delete Button
8. Accept Button

4. To configure the content of the **Zone Information Panel**, do the following:
 - To change the first selection displayed on the **Zone Information Panel**, touch the **First Selection** field and select one of the following: Zone Name, Current Temperature Setpoint, Actual Temperature, Power Output, or Amperage.
 - To change the second selection displayed on the **Zone Information Panel**, touch the **Second Selection** field and select one of the following: Zone Name, Current Temperature Setpoint, Actual Temperature, Power Output, or Amperage.



5. Touch the **Accept** button.

11.3.2.4 Creating a Leader Line

Create leader lines to clarify the connection between a **Zone Information Panel** and the associated heat zone. Create a **Zone Information Panel** before creating a **Leader Line**.

To create a **Leader Line**, do the following:

1. Make sure **Mold Picture View** is in **Edit** mode.
2. Touch the desired **Zone Information Panel**.
3. Touch and drag the **Flag** button to the desired location on the mold picture view graphic. A **Leader Line** appears between the flag and the **Zone Information Panel**.

11.3.3 Changing the Color of a Leader Line

To change the color of a **Leader Line**, do the following:

1. Make sure **Mold Picture View** is in **Edit** mode.
2. Touch the **Zone Information Panel** associated with the **Leader Line** to be changed.
3. Touch the **Leader Line Color** button.

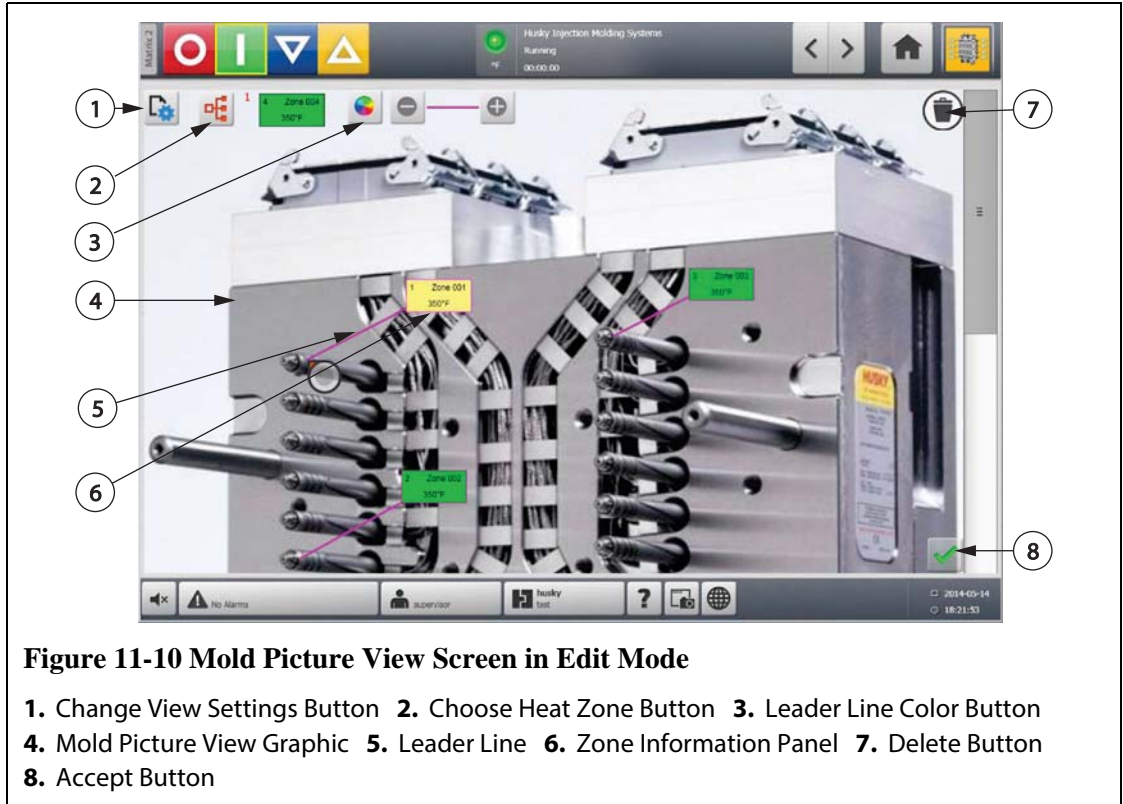


Figure 11-10 Mold Picture View Screen in Edit Mode

1. Change View Settings Button
2. Choose Heat Zone Button
3. Leader Line Color Button
4. Mold Picture View Graphic
5. Leader Line
6. Zone Information Panel
7. Delete Button
8. Accept Button

4. Touch the desired color.
5. Touch the **Accept** button.

11.3.4 Deleting a Leader Line

To delete a **Leader Line**, do the following:

1. Make sure **Mold Picture View** is in **Edit** mode.
2. Touch and drag the **Leader Line** to be deleted onto the associated **Zone Information Panel** or off the mold picture view graphic.

11.3.5 Deleting a Zone Information Panel

To delete a **Zone Information Panel**, do one of the following:

1. Make sure **Mold Picture View** is in **Edit** mode.
2. Touch and drag the **Zone Information Panel** to be deleted onto the **Delete** button or off the mold picture view graphic, or:
3. Select the **Zone Information Panel** and touch the **Delete** button.

11.3.6 Exiting Edit Mode

To exit **Edit** mode, do the following:

1. Make sure **Mold Picture View** is in **Edit** mode.
2. Touch the **Accept** button.

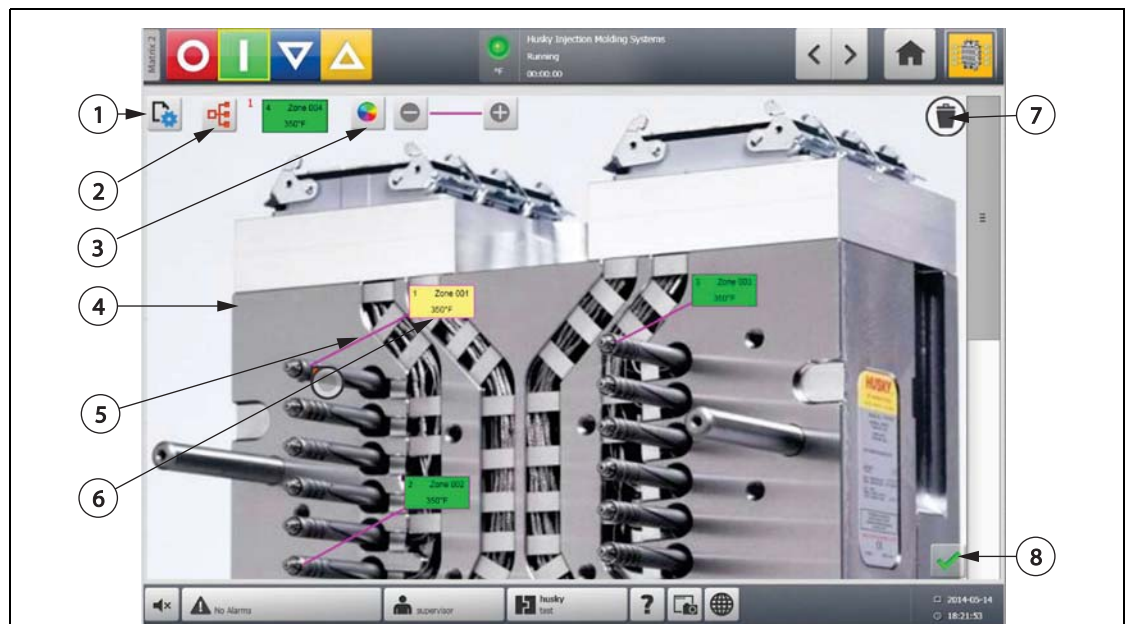


Figure 11-11 Mold Picture View Screen in Edit Mode

1. Change View Settings Button
2. Choose Heat Zone Button
3. Leader Line Color Button
4. Mold Picture View Graphic
5. Leader Line
6. Zone Information Panel
7. Delete Button
8. Accept Button

Chapter 12 Data Recording

Data Recording is a useful tool to track the operation of a mold. This tool helps analyze the system to optimize the molding process, track errors, find the source of a recent error or predict where future errors may occur. The Error Log contains a record of errors that have occurred since the errors were last cleared. Use the **Process History** screen to view the operation of a mold and view recorded data. If an error has occurred while the system was recording, review the behavior of the system at the time of the error to search for potential causes.

12.1 Process Trend Screen

The **Process Trend** screen displays the following information:

- The last 400 samples on four charts, where the X axis is the sample number and the Y axis is the value of the sampled variable.
- The data available for a selected variable.
- The timestamp and value for any point on a graph.

12.1.1 Viewing the Process Trend

To change the zone or process displayed on the **Process Trend** screen, do the following:

1. On the **Process Trend** screen, touch the **Variable Selection** button.

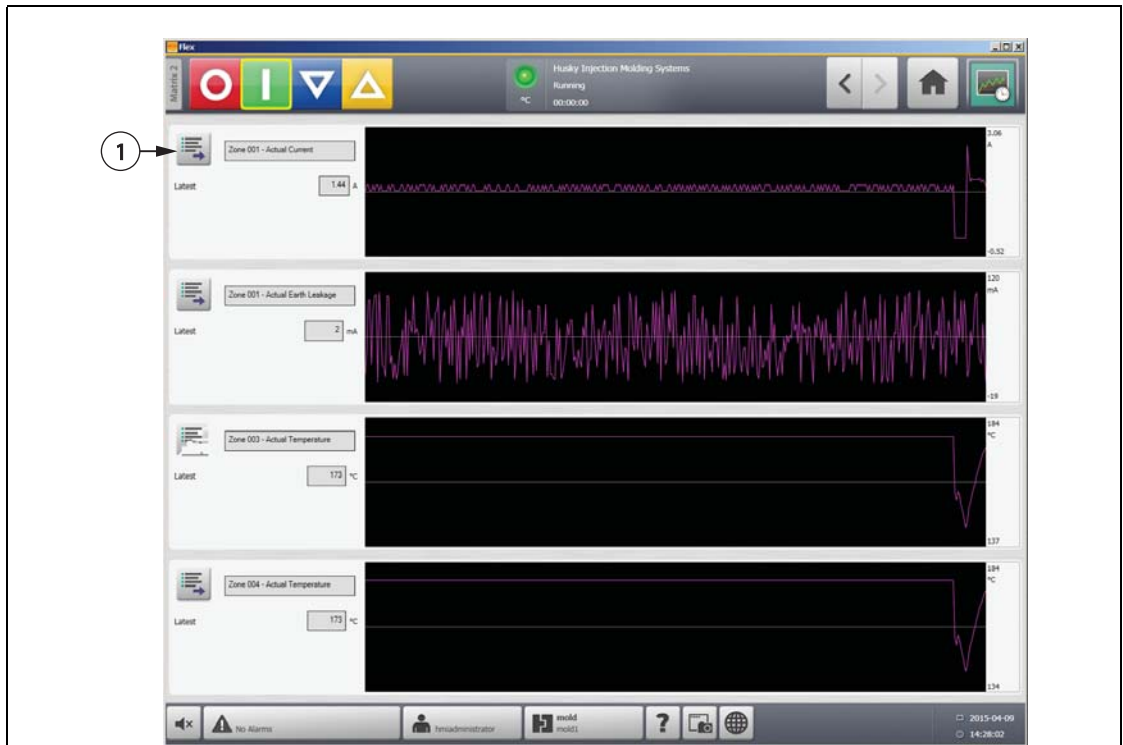
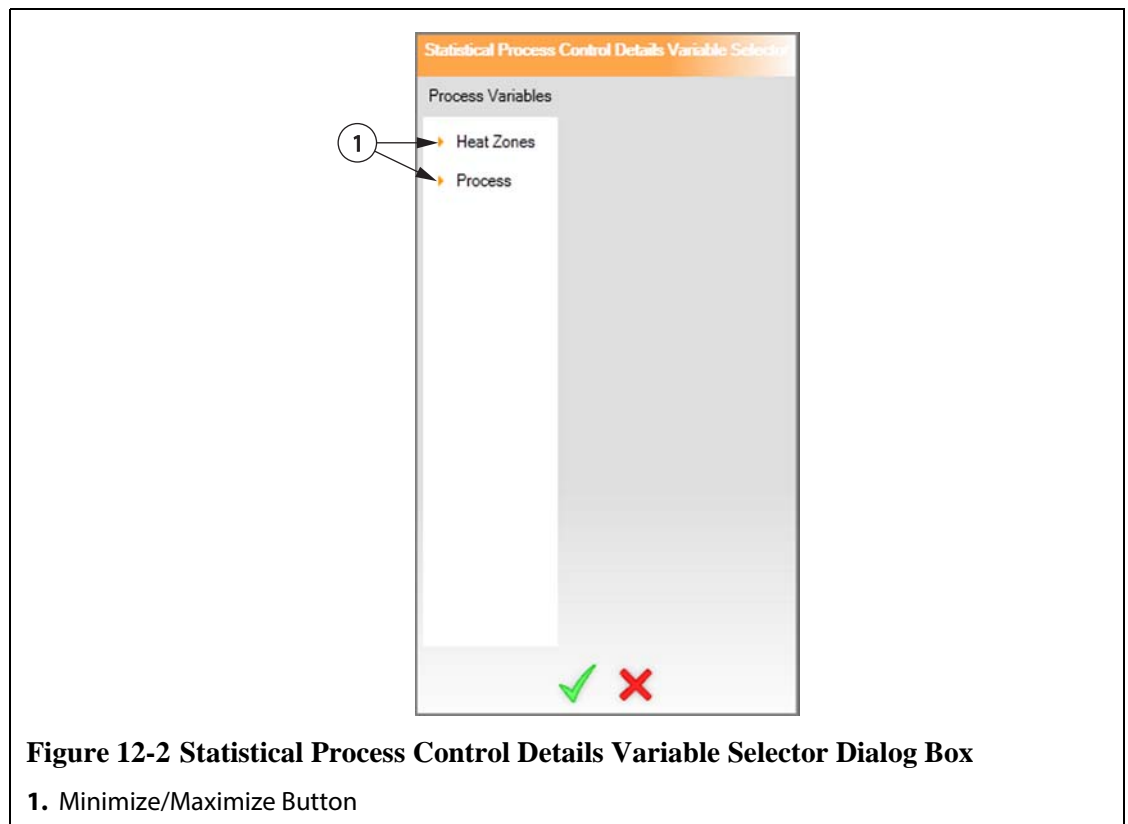


Figure 12-1 Process Trend Screen

1. Variable Selection Button

2. Touch the **Minimize/Maximize** button.



3. Select the desired process variable.

12.2 Process History Screen

On the **Process History** screen, the data is presented zone by zone. The **Process History** screen provides a visual summary of the recorded operation, noting power usage, temperature fluctuations, setpoint values, pressures, positions and times. A detailed textual representation is offered for specific times.

Available process variables for heat zones:

- Actual Current
- Actual Earth Leakage (displayed only when configured in System Setup)
- Actual Power
- Actual Temperature
- Actual Temperature Setpoint
- Actual Voltage

Available process variables for UltraSync-E:

- Close Position
- Closing Duration
- Open Position
- Opening Duration

- Peak Closing Force
- Peak Opening Force
- Cycle Time

The process history holds 10,000 records. Records contain values for all of the logged values for each zone in the system. A frequent sampling rate will fill the database faster than a slower sampling rate.

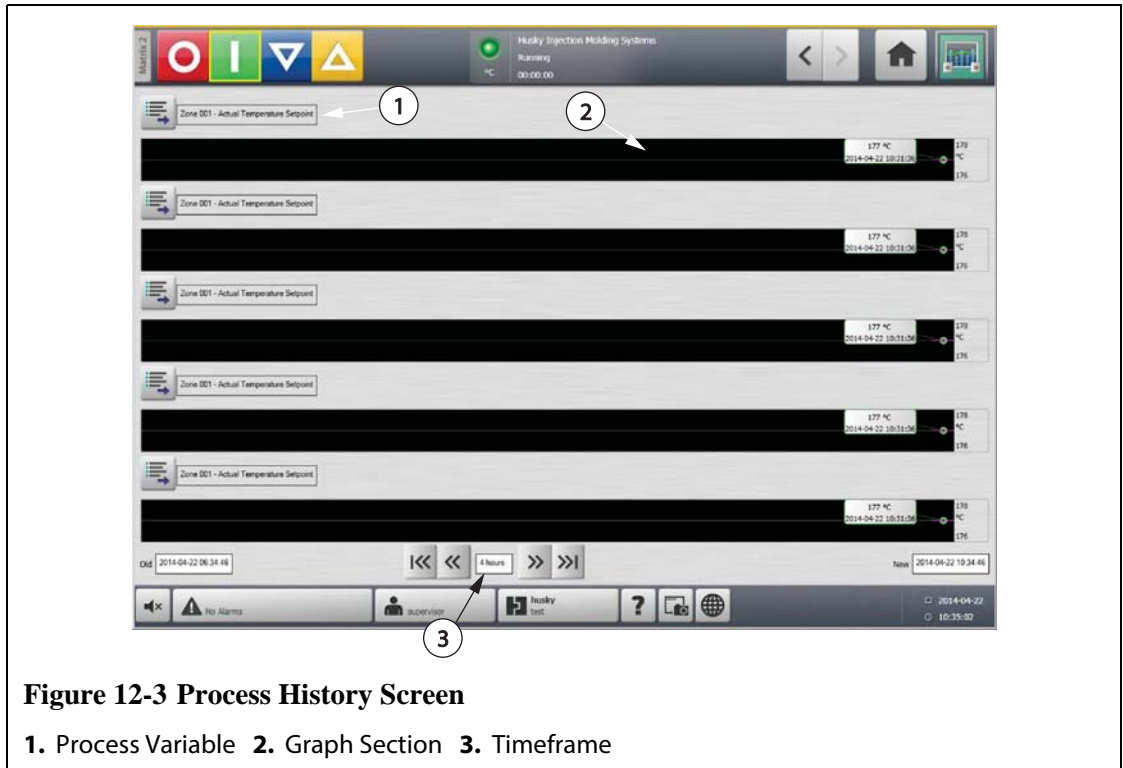


Figure 12-3 Process History Screen

1. Process Variable **2.** Graph Section **3.** Timeframe

Table 12-1 Process History Screen Item Descriptions

Item	Description
Process Variable	The process variable shown in the process history.
Graph Section	The operating history of one zone.
Timeframe	The period of time displayed on the graphs.
Date Range Old	The oldest date displayed on the graph.
Date Range New	The newest date displayed on the graph.

Table 12-2 Process History Screen Button Descriptions

Button	Description
<<Variable Name>>	Touch the variable name to select a different variable.

12.2.1 Curve Data Point

For a description of the data at a particular point on the graph, touch the desired point on the graph.

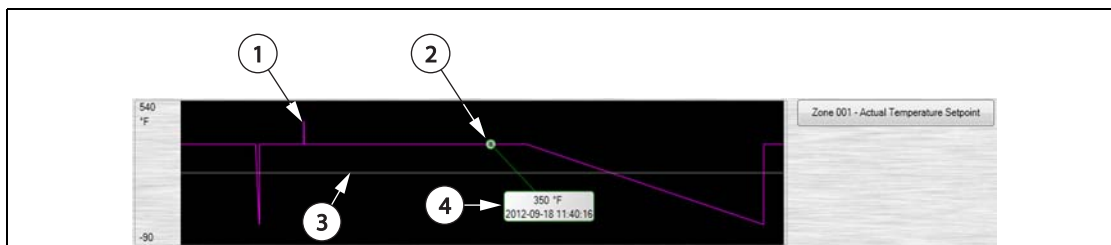


Figure 12-4 Process History Screen

1. Curve 2. Curve Data Point 3. Midline 4. Description of Data

Table 12-3 Process History Screen Curve Data Descriptions

Screen Element	Description
Curve	Graphical representation of data values.
Curve Data Point	Currently selected data value.
Midline	The midline is the middle value of the curve. For example, $(540 + (-90)) / 2 = 225$.
Variable Selection Button	Touch the button to select any of the process parameters to view.
Value	X Axis value reflects the value of the parameter selected at a specific moment in time.

12.2.2 Setting the Timeframe

Select the desired timeframe for the curves as 1, 2, 4, 8, or 12 hours. The default timeframe is four hours.

Changing the timeframe will automatically update the new starting date and time range. The old date and time range will not change.

To change the timeframe, do the following:

1. On the **Process History** screen, touch the **Timeframe** field.



Figure 12-5 Process History Screen

1. Timeframe Field
2. Touch the desired timeframe.

12.2.3 Setting the Date and Time Range

Select the desired date range for the curves. The default old date is the **New Date** value minus the **Timeframe** value. The default end date is the current date and time.

12.2.3.1 Changing the Date and Time Range Old

If the calculated **Date Range End** value is later than the current system time, the **Old Date** value will be adjusted automatically to maintain the **Timeframe** value.

12.2.3.2 Changing the Date and Time Range New

Changing the date and time range end will automatically update the date and time range old, based on the current timeframe duration.

NOTE:The date and time cannot be changed to a value later than the current system time.

12.2.4 Changing the Zone Displayed on the Process History Screen

To change a zone displayed on the **Process History** screen, do the following:

1. On the **Process History** screen, touch the **Variable Selection** button of the zone or process to be changed.

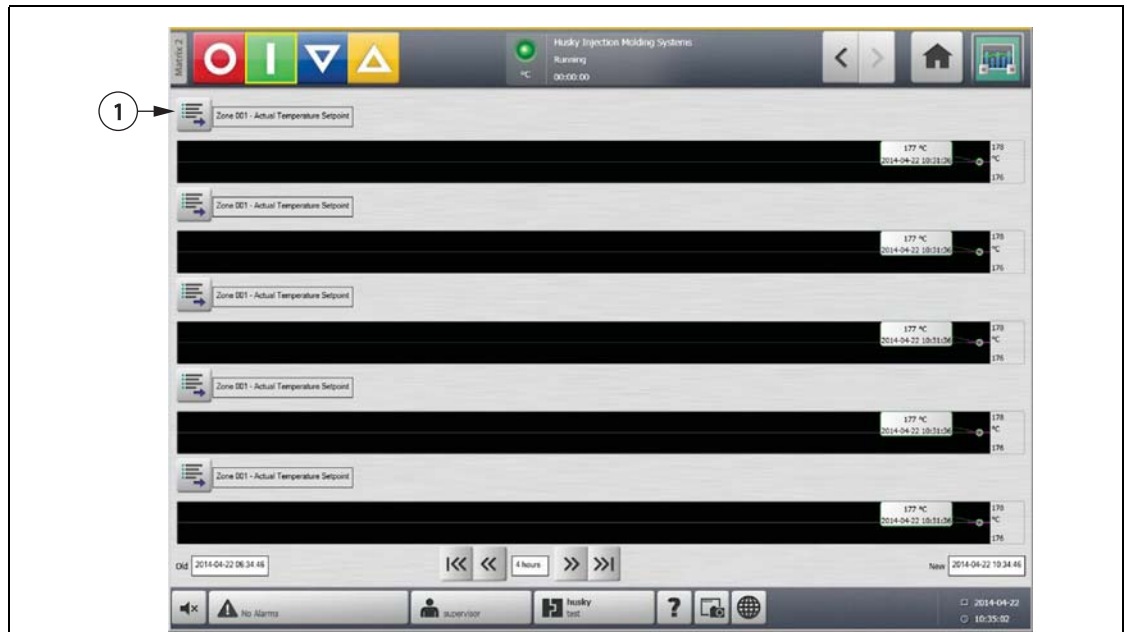


Figure 12-6 Process History Screen

1. Variable Selection Button

2. Touch the **Minimize/Maximize** button.

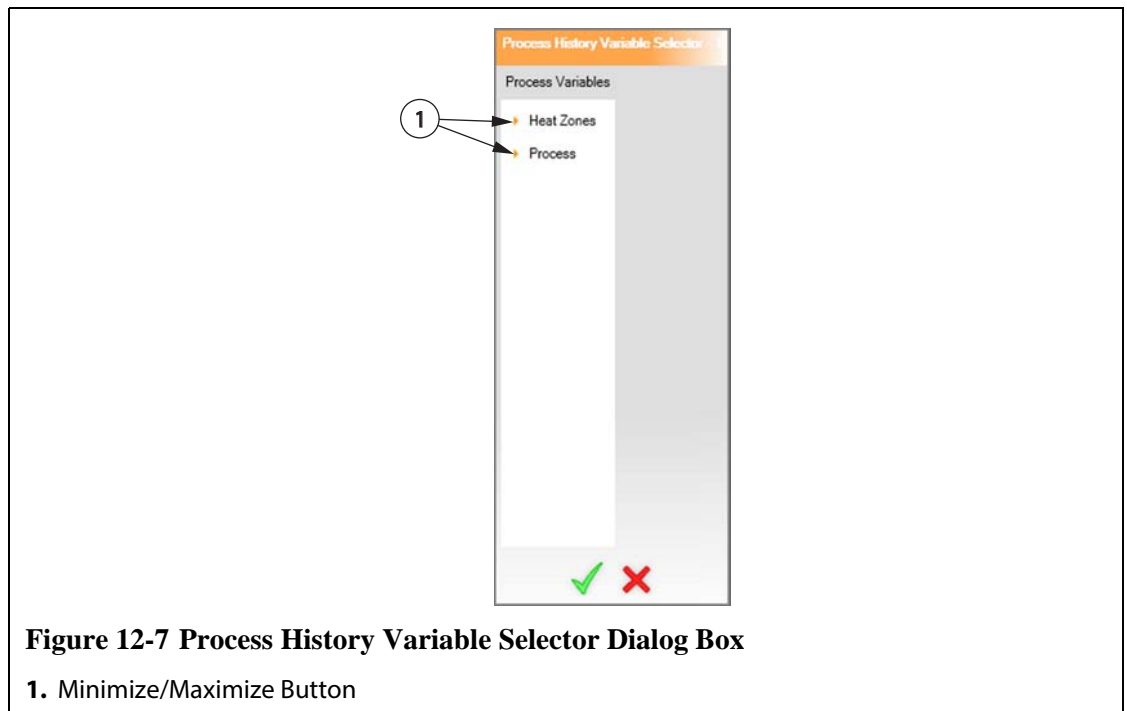


Figure 12-7 Process History Variable Selector Dialog Box

1. Minimize/Maximize Button

3. Select the desired heat zone or process.

12.3 Process Targets Screen

Use the **Process Targets** screen to set up the specification limits for each variable. When a variable value is outside the lower or upper limits, the variable is considered out of specification and triggers an alarm, a digital output and/or the controller may stop.

To access the Process Targets screen, do the following:

On the **Home** screen, touch the **Process Targets** button.

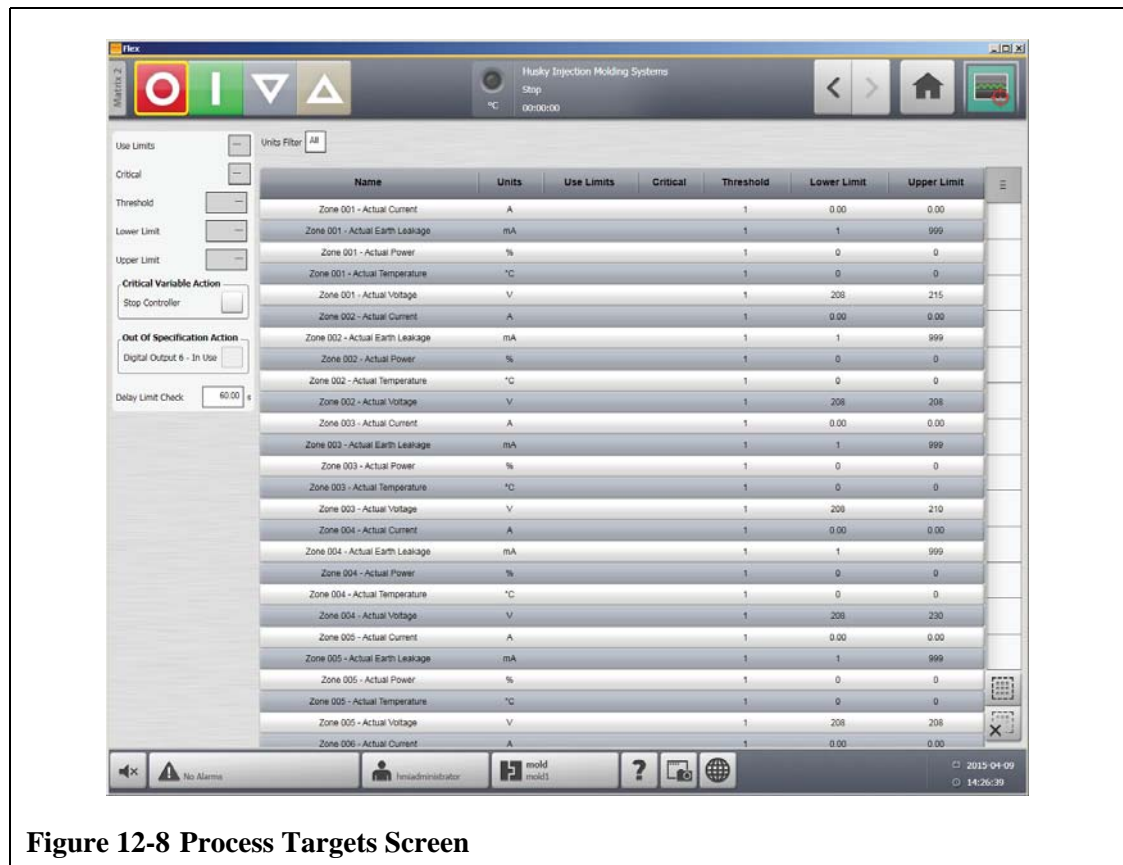


Figure 12-8 Process Targets Screen

Limit	Definition
Use Limits	Select the use limits check box and Altanium will trigger an alarm if the process variable is not within the lower and upper limits.
Critical	Controller may stop if the process variable is not within the lower and upper limits. To perform this action, select the Stop Controller check box.
Threshold Limit	The number of times that the value must be outside of the lower and upper limit before alarm activation or stoppage, depending on setup.
Lower Limit	The lowest value the process variable value can achieve before activation of the “out of specification” alarm or stoppage, depending on setup.
Upper Limit	The highest value the process variable value can achieve before activation of the “out of specification” alarm or stoppage, depending on setup.

Limit	Definition
Stop Controller	If selected, the controller will stop if any critical process variable is not within the lower and upper limits.
Digital Output On	If selected, a digital output will trigger if any process variable is not within the lower and upper limits. For more information, refer to the Digital I/O screen.
Delay Limit Check	If selected, process targets will not be checked until all zones are at temperature. The timer then will start. Once the time expires, the targets will be checked according to their settings.

12.3.1 Filtering by Units

To filter based on units of measure, do the following:

1. On the **Process Target** screen, touch the **Units Filter** field. The Units Filter dialog box appears.

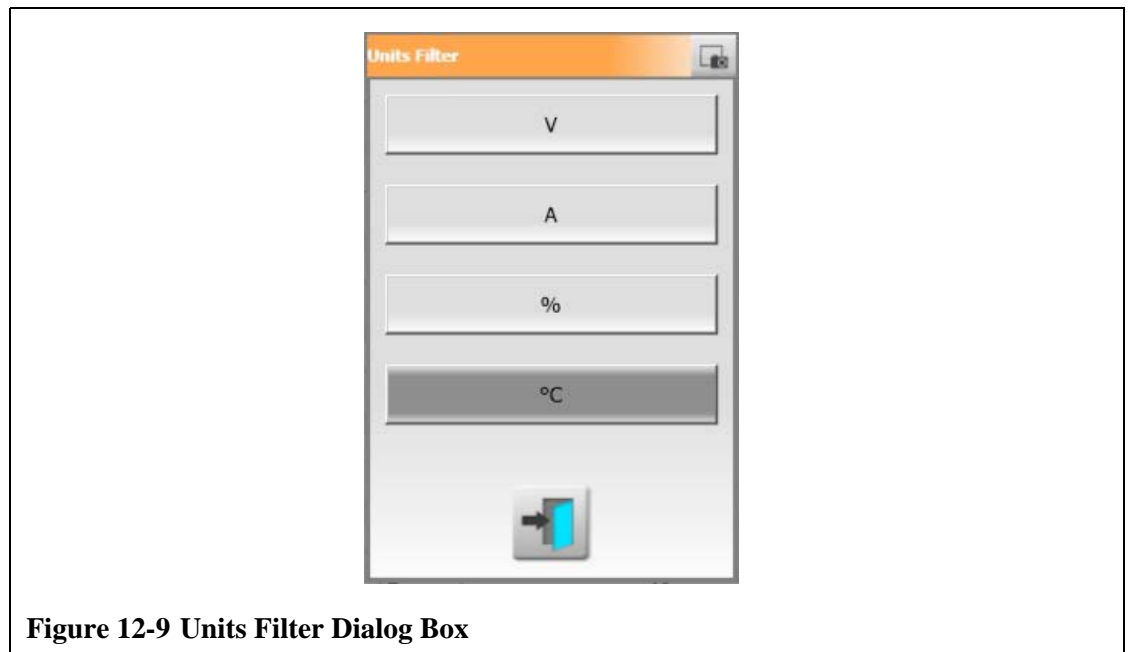


Figure 12-9 Units Filter Dialog Box

2. Touch the desired unit of measure.
3. Touch the **Close** button.

Chapter 13 System Options

Altanium has many additional optional features available to assist in the molding process. There are hardware, software and a combination of hardware and software options that can be used to complement the system.

13.1 Configuring the Digital I/O

Use the **Digital I/O** screen to configure the digital I/O. On the Home screen, touch the Digital I/O Screen.

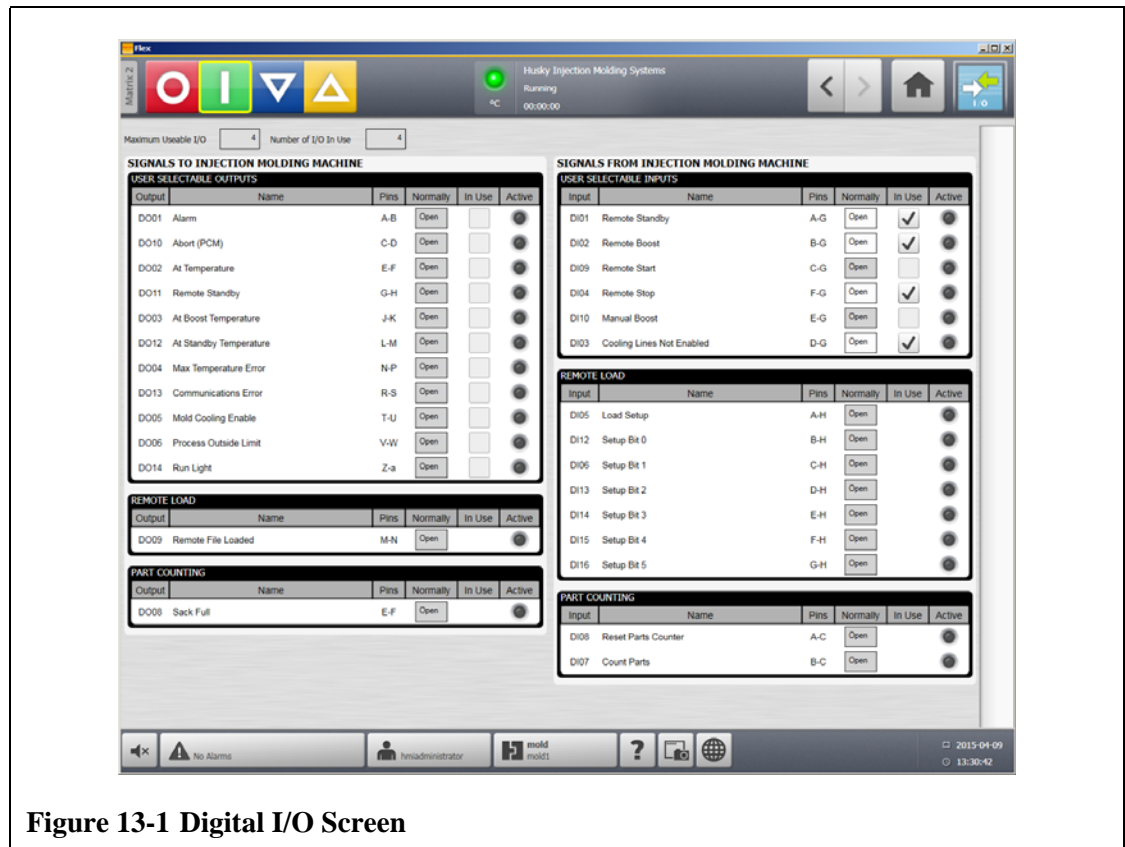


Figure 13-1 Digital I/O Screen

Table 13-1 Digital I/O Screen Item Descriptions

Item	Description
Input/Output	Corresponds to the input or output number assigned to the option.
Name	The names of the input and output options.

Table 13-1 Digital I/O Screen Item Descriptions (Continued)

Item	Description
Pins	The connector pins associated with each input and output.
Normally	Inputs normally refer to the state of the external dry contact. Outputs normally refer to the state of the internal relay switch. The relay switch may be closed or opened when the output is active.
In Use	Used to turn the option on or off.
Active	Indicates if the feature is active (green) or inactive (grey).

To configure the digital I/O, do the following:

1. On the **Home** screen, touch the **Digital I/O** button.
2. Configure the settings according to requirements.

13.1.1 Turning an I/O Option On or Off

The system comes standard with the ability to configure up to 4 I/O options. If an option package is included with the system, desired options must be turned on. The system will only allow the number of options purchased to be turned on. To try a different option once the purchase limit has been reached, turn one of the options OFF before turning another option ON.

To turn an option on or off, do the following:

- To turn the option on, select the **In Use** check box for the option to turn on. To turn the option off, clear the **In Use** check box for the option to turn off.

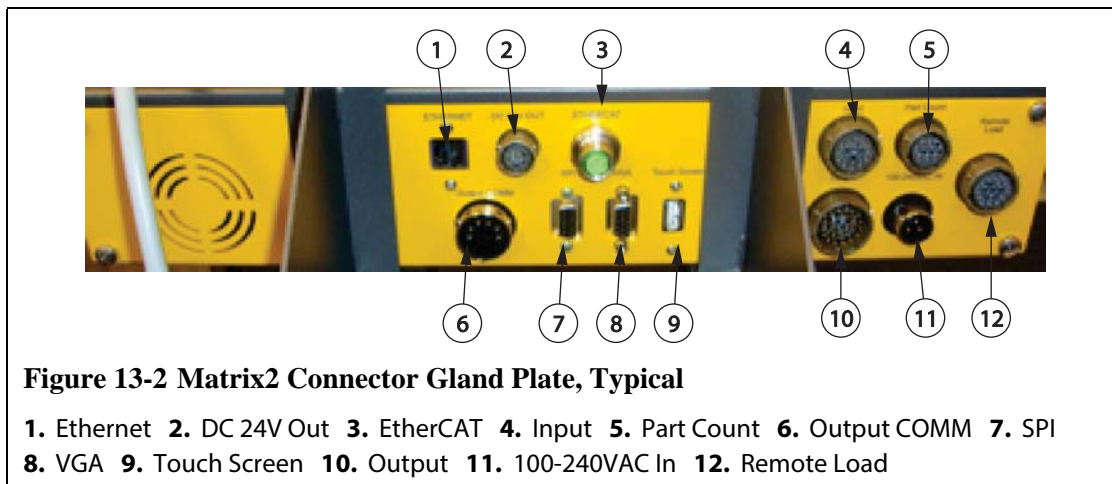
13.2 Cable Connections

With the exception of the USB connection on the front of the Matrix2 display, all cables are connected to the back of the Matrix2 display.

The insulation level of control cables and devices connected to Matrix2 I/O's shall be as follows:

- 500V when the devices are powered by a 400VAC or 415VAC system;
- 300V when the devices are powered by a system up to 240VAC.

NOTE: When the 24V provided on Input, Part Count or Remote Load connectors is connected to external devices, the total current used by all external devices shall not exceed 1A.



Cable Connection	Description
Ethernet	User interface to customer networks.
DC 24V Out	Option, for future use
EtherCAT, if equipped	Communication to UltraSyncE Gen2 system.
Input	Configurable digital inputs.
Part Count, if equipped	Part count option signals.
Output COMM	CANBus communication to Altanium mainframe.
SPI, if equipped	SPI communication protocol.
VGA	Video output connection to the touch screen monitor
Touch Screen	Touch screen communication input connection from the touch screen monitor
100-240VAC In	Main AC power from the Altanium mainframe.
Output	Configurable digital outputs.
Remote Load, if equipped	Remote mold setup option signals.

13.3 Input/Output Connector Pin-Out Description

Below is the connection detail for all of the optional Inputs and Outputs. Inputs are active High (24 VDC). All outputs are relay dry contact type.

13.3.1 Input Base Connector ID

Connector/Pin	Field Cable Wire Color	Signal Function
Input / A	WHT	Remote standby
Input / B	WHT/BLK	Remote boost
Input / C	BLK	Remote start
Input / D	BLK/WHT	Cooling lines not enabled
Input / E	BLU	Manual boost
Input / F	BLU/WHT	Remote Stop
Input / G	BLU/BLK	24V+
Input / H	GRN	24V+
Input / J	GRN/BLK	24V-
Input / K	GRN/WHT	24V-

13.3.2 Output Base Connector ID

The maximum load on digital outputs is as follows:

110VDC / 0.3A - 33W

30VDC / 2.0A - 60W

120VAC / 0.5A - 60VA

240VAC / 0.25A - 60VA

Connector/Pin	Field Cable Wire Color	Signal Function
Output / A	GRN	Alarm
Output / B	ORG/GRN	Alarm
Output / C	RED	Abort (PCM)
Output / D	BLU/RED	Abort (PCM)
Output / E	ORG	At temperature
Output / F	ORG/BLK	At temperature
Output / G	BLK	Remote standby
Output / H	BLU/BLK	Remote standby
Output / J	WHT	At boost temperature
Output / K	BLU/WHT	At boost temperature

Connector/Pin	Field Cable Wire Color	Signal Function
Output / L	RED/GRN	At standby temperature
Output / M	ORG/RED	At standby temperature
Output / N	BLK/WHT	Maximum temperature error
Output / P	WHT/BLK	Maximum temperature error
Output / R	GRN/WHT	Communications error
Output / S	BLK/RED/WHT	Communications error
Output / T	BLK/RED	Mold cooling enable
Output / U	RED/BLK	Mold cooling enable
Output / V	RED/WHT	Process outside limit
Output / W	WHT/RED	Process outside limit
Output / X	GRN/BLK	
Output / Y	GRN/BLK/WHT	
Output / Z	WHT/RED/BLK	"Run light"
Output / a	RED/BLK/WHT	"Run light"

13.3.3 Part Count Base Connector ID

Connector/Pin	Field Cable Wire Color	Signal Function
Part Count / A	BLK	Reset parts counter
Part Count / B	WHT	Count Parts
Part Count / C	RED	24V+
Part Count / D	GRN	24V-
Part Count / E	BRN	Sack full
Part Count / F	BLU	Sack full

13.3.4 Remote Load Base Connector ID

Connector/Pin	Field Cable Wire Color	Signal Function
Remote Load / A	WHT	Load setup
Remote Load / B	WHT/BLK	Setup B0
Remote Load / C	BLK	Setup B1
Remote Load / D	BLK/WHT	Setup B2
Remote Load / E	BLU	Setup B3
Remote Load / F	BLU/WHT	Setup B4
Remote Load / G	BLU/BLK	Setup B5
Remote Load / H	GRN	24V+
Remote Load / J	GRN/BLK	24V+
Remote Load / K	GRN/WHT	24V-
Remote Load / L	ORG	24V-
Remote Load / M	ORG/BLK	Remote file loaded
Remote Load / N	RED	Remote file loaded

Chapter 14 SPI Protocol Option

The system communicates with any central network or molding machine that supports the Society of Plastics Industry (SPI) standard protocol.

The system assumes a device ID of 26h on the SPI communications channel. This ID has been assigned to general-purpose temperature controllers with multiple zones. The system supports a subset of the commands that have been defined for this ID. The commands for this ID that are not supported by the system do not have equivalent functions in the system.

14.1 SPI Command Summary

The SPI commands supported by the system are listed below. The system supports the defined poll and select functions for each command. If a selected command is directed to all zones in the system, the error requirements must be satisfied for every zone before an ACK is returned.

- Echo.
- Version.
- Process Setpoint 1.
- Process Value.
- Alarm Active Status.
- Alarm 1 Setpoint.
- Alarm 2 Setpoint.
- Alarm 1 Reset.
- Controller Status.
- Manual Percentage Output.
- Open/Close Loop Control.

14.1.1 Echo

Summary	SPI controller integrity command.
Errors	If the data length for the selected function is incorrect, the system will return a NAK.
Version Summary	The system transmits the device ID (26h) and SPI software version number.
Errors	None.

14.1.2 Process Setpoint

Summary	This command is used to set and read the temperature setpoint for an automatically controlled zone. It is valid even if the selected zone is running in MANUAL or VIEW regulation mode.
Errors	<p>The following conditions result in a NAK response with an invalid data error for the select function:</p> <ul style="list-style-type: none"> • Incorrect data length. • Invalid zone number. • A value less than the minimum allowed setpoint. • A value greater than the maximum allowed setpoint. <p>The following conditions result in an invalid data error in response to a polled function:</p> <ul style="list-style-type: none"> • Invalid zone number.

14.1.3 Process Value

Summary	This command is used to read the actual temperature of a specified zone. It is valid for zones in all regulation modes. If the zone does not have a thermocouple input or thermocouple type assigned, or if the thermocouple is disconnected, 0.0 is returned. Otherwise a value between 32 °F and 932 °F is returned.
Errors	<p>The following conditions result in an invalid data error in response to a polled function:</p> <ul style="list-style-type: none"> • Invalid zone number.

14.1.4 Alarm Active Status

Summary	This command is used to read error status for a single zone. A value of 0 is returned if no errors are active. It is valid for all zones in all regulation modes.
Errors	<p>The following conditions result in an invalid data error in response to a polled function:</p> <ul style="list-style-type: none"> • Invalid zone number.

14.1.5 Alarm 1 Setpoint

Summary	This command is used to set and read the alarm window value for a single zone. The alarm window is used only for zones with Auto or View regulation.
Errors	<p>The following conditions result in a NAK response with an invalid data error for the select function:</p> <ul style="list-style-type: none"> • Incorrect data length. • Invalid zone number. • A value less than 0 °F or greater than 900 °F. • A value greater than the abort window value. <p>The following conditions result in an invalid data error in response to a polled function:</p> <ul style="list-style-type: none"> • Invalid zone number.

14.1.6 Alarm 2 Setpoint

Summary	This command is used to set and read the abort window value for a single zone. The abort window is used only for zones with Auto or View regulation.
Errors	<p>The following conditions result in a NAK response with an invalid data error for the select function:</p> <ul style="list-style-type: none"> • Incorrect data length. • Invalid zone number. • A value less than 0 °F or greater than 900 °F. • A value greater than the abort window value. <p>The following conditions result in an invalid data error in response to a polled function:</p> <ul style="list-style-type: none"> • Invalid zone number.

14.1.7 Alarm 1 Reset

Summary	This command is used to clear the errors for all the zones in the system. The system does not have the ability to clear an error for an individual zone.
Errors	<p>The following conditions result in a NAK response with an invalid data error for the select function:</p> <ul style="list-style-type: none"> • Incorrect data length. • Invalid zone number.

14.1.8 Controller Status

Summary	This command is used to read the condition of a single zone. The definition of the status bits is given below:		
	BIT	SPI DEFINITION	SYSTEM DEFINITION
	0	Heater Power	Power to heater is not zero
	1	Soft Start	Soft start is active
	2	Manual Control	Manual regulation (Not Auto or View)
	3	Low Alarm 1	Alarm under temperature
	4	High Alarm 1	Alarm over temperature
	5	Low Alarm 2	Abort under temperature
	6	High Alarm 2	Abort over temperature
	7	Open T/C Alarm	Lost thermocouple
	8	Reverse T/C Alarm	Reversed thermocouple
	9	Shorted T/C Alarm	Not supported
	10	Open Output Device	Fuse blown
	11	Shorted Output	Not supported
	12	Ground Fault	Not supported
	13	Low Current Alarm	Not supported
14	High current	Not supported	
15	Out Of Control	Not supported	
Errors	<p>The following conditions result in an invalid data error in response to a polled function:</p> <ul style="list-style-type: none"> Invalid zone number. 		

14.1.9 Manual Percent Output

Summary	This command is used to set and read the manual percent output for a manually-regulated zone. It is valid even if the zone is running in the Auto or View regulation mode.
Errors	<p>The following conditions result in a NAK response with an invalid data error for the selected function:</p> <ul style="list-style-type: none">• Incorrect data length.• Invalid zone number.• A value less than the minimum allowed percentage.• A value greater than the maximum allowed percentage. <p>The following conditions result in an invalid data error in response to a polled function:</p> <ul style="list-style-type: none">• Invalid zone number.

14.1.10 Open/Closed Loop

Summary	This command is used to set the regulation mode of a zone to either Manual or Automatic only. No provision is made for setting the regulation to View.
Errors	<p>The following conditions result in a NAK response with an invalid data error for the selected function:</p> <ul style="list-style-type: none">• Incorrect data length.• Invalid zone number. <p>The following conditions result in an invalid data error in response to a polled function:</p> <ul style="list-style-type: none">• Invalid zone number.• Zone regulation is set to View.

Chapter 15 Maintenance

This chapter describes the maintenance tasks required to maintain the Altanium Matrix2 system.

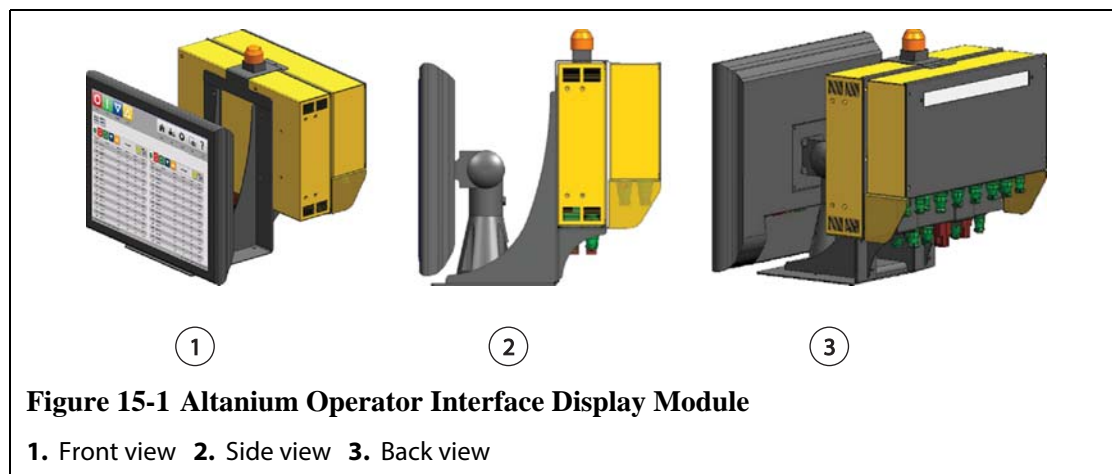
Periodically and before starting the equipment check that all cables and cable connections are free from wear or damage. Do not operate equipment if the cables are damaged. Replace any cables that appear damaged.

The following maintenance procedures are to be performed only when needed.

Procedure	Reference
Replacing an Intelligent Control Card (ICC ² or ICC ³)	Section 15.3.2
Replacing a Blown Fuse on an Intelligent Control Card (ICC ² or ICC ³)	Section 15.3.3
Replacing the Motherboard Battery	Section 15.5
Cleaning the System	Section 15.7

15.1 Altanium System

The Altanium X/H-Series systems are based around a modular concept. The two major components for the X/H-Series systems are the Altanium operator interface and the X-Series (12-zone) card cage or H-Series (24-zone) card cage. Both X-Series and H-Series card cages house six Intelligent Control Cards.



The Altanium operator interface display module is used to enter and display molding parameters.

15.2 Card Layout Screen

The **Card Layout** screen identifies the cards contained within the mainframe, and which zones each card belongs to. The **Card Layout** screen can be accessed from the **Home** screen or the **Event History** screen.

The backplane layout is on the left side of the screen and the card layout is on the right. The zone numbers can be seen on the top of each card. The zone numbers change depending on the zone density of the card. If a card is red with no zone numbers, then the card is not installed or an error of some kind has happened with the card. The card type is dictated by the color of the card on screen. XL and HL cards are black, X and H cards are Silver, and XE cards are Green. A red card without a question mark but with zone numbers assigned means there is either a communication problem or a card is not installed in the slot.

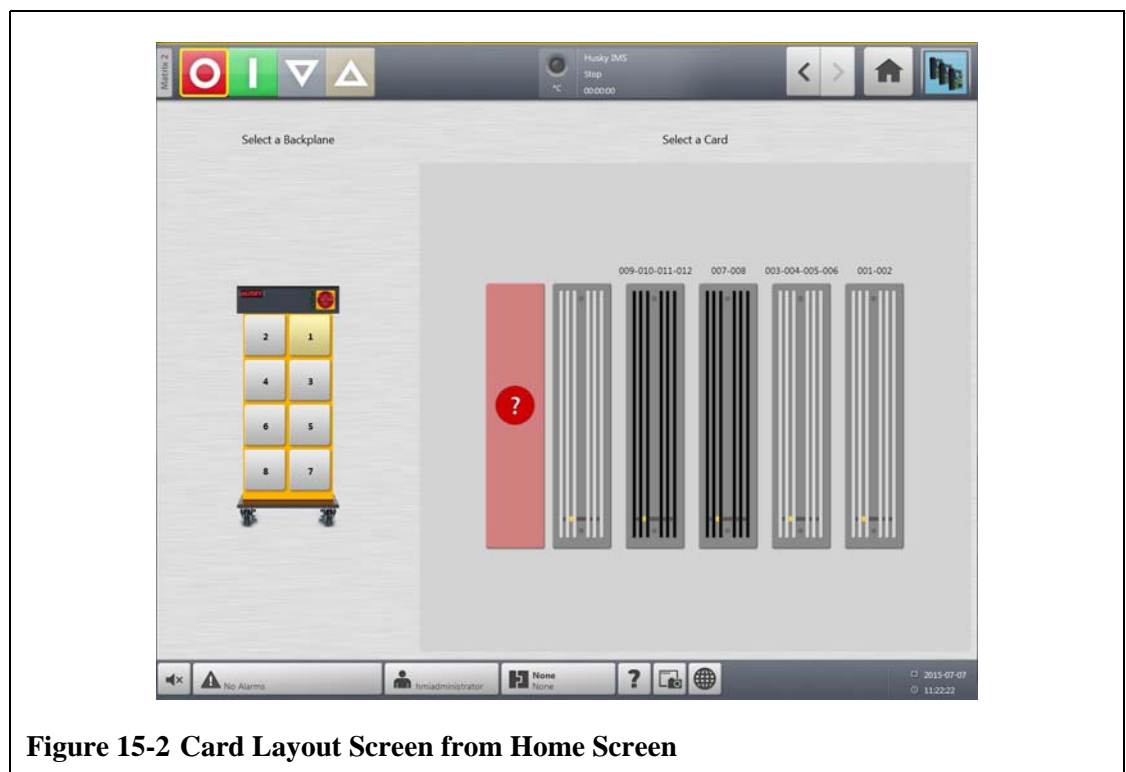


Figure 15-2 Card Layout Screen from Home Screen

15.2.1 Troubleshooting Using the Card Layout Screen

The **Card Layout** screen can be accessed from the **Event History** screen to identify which card or component on a card is associated with an alarm error. For example, to identify a blown fuse:

1. On the **Event History** screen, touch the **Filter** button. A dialog box will open.

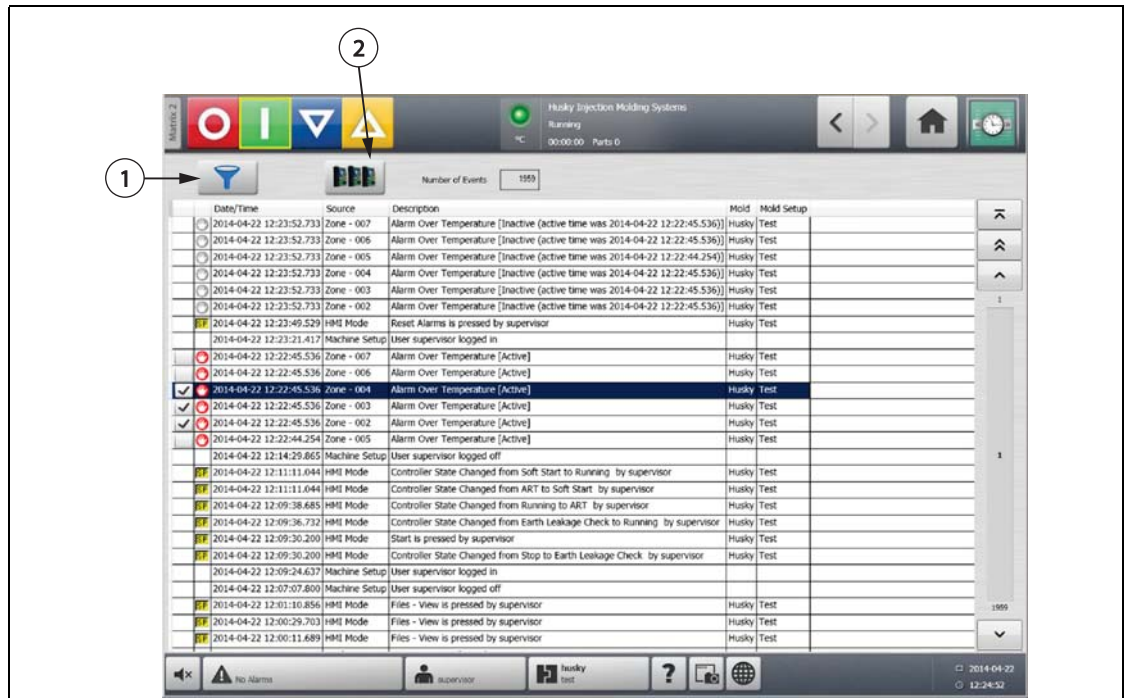


Figure 15-3 Card Layout Screen

1. Filter Button 2. Card Layout Button

2. Deselect all check boxes, and then select only **Zone Alarm Active** and **Zone Alarm Inactive**.



Figure 15-4 Filter Dialog Box

3. Touch the **Exit** button. A list of Active and Inactive faults will be displayed.
4. Select the applicable error, and then touch the **Card Layout** button. A screen detailing the fault information will appear.

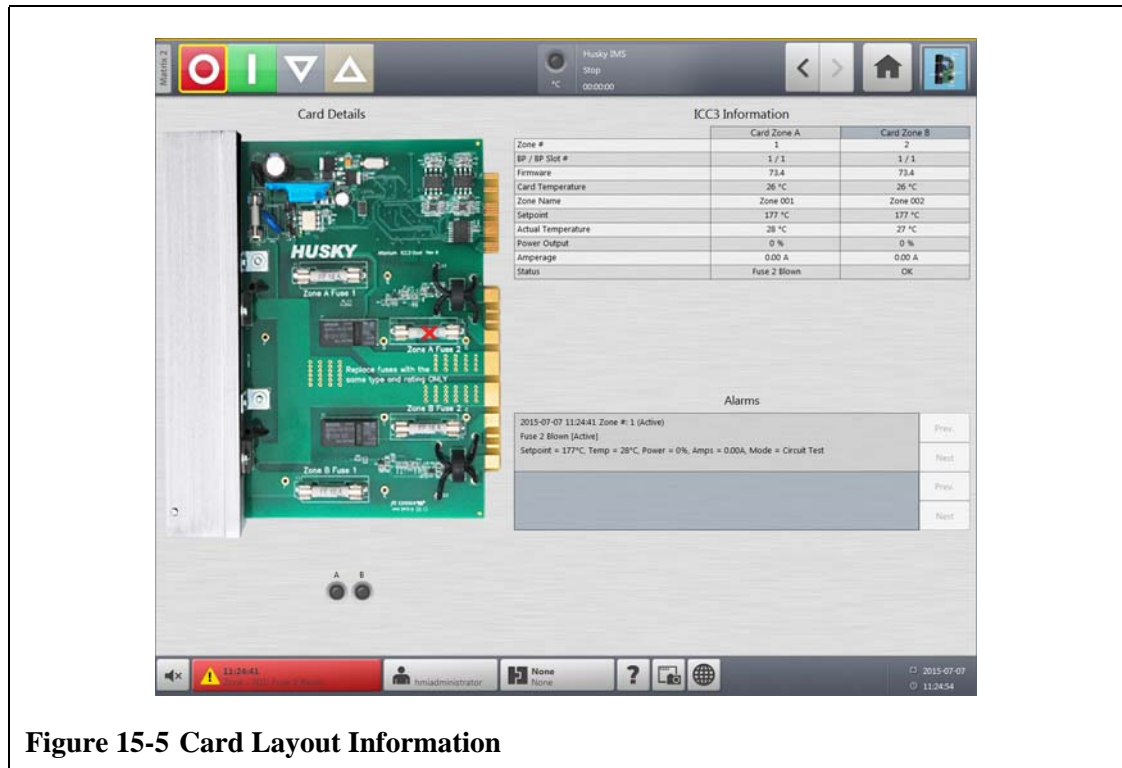


Figure 15-5 Card Layout Information

15.3 Servicing the Altanium System

The X-Series card cage contains everything needed to run up to 12 heaters in the mold. The H-Series card cage runs up to 24 heaters in the mold. This consists of a green Passive Backplane and one to six Intelligent Control Cards which are plugged into the Passive Backplane. The number of passive backplanes and Intelligent Control Cards the system contains is based on the number of zones ordered with the system. All ICC² are the same and can be interchanged with other ICC². This is the same for the ICC³. The Passive Backplanes contain CAN communications address switches and can be interchanged with other Passive Backplanes if the switches are set properly.

15.3.1 Altanium X/H-Series Card Cage

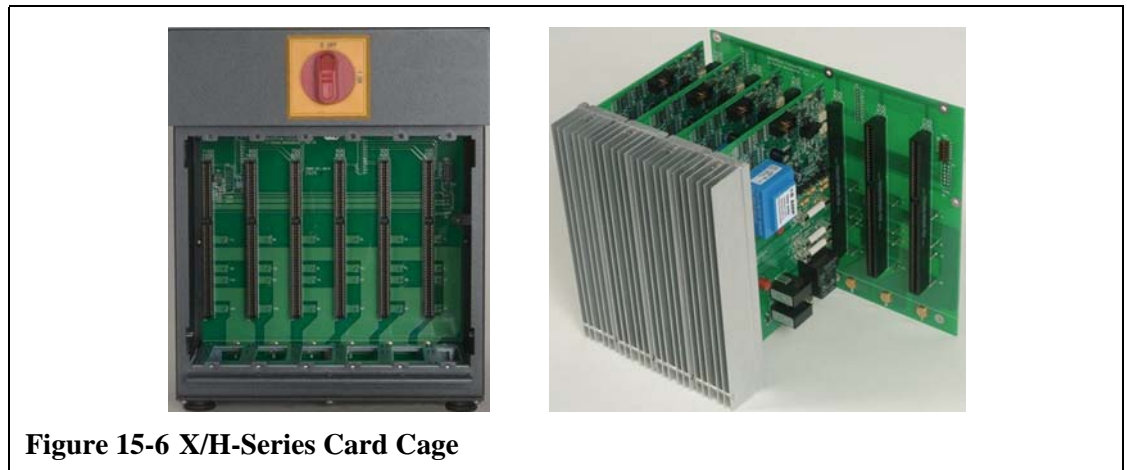


Figure 15-6 X/H-Series Card Cage

Access all user-serviceable parts, including fuses and circuit boards, by loosening the upper and lower slotted screws on each heat sink assembly and then sliding a screwdriver between the horizontal silver post and the ledge on the cabinet and gently prying the board out.

Located inside each card cage are one to six Intelligent Control Cards (ICC² or ICC³) and a single Passive Backplane.



IMPORTANT!

Although they look similar, ICC² and ICC³ cards use different backplanes and are not compatible with each other.



IMPORTANT!

An Intelligent Control Card must be present in the position labeled 1 in all card cages for the system to function properly.



WARNING!

Hazardous voltages— risk of death or serious injury. Before servicing the Altanium unit lock out and tag the Altanium Main Power switch in accordance with local codes.



Figure 15-7 Altanium Main Power Switch

1. Main Power Switch

15.3.2 Replacing an Intelligent Control Card (ICC² or ICC³)



WARNING!

Electrical and mechanical hazard- risk of death, serious injury and/or damage to the equipment. Turn off all power to the system and disconnect it completely from the main input power.

Use a ground strap when handling any of the Altanium components.

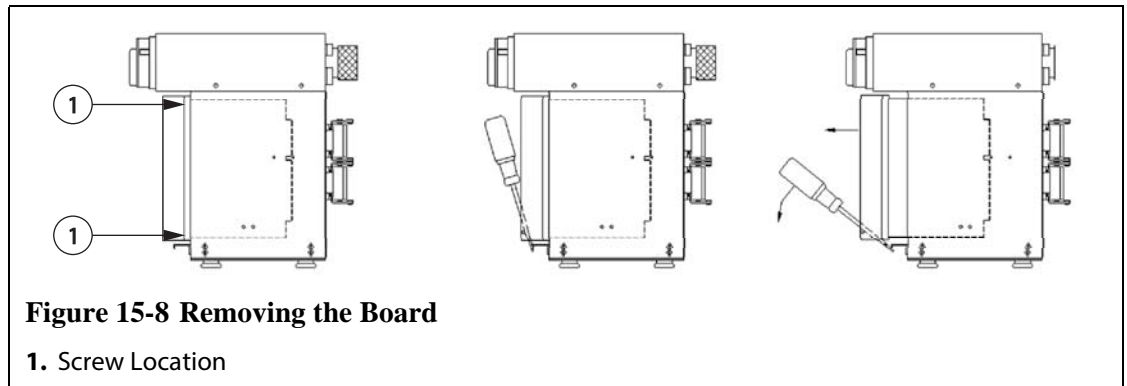
To replace an ICC² or ICC³, do the following:

1. Locate the Card Cage that contains the faulty ICC² or ICC³. Use the on-screen Card Layout feature to assist in locating the card.

CAUTION!

Mechanical failure mode - attempting to remove a card when the upper and lower heatsink mounting screws are not fully disengaged from the female threads on the cabinet can result in catastrophic damage to the card.

2. Loosen the upper and lower slotted screws on the heat sink from the female threads in the cabinet.
3. Slide a screwdriver between the silver post and the ledge on the cabinet and gently pry the board out. (Figure 15-8)



CAUTION!

Static electricity hazard - risk of damage to the equipment. Do not, under any circumstances, place any PCB on carpets, rugs, or other material that is likely to create a static charge.

4. Carefully place the card on an earthed/grounded surface.
5. Slide the new card into to the slot and push the card slowly and firmly back into place. An incorrectly oriented card will not seat properly.
6. Tighten the upper and lower slotted screws on the heat sink.

15.3.3 Replacing a Blown Fuse on an Intelligent Control Card (ICC² or ICC³)



WARNING!

Electrical and mechanical hazard- risk of death, serious injury and/or damage to the equipment. Turn off all power to the system and disconnect it completely from the main input power.

Use a ground strap when handling any of the Altanium components.

If Altanium informs that there is a blown fuse in the system, make a note of the error (which fuse is blown) before proceeding. Use the on-screen Card Layout feature to display a picture of the card with a red X shown over the faulty fuse.

To replace a blown fuse, do the following:

1. Locate the Card Cage that contains the faulty ICC² or ICC³. Use the on-screen Card Layout feature to assist in locating the card.
2. Loosen the upper and lower slotted screws on the heat sink. These two screws are captive so they do not fall into the system or get lost on the floor.
3. Slide a screwdriver between the silver post and the ledge on the cabinet and gently pry the board out. (see [Figure 15-8](#))

CAUTION!

Static electricity hazard - risk of damage to the equipment. Do not, under any circumstances, place any PCB on carpets, rugs, or other material that is likely to create a static charge.

4. Carefully place the card on an earthed/grounded surface.
5. Remove and replace the faulty fuse with one of identical type and rating. Husky recommends SIBA 71-25-40 Series or equivalent fuses. Make sure the fuse is fully seated. Poor seating will cause a hot spot, which can cause problems for the system.

NOTE: 20 and 30 Amp cards will only have two fuses.

6. Slide the new card into to the slot and push the card slowly and firmly back into place. An incorrectly oriented card will not seat properly.
7. Tighten the upper and lower slotted screws on the heat sink.

15.4 Replacing an Altanium Matrix2 Display Module



WARNING!

Static electricity hazard - risk of damage to the equipment. Turn off all power to the system and disconnect it completely from the main input power.

Use a ground strap when handling the Altanium components.

In some cases, Altanium will not work if the display is defective. If the display input power is correctly connected and all three phase indicators are lit; the display is probably faulty.

15.4.1 Disconnecting the Display Module

To disconnect the display module, do the following:



WARNING!

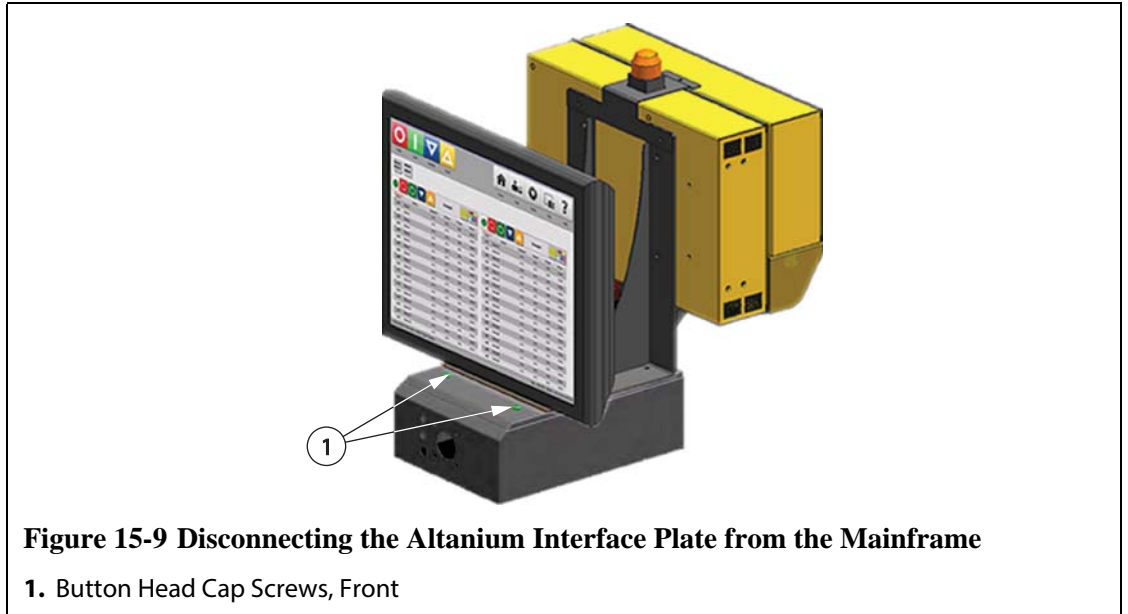
Electrical and mechanical hazard - risk of death, serious injury and/or damage to the equipment. Turn off all power to the system and disconnect it completely from the main input power. Use a ground strap when handling any of the Altanium components.

1. Facing the rear of the system, disconnect the Power and Input Comm cables from the mainframe.

**IMPORTANT!**

A minimum of 2 people are required to perform this procedure.

2. Facing the front of the controller, locate the four 1/4 inch-20 button head cap screws that hold the Altanium interface plate to the mainframe.

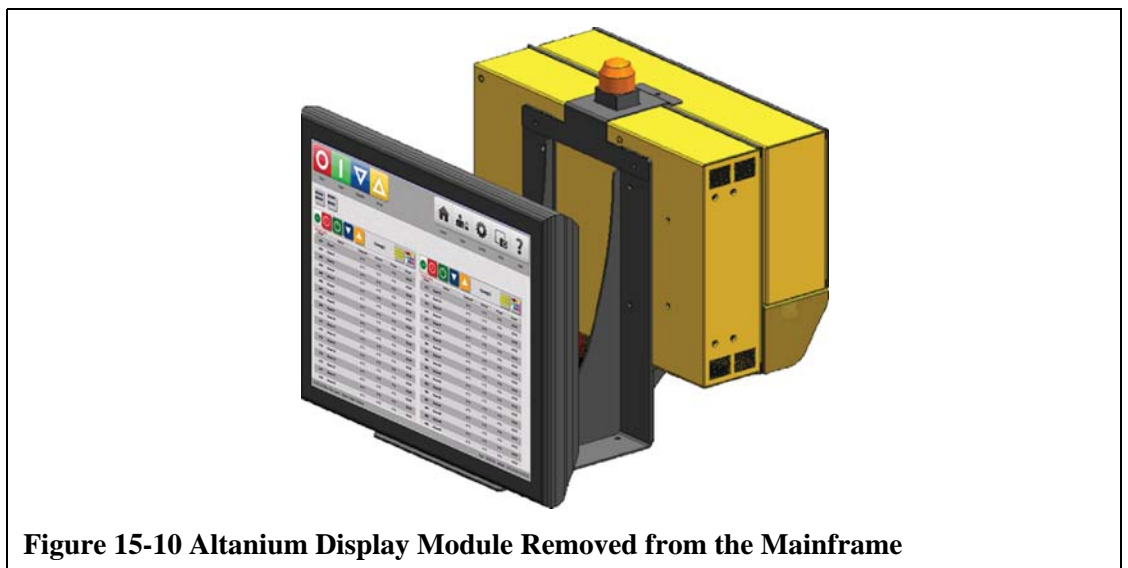


3. Remove the four screws using the 5/32 inch hex wrench provided with the controller.

**IMPORTANT!**

Make sure to support the display module when disconnecting the interface plate.

4. Disconnect the interface plate from the mainframe. Place the interface plate on a flat surface.



15.4.2 Connecting the Display Module

To connect the display module, do the following:



IMPORTANT!

A minimum of 2 people are required to perform this procedure.

1. Facing the front of the controller, locate the four 1/4 inch-20 button head cap screws that hold the Altanium interface plate to the mainframe.

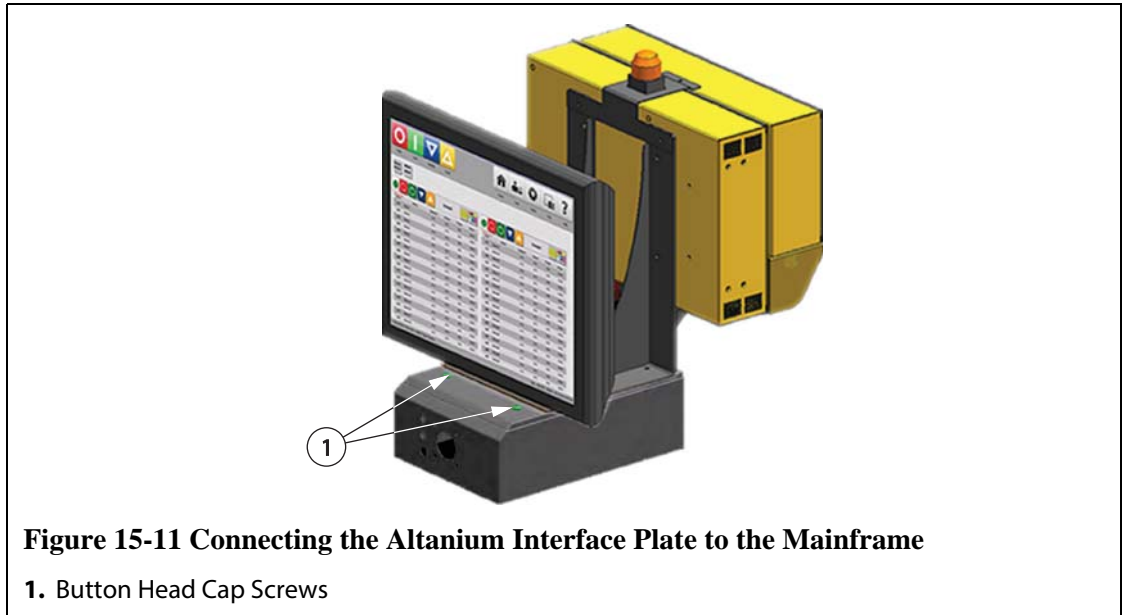


Figure 15-11 Connecting the Altanium Interface Plate to the Mainframe

1. Button Head Cap Screws

2. Install the four screws using the 5/32 inch hex wrench provided with the controller.
3. Facing the rear of the system, connect the Power and Input Comm cables to the mainframe.

NOTE:The main power for the Altanium display module can only come from the mainframe Display Power connection.

15.4.3 Mounting the Display Module Remotely

The display module can be mounted remotely if the Remote Mount option is ordered.

To mount the display module remotely, do the following



IMPORTANT!

A minimum of 2 people are required to perform this procedure.

1. Place the display module in the mounting location.
2. Using screws, secure the display module in position.

3. Facing the rear of the system, connect the detachable extension Power and Input Comm cables to the mainframe.

NOTE:The main power for the Altanium display module can only come from the mainframe Display Power connection.

15.5 Replacing the Motherboard Battery

Motherboard uses a Button Cell CR2032 battery.

To replace the motherboard battery, do the following:



WARNING!

Electrical and mechanical hazard- risk of death, serious injury and/or damage to the equipment. Turn off all power to the system and disconnect it completely from the main input power.

Use a ground strap when handling any of the Altanium components.

1. Disconnect power from the controller.
2. Remove the display module back cover.

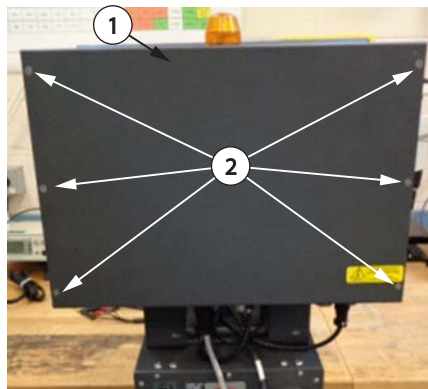
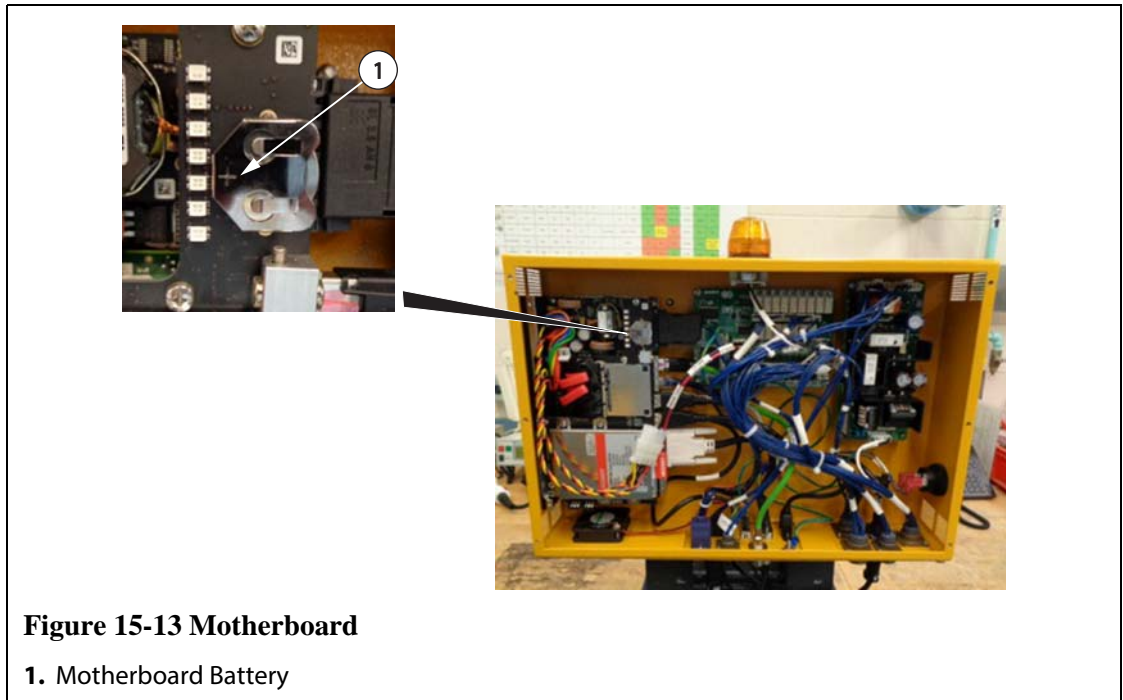


Figure 15-12 Controller

1. Back Cover **2.** Screws

3. Remove and discard the motherboard battery.



CAUTION!

Mechanical hazard - risk of equipment damage. Install the same size and type of battery. Installing the wrong size or type of battery could cause equipment damage.

4. Install the new motherboard battery. The positive (+) side faces outwards.
5. Install the display module back cover.
6. Connect the power.

15.6 Calibrating the Thermocouple Inputs

The system has been factory-calibrated and in most cases it is not necessary to recalibrate until Altanium has been running for one year. If calibration is necessary, contact the nearest Husky Regional Service and Sales office for calibration instructions.

15.7 Cleaning the System

15.7.1 Cabinet

To clean the cabinet, do the following:

- Use a damp sponge or cloth. No abrasives should ever be used on the surface. The labels should also be wiped and no cleaners or solvents should be used.
- If a cleaner of any type must be used, window cleaner sprayed onto a cloth, not directly onto the cabinet, is recommended.

15.7.2 Touch Screen

To clean the touch screen, do the following:

1. Make sure the monitor is turned off.
2. Wipe the screen with a clean, soft, lint-free cloth. This removes dust and other particles.
3. If necessary, apply a small amount of non-ammonia, non-alcohol based glass cleaner onto a clean, soft, lint-free cloth, and wipe the screen.

CAUTION!

Mechanical hazard - risk of damage to the equipment. Do not spray or pour any liquid directly onto the screen or case. Spray cleaner onto a lint-free cloth. If droplets are allowed to dry on the monitor permanent staining or discoloration may occur.

CAUTION!

Mechanical hazard - risk of damage to the equipment. The display area is highly prone to scratching. Do not use ketone type material (e.g. acetone), ethyl alcohol, toluene, ethyl acid or methyl chloride to clear the panel. These products may permanently damage the panel and void the warranty.

Chapter 16 UltraSync-E, If Equipped

This chapter describes the screens, controls and troubleshooting specific to UltraSync-E (Electric) systems. These screens and controls are not available when the controller is used with any other hot runner system.



IMPORTANT!

Controllers for UltraSync-E hot runners are designed for use with a specific hot runner. Contact the nearest Husky Regional Service and Sales office before attempting to use the controller with any other hot runner.

16.1 Connecting the Controller

To connect the controller to the injection molding machine, do the following:



IMPORTANT!

Only qualified personnel should be permitted to make modifications to the machine interface.

1. Connect the supplied X-100 interface cable to the X-100 connector on the controller. Refer to [Section 16.6](#) for more information about signals.

CAUTION!

Electrical hazard – risk of damage to the controller. All signals sent to the controller must be from dry or potential-free contacts.

2. Using the electrical schematics for the controller and the machine, connect the X-100 cable to the machine. Some modifications to the machine may be required to connect the cables to the appropriate signal source or destination. Contact the nearest Husky Regional Service and Sales office for assistance.

16.2 UltraSync-E Screens

Use the **Home** screen to access the UltraSync-E Home, Profile and Setup screens.

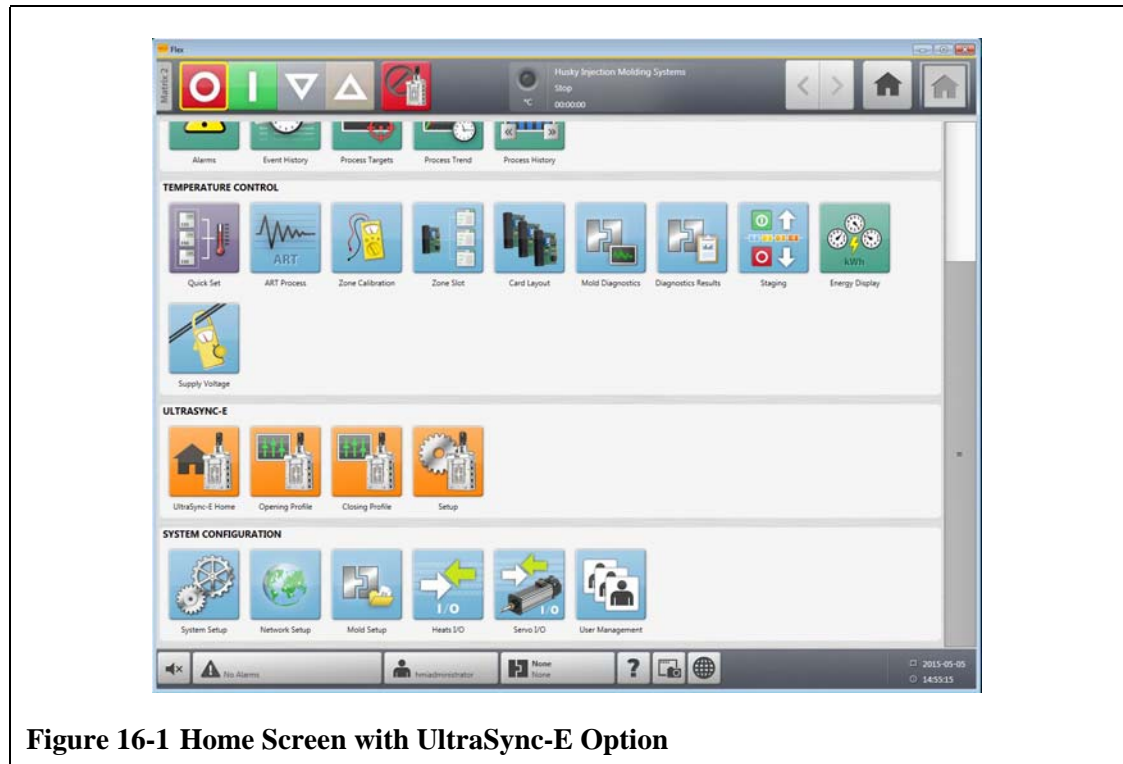






Figure 16-1 Home Screen with UltraSync-E Option

16.2.1 UltraSync-E Home Screen Buttons

Use the UltraSync-E Home screen buttons to open the following UltraSync-E screens:

- **UltraSync-E Home** screen
- **UltraSync-E Opening Profile** screen
- **UltraSync-E Closing Profile** screen
- **UltraSync-E Setup** screen

Button	Description
	Use the UltraSync-E Home button to open the UltraSync-E Home screen.
	Use the UltraSync-E Profile button to open the UltraSync-E Profile screen.
	Use the UltraSync-E Closing Profile button to open the UltraSync-E Closing Profile screen.
	Use the UltraSync-E Setup button to open the UltraSync-E Setup screen.

16.3 UltraSync-E Home Screen

Use the **UltraSync-E Home** screen to monitor and control the UltraSync-E system. On the **Home** screen, touch the **Home** button to open the **Home** screen.






Figure 16-2 UltraSync-E Home Screen

- 1. Control Modes Buttons Drop-Down
- 2. Control Bar
- 3. Control Bar Status Indicators
- 4. Command Buttons
- 5. UltraSync-E Home Screen Tab
- 6. UltraSync-E Opening Profile Tab
- 7. UltraSync-E Closing Profile Tab
- 8. UltraSync-E Setup Tab

16.3.1 Control Modes Buttons




Use the Control Mode buttons to change the UltraSync mode between disengaged and engaged.

Item	Description
	<p>Engaged Button</p> <p>Activates Engaged mode, where UltraSync-E is controlled by remote inputs.</p>

Item	Description
	<p>Disengaged Button</p> <p>Activates Disengaged mode, where UltraSync-E is controlled by the operator using the Altanium user interface.</p>
	<p>Disabled Button</p> <p>The UltraSync-E servo system is disabled.</p>

16.3.2 Manual Control Buttons

Use the Manual Control buttons to indicate current position of the stems, change the position of the valve gates and to calibrate UltraSync-E.

Item	Description
	<p>Close Valve Gates</p> <p>This button closes the valve gates. When the stems are at close position, the button is highlighted with a yellow outline.</p>
	<p>Open Valve Gates</p> <p>This button opens the valve gates. When the stems are at open position, the button is highlighted with a yellow outline.</p>
	<p>Calibrate</p> <p>This button starts the calibration sequence.</p>

16.3.3 Ready Conditions

Use the ready conditions status indicators to determine what steps are required to put UltraSync-E into Engaged mode.

Item	Description
IMM E-Stop OK	Displays the state of the IMM E-Stop.
IMM Safety Gates Closed	Indicates the IMM safety gates are closed.
Controller E-Stop OK	Displays the state of the UltraSync-E cabinet E-Stop
At Temperature	Displays the At Temperature status. On an UltraSync-E system with integrated hot runner temperature control, this is the system At Temperature status. On a stand alone UltraSync-E system, this is the state of the At Temperature digital input.
Soak Time Remaining	Indicates the time remaining on the soak timer countdown.
Soak Time Done	Soak time countdown is complete.
Servo Drive Enabled	Servo drive is powered and enabled.
Calibration OK	Indicates UltraSync is calibrated.
Valve Stems Ready and Engaged	Indicates UltraSync is in Engaged mode with no faults.

16.3.4 Control Bar Status Indicators

Item	Description
Active command	Displays the command currently being executed by UltraSync.
Plate position	Displays the current position of the valve stems.
Active Force	Displays the force being applied by the UltraSync motor.

16.3.5 Datalog Values

Use the **Datalog Values** section to view the values recorded during the last Engaged cycle.

Item	Description
Open Duration	Elapsed time of the last open motion.
Close Duration	Elapsed time of the last close motion.
Open Position	Final position of the last open motion.
Close Position	Final position of the last close motion.

Item	Description
Peak Open Force	Peak force during the last open motion.
Peak Close Force	Peak force during the last close motion.

16.4 UltraSync-E Setup Screen

Configure the UltraSync-E advanced options on the **UltraSync-E Setup** screen. UltraSync-E can only be configured when the user level is sufficient and UltraSync-E is not engaged.



Figure 16-3 UltraSync-E Setup Screen

16.4.1 Monitoring

Monitoring	Description	Minimum	Maximum	Default
At-Position Window	The position window within which the valve stems are reported "At Open Position" or "At Close Position".	0.01 mm	1.00 mm	0.10 mm

Monitoring	Description	Minimum	Maximum	Default
Position Alarm Window	If the position of the valve stems deviates from the set position by more than this amount, the alarm "Position Deviation Limit Exceeded" is generated. Position is monitored both during motion and when holding at the open or close position.	0.01 mm	1.00 mm	0.05 mm
Force Warning Level	The force level at which a warning is generated. The force warning level is calculated as a percentage of the Opening or Closing force limit.	0%	100%	90%

16.4.2 Other Settings


In the **Other Settings** section, configure the relax settings and use the **At Temperature Soak Time** field to set the soak time. Select **Enter Engaged Mode After Calibration** as required.

Item	Description
Relax Force Limit	The force limit used after the Relax Delay has expired. This force limit should be set lower than the operating force limits. Its purpose is to reduce energy consumption and prevent overheating of the servo system and motor during long idle periods. Minimum 0 kN, Maximum per tool, Default 10 kN.
Relax Delay	The delay time before the Relax Force Limit is applied. The timer begins at the end of the previous motion. Minimum 0 s, Maximum 120 s, Default 60 s.
At Temperature Soak Time	Valve stems cannot be actuated until the soak time countdown has completed. The soak time begins when the At Temperature status is true. The first field displays the soak time remaining. The second field displays the duration of the soak timer.
Enter Engaged Mode After Calibration	If selected, UltraSync will immediately enter Engaged mode after calibration completes.
Curves Include Accelerating Forces	If selected, the force curves will display the total force, including the force component used to accelerate and decelerate the inertial mass of the UltraSync-E mechanism. This option changes the curves only and does not affect the actual force or logged force.

16.4.3 Setup Buttons

Use the **Setup** buttons to open and configure the following UltraSync-E screens:

- **Signals** screen
- **Maintenance** screen
- **Tool** screen
- **Pullback** screen

Item	Description
	Use the Signals button to open the Signals screen. Use this screen to configure the permit calibration and permit disengaging signals from the IMM.
	Use the Maintenance button to open the Maintenance screen.
	Use the Tool button to open the Tool screen.
	Use the Pullback button to open the Pullback screen.

16.4.3.1 Signals

Use the **Signals** screen to configure the engage mode commands, permit calibration and permit disengaging signals from the IMM.



Figure 16-4 Signals Screen

The features in the **Signals** screen are:

- Permit Calibration
- Permit Disengaging
- Engaged Mode Commands

16.4.3.1.1 Permit Calibration

For Permit Calibration:

- This configurable input signal must be TRUE to initiate valve stem calibration.
- The signal type choices are digital input and none.
- If the input is lost during calibration, the calibration sequence is cancelled.

- The benefit of using this input is to prevent calibration when damage may occur, such as when the mold is closed with parts in the cavities.
- The signal is configured with two “anded” conditions.
- The default conditions are:
 - External Permit Calibration digital input, not inverted.
 - IMM in Auto digital input, inverted.

16.4.3.1.2 Permit Disengaging

For Permit Disengaging:

- This configurable input signal must be TRUE to allow the system to go into disengage mode.
- The signal type choices are digital input and none.
- The benefit of using this input is to prevent going to disengage mode when damage may occur, such as when the IMM is still auto cycling and injecting plastic into the mold with the stems closed.
- The signal is configured with two “anded” conditions.
- The default conditions are:
 - None.
 - None.

16.4.3.1.3 Engaged Mode Commands

The controller has three input signal configurations for controlling the opening and closing of the valve stems from the machine. This allows flexibility when connecting the controller to the machine.

Use the **Engaged Mode Commands** on the **Signals** screen to change the control modes.

Input Signal Configuration	Description	Open Valve Stems Command Examples	Close Valve Stems Command Examples
Level	Valve stems open after Open command signal is active and the open delay timer is complete. Valve stems stay open until the Open command signal is inactive and the close delay timer is complete.	<ul style="list-style-type: none"> • Configurable output • Valve gate open 	—

Input Signal Configuration	Description	Open Valve Stems Command Examples	Close Valve Stems Command Examples
One Trigger	Valve stems open after the Open Command signal is active and the stem open delay timer is complete. Valve stems stay open until the stem close delay timer is complete.	<ul style="list-style-type: none"> • Clamp closed • Mold close • Machine nozzle shutoff • Configurable output 	—
Two Triggers	Valve stems open after the Open Command signal is active and the stem open delay timer is complete. Valve stems stay open until the Close Command signal is active and the stem close delay timer is complete.	<ul style="list-style-type: none"> • Clamp closed • Mold close • Machine nozzle shutoff • Configurable output 	<ul style="list-style-type: none"> • Hold • Valve Gate Close

16.4.3.2 Maintenance

Use the **Maintenance** dialog box to configure the maintenance position for Generation 1 tools.

The Maintenance position is user-adjustable, to a maximum of 20 mm. The default setting is 16.4 mm.

The Velocity setpoint to reach maintenance position is user-selectable, to a maximum of 5 mm/s. The default setting is 1 mm/s.

The maintenance position command button and settings will be accessible only when logged in with the appropriate security level.

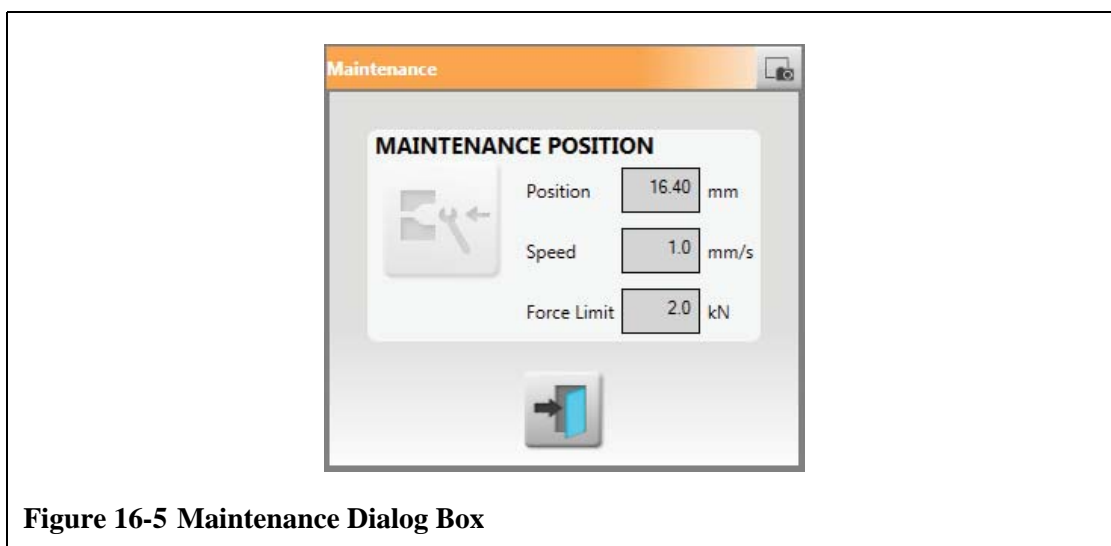


Figure 16-5 Maintenance Dialog Box

16.4.3.3 Tool

Use the **Tool** dialog box to configure the UltraSync controller for the hot runner tool it is actuating. These settings can only be changed in Disabled mode.

Each motor is associated with a parameter set. Operation of UltraSync-E is not allowed until the parameter set of the selected motor has been downloaded and saved to the servo drive, and a power cycle of the Matrix2 controller is performed by restarting the entire Matrix2 controller.

To perform a parameter set download, select the desired motor and touch the **Download** button.

The status of the active parameter set is displayed in a text box as follows:

Status	Description
Download Required	The parameter set in the drive does not match the selected motor and a parameter set download is required.
Downloading	The parameter set of the selected motor is being downloaded to the drive.
System Restart Required	The parameter set in the drive matches the selected motor, but a power cycle is required before it can be used.
Ready	The parameter set matches the selected motor and is ready to run.

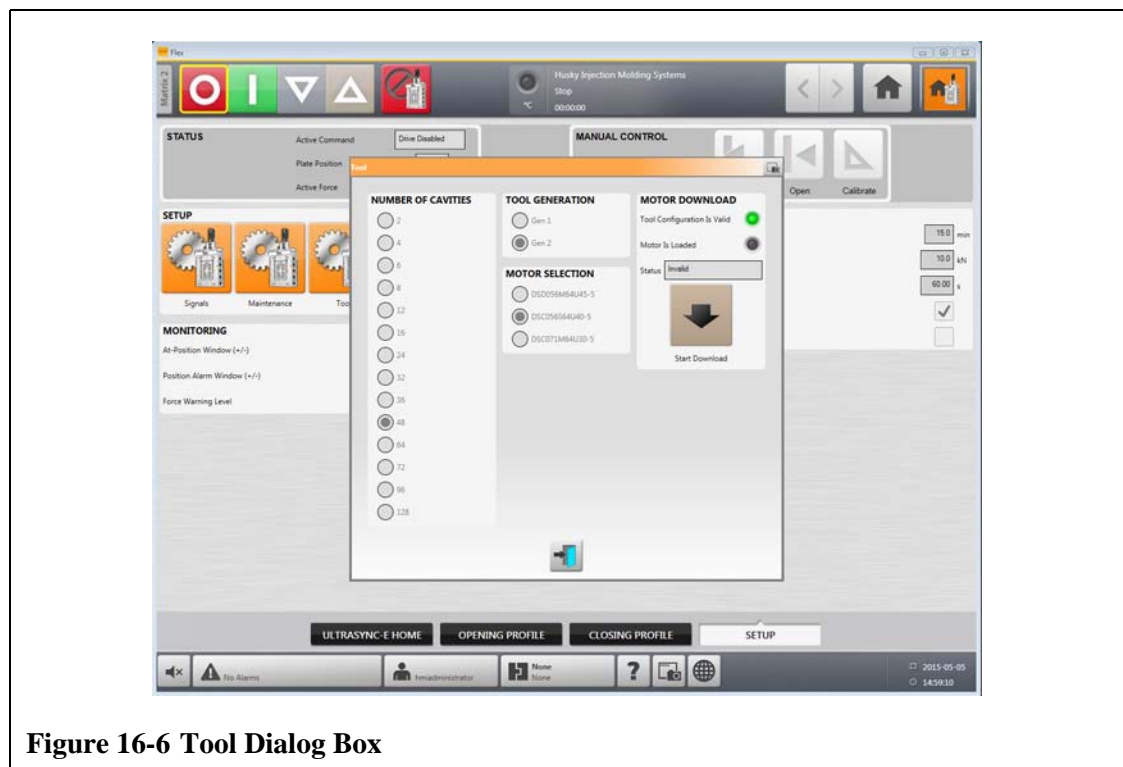


Figure 16-6 Tool Dialog Box

16.4.3.4 Pullback

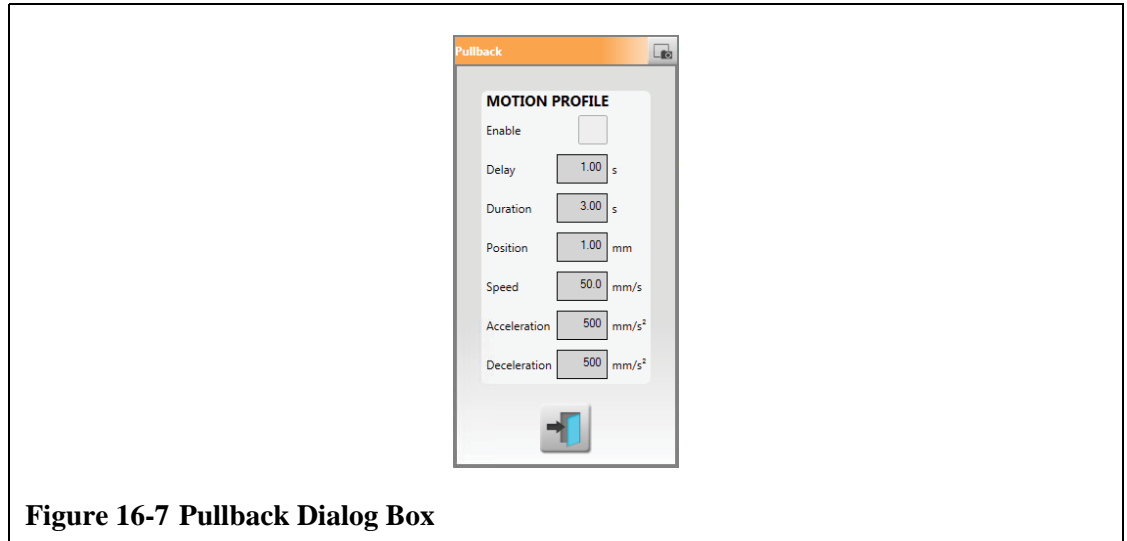


Figure 16-7 Pullback Dialog Box

Pullback is an optional motion that occurs after the Stems Close motion. Touch the **Pullback** button to open the dialog box.

During Pullback Opening, the Opening force limit is used. The motion profile is defined on the Pullback dialog box.

During Pullback Closing, the Closing force limit and motion profile are used.

Item	Description
Enable	Set this to use the pullback motion.
Delay	The delay timer starts when the valve stems reach the closed position. When the delay timer expires, the pullback motion begins.
Duration	The duration timer starts when the pullback motion begins. When the duration timer expires, the valve stems return to the closed position.
Position	The valve stems open to this position during pullback. When this position is reached, the valve stems will continue opening at a lower velocity until the duration timer expires.
Speed	The speed used for the opening portion of the pullback motion.
Acceleration	The acceleration used for the opening portion of the pullback motion.
Deceleration	The deceleration used for the opening portion of the pullback motion.

16.5 UltraSync-E Opening Profile and Closing Profile Screens

Use the **UltraSync-E Opening Profile and Closing Profile** screens to setup and view the motion profiles used to open and close the valve stems.

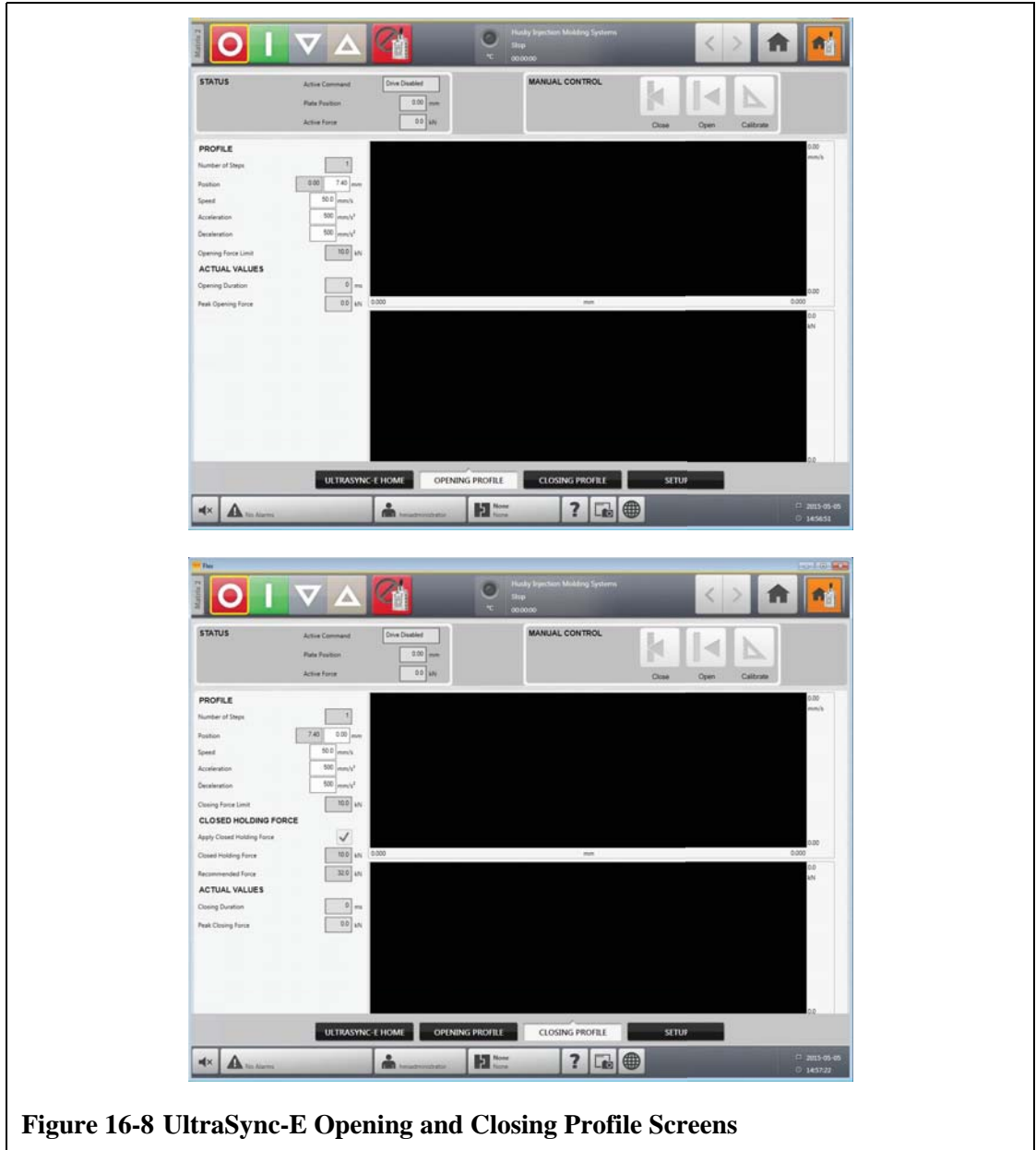


Figure 16-8 UltraSync-E Opening and Closing Profile Screens

Closing and Opening Profiles	Description	Minimum	Maximum	Default
Number of Steps	Defines the number of profile steps used during the motion.	1	Opening: 2 Closing: 3	1
Position	Sets the end position of the motion. If multiple steps are used, sets the switch position between steps.	-	Close: 0.0mm Open (Gen1): 10.0 mm Open (Gen2): 7.4 mm	Maximum
Speed	The speed limit of the step. May not be achieved, depending on travel distance, acceleration and deceleration limits.	0.1 mm/s	50 mm/s	50 mm/s
Acceleration	The acceleration limit of the step. May not be achieved, depending on travel distance of the step.	1 mm/s ²	500 mm/s ²	500 mm/s ²
Deceleration	The deceleration limit of the step. May not be achieved, depending on travel distance of the step.	1 mm/s ²	500 mm/s ²	500 mm/s ²
Force Limit	Maximum force limit applied to all steps in the motion.	0.0 kN	Per tool	Tool maximum

Closed Holding Force	Description	Minimum	Maximum	Default
Apply Closed Holding Force	If selected, a constant force is applied in the close direction once the close position has been reached. If deselected, the motor will only use the minimum force required to maintain the close position.	-	-	Enabled
Closed Holding Force	The constant force applied.	0.0 kN	Per tool	Tool recommended
Recommended Force	The recommended Closed Holding force for the selected tool.	-	-	Per tool

16.5.1 Closing Profile Graph

Use the **Closing** profile graph to monitor the valve stem close motion profile.

Item	Description
Duration	The elapsed time of the last valve stem close motion.
Peak Force	The peak force recorded during the last valve stem close motion.

16.5.2 Opening

Use the **Opening** profile graph to monitor and configure the valve stem open motion profile.

Item	Description
Duration	The elapsed time of the last valve stem open motion.
Peak Force	The peak force recorded during the last valve stem open motion.

16.6 Servo I/O Screen

Use the **Servo I/O** screen to view the status and setup the digital inputs, digital outputs, configurable signals and safety signals that run between the UltraSync-E controller and IMM.

On the **Home** screen, touch the **Servo I/O** button.



Figure 16-9 Servo I/O Screen

1. Servo I/O Icon Button

Item	Description
In Use	Set this to enable the signal. When enabled, the controller will read or set the signal according to the signal description in Section 16.6.1 and Section 16.6.2 .
Active	The current state of the input or output.
Name	Name given to the input or output signal by the user. This name is used throughout the system.
Signal Type	Defines the type of output signal. The choices are Function, Configurable or None.
Signal	Defines what output signals are available for selection based on the signal type selected. The signal selected determines the function of the output.
Function	Name of the function that the input signal performs.
Normally	<p>The inputs and outputs can be set as normally open or normally closed:</p> <ul style="list-style-type: none"> • To set to normally open, select Open (default) <ul style="list-style-type: none"> • When set as normally open: <ul style="list-style-type: none"> • Inputs: Active when input gets 24V • Outputs: Active state will close the relay output • To set to normally closed, select Closed <ul style="list-style-type: none"> • When set as normally closed: <ul style="list-style-type: none"> • Inputs: Active when input gets 0V • Outputs: Active state will open the relay output.
Level	Indicates the electrical state of the input or output at the pin on the connector on the outside of the UltraSync-E controller. This equals the logical state after the input or output has been inverted by a Normally Close signal.
Pins	Text fields that indicate the connector and pins that the input or output signal is physically wired to on the outside of the UltraSync-E controller.

16.6.1 Inputs

Use the **Inputs** screen to configure the digital input signals from the injection molding machine.



Figure 16-10 Inputs Screen

Signal Name	Description	Pin (s)
24 VDC of Controller	Reference HIGH level from the valve gate controller, for dry contacts.	21
IMM in Auto	Active when IMM is cycling in Automatic. Signal is used to prevent valve gate servo controller from being put into manual or disabled mode.	21, 22
External At Temperature	Active when all heat zones are within their defined tolerance range. This is used to trigger a soak timer, which when complete enables the operation of the valve stems.	21, 23
Valve Stems Open Command	Command to open valve gates when controller is in engaged/auto mode.	21, 24
Valve Stems Close Command	Command to close valve gates when controller is in engaged/auto mode.	21, 25
External Permit Calibration	Active when valve gate calibration is permitted.	21, 26

16.6.2 Outputs

Use the **Outputs** screen to configure the digital output signals to the injection molding machine.

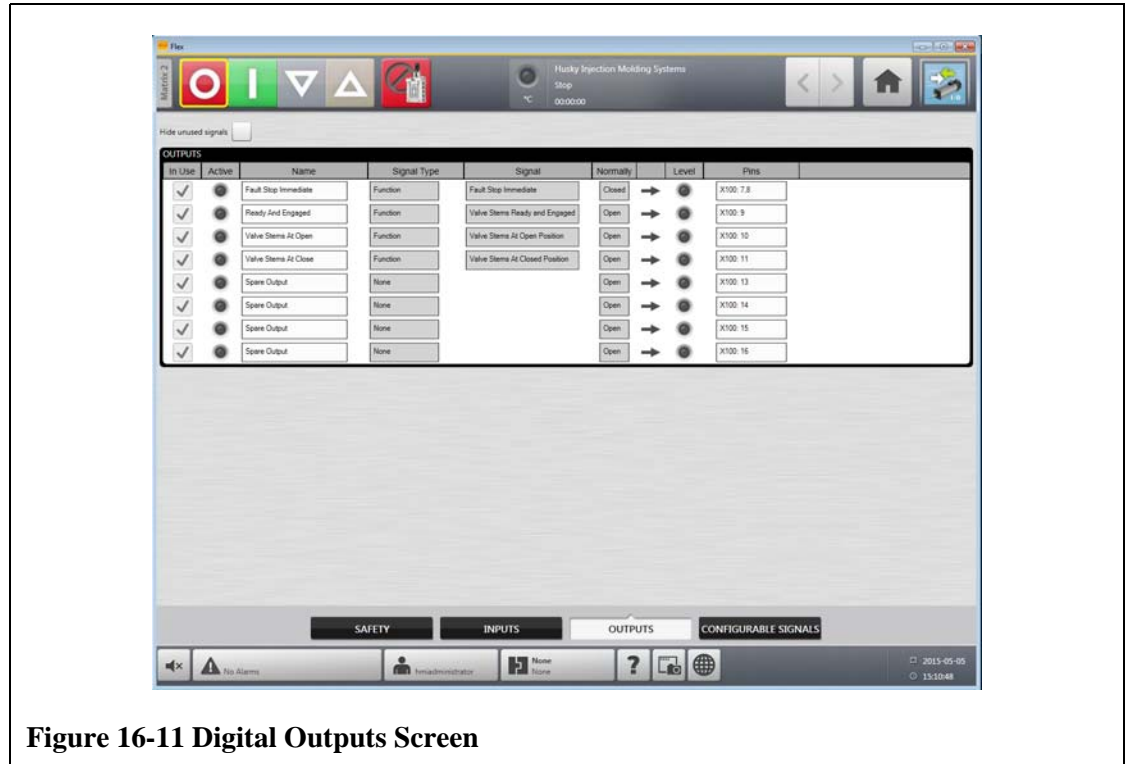


Figure 16-11 Digital Outputs Screen

Signal Name	Description	Pin (s)
IMM Signal Reference	Reference signal from IMM for dry contacts.	5, 6
Fault Stop Immediate	Active when clamp motion is permitted. These contacts are opened when an immediate stop is required for the machine, due to a fault or alarm on the controller.	7, 8
Ready and Engaged	Active when controller is enabled with no faults, in auto/engaged mode.	6, 9
Valve Stems at Open	Active when all of the following conditions are true: -Valve gate controller is ready and engaged -Valve stems are at open position -Valve gate controller is in auto/engaged mode This signal can be used to provide injection permission to the IMM.	6, 10
Valve Stems at Close	Active when valve gate stems are at closed position, and controller is enabled.	6, 11

16.6.3 Configurable Signals

Configurable signals are outputs defined using Boolean logic. Input functions, output functions, and other configurable signals can be assigned as conditions to a given configurable signal that when all are true the signal is active.

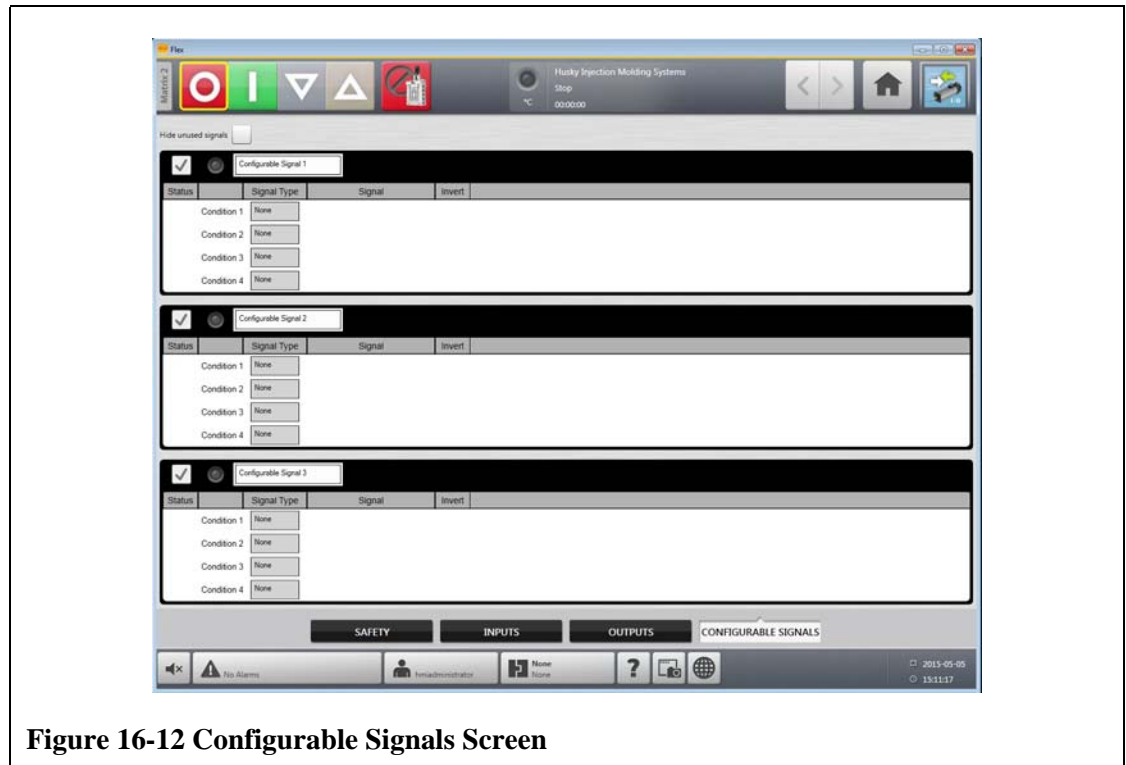


Figure 16-12 Configurable Signals Screen

Item	Description
Status	Indicates that the condition is true when the indicator is illuminated.
Condition	These are “anded” conditions that must all be true for the configurable signal to become active.
Name	Name given to the configurable signal by the user. This name is used throughout the system.
Signal Type	Defines the type of signal. The choices are Function, Digital Input, Configurable Signal or None.
Signal	Defines what signals are available for selection based on the signal type selected. The signal selected determines the function of the condition.
Invert	If selected, the inverse of the signals normal operation will be true.

16.6.4 Safety Signals

Safety signals are non-configurable fixed signals hardwired to the safety relay inside the UltraSync-E controller. These signals are intended to connect to the IMM safety gate and E-stop circuits to ensure user safety. The system will not run unless these signals are properly connected.



Figure 16-13 Safety Signals Screen

Signal Name	Description	Pin (s)
IMM E-Stop OK	The switch contact must be OPEN when the IMM emergency stop device is being actuated. Opening the switch contact causes emergency stop of valve gate stem movement.	19, 20
IMM Safety Gates Closed	The switch contact is CLOSED when safety devices on the IMM (e.g. gates) allow injection of plastic. The signal must be the result of limit switch contact series of mold area safety devices according to EN201.	17, 18
Controller E-Stop OK	E-Stop button on UltraSync-E controller. OPEN when the UltraSync-E controller emergency stop device is being actuated. Opening the switch contact must cause emergency stop of the IMM. (2 Channels)	1, 2, 3, 4

16.7 Calibrating the UltraSync-E

Each time Altanium is powered on, it is necessary to calibrate UltraSync-E in order to move the valve stems.

To calibrate the UltraSync-E, do the following:

1. On the **UltraSync-E Home** screen, make sure the controller is in **Disengaged** mode.
2. Make sure the soak time is complete.
3. Make sure the **Servo Drive Enabled** status is true.
4. On the **UltraSync-E Setup** screen, make sure the **External Permit Calibration** signal is present, if this signal is configured as "In Use".
5. Touch the **Calibrate** button.

16.8 Troubleshooting

The following describes troubleshooting methods and potential solutions for problems that may be encountered during operation and/or setup of an UltraSync system.

The problems discussed are not a definitive list. If a problem is not listed in this chapter, contact Husky Technical Support or the nearest Husky Regional Service and Sales office for assistance.

16.8.1 Drive Fault (Error Code #)

This fault from the servo drive system can occur for a variety of reasons. To diagnose the problem, complete the following steps in order:

1. Make sure the servo cables are connected and the servo motor power switch is in the ON position.
2. Attempt to reset the fault by doing the following:
 - a. On the **Status/Alarm** screen, touch the **Clear Alarm** button to silence the alarm.
 - b. Touch the **Reset** button once, then wait two to three seconds. If the alarm does not clear, try to reset again.
3. Observe the status of the electrical components and make sure the following is true:
 - Main fuses F1 have not blown (visual indicating lights indicating blown fuse) or main breaker Q1M is not tripped (voltage system dependant)
 - Circuit breaker Q1M is on (switch up)
 - DC power supply G1 is active (green LED on)
 - 5 green LEDs on safety relay K1 are all on if the machine safety gates are closed (only the first "Power" LED will be on if the safety gates are open)

Fault Number	Fault	Solution
1	Watchdog error	Internal error. Cycle power to the drive.
2	Incorrect interrupt has occurred	Internal error. Cycle power to the drive.
3	NMI interrupt/bus error	Internal error. Cycle power to the drive.
16	Errors while booting	Internal error. Cycle power to the drive.
17	Software error	Internal error. Cycle power to the drive.
18	Time slot configuration	Internal error. Cycle power to the drive.
19	Time slot – time error	Internal error. Cycle power to the drive.
20	No free memory	Internal error. Cycle power to the drive.
21	Invalid error code	Internal error. Cycle power to the drive.
22	Invalid warning code	Internal error. Cycle power to the drive.
23	False FPGA version	Contact Husky Service.
48	Error in module A	Cycle power to the drive, check wiring to module, replace module.
50	Error in module C	Cycle power to the drive, check wiring to module, replace module.
51	Error in module D	Cycle power to the drive, check wiring to module, replace module.
53	Error in module G	Cycle power to the drive, check wiring to module, replace module.
54	Error in module H	Check that module switch is in the down position, cycle power to the drive, contact Husky Service.
64	Mains failure	Check fuses/circuit breaker, restore main power to the drive.
65	Phase failure	Check fuses/circuit breaker, restore main power to the drive.
66	Mains under voltage	Check power wiring. Measure voltage at the drive, Phase to Phase must be greater than 208 V, correct low voltage condition.
67	Mains over voltage	Check power wiring. Measure voltage at the drive, Phase to Phase must be less than 415 V, correct low voltage condition.
68	Under voltage 24 V	Check DC power supply G1 wiring. Measure DC voltage, must be between 20.4 V to 28.8 V, and adjust if necessary.

Fault Number	Fault	Solution
81	Heat sink over temperature	Check for obstruction of the drive heat sink fins (located out the back of the controller). There is a fan on the heat sink (bottom) that should come on before this fault occurs. If this fan turns on, let the system cool down and try again.
82	U DC link over voltage	Plastic pressure has pushed on the stems before they reached open position. Make sure injection is not occurring until stems are in the open position (do not inject while stems are opening).
83	Over current	Check cabling to motor. Cycle power to the drive. Could occur if a prolonged obstruction goes undetected.
84	Earth leakage	Check cabling between drive and motor, check motor for earth leakage, replace motor.
85	Device internal over temperature	Make sure there are no air obstructions above or below the drive. Check heat sink fins (located out the back of the controller) for obstruction.
86	Cable break temperature sensor	Check to make sure black encoder cable is not damaged and is connected to the motor. Replace encoder cable if necessary.
87	Safety relay off or defective	Could be displayed when safety gates are opened. Check control wiring to drive (blue wires), check to make sure connector X102 on underside of drive is plugged in (safety relay connector).
88	Bridge short circuit	Cycle power to the drive. Replace drive.
89	Power unit not ready to operate	Check control wiring to drive (blue wires), cycle power to the drive.
90	Phase failure	Same as Fault 65
91	Mains failure	Same as Fault 64
92	Mains under voltage	Same as Fault 66
93	Mains over voltage	Same as Fault 67
94	U DC link under voltage	Check power connections. Replace drive.
96	Short circuit motor temperature sensor $T_m \leq -30^\circ\text{C}$	Check to make sure black encoder cable is not damaged and is connected to the motor. Replace encoder module A in the drive. Replace the motor.
97	Temperature sensor motor not connected $T_m \geq +300^\circ\text{C}$ (572 °F)	Check to make sure black encoder cable is connected between motor and drive and not damaged. Replace encoder module A in the drive. Replace the motor.

Fault Number	Fault	Solution
98	Motor over temperature	Let motor cool down. Increase cycle time (cycle time should not be less than 3sec).
99	Error $I^2t > 100\%$	Let motor cool down. Increase cycle time (cycle time should not be less than 3sec).
115	Cable break encoder 1	Check to make sure black encoder cable is connected between motor and drive and not damaged.
123	Field angle error	Check black encoder cable for shield damage.
146	Encoder module 1 is missing	Module A in the drive is missing or faulty. Replace if necessary.
192	Position deviation dynamic	Motor position has exceeded its control position. Make sure injection is not occurring until stems are in the open position (do not inject while stems are opening). Try decreasing hold pressure.
193	Position deviation static	Motor position has exceeded its control position. Make sure injection is not occurring until stems are in the open position (do not inject while stems are opening). Try decreasing hold pressure.
200	Homing necessary and not yet executed	Perform calibration. Cycle power to drive.
208	Drive is blocked	Motor is blocked/stalled that was not detected by obstruction detection software or torque limit exceeded for a prolonged period of time. Perform calibration. Check for obstruction in valve stem actuation system. Cycle power to drive.

16.8.2 Alarm: Position Deviation Limit Exceeded

This fault occurs when the valve stems position deviates from set position, by more than the value of the Position Alarm Window setting. The alarms can be cleared but may reappear immediately or during the next valve stem movement if the problem still remains.

Possible causes for this fault include:

- Opening or Closing Force Limit are set too low
- Position Monitoring Window is set too small
- Resin in the system is too cold or the temperature zone setpoints are set too low
- A physical obstruction of the valve stem plate
- Damaged component

- Maintenance pin(s) not removed before operation (Gen1 tools only)
- Force limit set too low to complete the motion.

To troubleshoot this fault:

- Review the concurrent alarms on the alarm page or in the Event log to determine when the fault occurred. Was it during opening, closing, or while holding an end position?
- Increase the closing and opening force limits to maximum
- Reduce the speed, acceleration and deceleration settings
- Increase the Position Alarm Window setting.