

Altanium Neo5

User Guide



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Original Instructions

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	Direct and Non-EC	+ (352) 52115-4300
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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.

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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 that the screw on the back of the top portion of the controller, marked with the general warning symbol, is installed when the 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.
- When the controller is connected to an injection molding machine, the safety of the system is the responsibility of the integrator.
- 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. Insufficient cooling airflow through the fan inlets and outlets could damage the system.

CAUTION!



When switching OFF the system wait 30 seconds before switching the main disconnect back ON. If you do not wait the required 30 seconds, communication issues may occur.

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/Yellow	Green
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 Specifications

The following are the environmental operating specifications for the Altanium Neo5 operator interface:

CAUTION!

Mechanical hazard – risk of equipment damage. Falling or spraying liquid, including oil or water, could damage the equipment. Do not spray wash.

- For Indoor use only.
- Operating Temperature: 5 to 40 °C (41 to 104 °F)
- Operating Humidity: 0% to 90% RH, Non-Condensing
- Altitude: up to 2000 m (6562 ft)
- Pollution Degree: PD2
- Overvoltage Category: OVII

1.6 Equipment Ratings



Ratings for the entire Neo5 can be found on the nameplate attached to the back of the controller.

The following are the equipment ratings for the Neo5 operator interface only:

- Supply Voltage: 100 to 240 VAC +/- 10%, single phase
- Frequency: 47 to 63 Hz
- Power Rating: 130 W

1.7 Weights and Dimensions

The technical specifications (weights and dimensions) for the most common Altanium Neo5 configurations are shown below.

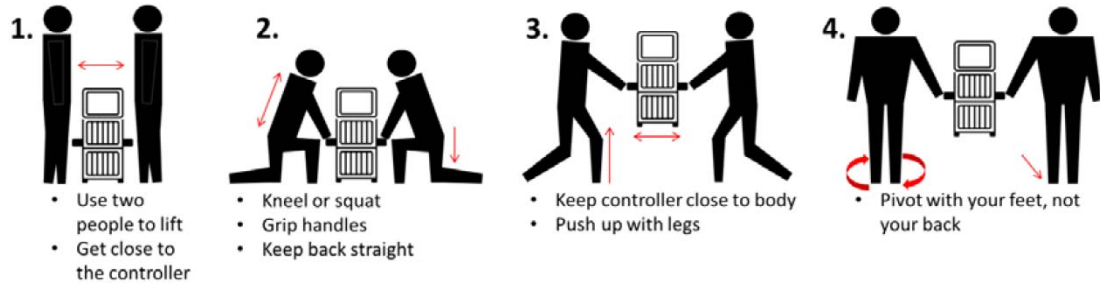
	Dimensions	Weight
Neo5 Operator Interface 	<ul style="list-style-type: none"> • Width: 278 mm (11 in) • Length: 363 mm (14 in) • Height: 324 mm (13 in) 	<ul style="list-style-type: none"> • Controller: 7.25 kg (16 lb) • With shipping container: 3 kg (27 lb)
Neo5 C6-1 	<ul style="list-style-type: none"> • Width: 289 mm (11.4 in) • Length: 331 mm (13 in) • Height: 550 mm (21.7 in) 	<ul style="list-style-type: none"> • Controller: 25.40 kg (56 lb) • With shipping container: 40.82 kg (90 lb)
Neo5 C6-2 	<ul style="list-style-type: none"> • Width: 289 mm (11.4 in) • Length: 331 mm (13 in) • Height: 777 mm (30.6 in) 	<ul style="list-style-type: none"> • Controller: 35.38 kg (78 lb) • With shipping container: 59.87 kg (132 lb)
Neo5 Single Stack 	<ul style="list-style-type: none"> • Width: 450 mm (17.7 in) • Length: 560 mm (22 in) • Height: 1512 mm (59.5 in) 	<ul style="list-style-type: none"> • Controller: 65.32 kg (144 lb) • With shipping container: 133.36 kg (294 lb)

1.8 Controller Lifting Instructions

The recommended lifting method varies depending on whether the Altanium Neo5 is a C6-1, C6-2, or single stack (freestanding) controller.

1.8.1 C6-1 and C6-2 Lifting Instructions

Use the steps that follow to correctly lift a Neo5 C6-1 or C6-2.



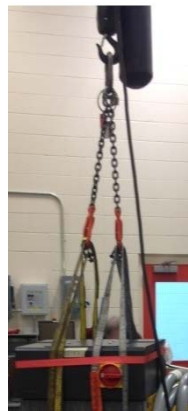
1.8.2 Single Stack Lifting Instructions:

Do the steps that follow to lift the single stack Neo5.

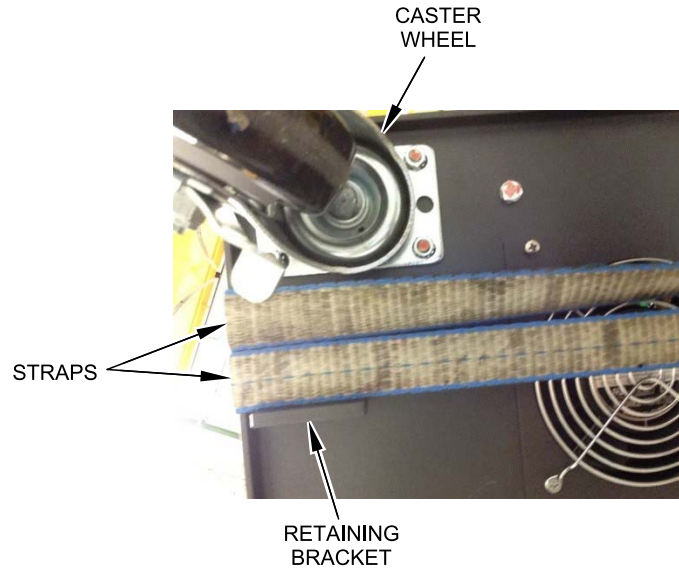
Lifting devices (crane or forklift) and straps vary in lifting ability and lengths. See the table that follows for the correct lifting ability and lengths.

Altanium Controller	Webbed Straps Rated 2903 kg (6400 lb)	Ratchet Strap	Lifting Device (Lifting Ability)
Neo5 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)

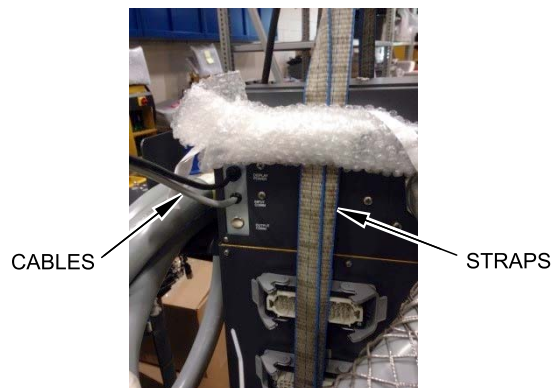
1. Place each of the webbed straps under the controller. See the table above for the correct strap lengths.
 - a. For a single stack Neo5, the webbed straps go under the equipment from left to right.
2. Bring the straps up and above the Neo5 and attach them to the lifting device.



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

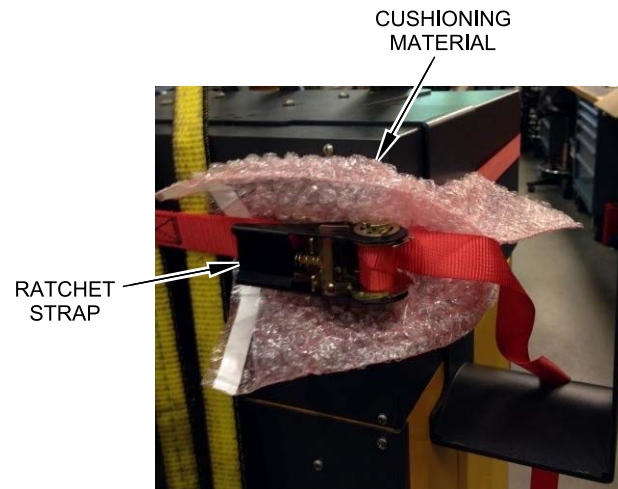


- b. Make sure the straps are not pinching or crushing any cables attached to the Neo5.



3. Use the lifting device to apply enough upward force on the straps to remove the slack, but do not lift the Neo5 at this time.
4. Place the ratchet strap around the top of the Neo5, 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 Neo5 is lifted.
5. Place cloth or other cushioning material between the ratchet strap and the Neo5 to keep the finish free from rubs and scratches.



- 6.** Tighten the ratchet strap.
- 7.** Use the lifting device to slowly lift the Neo5 off the ground a few inches.
- 8.** Check the webbed and ratchet straps to make sure that the Neo5 will not tip.
- 9.** Move the Neo5 to the new location.
- 10.** At the new location, slowly lower the Neo5 to the ground.
- 11.** Remove the ratchet straps, cushioning material and webbed straps.

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 Neo5.

The Neo5 was 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 consistent and repeatable with respect to the process setpoint. The closer to the setpoint the process temperature is maintained, 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

Controllers use 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, but not actually part of the single heater assembly. The external thermocouple may 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. Neo5 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, because the size of the tip heater is too small for 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 Neo5 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 Neo5 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 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 Neo5 will provide wattage, resistance or amperage information for heaters, if equipped with X ICC² or H 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. Connect the (red) positive lead to the first wire from the heating element and connect the (black) negative lead to 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:

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

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

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

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

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

The Neo5 uses 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.
- Make sure that the cooling fan is free from obstruction
- 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



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. The resistance must be less than 1 Ω .
3. Make sure that the main input power disconnect is in the OFF position.
4. Connect the controller to the power source.

3.3 Startup Procedure Checklist



WARNING!

Trip hazard – risk of death or serious injury. Make sure that all the cables between the controller and all the external devices and/or equipment are marked clearly. Or route the cables so that no one will trip over the cables.

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 that the mold setup is the correct. Check 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 Neo2 View or the Text View screens.	

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 gives a brief overview of the functionality of the Neo5 operator interface.

4.1 General

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

The Neo5 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.



WARNING!

Pinch Point Hazard – keep hands and fingers clear of the Neo5 touch monitor hinge mechanism.


CAUTION!

Mechanical hazard – risk of equipment damage. Only use your finger to operate the touch screen. Do not use a screwdriver, pen, or any other tool to touch the screen because they may damage the touch screen.

Use the touch screen to move from screen to screen, enter data, and operate the hot runner system.

4.2 Operator Interface — Screens and Buttons

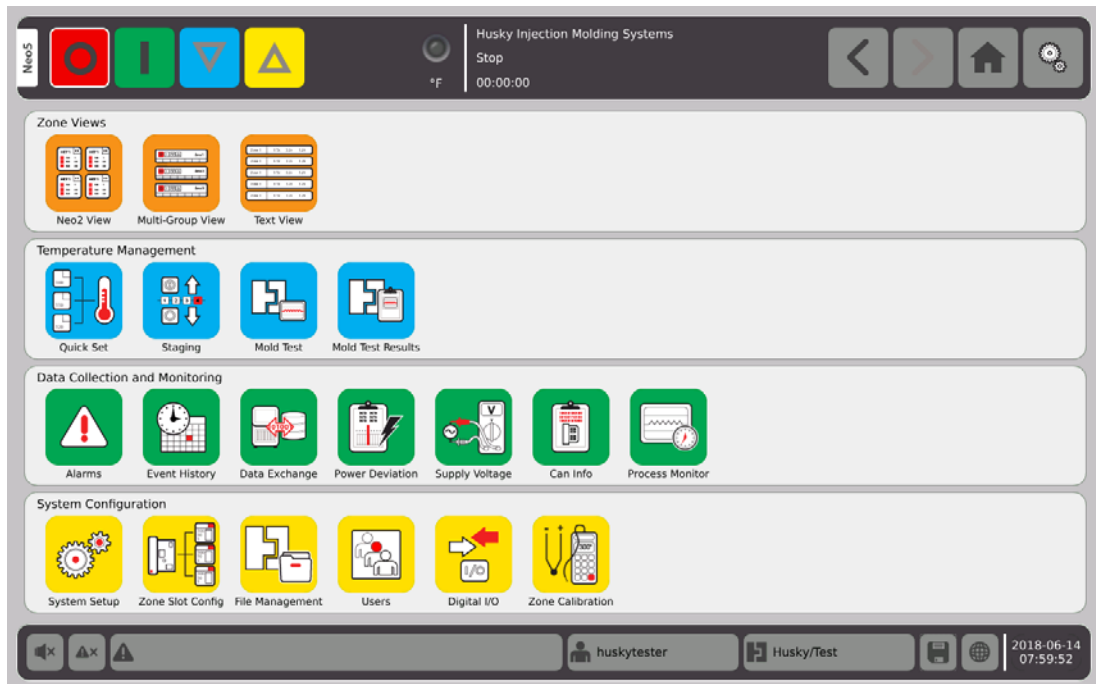
4.2.1 Dialog Box — Accept/Cancel Buttons

At the bottom of each screen, where you have entered new data, touch  to save new or changed data.

If you want to close the dialog box (no changes) touch .

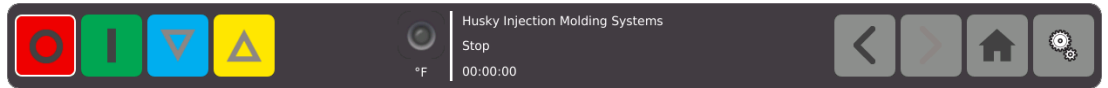
4.2.2 Home Screen

The Home screen is the screen you use to navigate to all the other screens in the system. The system screen selections on the Home screen are organized into four groups (rows): Zone Views, Temperature Management, Data Collection and Monitoring, and System Configuration.



4.2.3 Header and Footer

The home screen has a header







and a footer.

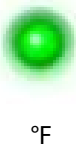





The same header and footer appears on each screen.





4.2.3.1 Header — Controller Function Buttons

Button	Description
	<p>Stop - Removes the power from all the zones, regardless of system condition.</p>
	<p>Start - Applies power to the zones that have a setpoint.</p>
	<p>Standby button - Places the system in standby. If a timer is active, the time remaining is displayed in the system header. NOTE: You cannot put the system in standby during the ART process.</p>
	<p>Boost button - Places the system in boost mode. If a timer is active, the time remaining is displayed in the system header. NOTE: You cannot put the system in boost mode during the ART process.</p>



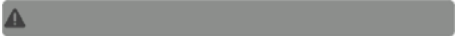
4.2.3.2 Header — System Status Indicators

Indicator	Description
	<p>At Temperature:</p> <ul style="list-style-type: none"> Flashes when the zones are heating up to the setpoint temperature. Solid when all automatic zones are 'At temperature'. Off when the controller is stopped. Shows that the temperature values are given as °C or °F.
	<p>Company Name is displayed.</p>
	<p>System Mode - For a description of each system mode, refer to the Table at the end of this Chapter.</p>
	<p>System Timer - If applicable, displays the time remaining on the timer.</p>






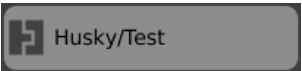
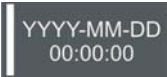
4.2.3.3 Header — Navigation Buttons

Button	Description
	<p>Back - Displays the previous screen (maximum of 10 screens back).</p>
	<p>Forward - Moves to the last screen that was displayed (maximum of 10 screens forward).</p>
	<p>Home - Goes to the Home screen.</p>
	<p>System Setup button - Goes to the System Setup screen.</p>

4.2.3.4 Footer — Alarm Buttons

	<p>Silence Horn - Stops the audible alarm.</p>
	<p>Alarm Reset - Changes an alarm from active to inactive.</p>
	<p>Alarm Status - The time and a description of the highest priority active alarm is displayed. If an alarm is active, the Triangle Icon will turn red.</p>

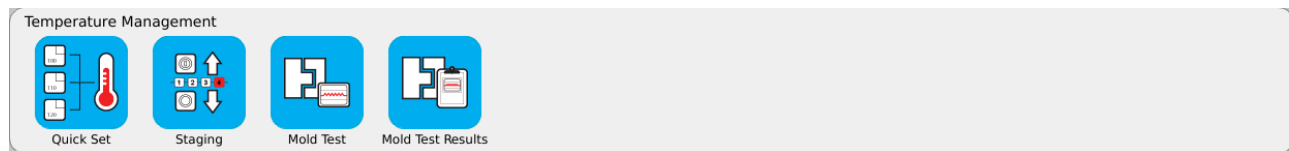
4.2.3.5 Footer — System and User Management Buttons

	<p>Log off/Log on - Shows the name of the current user who is logged in. Touch to Login or Logout.</p>
	<p>Language Selection - Shows the language screen.</p>  <p>Choose a language, then touch, .</p>
	<p>Save - Saves a screen shot, report or process data on the internal hard drive, or other user defined location.</p>
	<p>Mold Setup Info button - Goes to the file management screen to display the currently loaded mold and associated mold folder. The first word is the name of the mold folder. The second word is the name of the mold setup file.</p>
	<p>Shows the date and time. Touch this field to show the Set Date and Time dialog boxes.</p>

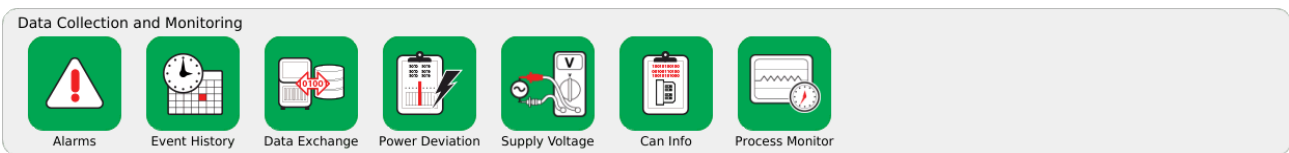
4.2.4 System Screen Selections — Zone Views



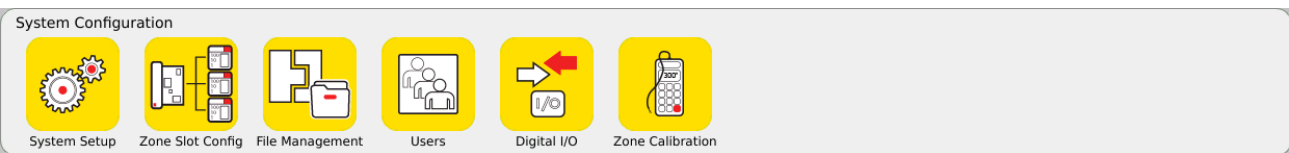
4.2.5 System Screen Selections — Temperature Management



4.2.6 System Screen Selections — Data Collection and Monitoring



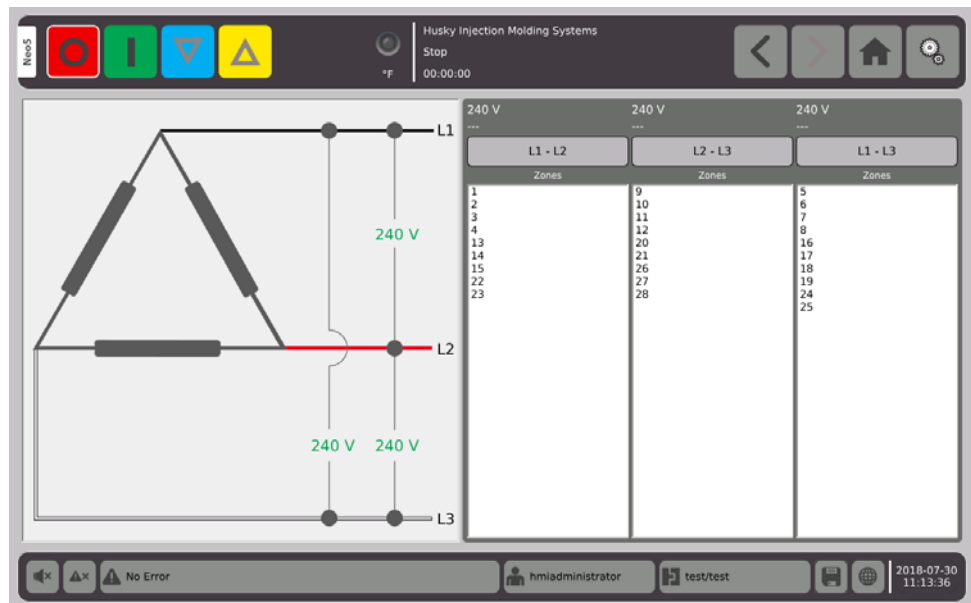
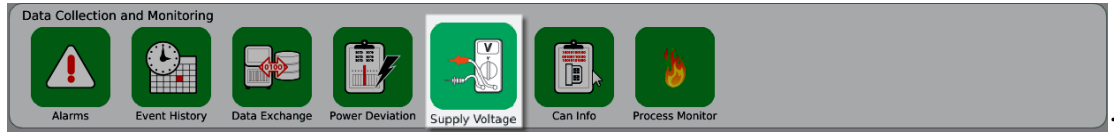
4.2.7 System Screen Selections — System Configuration



4.3 Supply Voltage Screen

The **Supply Voltage** screen displays a graphical view of how the input supply voltage is wired. A table shows how the zones are connected to the input power.

On the **Home** screen, select





Item	Description
Schematic	The image is a visual representation of the supply configuration
Zone #	Shows what phase pair the zone is connected to
Phase Pair	Phase pair label associated with the supply configuration schematic
Volts	The voltage value for all the zones associated with a phase
Amps	The 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.

The supply configuration is selected on the **System Setup** screen. The supply voltage can be wired in four different configurations.

System Modes Table

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 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 Boost button  and the system is heating to the boost 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	Calibrates 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.
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 manual standby button was activated 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 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.

System Modes Table (Continued)



System Mode	Description
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. These bake out conditions would be less severe than a earth leakage.
Earth Leakage Check	The system is searching for any earth leakage conditions.
Circuit Test	The system is verifying that there are no heater circuit faults (open circuit, short circuit, leakage or wrong heater) on any zones.

Chapter 5 Security and Administration


This chapter describes the user management functions.

5.1 Login/Logout

5.1.1 Login

1. In the footer, touch the **Log off/Log on** button .
2. If logging in:
 - a. Use the keyboard to type in your user name, then .



- b. Type in your password, then .



If logging out:

3. On the logout dialog box , touch .

5.2 User Management and Security Screens

All users are assigned a role. There are three different roles. Each role is customized by the administrator. The administrator decides what features each user can access.



The three roles are:

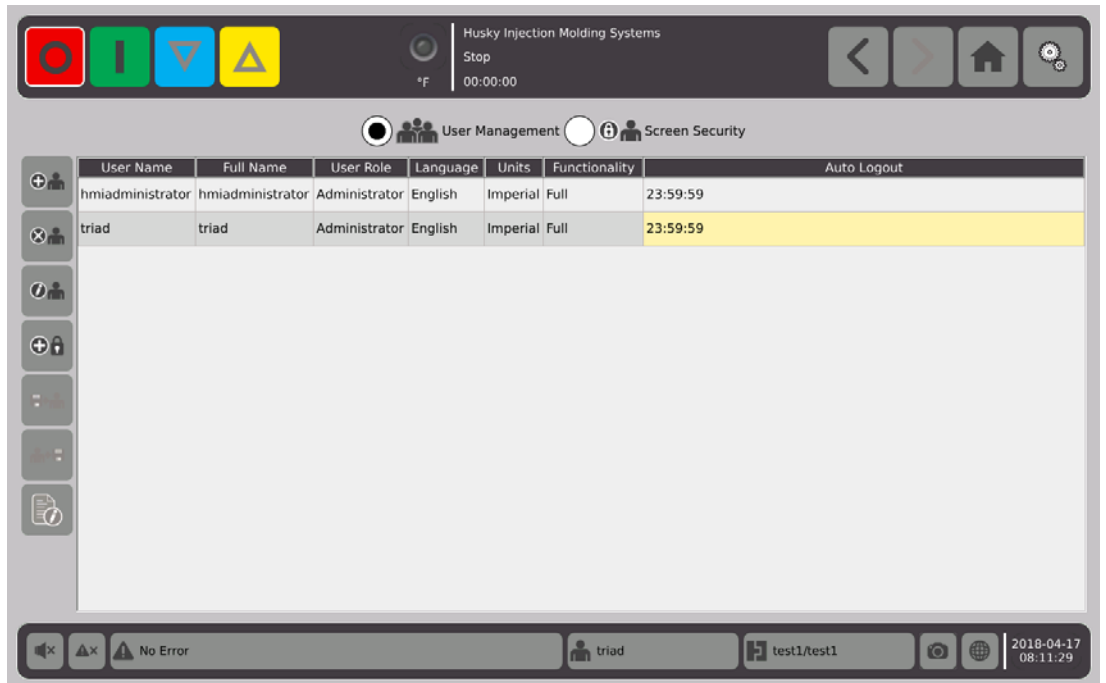
- Operator
- Supervisor
- Administrator.

From the **Users** screen, the administrator can add or delete a user or change a user's password. The administrator also controls security settings. The security settings give or deny access to the different features of the Neo5.


5.2.1 Manage Users

To create/delete a user or change a user’s password, do the steps that follow:

1. On the **Home** screen, in the systems configuration row, select .
2. On the top of the **User** screen, if necessary, select  User Management.



5.2.1.1 Add a User

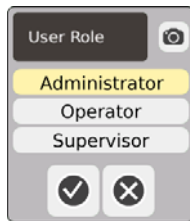
1. In the left side column select .
2. Use the keyboard or drop down menus to enter in the data that follows:
 - User Name:



- Full Name:



- User Role:



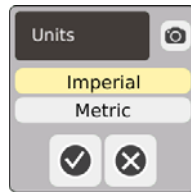
- Password:



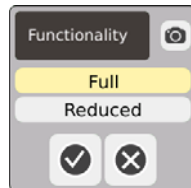
- Language:



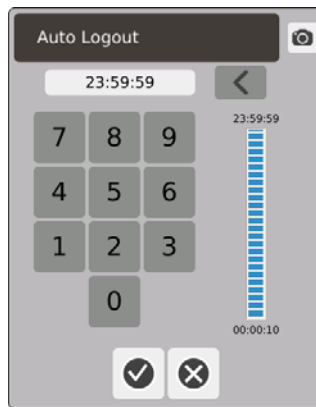
- Units:



- Functionality:



- Auto Logout Time:

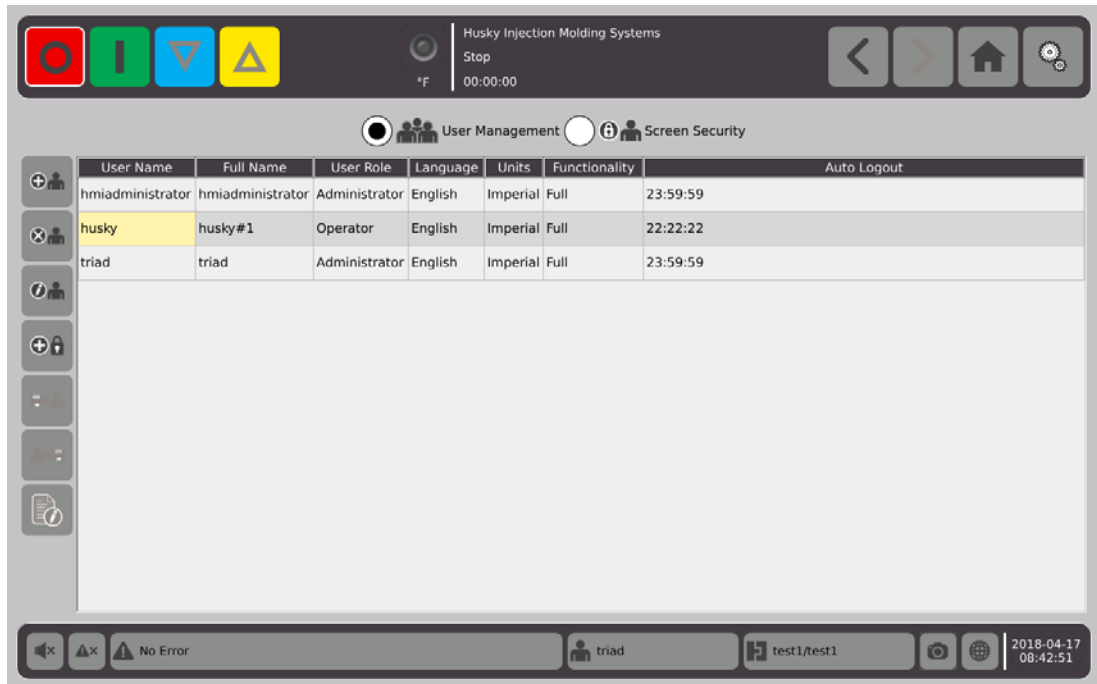


When there is no activity for the time entered in the **Auto Logout Time** dialog box, the Neo5 will automatically logout the user. The default time is 5 minutes. The minimum is 10 seconds.

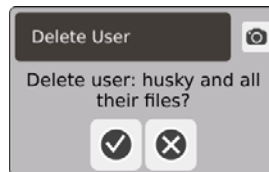
3. The **Add a User** screen will automatically move to next data screen after you select . When you enter the auto logout time and touch , the user will be added to the User Management screen.

5.2.1.2 Delete a User

1. Select the user in the **User Name** column.




1. Select  in the left hand column.
2. Select  on the **Delete User** screen.




3. The user is deleted.

5.2.1.3 Change a User Password

1. Select the user in the **User Name** column.
2. Select .
3. In the **Password** screen, use the keyboard to enter the new password.





4. After you select , the confirm password screen will show.




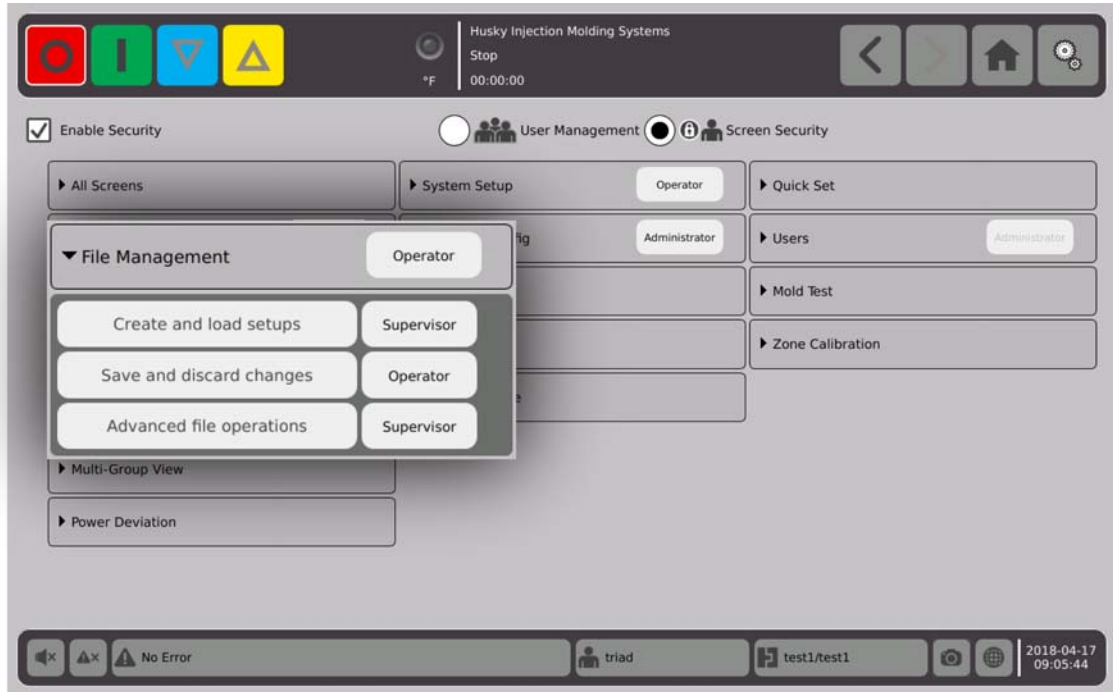
5. Enter the password again, then . The password is changed.

5.2.2 Set the Security Settings

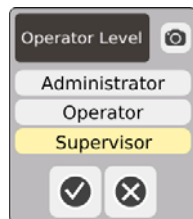
1. On the **Home** screen, in the systems configuration row, select  .
2. On top of the **User** screen, if necessary, select  Screen Security .
3. On the **Screen Security** screen, assign a role (operator, supervisor or administrator) to each function.




4. On the File Management tab, touch the  to open the drop down menu.



5. Touch the box to the right of the function/screen name to show the dialog box.



6. Select a user role, then .
7. Assign a user role for each function/screen in the remaining tabs on the **Screen Security** screen.

When **Operator** is selected, the supervisor and administrator roles also have access to the function/screen.

When **Supervisor** is selected, the operator cannot access that function/screen.

When **Administrator** is selected, the supervisor and operator cannot access that function/screen.

5.2.3 Enable Security

You must put a check mark in the **Enable Security** box to apply all the security settings. The default is Enable Security. You can touch the box and remove the check mark. This will disable all the security settings and all users will have access to all functions/screens.

Chapter 6 Mold Setups

The mold setup has the process parameters necessary to operate the hot runner system.


6.1 Mold Setup Screen

The **Mold Setup** screen stores and manages files such as mold setups, images, documents and reports. Files 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 Neo5 hard drive and the right side displays all available directories and files from an external source, such as a USB or a network file share.

1. To access the mold setup screen, on the home screen in the System Configuration row select **File Management**.



Or

2. Touch  in the footer of any screen.



will show, in the left pane, mold setup files stored in the mold folders, if molds is selected.



will show, in the left pane, image files stored in the mold folders, if molds is selected.



will show all Comma Separated Value (CSV) files stored in the mold folders in the left pane, if molds is selected.




will show all available file types stored in the molds folders in the left pane, if molds is selected.

If molds is selected, all the mold folders will be shown in the left hand pane.










If system is selected, the Reports folder, containing all system files will be shown.

3. Touch, , Details to expand display files in a tabular layout with file name, file size, and the date and time last modified.
4. Select USB to display the contents of a connected USB device.




5. Select Network to display the contents of a network folder if the system is configured for a network.

Button	Description
	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.
	Touch the Save As button to save the currently loaded mold setup file with a new name. This action only applies to the loaded mold setup file regardless of what is selected on the screen.
	Touch the New Mold Setup or Mold Folder button to create a new mold setup file or mold folder. This button is not enabled if system is selected.
	Touch the Copy button to copy mold setups, images, or CSV files from one folder or device to another.
	Touch the Delete button to delete a mold folder, mold setup, image or CSV file. 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, or CSV file. This button is not enabled unless a file or folder is selected.
	Touch the Preview button to display mold setup files, images, and CSV files.

6.1.1 Saving Changes to a Mold Setup File

Once a Mold Setup file has been loaded, you can permanently save changes made to it.

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 . Changes are saved.


6.1.2 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 steps that follow:

1. On the **Mold Setup** screen, touch the **Save As** button. This will display the keyboard.



2. Enter the new mold name, then .

6.1.3 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.

6.1.4 Deleting Files


When a file or folder is no longer required on the internal hard drive, you can delete it.

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 . To cancel the deletion, touch .

6.1.5 Copying Files

You can copy mold setups, images, or CSV files from one folder or device to another.

To copy and paste a file, do the following:

1. On the **Mold Setup** screen, touch the file to be copied.
2. Touch .
3. Navigate to the destination folder or pane, touch anywhere in the pane or folder.

6.1.6 Transferring Data

6.1.6.1 Transferring Data to the Network

Use the **Mold Setup** screen to transfer data to the network. When connected to the network, the network folder structure appears by default in the right pane of the **Mold Setup** screen.

6.1.6.2 Transferring Data Using a USB Storage Device

You can transfer data using USB disks or USB CD-ROM drives. Select the USB button on the **Mold Setup** screen. When a USB device is plugged into the USB port, the folder structure of the USB device appears in the right pane of the **Mold Setup** screen. The folder structure disappears when the device is unplugged. Follow the copy and paste steps to move files from the USB device to the local hard drive, or from the local hard drive to the USB device.

Chapter 7 Making Adjustments

You can make adjustments to the process settings for a mold setup before starting the mold, or while the mold is running. This chapter explains how to use, monitor and modify the system.

Neo5 allows zone data to be displayed in different graphical and textual formats. These include tabular views, images, 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**
- **Text View**
- **Quick Set**
- **Neo2 View**
- **Staging**
- **Mold Test**
- **Mold Test Results**
- **Zone Calibration**
- **Zone Slot Configuration**
- **CAN Info**


1. You can select zones four ways:

a. Touch a zone. The zone is selected.

b. Touch . This selects all the available zones.

c. Use the Block function. Touch and hold a zone element for more than a second. This will highlight the zone green. Then touch another zone. All the zones between the start and end zone are highlighted (selected).

d. Touch a zone and drag your finger. All the zones that your finger passes over are selected. This is a zone selection option on all the screens except the Neo2 view.

2. Touch  to reset all the selected zones.

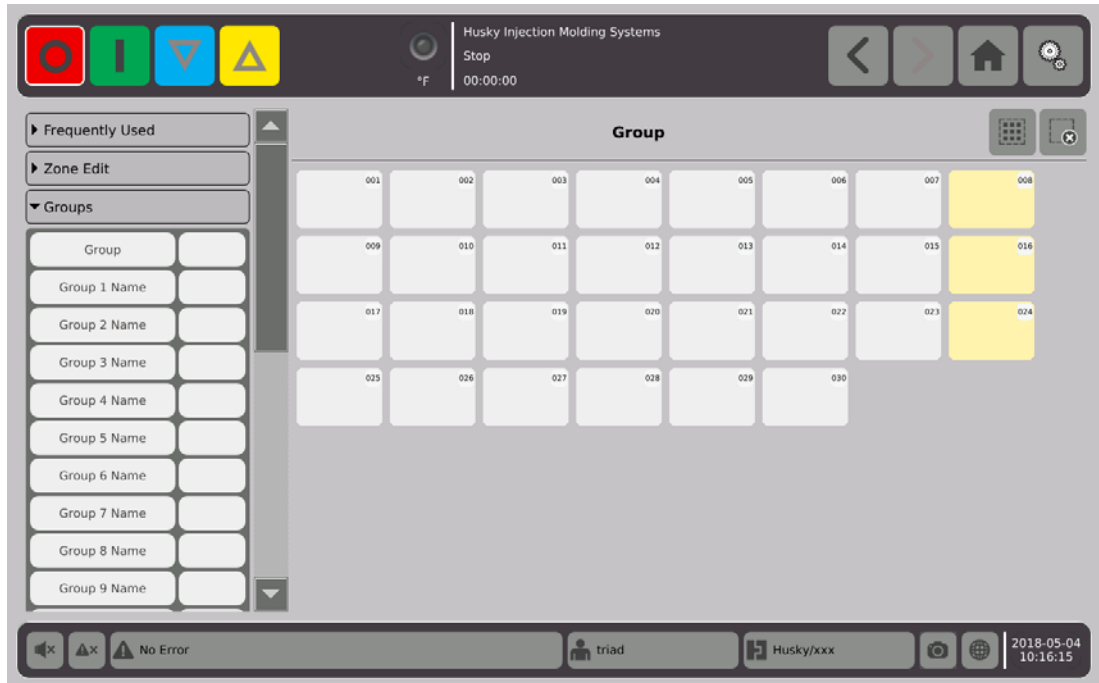
3. When a zone is selected it will turn yellow.


7.2 Creating a Group

1. On the **Home** screen, select



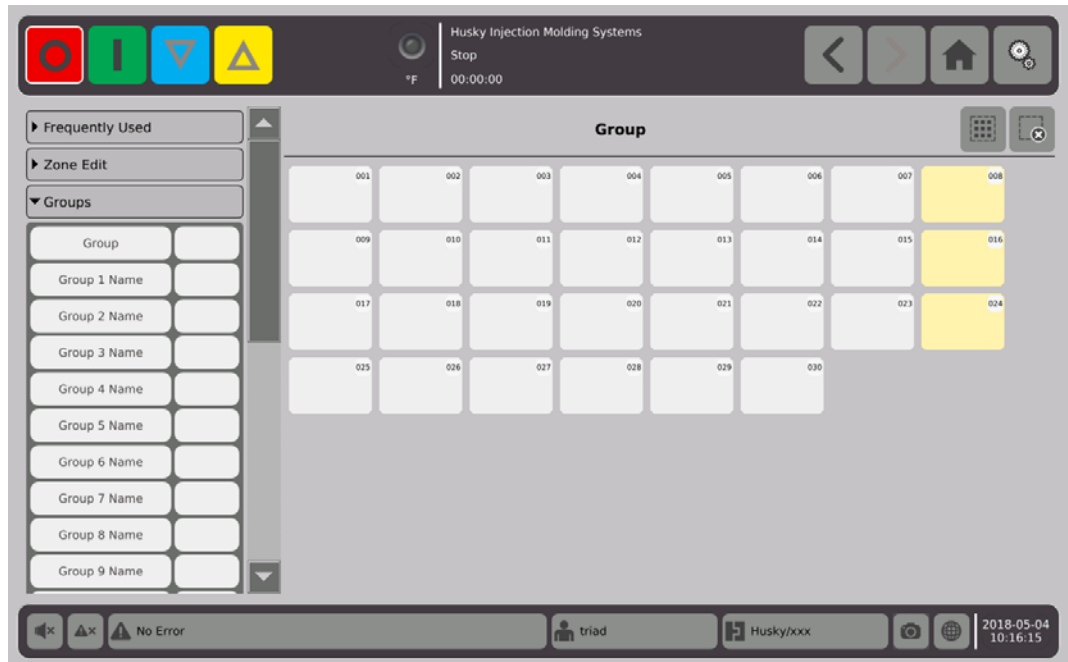
2. On the **Groups** button, touch  to open the drop down menu.




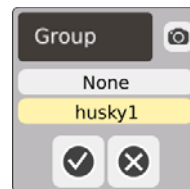
3. Assign names to one or more of the Group (1 thru 10) Name holders.
 - a. Touch the field to the right of the Group 1 Name.
 - b. Use the keyboard to enter in the Group 1 Name, then .
 - c. As necessary, do steps 3.a. and 3.b. to enter the Group 2 thru Group 10 Names.



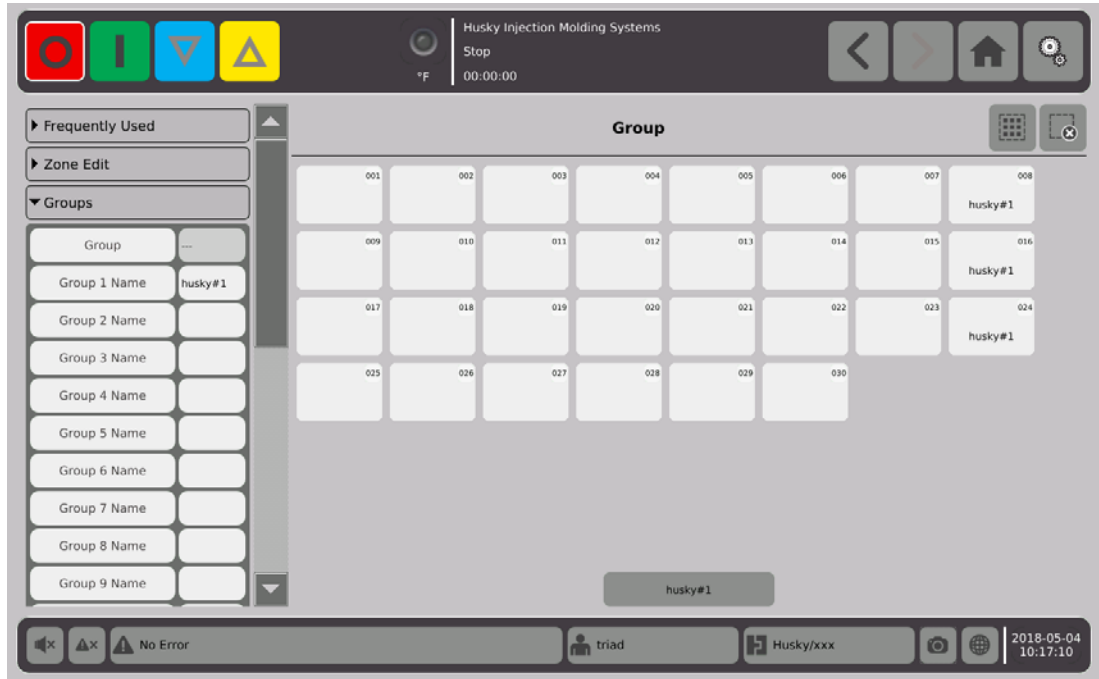
4. Select the zones that you want to be in a group.
5. Touch the field to the right of **Group**.





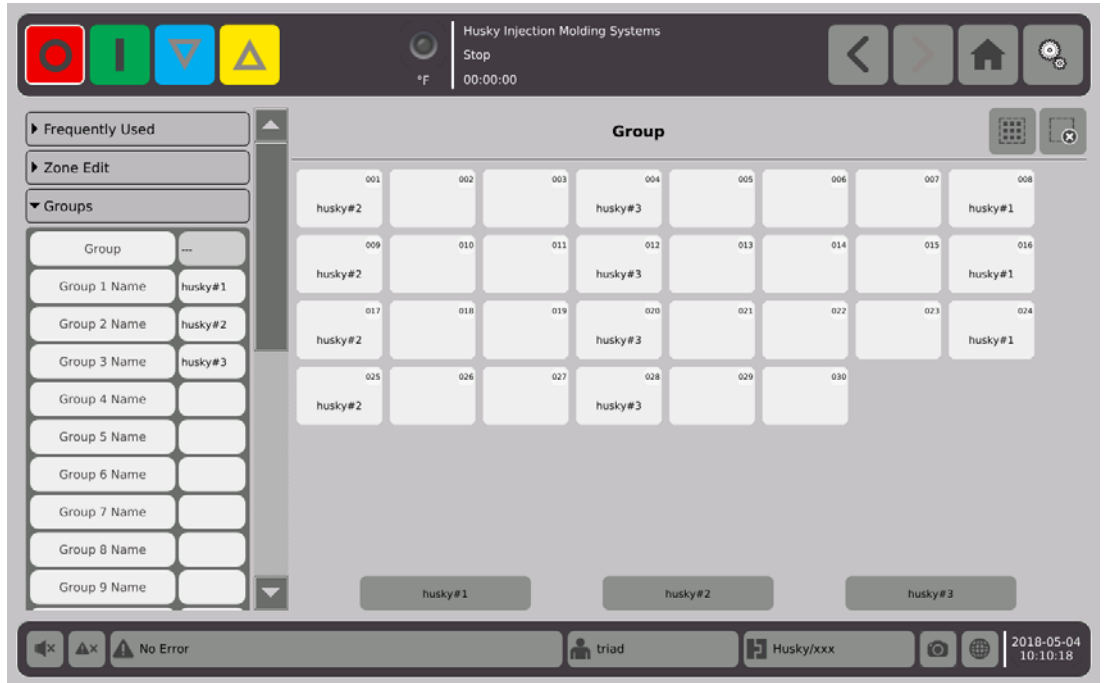
6. From the list in the **Group** dialog box, touch the Group Name that you want to give to the selected zones, then .



7. A Group selector button for that group will be displayed at the bottom of the screen.



8. As necessary, do steps 3 thru 6 again to assign zones to the remaining groups.
9. To delete a group, touch the box to the right of the Group X Name.
10. On the **Group Name Keyboard** screen, touch  to delete the name, then . The group name will be at the bottom of all the quick set screens. When you touch the group name you can set or change the parameter for all the zones in the group at one time. You can make a maximum of 10 groups.

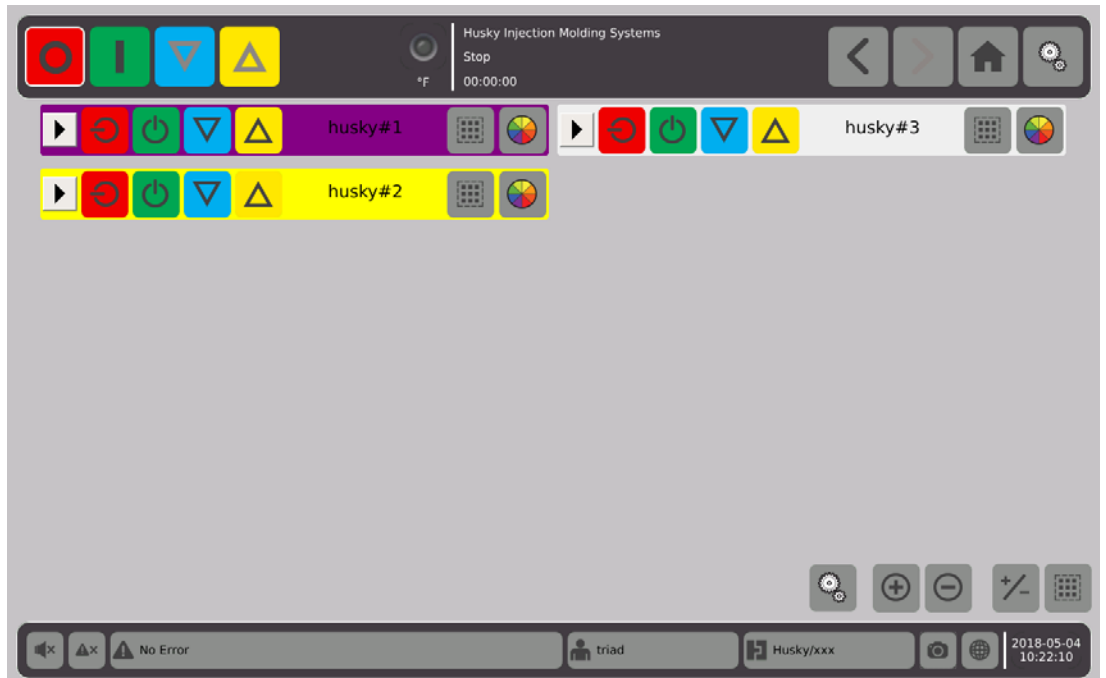



On the home screen, in the zone views row, select

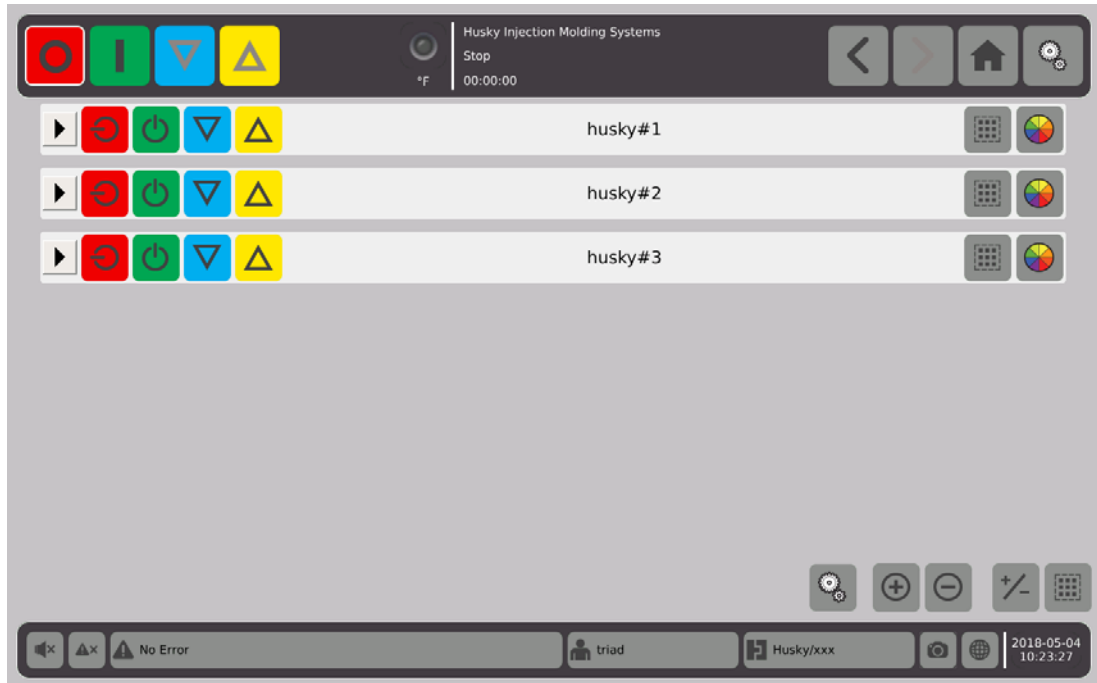



Multi-Group View •

All the groups that were set up in the **Quick Set** groups screen will be shown.



If you touch  the screen will go to the full screen view.

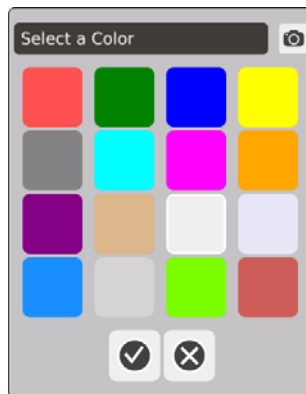


Touch  to go back to the half screen view.

7.2.1 Color Code

You can color code the groups.

1. On the header bar  select .
2. On the **Select a Color** dialog box, select the color, then .



The header bar for that zone will change to the color selected.




7.2.2 Layout Order

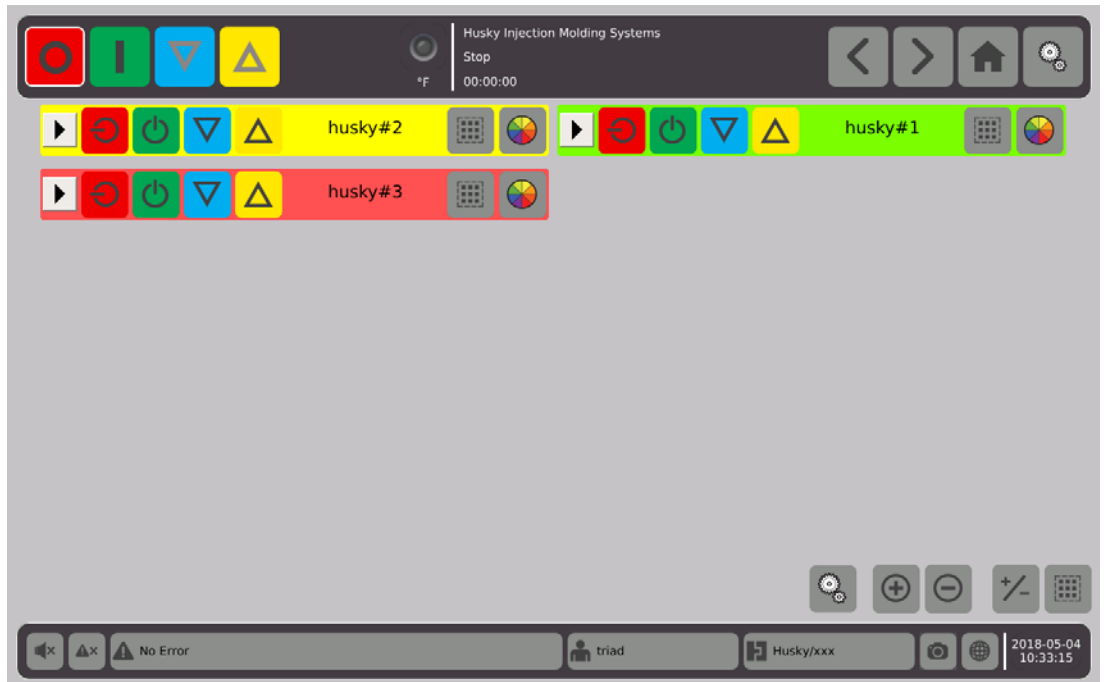
You can also choose a layout order for the groups.

1. Select  ,




2. Touch the clear previous button or clear all button to clear the numbers.
3. Touch the box for the group that you want to be at the top (1st position) on the multi-group view.
4. Continue to touch the boxes to put the groups in the order that you want to see them, then .

The groups will be arranged with the number 1 group on top (in the full view screen). In the half screen view, the groups are arranged top to bottom and left to right.




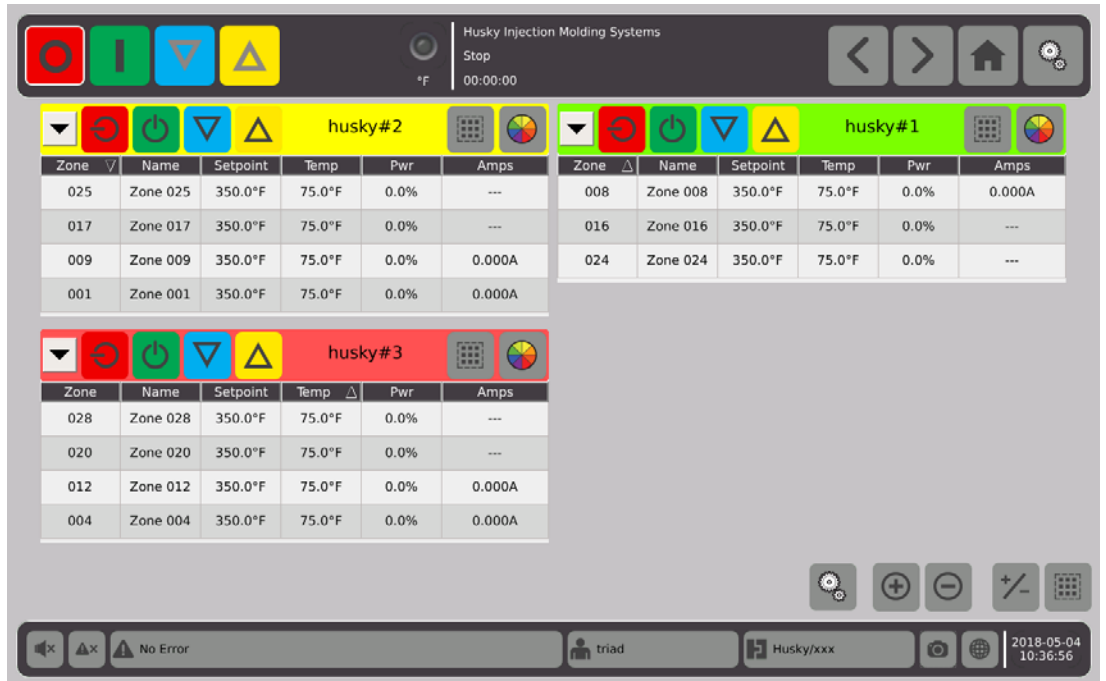




7.2.3 Show Group Details


1. Touch  in the header of the group to show the group details.



2. Touch  to show the details of all the groups.



3. Touch  to collapse all the group details or touch  to collapse only that group's details.

4. Touch  to go to the **Quick Set** screen.

7.3 Neo2 View Screen Overview

The **Neo2 View** shows the 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.



On the **Home** screen, select the

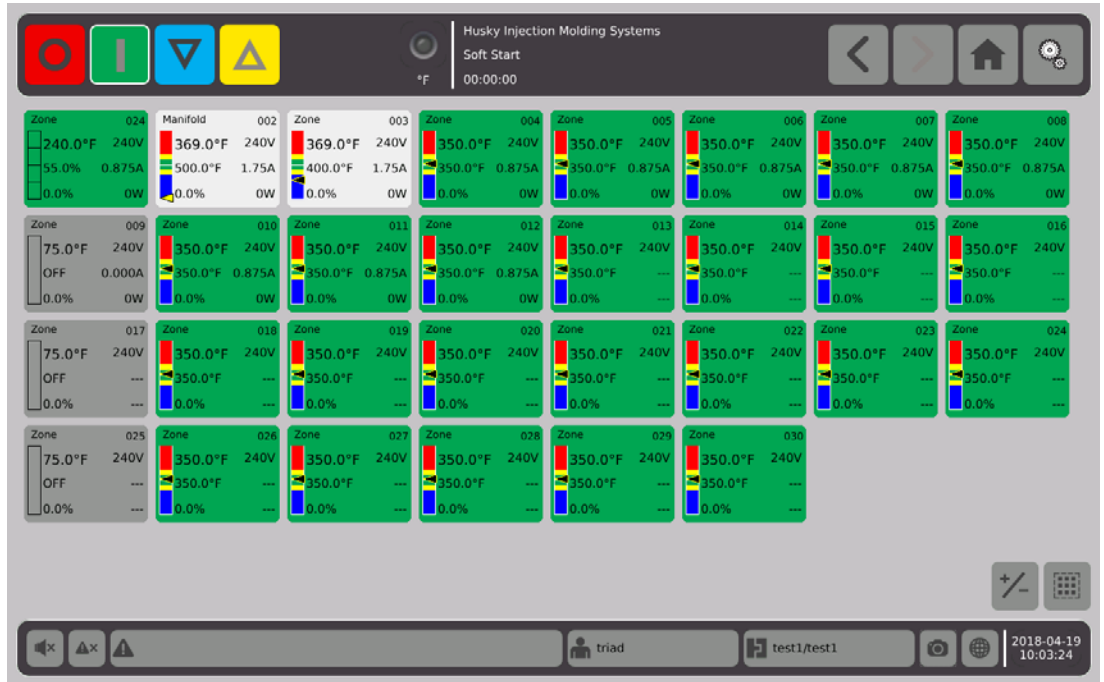
Neo2 View .




NOTE: Heat OFF.




NOTE: Heat OFF/zones cooling/zones 1 and 2 are switched OFF.




NOTE: Heat ON/zones (green) at temperature/zones (white) are not at temperature/zone 1 is slaved to zone 24/zones 9, 17, and 25 - switched OFF.

Item	Description
<p data-bbox="379 1087 572 1117">Temperature Bar</p> 	<p data-bbox="595 1087 1233 1117">The bar in each zone shows the temperature of the zone.</p> <p data-bbox="595 1136 1010 1165">Segments of the bar are color coded.</p> <ul data-bbox="595 1184 1469 1812" style="list-style-type: none"> <li data-bbox="595 1184 1193 1213">• The green area represents the molding window. <li data-bbox="595 1220 1129 1249">• The white hairline represents the setpoint. <li data-bbox="595 1255 1153 1285">• An arrow represents the actual temperature. <ul data-bbox="655 1297 1469 1528" style="list-style-type: none"> <li data-bbox="655 1297 1469 1327">• If the arrow is yellow, the temperature is not within the graph range. <div data-bbox="708 1339 858 1451"> <p data-bbox="708 1339 858 1360">Zone 003 003</p> <p data-bbox="708 1367 858 1388">75.0°F 240V</p> <p data-bbox="708 1394 858 1415">350.0°F 0.000A</p> <p data-bbox="708 1421 858 1442">0.0% 0W</p> </div> <li data-bbox="655 1465 1442 1528">• The arrow turns black when the temperature is in the range of the graph and moves up until it gets to the set point. <div data-bbox="708 1541 858 1652"> <p data-bbox="708 1541 858 1562">Zone 003 003</p> <p data-bbox="708 1568 858 1589">314.0°F 240V</p> <p data-bbox="708 1596 858 1617">350.0°F 0.000A</p> <p data-bbox="708 1623 858 1644">0.0% 0W</p> </div> <li data-bbox="595 1671 1337 1701">• The yellow area in the zone bar represents the alarm window <li data-bbox="595 1707 1453 1770">• The red and blue areas in the zone bar represent the high (red) and low (blue) abort windows. <li data-bbox="595 1780 1166 1810">• A blank gray bar indicates that the zone is off. <div data-bbox="708 1822 874 1934"> <p data-bbox="708 1822 874 1843">Zone 025</p> <p data-bbox="708 1850 874 1871">75.0°F 240V</p> <p data-bbox="708 1877 874 1898">OFF ---</p> <p data-bbox="708 1904 874 1925">0.0% ---</p> </div>

Touch the  button and the screen will toggle to the screen below. This screen only shows the temperature of the zone.

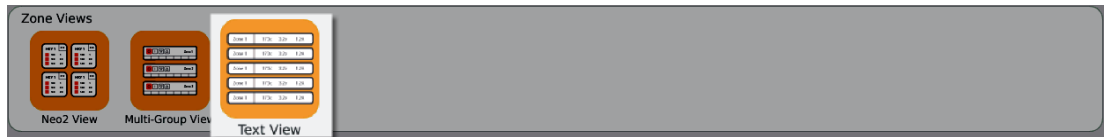


Touch the  button again to toggle back to the graphical view.

7.4 Text View Screen Overview

The **Text View** screen displays zone information in a tabular format. Detailed data for each zone is shown in each row of the table. This provides the most comprehensive view of the process.

1. On the **Home** screen, select



Stop
*F
00:00:00

Husky Injection Molding Systems

Zone	Name	Setpoint	Temp	Pwr	Amps	Leakage	Reg	Alarm	Abort	Watts	Ohms	Full Load	Volts
001	Manifold	500.0°F	75.0°F	0.0%	0.000A	0.000A	Auto	10.0°F	20.0°F	0W	---	0W	240V
002	Manifold	500.0°F	75.0°F	0.0%	0.000A	0.000A	Auto	10.0°F	20.0°F	0W	---	0W	240V
003	Zone	350.0°F	75.0°F	0.0%	0.000A	0.000A	Auto	10.0°F	20.0°F	0W	---	0W	240V
004	Zone	350.0°F	75.0°F	0.0%	0.000A	0.000A	Auto	10.0°F	20.0°F	0W	---	0W	240V
005	Zone	350.0°F	75.0°F	0.0%	0.000A	0.000A	Auto	10.0°F	20.0°F	0W	---	0W	240V
006	Zone	350.0°F	75.0°F	0.0%	0.000A	0.000A	Auto	10.0°F	20.0°F	0W	---	0W	240V
007	Zone	350.0°F	75.0°F	0.0%	0.000A	0.000A	Auto	10.0°F	20.0°F	0W	---	0W	240V
008	Zone	350.0°F	75.0°F	0.0%	0.000A	0.000A	Auto	10.0°F	20.0°F	0W	---	0W	240V
009	Zone	350.0°F	75.0°F	0.0%	0.000A	0.000A	Auto	10.0°F	20.0°F	0W	---	0W	240V
010	Zone	350.0°F	75.0°F	0.0%	0.000A	0.000A	Auto	10.0°F	20.0°F	0W	---	0W	240V
011	Zone	350.0°F	75.0°F	0.0%	0.000A	0.000A	Auto	10.0°F	20.0°F	0W	---	0W	240V
012	Zone	350.0°F	75.0°F	0.0%	0.000A	0.000A	Auto	10.0°F	20.0°F	0W	---	0W	240V
013	Zone	350.0°F	75.0°F	0.0%	---	---	Auto	10.0°F	20.0°F	---	---	---	240V
014	Zone	350.0°F	75.0°F	0.0%	---	---	Auto	10.0°F	20.0°F	---	---	---	240V

No Error

triad
test1/test1

2018-04-17 10:16:42

Column Header	Description
Zone Row	<p>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. Refer to 7.5.</p>
Column Headers	<p>Each header in the Text view indicates what information is being displayed in each column.</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 • Amps = Current draw of heater (values in this column are suppressed for XL and HL cards) • Leakage = Earth leakage. This column is only displayed if the Display Earth Leakage Reading is selected in the Earth Leakage section of the system setup screen • Reg = Control mode (Auto = T/C control, Manual = Fixed % output, Monitor = Temperature only - No power output) • 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) • Watts = Calculated wattage of each heater (values in this column are suppressed for XL and HL cards) • Ohms = Calculated full load ohms of the heater, based on the circuit test results (values in this column are suppressed for XL and HL cards) • Full Load = Calculated full load wattage of the heater, based on the circuit test results (values in this column are suppressed for XL and HL cards) • Volts = Measured line voltage that supplies power to each heater
Scroll Bar	<p>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</p>

7.4.1 Zone Selection in the Text View Screen

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

1. To view one zone, touch anywhere in the row of that zone.
2. To view multiple zones, touch and hold the first zone. Then drag up or down to the last zone. All zones between the two zones are selected.
3. The view will automatically go to the **Quick Set** screen.

7.4.2 Sorting

You can sort column data on the **Text View** screen and all other screens that have column headers. Touch the header field. The ascending or descending arrows (▼ ▲) appear next to the column header name. Touch the column header to reverse the order.

Information can be sorted according to the dynamic columns (for example, current (Amps), voltage (Volts), etc.). This can help you when trying to figure out which zone is drawing the most current at any moment.

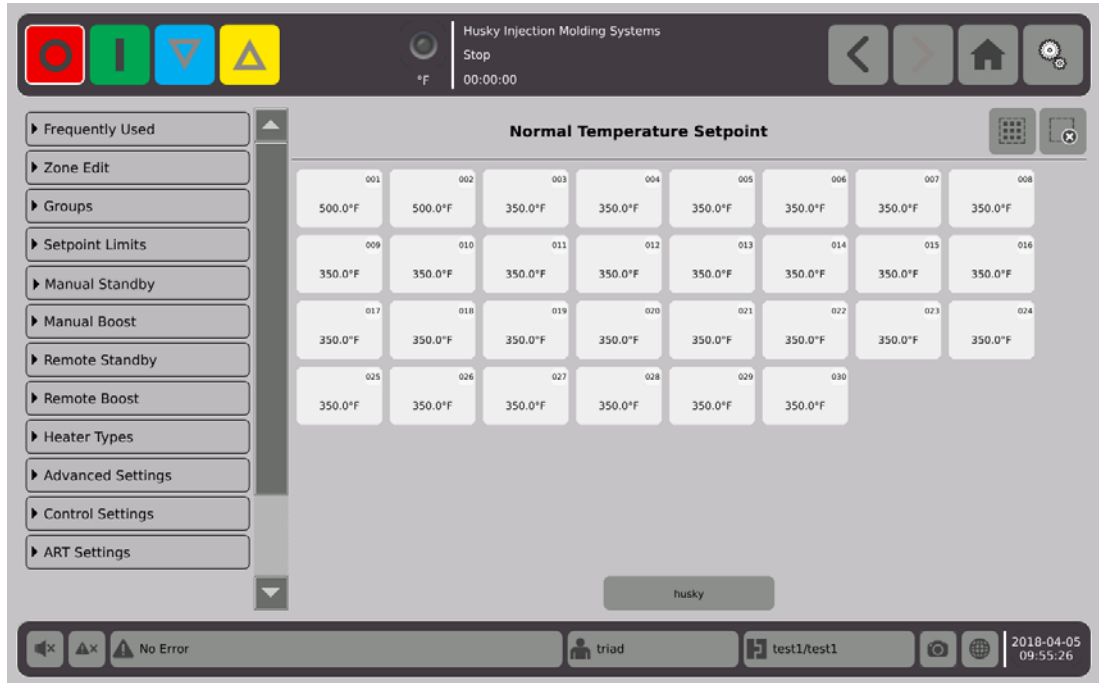
7.5 Quick Set Screen

Use the **Quick Set** screen to change the zone settings.

On the **Home** screen, select

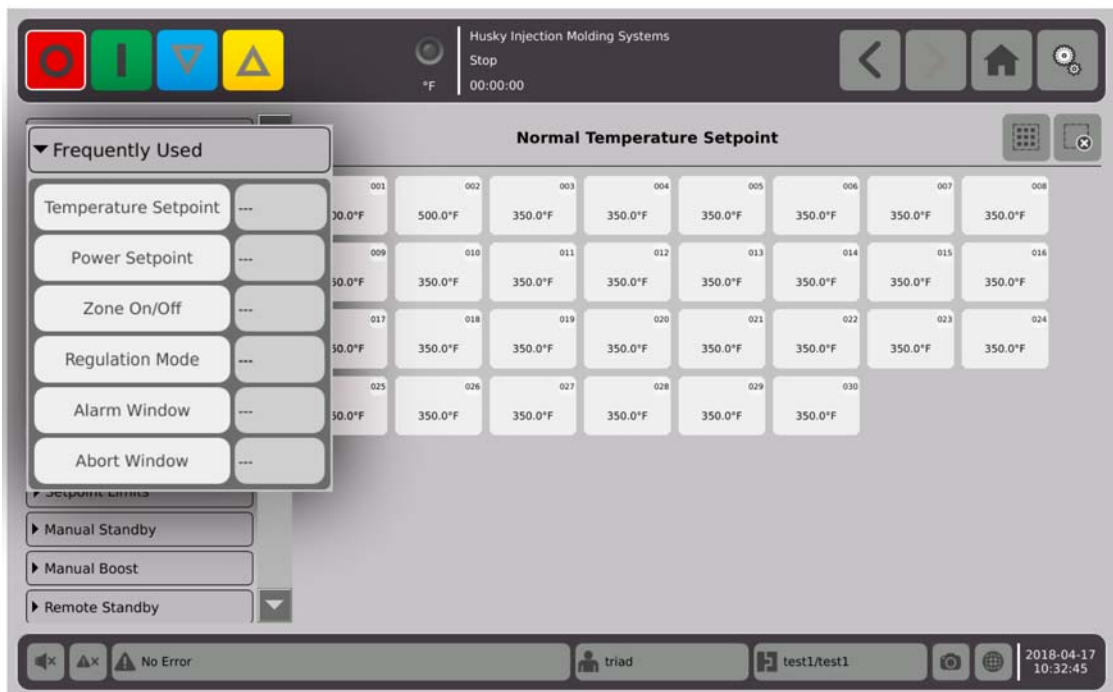


NOTE: When you select a zone in the **Neo2**, **Multi-Group**, or **Text view** screens the **Quick Set** screen will automatically show.



Select the zone, zones, or groups that you want to change or enter data.
To expand each tab, touch ►.

7.5.1 Frequently Used Fields



Touch the box to the right of the parameter to display a keyboard or menu.



Temperature Setpoint — Use the keypad to enter the zone(s) temperature setpoint in Auto or Monitor regulation.

Up and Down Arrows



Up arrow, ▲, indicates the setpoint will increase by the entered amount. The number below the arrow is the maximum numerical value that can be input in the dialog window without exceeding the maximum limit of the setpoint.

NOTE: A maximum setpoint limit must be entered, refer to [Section 7.5.4](#), before this button becomes active.



Down arrow, ▼, indicates the setpoint will decrease by the entered amount. The number below the arrow is the maximum numerical value that can be input in the dialog window without going below the minimum limit of the setpoint.

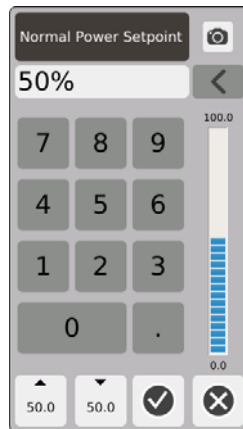
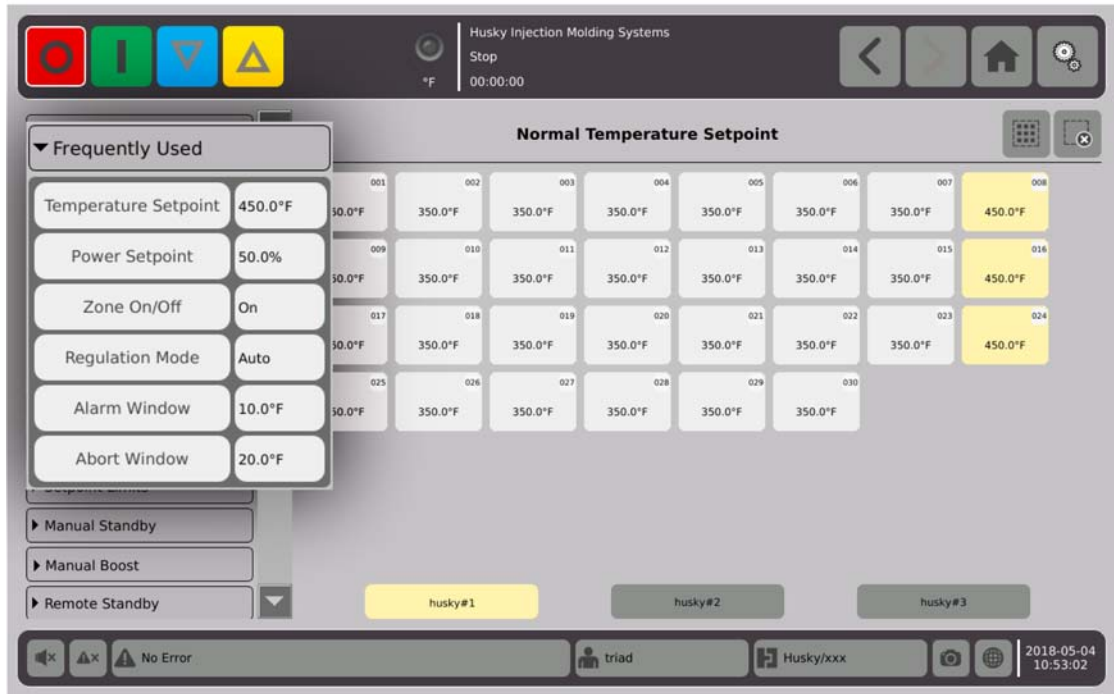
NOTE: A minimum setpoint limit must be entered, refer to [Section 7.5.4](#), before this button becomes active.

Use the ▲ and ▼ arrows to add or subtract a specified amount from the current setpoint.

1. In the **Normal Temperature Setpoint** dialog box, touch the ▲ or ▼ button.

NOTE: The two buttons are at first greyed out.
2. With the keypad, enter in the amount that you want to add or subtract from the current setpoint. For example, 5 degrees.

NOTE: After you enter the amount the ▲ or ▼ buttons will become active, not greyed out.
3. Touch the button with the ▲ arrow. 5 degrees will be added to the current setpoint. The dialog box will disappear. You will return to the **Quick Set** screen, and the setpoint shown in the selected zones will increase by 5 degrees.
4. Touch the button with the ▼ arrow, and the current setpoint will decrease by 5 degrees. The dialog box will disappear. You will return to the **Quick Set** screen, and the setpoint shown in the selected zones will increase by 5 degrees.
5. The number in the button is the maximum value that you can enter with the keypad to use the up and down arrows.



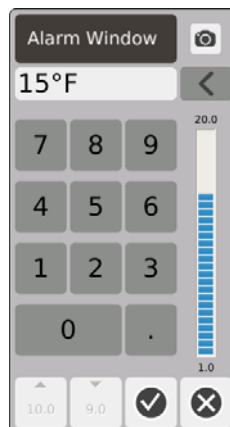
Power Setpoint — Use the keypad to adjust the percentage of power applied when the zone(s) is in Manual regulation.



Zone On/Off — Turns the selected zone(s) ON or OFF. The default is ON.



Regulation — Sets the regulation mode for the selected zone(s). AUTO or Automatic (closed loop) uses the thermocouple feedback to control the temperature. Manual (open loop) means the system will only apply power (0 to 100%), user selected, to the heater and not look for thermocouple feedback. Monitor means the system will only monitor the temperature of the zone (no power applied to heater).

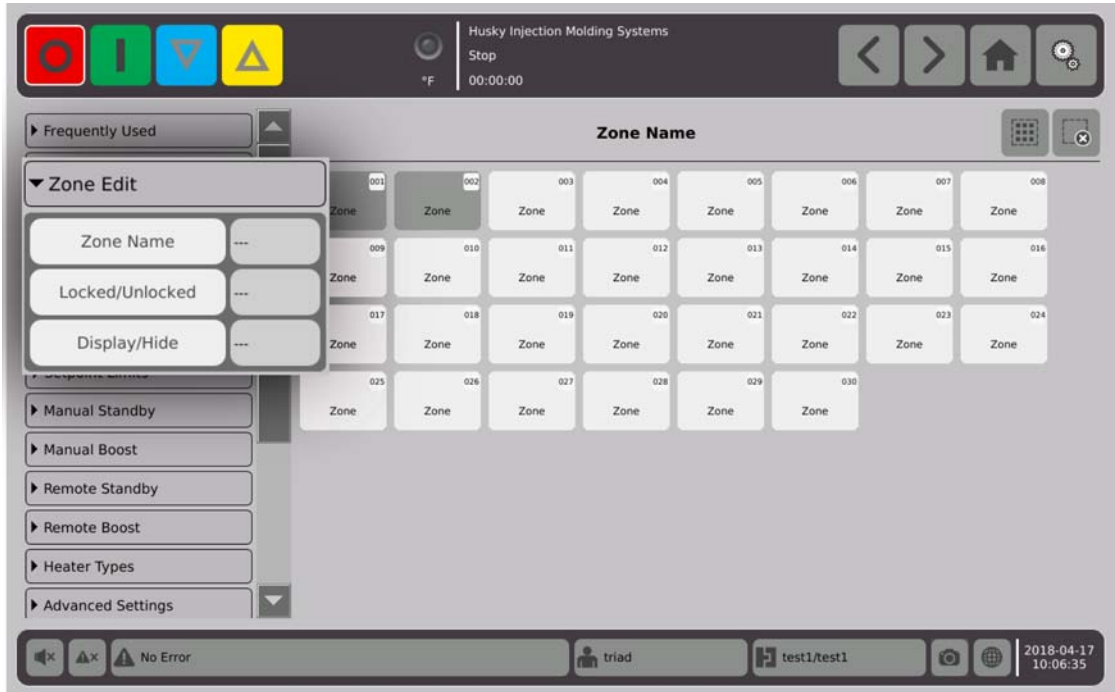


Alarm Window — Use the keypad to adjust the upper and lower alarm limits.



Abort Window — Use the keypad to adjust the upper and lower abort limits.

7.5.2 Zone Edit Fields



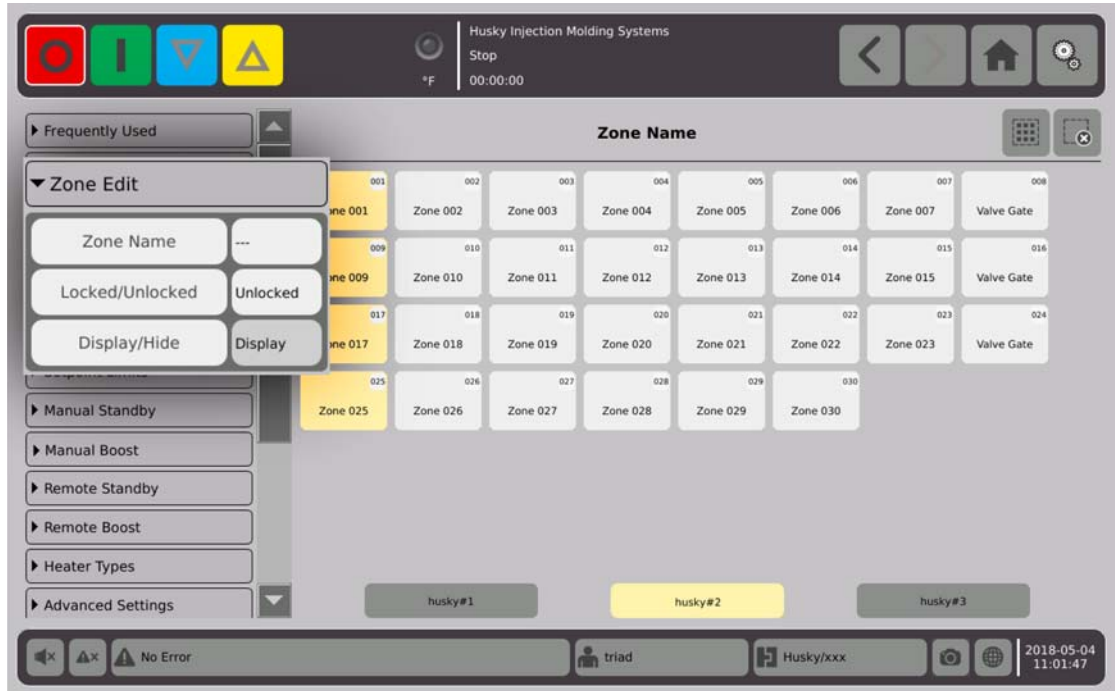
Touch the box to the right of the zone name button.

Use the keyboard to name the zone(s) or groups. Eight common zone name tabs are above the keyboard. Touch the common name tab to assign that name to the zone(s).

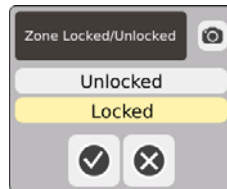


All the zones in group husky #1 have been assigned the zone name, valve gate.

After you name all the zones, touch Auto+. Auto+ assigns a number, in sequential order, to all the zones.



Touch the box to the right of the locked/unlocked button.



In the dialog box select lock or unlock, then . If a zone(s) is locked, you cannot make changes from the Quick Set screen.

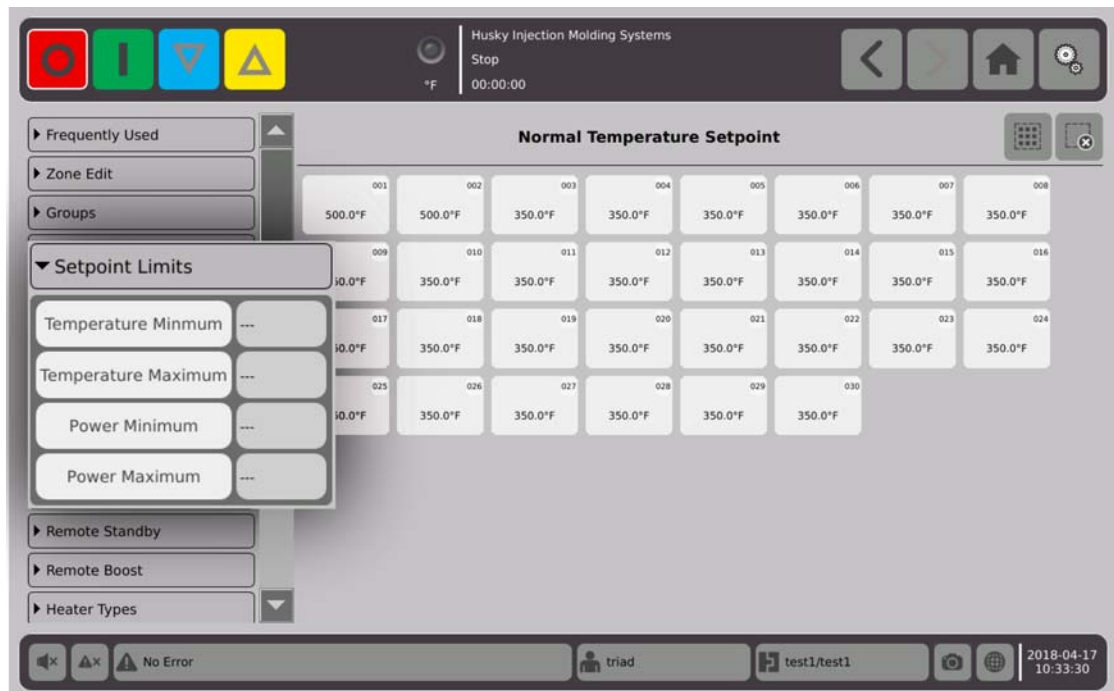
All zones are displayed.



7.5.3 Groups

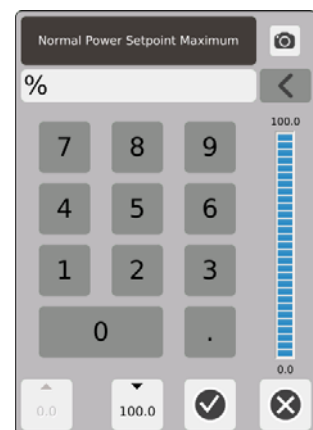
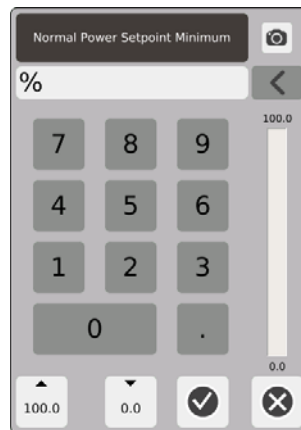
Refer to [Section 7.2](#).

7.5.4 Setpoint Limits



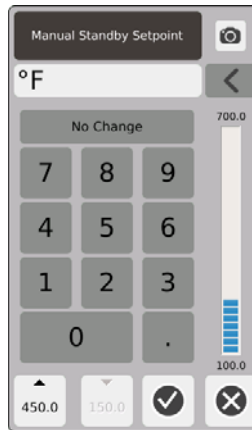
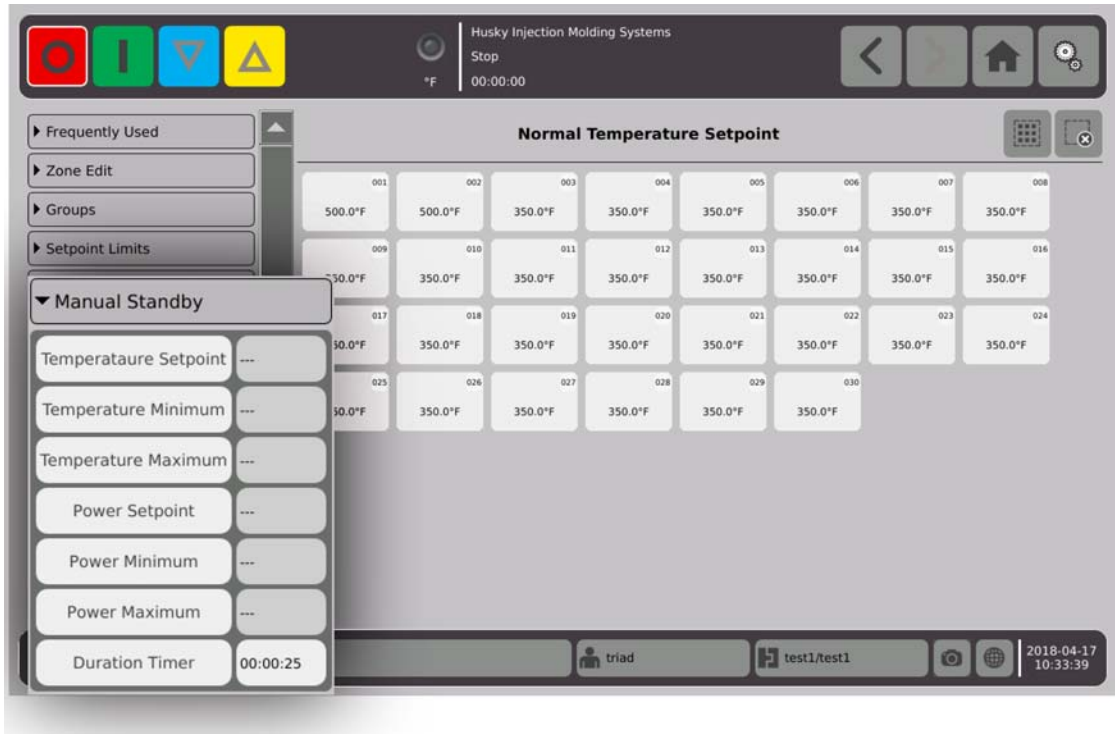




Setpoint Range — Use the minimum and maximum dialog boxes to set the range for the temperature setpoint. Example: If the Minimum is set to 100°F and the Maximum to 600°F, you will not be able to enter a setpoint that is less than 100°F or more than 600°F.



Power Range — Use the minimum and maximum dialog boxes to set the power range.

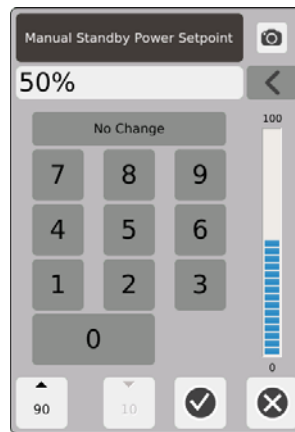
7.5.5 Manual Standby





Manual Standby Temperature Setpoint — The temperature all zones are set to when you select . Manual Standby lowers the temperatures of all the zones to the setpoint until the timer expires or you touch  again.



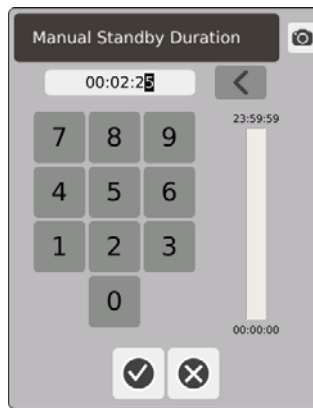
Manual Standby Temperature Range — Use the minimum and maximum dialog boxes to set the manual standby temperature range.



Manual Standby Power Setpoint — The power level that all zones are set to when you select . Manual Standby lowers the power level to all the zones to the setpoint until the timer expires or you touch  again.



Manual Standby Power Range — Use the minimum and maximum dialog boxes to set the manual standby power range.



Duration Timer — In the dialog box, set the time that the zones will stay in the manual standby mode.

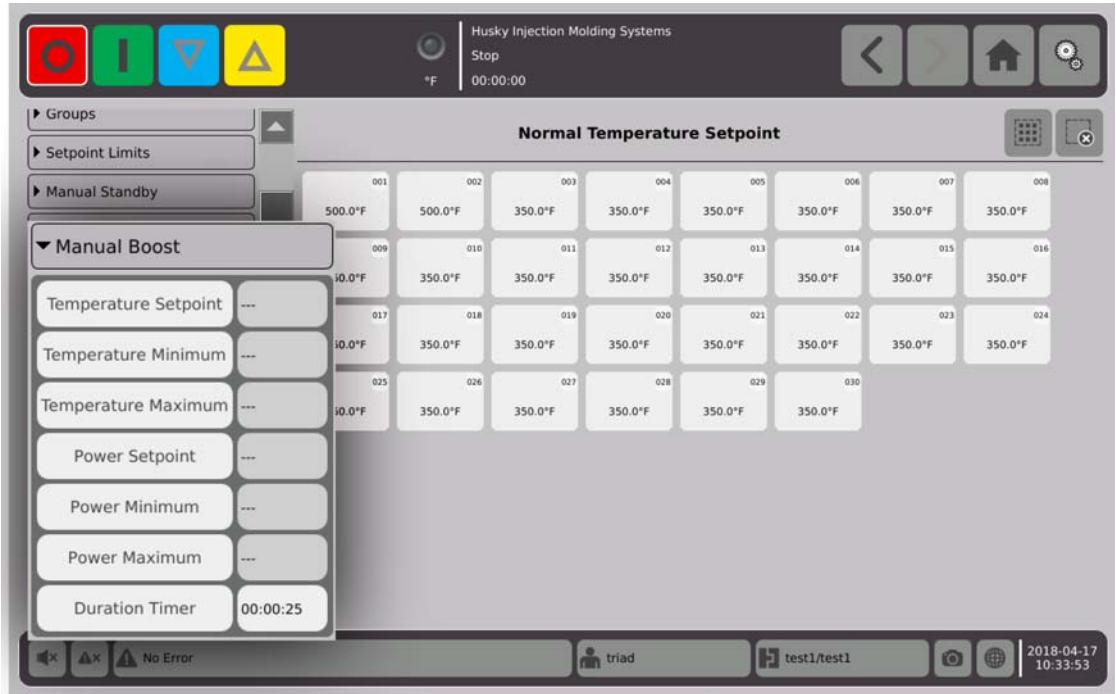
NOTE: This is a system setting that applies to all the zones.



Manual Standby Operational Description

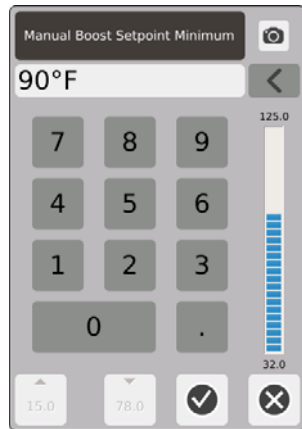
Manual Time	Delay Time	Remote Time	Input Mode	Operation - STANDBY Button Select
0:00:00	----	----	----	System enters Standby indefinitely.
X:XX:XX	----	----	----	System remains in Standby until the timer expires.

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

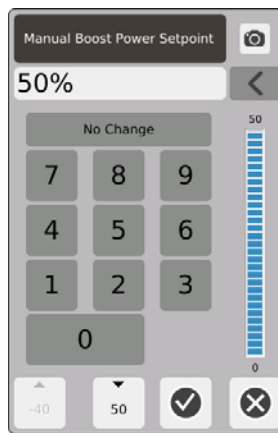
7.5.6 Manual Boost





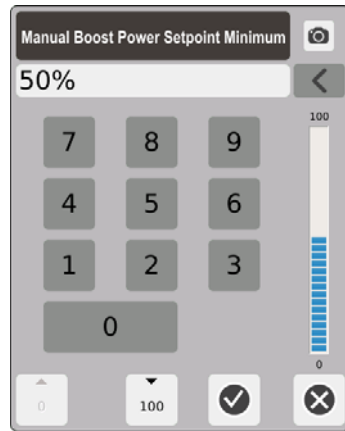
Manual Boost Temperature Setpoint — The temperature all zones are set to when you select . Manual boost increases the temperature of all the zones to the manual boost temperature setpoint until the timer expires or you touch  again. The default value is No Change.



Manual Boost Temperature Range — Use the minimum and maximum dialog boxes to set the manual boost temperature range.



Manual Boost Power Setpoint — The power level that all zones are set to when you select . Manual Boost increases the power level of all the zones to the setpoint until the timer expires or you touch  again. The default value is 90%.



Manual Boost Power Range — In the dialog boxes, set the minimum and maximum manual standby power range.



Manual Boost Duration Timer — In the dialog box, set the time that the zones will stay in the manual boost mode.

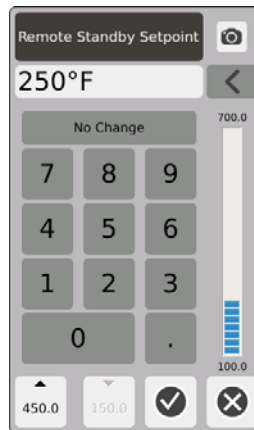
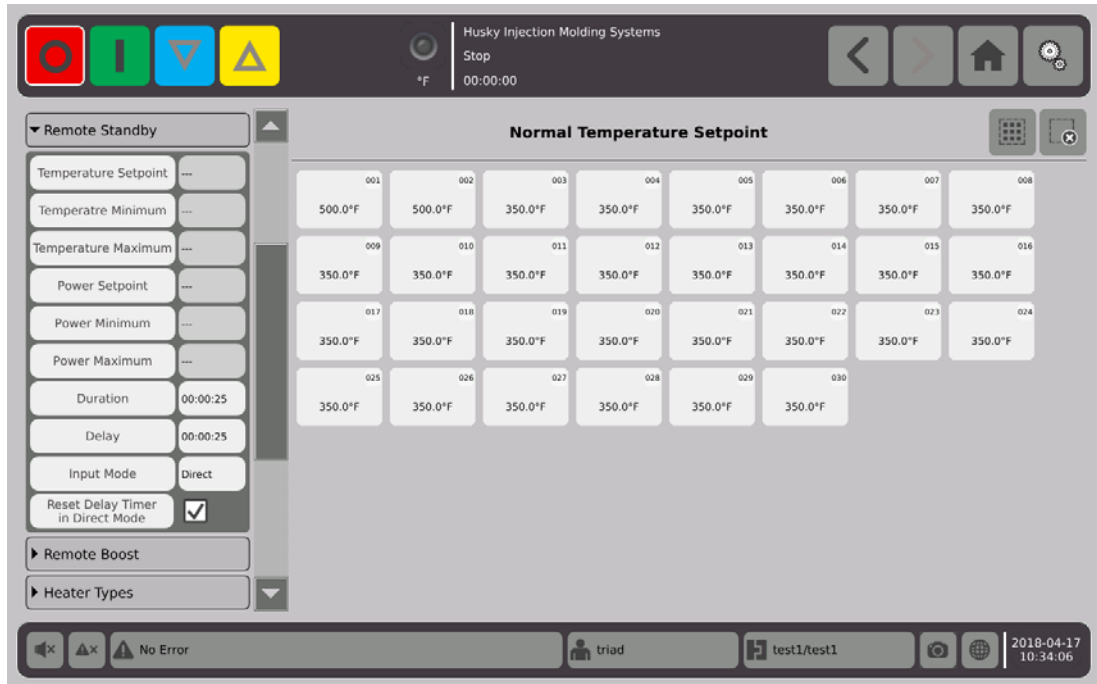
Manual Boost Operational Description

Manual Time	Delay Time	Remote Time	Input Mode	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.

7.5.7 Remote Standby

Remote Standby is activated with a digital input to the Neo5 from a remote location on the IMM.



Remote Standby Temperature Setpoint — The temperature all the zones are set to when a remote standby signal is received. Remote standby lowers the temperature of all the zones to the setpoint until the timer expires or the remote standby signal is removed.



Remote Standby Temperature Range — Use the minimum and maximum dialog boxes to set the remote standby temperature range.



Remote Standby Power Setpoint — The power level all zones are set to when a remote standby signal is received. Remote standby lowers the power levels to all the zones to the setpoint until the timer expires or the remote standby signal is removed.

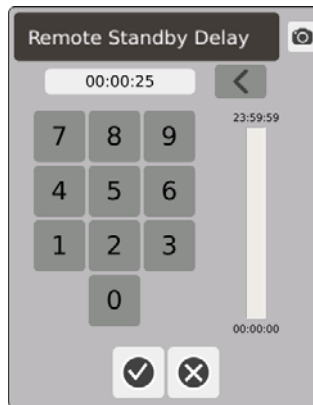


Remote Standby Power Range — Use the minimum and maximum dialog boxes to set the remote standby power range.

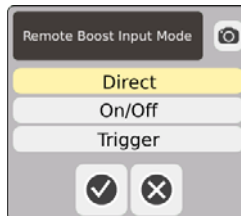


Duration Timer — In the dialog box, enter the time that the zones will stay in the remote standby mode.

NOTE: The Duration Timer, Remote Standby Delay, and Input Mode are system settings that apply to all the zones.



Remote Standby Delay — In the dialog box, enter the time that you want the system to wait from the time it receives the remote standby signal to when it enters the standby mode.



Input Mode — Set to one of the three modes.


Remote Standby Operational Description

Manual Time	Delay Time	Remote Time	Input Mode	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	System delays for specified time and then enters Standby until the timer expires.
----	X:XX:XX	0:00:00	Trigger	System delays for specified time and then enters Standby indefinitely.
----	X:XX:XX	X:XX:XX	Trigger	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	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.
----	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 (only when in the Trigger or ON/OFF modes).

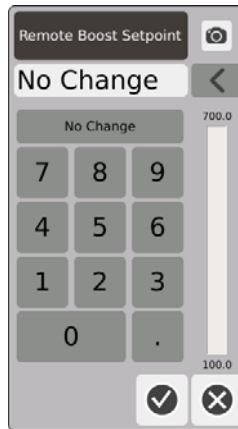
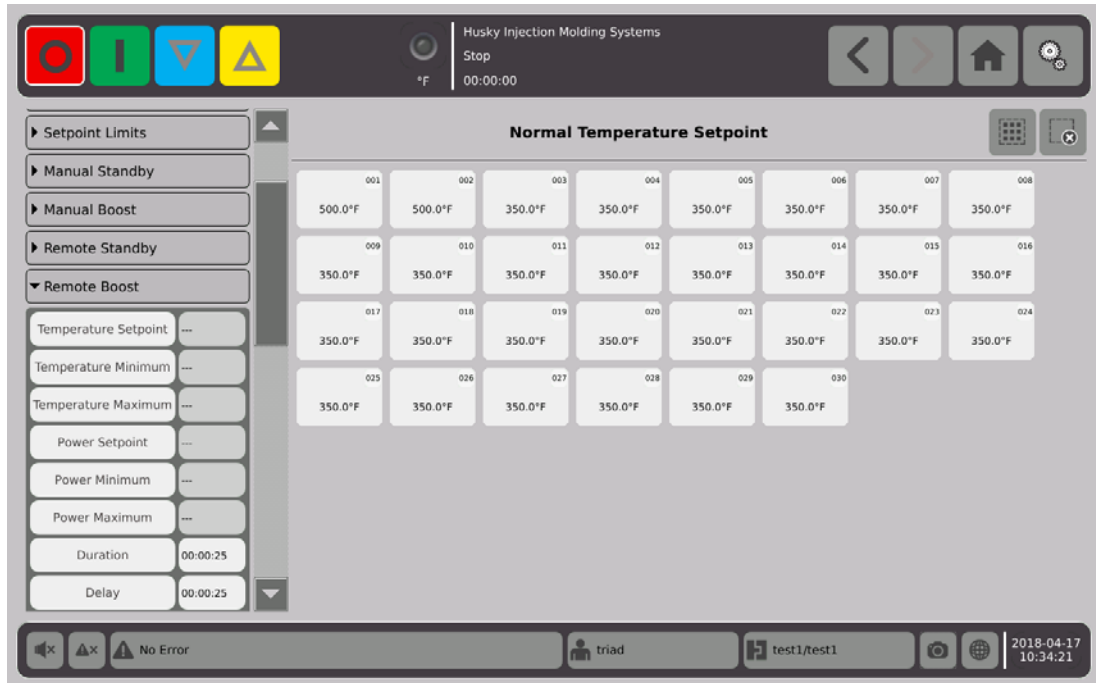
Reset Delay Timer in Direct Mode:

The Reset Delay Timer is only used when in Direct Mode and while the delay timer is in progress.

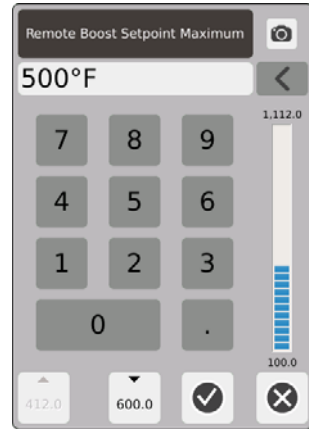
If enabled,  , the Reset Delay Timer allows you to reset the delay timer by touching the Standby button in the system header.

7.5.8 Remote Boost

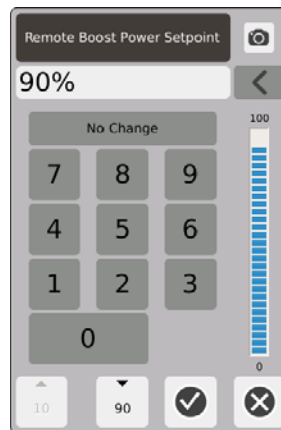
Remote boost is activated with a digital input to the Neo5 from a remote location on the IMM.



Remote Boost Temperature Setpoint — The temperature all zones are set to when a remote boost signal is received. Remote boost increases the temperature of all the zones to the remote boost temperature setpoint until the timer expires or the remote boost signal is removed.



Remote Boost Temperature Range — Use the minimum and maximum dialog boxes to set the remote boost temperature range.



Remote Boost Power Setpoint — The power level that all zones are set to when a remote boost signal is received. Remote boost increases the power level of all the zones to the setpoint until the timer expires or the remote boost signal is removed.



Remote Boost Power Range — Use the minimum and maximum dialog boxes to set the remote boost power range.

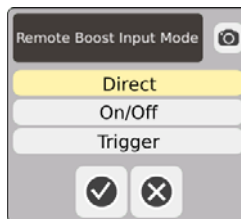


Duration Timer — In the dialog box, enter the time that the zones will stay in the remote boost mode.

NOTE: The Duration Timer, Remote Boost Delay, and Remote Boost Input Mode are system settings that apply to all zones.



Remote Boost Delay — In the dialog box, enter the time that you want the system to wait from the time it receives the remote boost signal to when it enters the boost mode.



Remote Boost Input Mode — Set to one of the three modes.

Remote Boost Operational Description

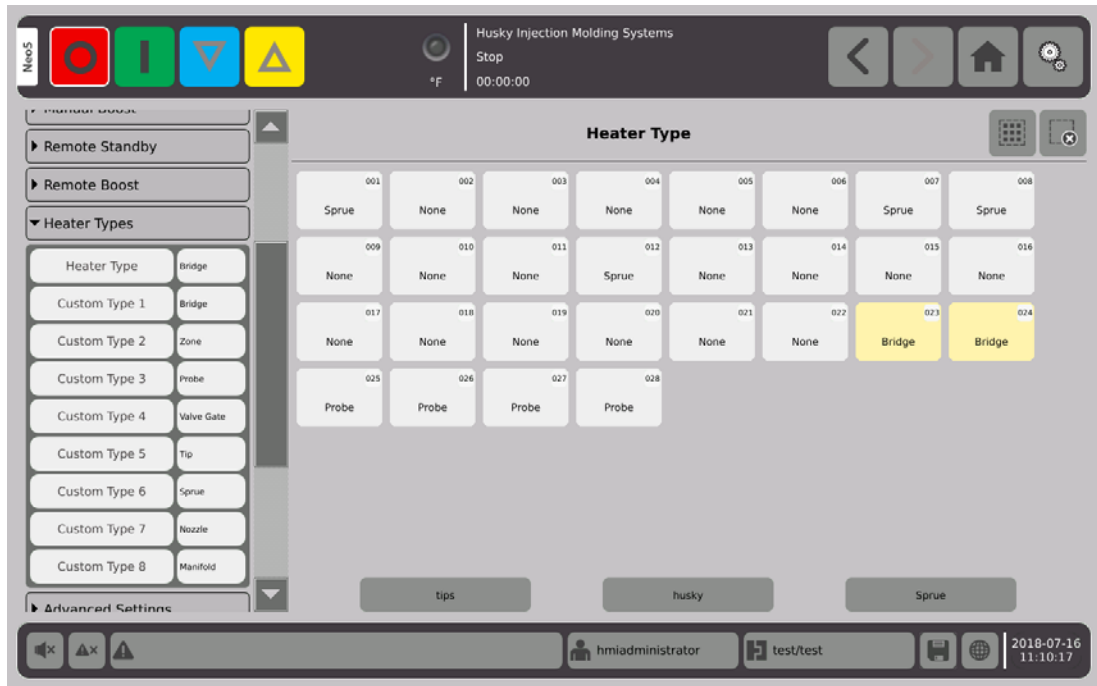
Manual Time	Delay Time	Remote Time	Input Mode	Operation - Boost Button Select
----	0:00:00	0:00:00	Trigger	System will not enter Boost since no timers are set.
----	0:00:00	X:XX:XX	Trigger	System immediately enters and remains in Boost until the timer expires.

Remote Boost Operational Description (Continued)

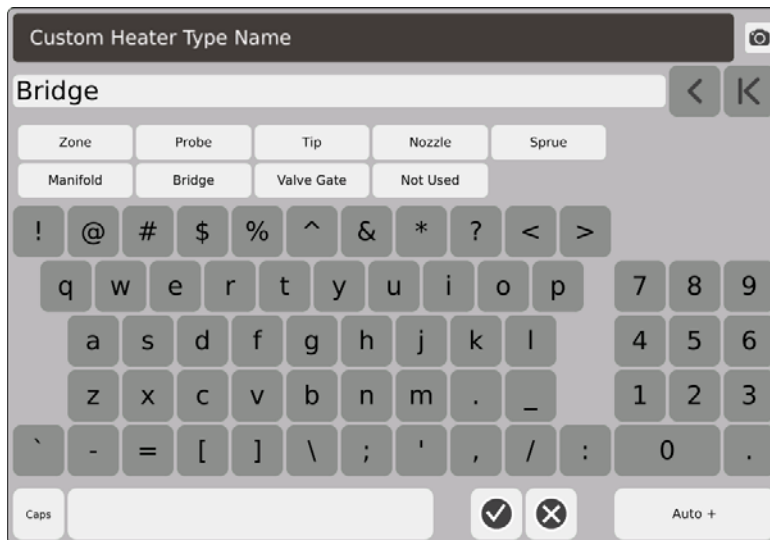
Manual Time	Delay Time	Remote Time	Input Mode	Operation - Boost Button Select
----	X:XX:XX	X:XX:XX	Trigger	System delays for specified time and then enters Boost until the timer expires.
----	X:XX:XX	0:00:00	Trigger	System delays for specified time and then enters Boost indefinitely.
----	0:00:00	0:00:00	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 (only when in the Trigger or ON/OFF modes).


7.5.9 Heater Types

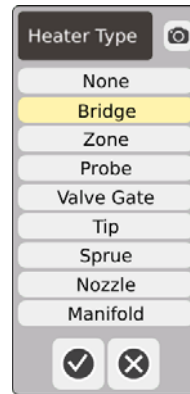


1. Assign names to one or more of the Custom Heater Types (1 thru 8).
 - a. Touch the field to the right of the Custom Type 1. The Custom Heater Type Name keyboard screen will be displayed.



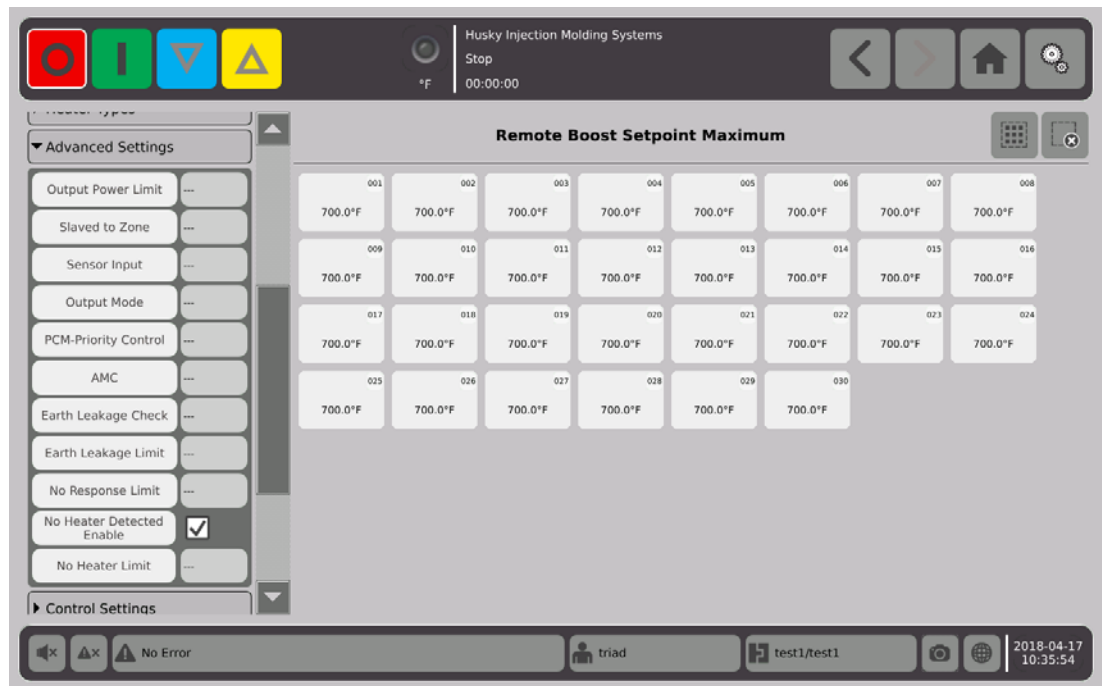
- b. Use the keyboard to enter in the heater type name or select one of the nine heater type names, then .
 - c. As necessary, do steps 1.a. and 1.b. to enter the Custom Type 2 thru Custom Type 8 names.

2. Select the zones that you want assigned to a specific heater type.
3. Touch the field to the right of Heater Type.
4. From the drop down list, in the Heater Type dialog box, touch the heater type that you want to assign to the selected zones, then  .



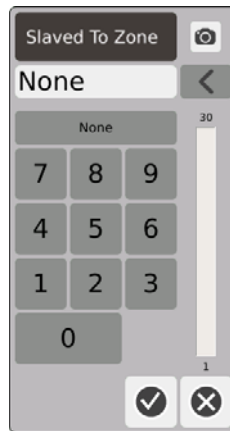
5. As necessary, do steps 2. thru 4. again to assign heater types to other zones or groups.

7.5.10 Advanced Settings

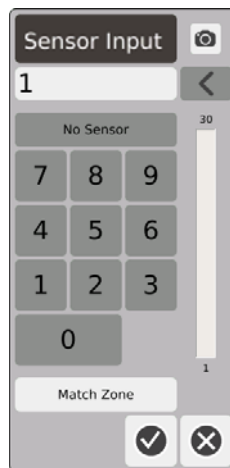




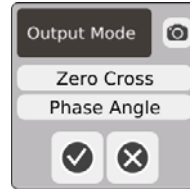
Output Power Limit — In the dialog box, enter the maximum percentage of output power that will be supplied to heat the zones.



Slaved to Zone — In the dialog box, enter the zone number that the selected zone will be slaved to. If the selected zones thermocouple fails, Neo5 will use the power output of the zone that it is slaved to. This will let the selected zone function without an operating thermocouple. Refer to [Section 7.5.13](#).



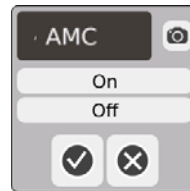
Sensor Input — In the dialog box, enter the number of the thermocouple that is connected to the zones. The match zone button will select the thermocouple with the same number as the zone.



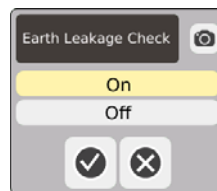
Output Mode — In the dialog box, you can choose what type of output mode that will be used to control the zones. Choose zero cross or phase angle.



PCM - Priority Control — In the dialog box, select zone or system. In an abort condition Neo5 will remove power from the zone if the malfunctioning zone is set to Zone or go into stop mode if the malfunctioning zone is set to system.



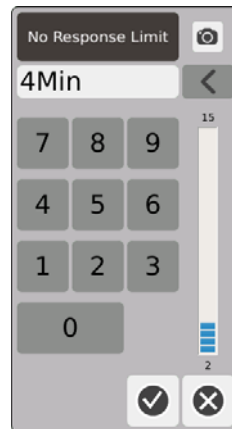
AMC — Automatic Manual Control (AMC). If the zones thermocouple fails, Neo5 will automatically apply a manual power output percentage to heat the zone, if AMC is set to On. Neo5 software will use a historical average to calculate the manual power output percentage.



Earth Leakage Check — In the dialog box, set the earth leakage check to On or Off. The default setting is On.

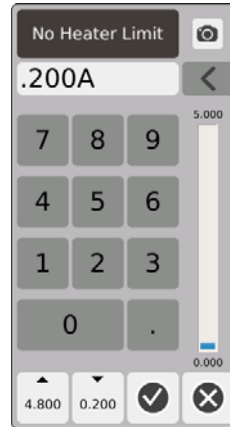


Earth Leakage Limit — In the dialog box, enter the limit, in Amps. The limit is the threshold where Neo5 will give an Earth Leakage Alarm.



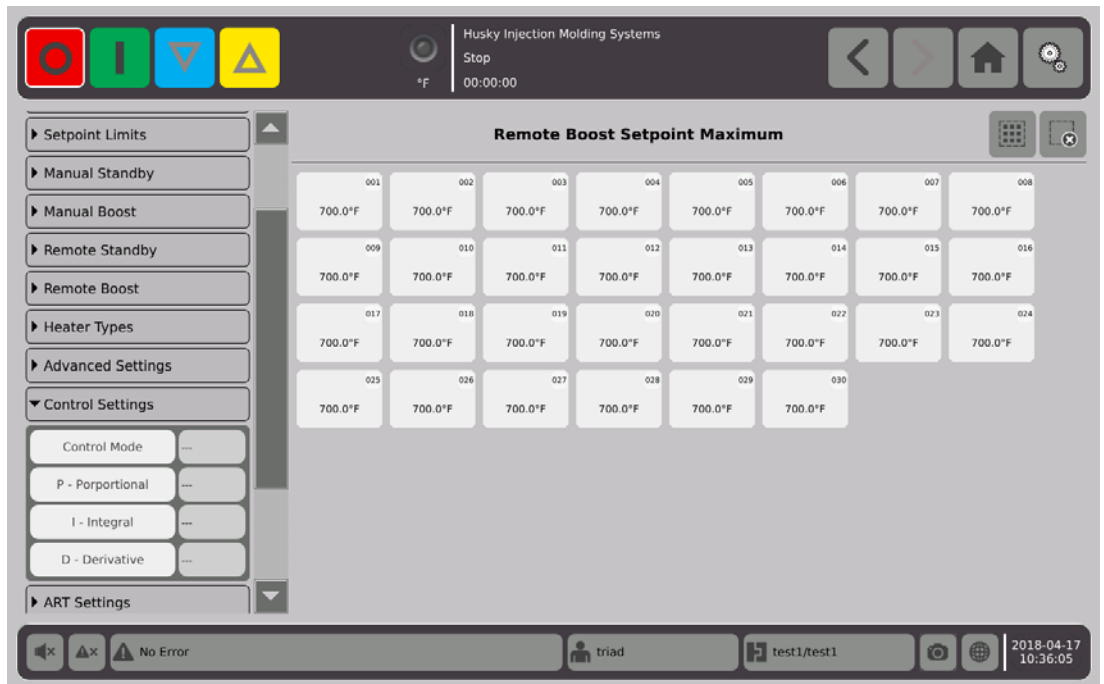
No Response Limit — This is a global setting that determines how long the system should apply 96% power or more without a 5 degree rise in the temperature before it is declared an alarm condition. The default value is 4 minutes and the valid range is 2 to 15 minutes.

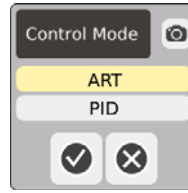
No Heater Detected Enable — The No Heater Detected Alarm supplies instantaneous feedback that a heater has failed or is no longer connected to the circuit. Touch the No Heater Detected Enable box to enable the No Heater Detected feature.



No Heater Limit — This limit is used by the system to determine if a heater is still connected to the zone. If the current measurement of the zone is below the limit for more than 10 seconds, the No Heater Alarm will be activated.

7.5.11 Control Settings Fields





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).

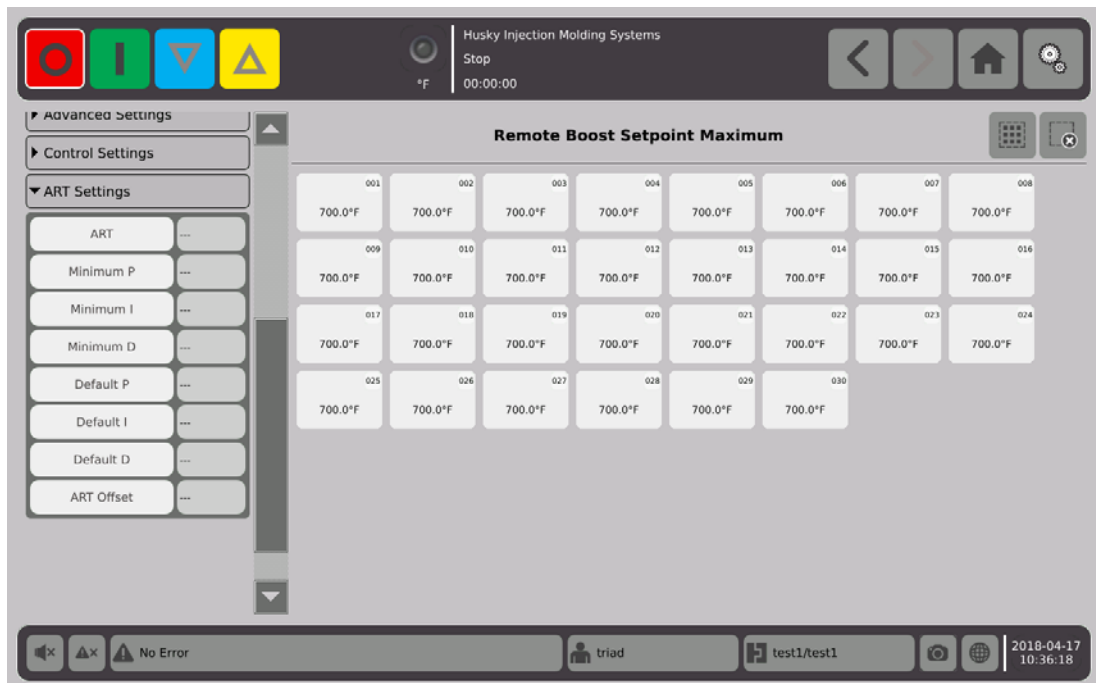
P-Proportional — This is the proportional term value used by the control algorithm. Possible values are 0 to 250.

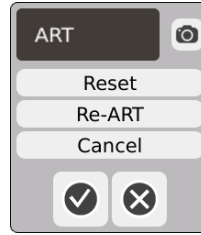
I-Integral — This is the integral term value used by the control algorithm. Possible values are 0 to 250.

D-Derivative — This is the derivative term value used by the control algorithm. Possible values are 0 to 250.

PID values are set in the ART settings drop down menu.

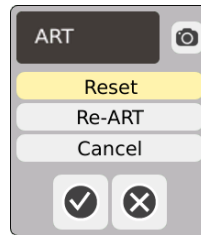
7.5.12 Art Settings





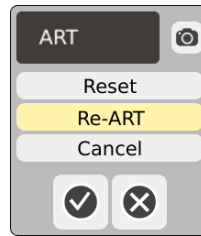
ART

- **Reset** — Resets the ART parameters for the zones. At the next start operation, the zones will go through the ART process.



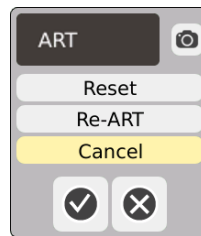
NOTE: Reset can be selected regardless of the system mode.

- **Re-ART** — Reruns the tuning process on the selected zones.

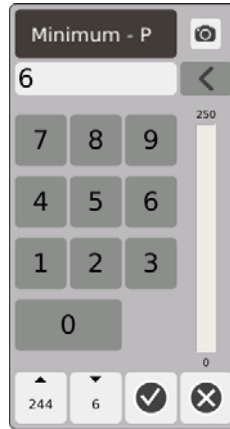


NOTE: The system must be in run mode before a zone can be Re-ARTed.

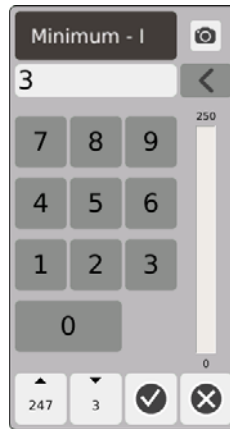
- **Cancel** — Stops the ART process.



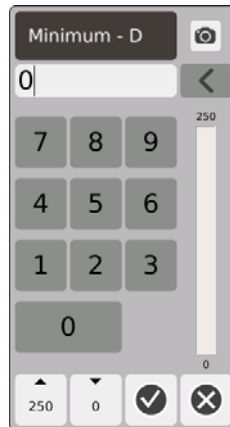
NOTE: The system must be in run mode before the ART process can be canceled.



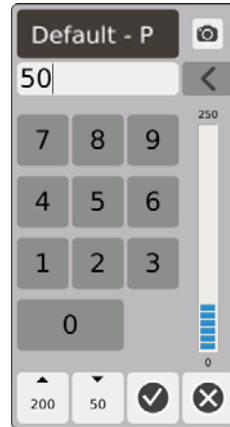
Minimum P — In the dialog box, enter the minimum Proportional (P) value.



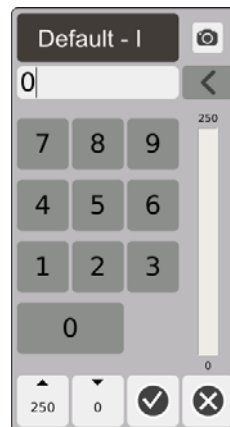
Minimum I — In the dialog box, enter the minimum Integral (I) value.



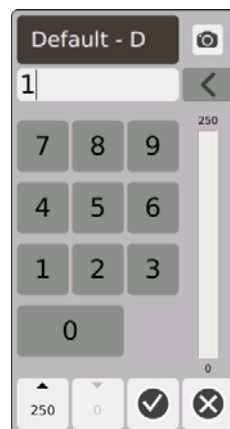
Minimum D — In the dialog box, enter the minimum Derivative (D) value.



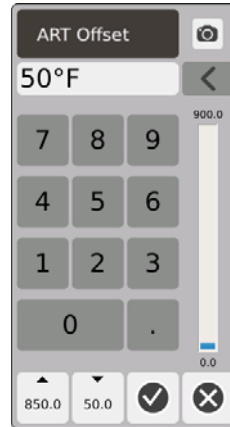
Default P — In the dialog box, enter the default P value.



Default I — In the dialog box, enter the default I value.



Default D — In the dialog box, enter the default D value.



ART Offset — The ART Offset is the number of degrees that the actual temperature has to be below the normal setpoint for all the zones before the system starts the ART process.

7.5.13 Zone Slave

Some of the most vulnerable components in the mold are the thermocouples. If a thermocouple fails, an alarm will sound and an error is logged on the **Alarm** screen. When this occurs you can do 1 of the 3 steps that follow:

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, for example, 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. Neo5 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.

7.5.13.1 Using the Automatic Slave Function

If a thermocouple malfunctions during molding operation, the Auto-Slave function will take over. Heaters are continuously monitored and comparative data is stored. This data is used to select an almost identical Master/Slave relationship for every zone in the mold.

Based on the stored comparative data, 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**, and **Text View** screens, the zone number switches between the original zone number and the zone to which it is slaved.

Once the error is cleared and reset, the slave value is stored 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 setting.


7.5.13.2 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:



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.

1. On the **Quick Set** screen, select the zones that need to be slaved.
2. Open the **Advanced Settings** drop down menu.
3. Touch the box to the right of the **Slave To Zone** button. Enter the zone number that the selected zone will be slaved to, then .

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

7.5.14 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 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.

7.5.14.1 Changing the Zone Control from ART to PID

The control algorithm is automatically adjusted 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, you can manually enter values for the Proportional, Integral and Derivative parameters.

7.5.14.2 Typical PID Values

The following is a list of some typical PID values.

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	

7.5.14.3 Possible Causes of Oscillation

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

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

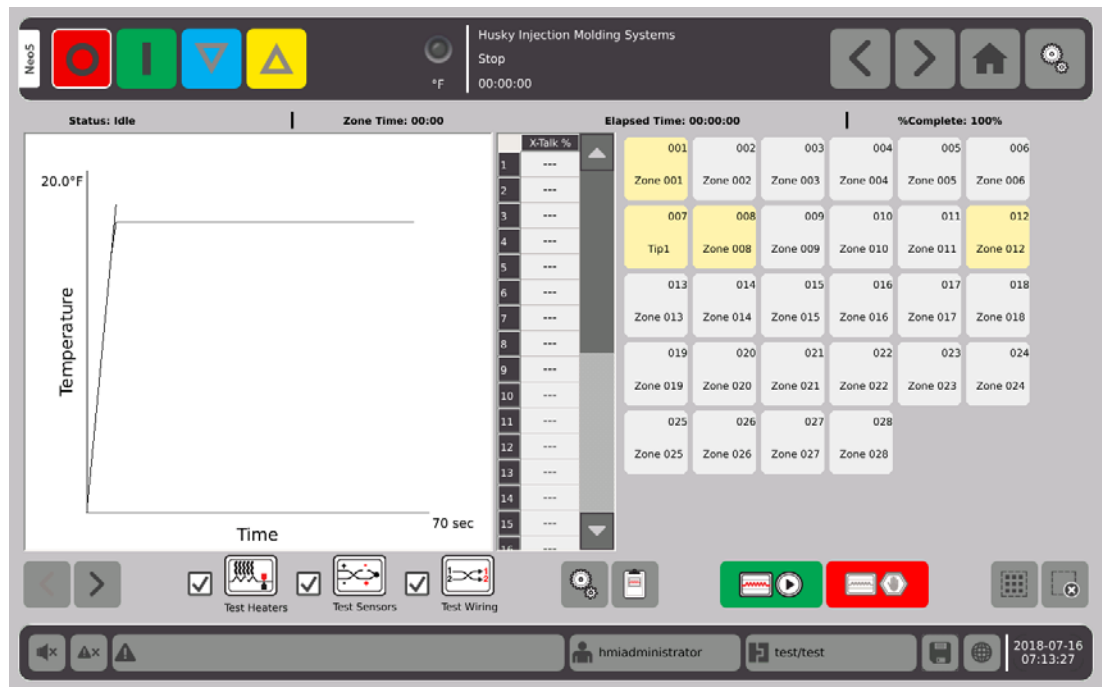
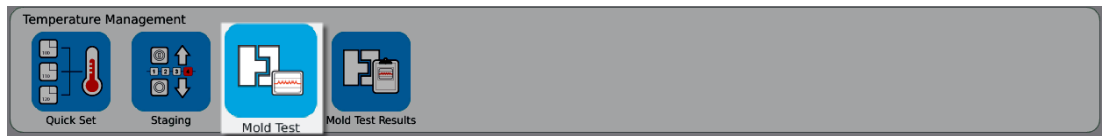
Diagnostics is a useful tool for troubleshooting problems with a mold or for verifying the wiring integrity of a mold after maintenance has been performed. You can also use diagnostics to analyze the thermal isolation between all the cavities in the mold.

8.1 Test Settings

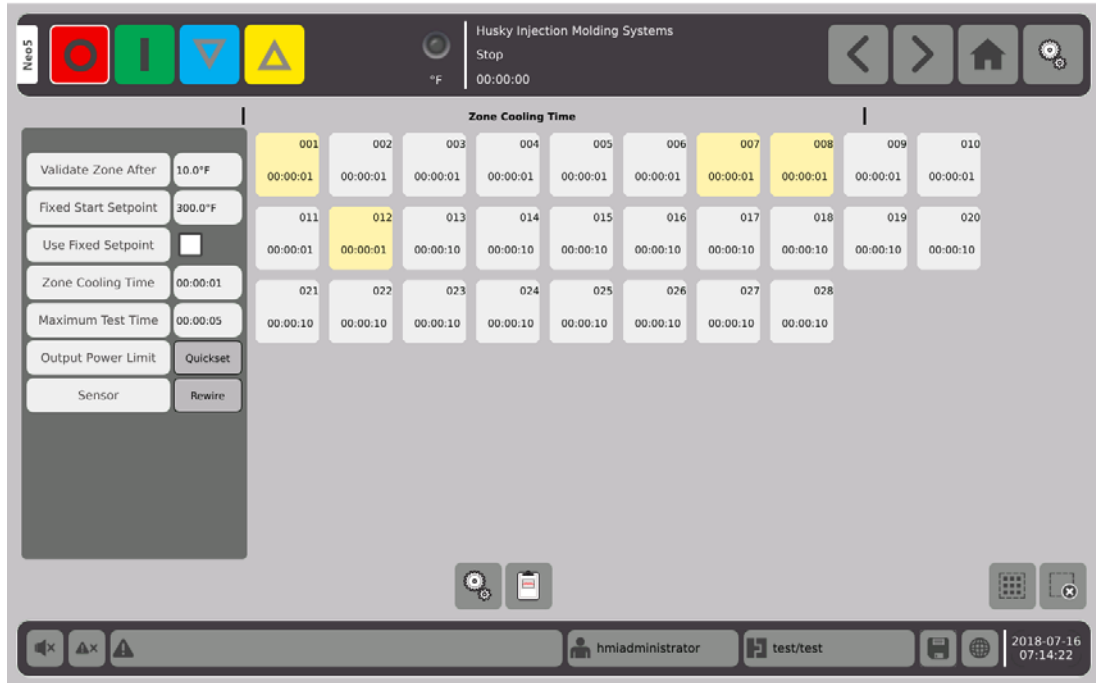
NOTE: The settings are set to their default values at the factory. The settings can be changed if necessary. The steps that follow are not mandatory and only need to be done once, unless additional changes are necessary in the future.

Before you run a test you must enter in the test parameters in the **Settings** screen.

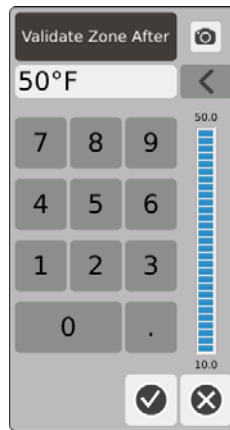
1. On the **Home** screen, select




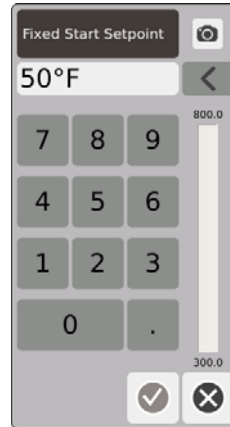
- On the mold test screen, select settings.



- Touch the box to the right of the validate Zone After button.





- On the **Validate Zone After** dialog box, enter the temperature, then . This is the temperature rise in degrees that a zone must reach before it is considered an operational zone.
- Touch the box to the right of the **Fixed Start Setpoint** button.




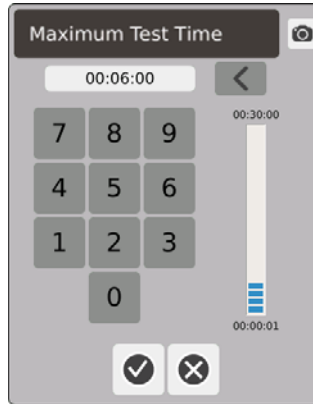
If the fixed setpoint is enabled, then the entered value is used as the minimum setpoint. If not enabled, the lowest normal setpoint for the zones that are selected for testing is used as the minimum setpoint.


All the temperatures for the input sensors that are being tested must be below this limit before the next zone is tested during the wiring test.

6. On the **Fixed Start Setpoint** dialog box, enter the temperature, then .
7. To use the fixed setpoint, touch the box to the right of the use Fixed Setpoint button. This will put a  in the box.
8. Touch the box to the right of the Zone Cooling Time button.



9. On the zone cooling time dialog box, enter the zone cooling time, then . Refer to [8.2.1](#).
10. Touch the box to the right of the maximum test time button.



11. On the maximum test time dialog box, enter the maximum test time, then . Refer to 8.2.2.

Output Power Limit — This is a link to the quick set screen to allow the user to set an Output Power Limit if desired.

Sensor — If the zones and thermocouples are not correctly connected (zone 1 to thermocouple 1), the box to the right of the Sensor button will become active (not greyed out). Touch the Rewire box to correctly connect the zone to its thermocouple.

8.2 Running a Mold Diagnostics Test

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

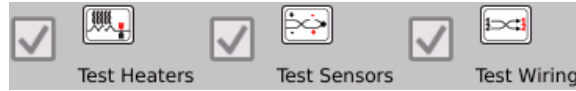
CAUTION!



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 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.
5. Connect the Neo5 to the main input power and turn it ON via the main disconnect.
6. Log in and load a mold setup.
7. On the **Home** screen, select



8. Only zones selected will be tested.
9. Select the desired zone(s) on the **Mold Test** screen.
10. Make sure that Neo5 is stopped.
11. Touch the box next to the test that you want to run on the selected zones. Refer to [8.2.3](#).



12. Touch  to run the selected tests on the selected zones.
13. Touch  if it is necessary to stop the test.

8.2.1 Zone Cooling Time

On some molds, it may be necessary to wait before moving on to test the next zone. This 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 Neo5 started testing the next zone before the previous zone's temperature stopped increasing, this could affect the test results. The default setting is 10 seconds. Each mold setup can have its own set of cooling times.

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

8.2.3 Test Definitions

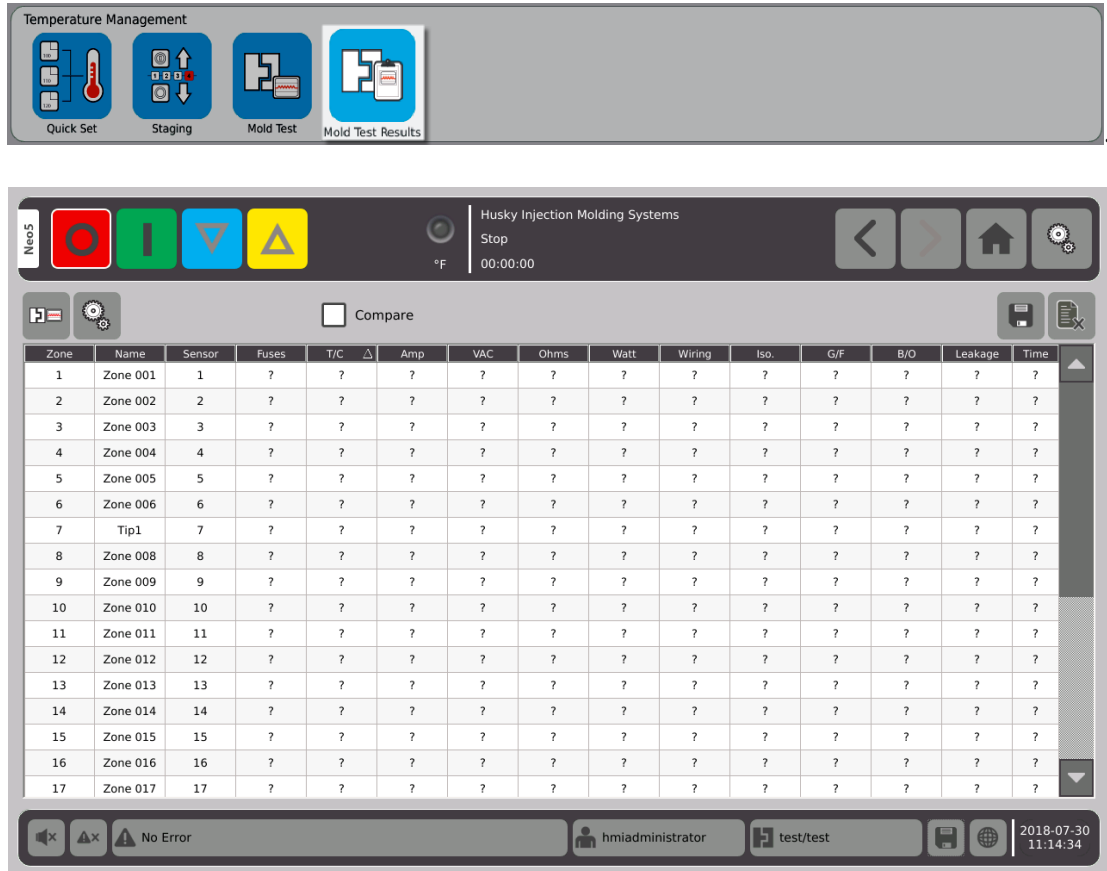
Test Heaters Test — During heating, the maximum current and voltage are recorded and the resistance is calculated. Also checks for blown fuses.

Test Sensor Test — Tests the correct functioning of the thermocouple. For example, if a thermocouple is lost or reversed.

Test Wiring Test — Makes sure that the thermocouple and heaters are paired correctly (1 to 1, 2 to 2, etc). During heating the maximum current and voltage are recorded and the resistance is calculated. Before the cross talk test is done, the test waits for the zone temperature to be less than the threshold.

8.3 Mold Test Results

1. On the **Home** screen, select



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

Item	Description
Zone	Zone number
Name	Zone name
Senor	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 test did not complete. • OK = indicates the fuse for the zone passed the test. • BLOWN = Zone failed the test and the fuse is blown.

Item	Description
T/C	<p>The thermocouple test will determine whether the thermocouple for that zone is operating correctly. Thermocouple values are displayed as follows:</p> <ul style="list-style-type: none"> • ? = indicates the thermocouple for the zone was not tested or did not complete the test. • OK = indicates the thermocouple for the zone test passed. • REV = Reversed. • N/C = Not Connected. • N/A = Not Assigned. • CAL = Not Calibrated. • OL = Overload Positive. • -OL = Overload Negative. • ART = Zone is Arting.
AMP	<p>Current drawn by the heater during the test for each zone.</p> <ul style="list-style-type: none"> • ? = Test did not complete. • --- = No current sensor for this zone. • xx.xxA = Measured full load current of zone. • No Heater = Measured value is less than No Heater Limit.
VAC	<p>Line voltage reading taken during the test for each zone.</p> <ul style="list-style-type: none"> • ? = Test did not complete. • xxxV = Measured voltage being supplied to the zone.
OHMs	<p>Resistance calculated for each zone based on the line voltage and current readings measured during the test.</p> <ul style="list-style-type: none"> • ? = Test did not complete. • --- = No current sensor for this zone. • xx.xΩ = Calculated ohm value for this zone.
Watt	<p>Power calculated for each zone based on the line voltage and current readings measured during the test.</p> <ul style="list-style-type: none"> • ? = Test did not complete. • --- = No current sensor for this zone. • xxxx.xxW = Calculated full load wattage for this zone.
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. Wiring values are displayed as follows:</p> <ul style="list-style-type: none"> • ? = Not tested or did not complete the test. • OK = Passed. • Fail -n = Failed where n is the zone with the maximum response.
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. Iso. values are displayed as a percentage.</p> <ul style="list-style-type: none"> • ? = Not tested or test did not complete.

Item	Description
G/F	The ground fault test tests for an earth leakage in each zone. Earth leakage values are displayed as follows: <ul style="list-style-type: none"> • ? = Test did not complete. • - - - = No current sensor for this zone. • OK = Passed. • Fail = Failed (measured a leakage value that exceeded the Earth Leakage Limit setting in Quick Set).
B/O	The bake out test tests for moisture in each heater. Bake out values are displayed as follows: <ul style="list-style-type: none"> • ? = Test did not complete. • - - - = No current sensor for this zone. • OK = Passed. • Fail = Failed (measured a leakage value that exceeded the Bake Out Limit setting in the System Setup screen).
Leakage	The measured earth leakage in amps. <ul style="list-style-type: none"> • ? = Test did not complete.
Time	Time taken to test each zone. <ul style="list-style-type: none"> • ? = Test did not complete.


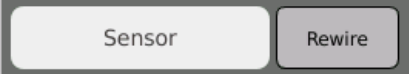
NOTE: "Not tested", could be because the zone was not selected, or because one or two test types (heaters, sensors, or wiring) were not checked. "Test did not complete", means the test timed out or the user stopped the test.

8.3.1 Automatic Thermocouple Wiring

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


The Neo5 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 display Failed, followed by the zone number with the maximum response in the wiring column. Also, the **Re-Wire** button in the **Mold Test, Settings** screen will be enabled.



To automatically rewire thermocouples:

1. If necessary, on the bottom of the **Mold Test** screen, touch  .
2. On the **Settings** screen, touch the **Rewire** button  to automatically reassign the mold thermocouples to their correct zones.



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

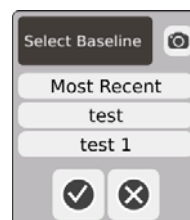
8.3.2 Compare Mode Test Results


When the  Compare compare function on the **Mold Test Results** screen is checked, the **Diagnostics Results** screen will show two tables, one above the other. The top table shows the 'baseline' results, and the bottom table shows the 'compare' results. Buttons at the top of the screen allows the operator to choose the baseline results and compare results from a list of the tables in the database.

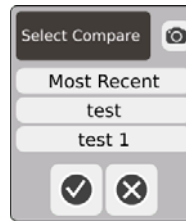
1. In the **Mold Test** screen, run a diagnostics test. The results are stored in a diagnostics table.
2. Touch , **Mold Test Results** and go to the **Diagnostics Results** screen.
3. In the upper right of the **Diagnostics Results** screen, press . The **Test Results Title** keyboard will be shown.





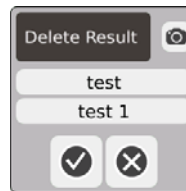
4. Touch . The diagnostics results table is copied to the new table named **Test 1**.
5. Touch  Compare. In the drop down menu, **Select Baseline**, select the test that you want to use as the baseline for the upper table.



6. Press  **Compare**. In the drop down menu, **Select Compare**, select the test that you want to compare to the baseline.



7. Differences in amps, watts, voltage, and ohms are highlighted in red in the lower table.
8. Once there are 20 diagnostic results tables in the database, the **Store** button  will be disabled. Touch , to delete a diagnostic results table, then you can store a different table.




Chapter 9 Heating the Mold

This chapter describes how to start the Neo5 system and check for errors, and alarm conditions if they occur.

9.1 Heater Circuit Test

9.1.1 Startup

1. When you select  in the header, a heater circuit test on all the zones is done before full power is applied. The duration of this test is 15 seconds and is done before the soft start routine is activated.

This test will detect the heater circuit faults that follow:

Faults	Description
Open Circuit	Occurs when a conductor is broken or comes loose and no current flows through the circuit.
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

Neo5 is equipped with an advanced Earth Leakage/Wet Heater Bake Out system. When the Neo5 is started, a check for earth leakage conditions on every heater is done simultaneously and continuously. When necessary, it will start a low voltage bake out on the faulty zone(s). This will bake the moisture out of the zones.

9.2.1 Earth Leakage Limit

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 Limit with a default value of 500 milliamps and an adjustable range from 1 to 999 milliamps.

To set the Earth Leakage Limit, go to the advanced settings field in the **Quick Set** screen. Refer to [7.5.10](#).

9.2.2 Configuring the Length and Number of Bake Out Cycles

You can run up to 5 low voltage bake outs, 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 determines if another bake out cycle is necessary. If the bake out alert enable parameter is active (refer to the **System Setup** screen, [Chapter 10](#)), and, after the set number of bake out cycles are completed, if there is still 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 set number of bake out cycles have completed, the soft start process will begin.

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.

Refer to the **System Setup** screen, [Chapter 10](#), to set the **Bake Out** parameters.

9.3 Soft Start Routine

During the soft start routine, all the zones warm up simultaneously, and 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.

The soft start sequence is:

1. If necessary, the bake out starts.

NOTE: If the ART process has not been completed, the **ART Process** screen will appear 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 ensure 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.
5. You enable **Soft Start** on the **System Setup** screen, refer to [Chapter 10](#).

9.3.1 Adjusting the Soft Start Minimum Limit

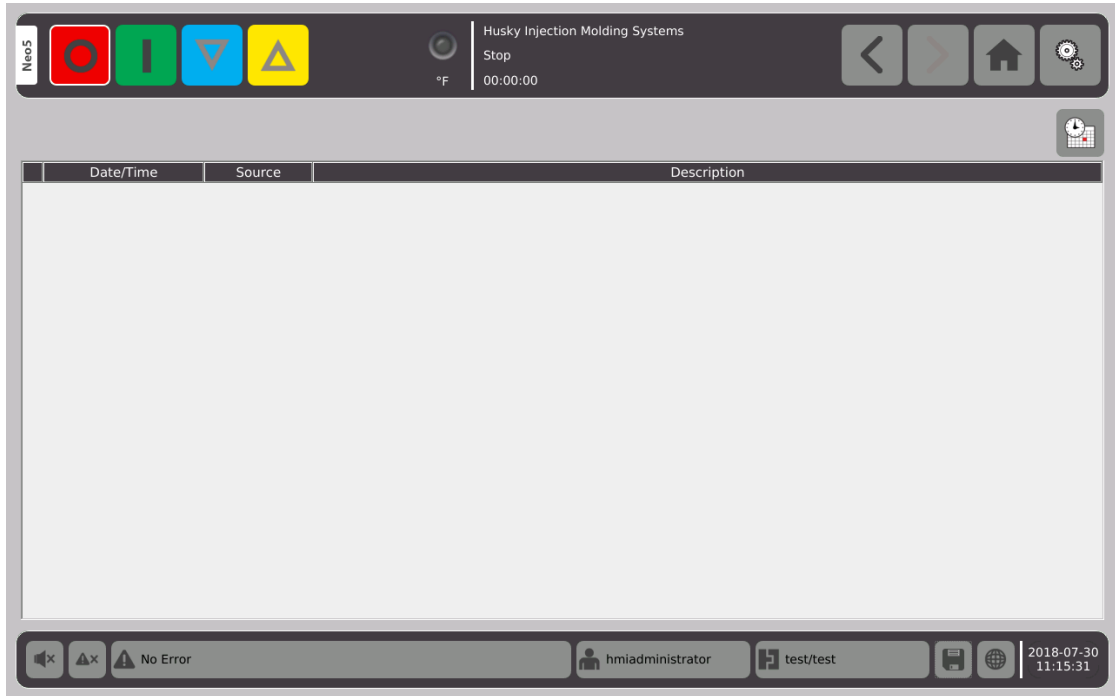
The soft start limit is used to calculate the window between the lowest temperature zone and the highest temperature zone in the system. This window is maintained throughout the soft start process and determines the gap between the coldest and hottest zones. Generally, lowering the soft start limit value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

To set the soft start minimum limit, refer to the **System Setup** screen, [Chapter 10](#).

9.4 Alarm Screen

The **Alarm** screen displays 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 9.6](#). For a description of the abort conditions displayed on the **Event History** screen and **Alarm** screen, refer to [Section 9.7](#).



Item	Description
Date/Time	Date and time that the alarm was triggered.
Source	Cause of the alarm.
Description	Description of the problem that triggered the alarm.



This button is a quick link to the **Event History** screen. The **Event History** screen stores all the alarms after they have been cleared from the **Alarm** screen.

9.4.1 Opening the Alarm Screen

To open the **Alarm** screen:

1. On the **Home** screen, in the **Data Collection and Monitoring** row, select **Alarms**.



Or

2. In the system footer, touch





9.4.2 Clearing Alarms

If an error occurs, Neo5 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 .

To reset the alarm light and acknowledge the alarm, touch .

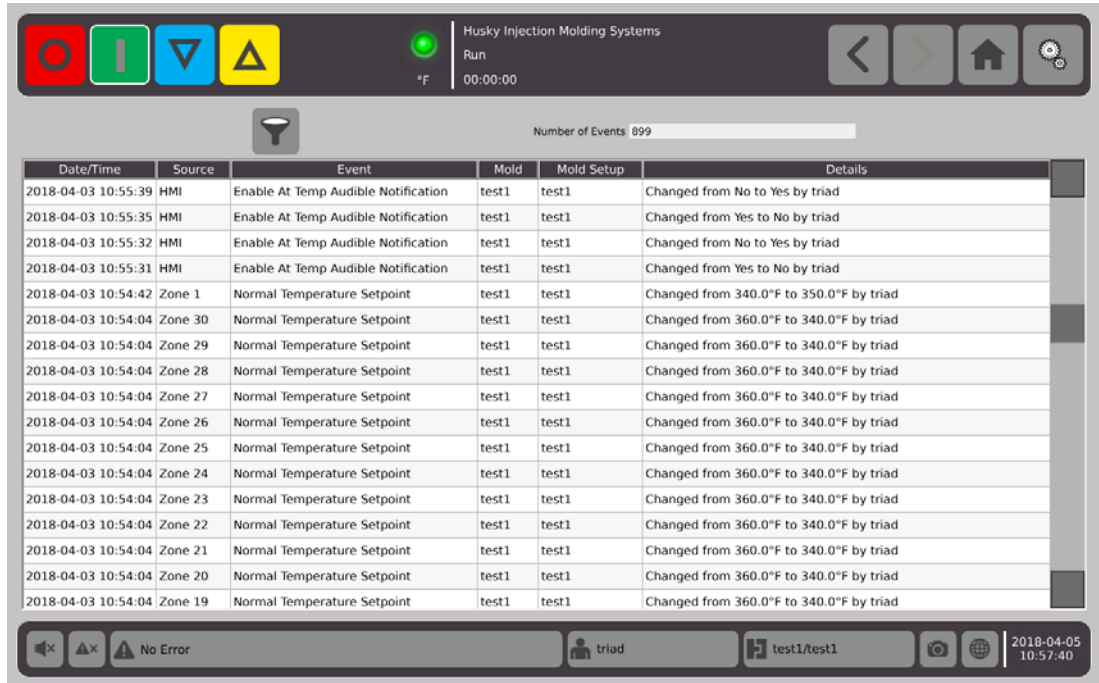
Touch  once and the alarm is assigned the inactive/not acknowledge state.

Touch  twice and the alarm is assigned the inactive acknowledge state. This clears the alarm from the screen. You can see the alarm in the Event History screen after the alarm is cleared.

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



Item	Description
Date/Time	Date and time that the event was triggered.
Source	Where the event occurred.
Event	Name 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.
Details	Describes the event.

9.5.1 Filtering Events

You can filter the events.

1. On the **Event History** screen, touch the .
2. In the **Filter Event** screen, select the filters.
3. Touch .

9.6 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.

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.
No Heater	Instantaneous feedback that a heater has failed or is no longer connected to the circuit. The zones current draw was below the, no heater detection limit, for more than 10 seconds.

9.7 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.

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.
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.
Circuit Overload	The over current hardware signal is triggered by the current sensor. This error occurs immediately: usually in a dead short situation.
Control Card Over Temperature	A control card temperature has exceeded 76 °C (170 °F).
Earth Leakage	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.
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 ICC ² or ICC ³ has blown and needs replacing.
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	The system 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.
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.

Chapter 10 System Setup Screen

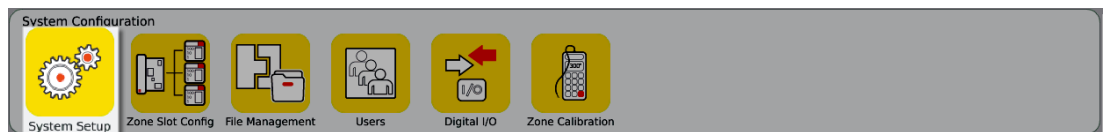
This chapter describes the functionality available within the **System Setup** screen, and provides instructions on setting some of the most commonly used system wide preferences.

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.

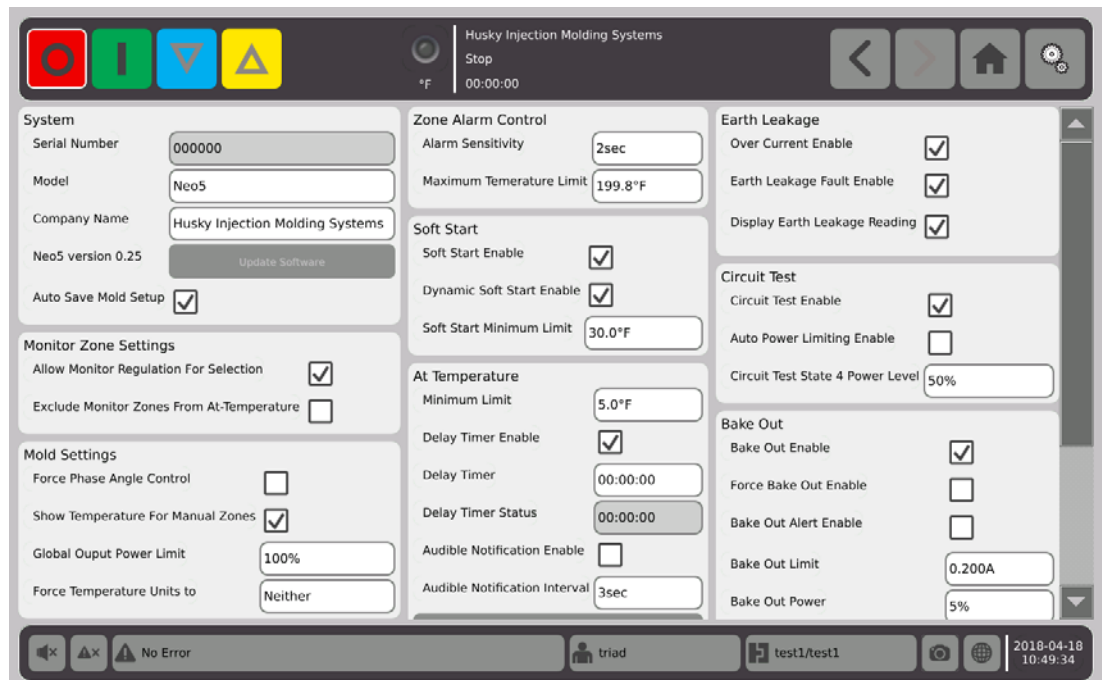
10.1 System Setup Screen

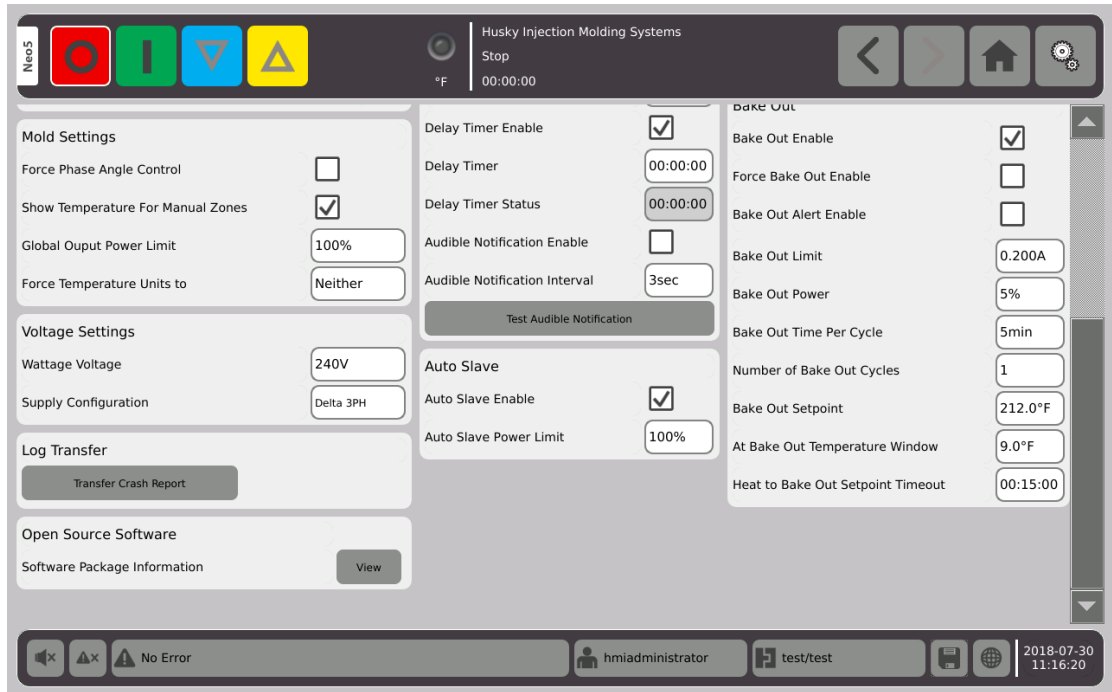
Use the **System Setup** screen to configure the system.

On the **Home** screen, select



You can also access the **System Setup** screen from the header on all screens. Touch





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.
Model	Controller model name.
Company Name	User definable company name displayed in the system header.
Software Version	The Current Software Version is for informational purposes only. Husky support may ask for this number when troubleshooting or upgrading.
Auto Save Mold Setup	If checked, all changes to the current mold setup will be saved as they occur and cannot be discarded.
Allow Monitor Regulation for Selection	Enables the parameter that allows the change of the regulation mode to "Monitor" for zones in the Quick Set screen.
Exclude Monitor Zones from At-Temperature	Enables the parameter that allows the exclusion of the zones set to "Monitor" regulation from the at-temperature determination by the system.
Force Phase Angle Control	There are two methods for controlling the power applied to the heaters, refer to Section 2.2 . If checked, only the phase angle control will be used.
Show Temperature For Manual Zones	A global setting that controls whether the controller view screens display the thermocouple readings for zones in manual mode.

System Setup Screen Item Descriptions (Continued)

Item	Description
Global Output Power Limit	Controls the maximum output power delivered to each zone. Overrides the individual zone setting in the Quick Set screen.
Force Temperature Units to	Forces the temperature units to specified settings.
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.
Soft Start Enable	The soft start process is applied upon startup, if checked.
Dynamic Soft Start Enable	If checked, the dynamic soft start is enabled.
Soft Start Minimum Limit	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.
Minimum Limit	Defines the minimum threshold for activating the AT-Temperature signal. The AT-Temperature signal goes active when all active zone temperatures are within the lower alarm limit. If the alarm band setting is smaller than the AT-Temperature Minimum Limit, then the AT-Temperature Minimum Limit is used to activate the AT-Temperature signal.
Delay Timer Enable	The delay timer will start, if checked.
Delay Timer	Sets the amount of time the system will wait before the AT-Temperature output signal is activated.
Delay Timer Status	Time remaining on the delay timer.
Audible Notification Enable	Will give an audible notification that the zones are at temperature.
Audible Notification Interval	The time between the audible beeps.
Auto Slave Enable	Toggle this parameter on or off.
Auto Slave Power Limit	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.
Over Current Enable	If checked, the Over Current alarm is enabled.
Earth Leakage Fault Enable	Toggle this parameter to turn earth leakage checking on or off.
Display Earth Leakage Reading	Enables the Leakage column in the Text View screen.
Circuit Test Enable	Enables the circuit test for ICC ³ cards.

System Setup Screen Item Descriptions (Continued)

Item	Description
Auto Power Limiting Enable	If checked, the Auto Power Limiting feature is enabled.
Circuit Test State 4 Power Level	Determines the power percentage applied during circuit test state 4.
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>
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	Length of the bake out cycle. The parameter range is 1 to 30 minutes. The default value is 5 minutes.
Number of Bake Out Cycles	The number of attempts to bake out the moisture in a heater. The parameter range is 1 to 10. The default value is 1.
Bake Out Setpoint	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 ICC ³ cards are installed.
At Bake Out Temperature Window	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 ICC ³ cards are installed.
Heat to Bake Out Setpoint Timeout	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 ICC ³ cards are installed.


10.2 Changing the Number of Zones in the System

You may need to add or remove zones to an existing mold setup. If the mold running has fewer control zones than listed on the screen, you 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 .
2. Select the number of zones and/or slots to be enabled or disabled.



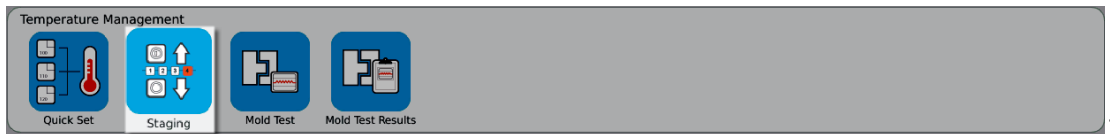
3. Touch the **Slot Enable** button.
4. Touch .
5. Restart the controller.


Chapter 11 Staged Startup and Shutdown

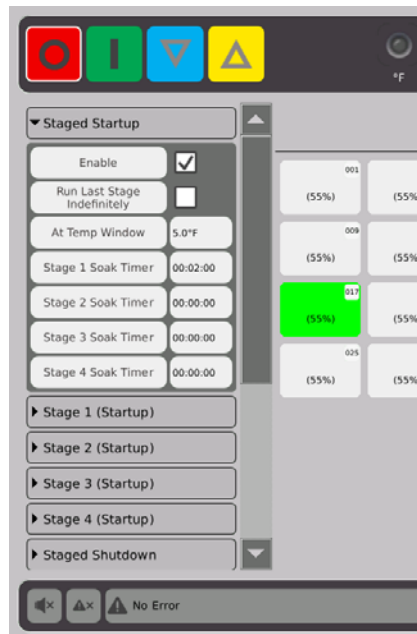
This feature allows the Neo5 to heat or cool zones in a predetermined order by using stages. Zones can be assigned to any of the 4 stages and can be configured with a separate set point for each stage. A timer can also be configured for each stage which will allow all the zones to “soak” for a defined amount of time. The hot runner system must be heated (Staged Startup) and cooled (Staged Shutdown) in a specific order to prevent problems such as misalignment and leaking.


11.1 Enabling or Disabling Staged Startup

On the **Home** screen, in the Temperature Management row, select



1. Select the zones or groups that will make up stage X.
2. On the **Staging** screen, touch the  on the staged startup button to show the drop down menu.



3. Touch the box next to the Enable button. A  will show in the box.
4. To disable staged startup, touch the check box again.


Item	Description
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 time the zones stay “soak” at the stage setpoint before the next stage begins.
At Temp Window	The stage will be At Temperature when the setpoint is within the At Temperature window.

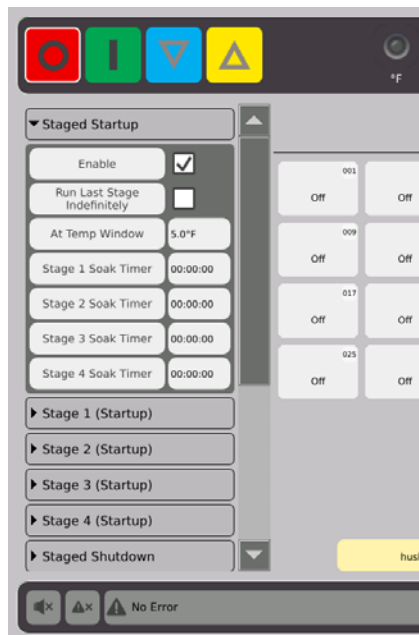
11.1.1 Setting Soak Timers


At the end of each stage during staged startup or shutdown, when all the zones are at the stage setpoint, 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.

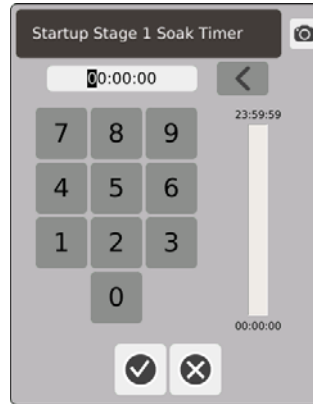
NOTE: It is not necessary to assign a soak time to each stage. To avoid a delay between when a stage has reached setpoint and before the following stage is activated, set the timer to 00:00:00.

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

1. On the **Staging** screen, touch  on the Staged Startup button to show the drop down menu.
2. Touch the box to the right of the stage 1 soak timer.

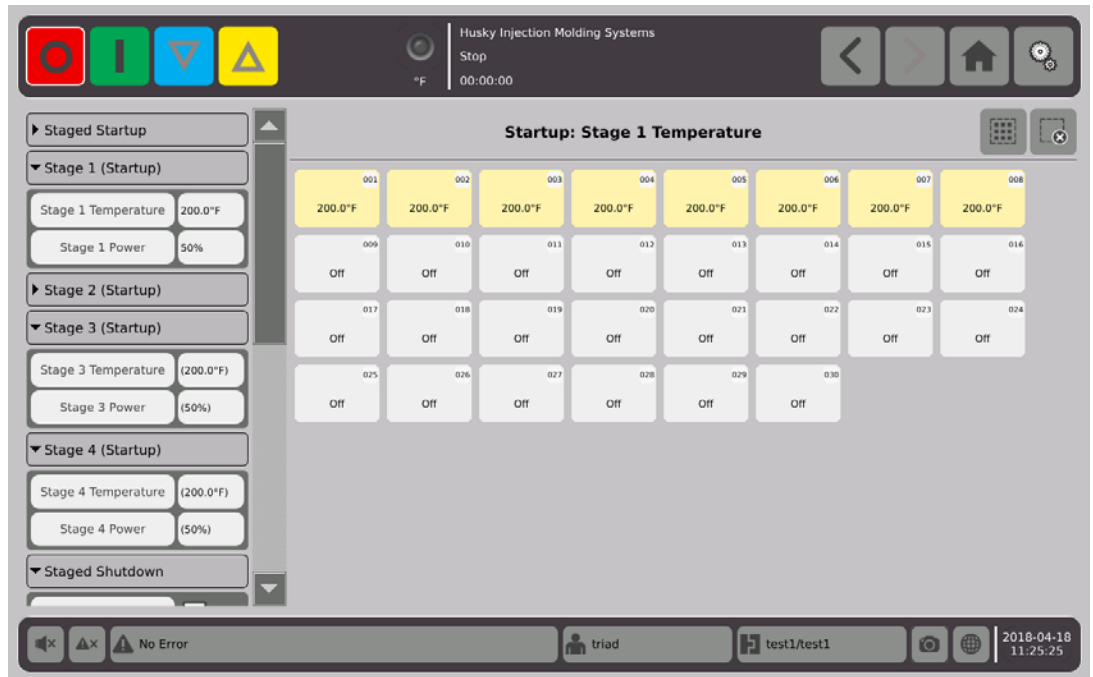


3. Use the dialog box to set the soak time, then .



11.2 Set the Stage Temperature and Power

1. Select Stage (1, 2, 3, or 4) (Startup) and touch ► to show the drop down menu.
2. Touch the button to the right of the Stage X Temperature bar.
3. In the dialog box enter the temperature for Stage X, then ✓.
4. Do steps 1 thru 4 above to set the Stage X power percentage.



Chapter 12 Data Recording

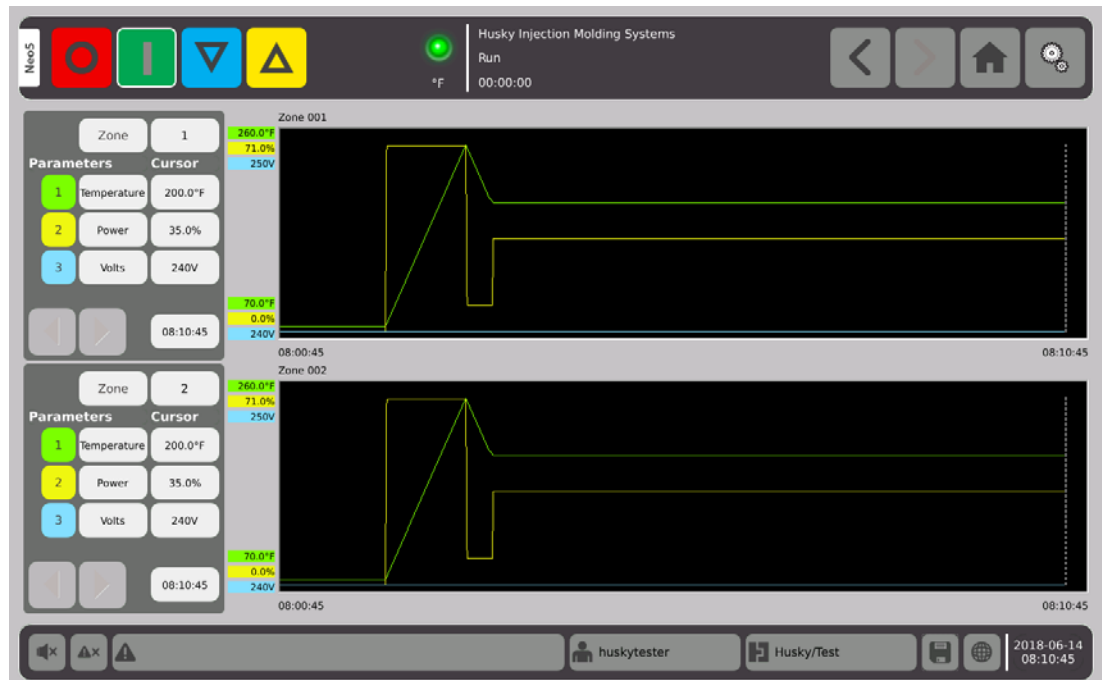
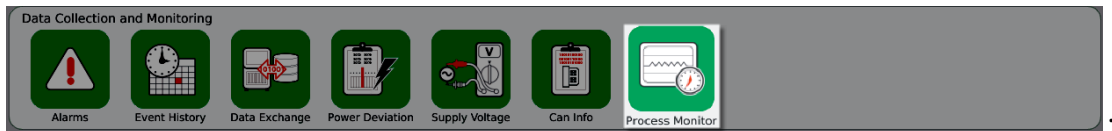
Data Recording is a useful tool to track the operation of a mold. This tool helps analyze the system to optimize the molding process, track errors, find the source of a recent error or predict where future errors may occur. The Error Log contains a record of errors that have occurred since the errors were last cleared. Use the **Process Monitor** 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 Monitor Screen

The **Process Monitor** screen shows two graphs.


You can plot 1, 2, or 3 parameters on each graph for the selected zone. The parameter plots are color coded. The x-axis is the parameter and the y-axis is the time.

1. On the **Home** screen, select




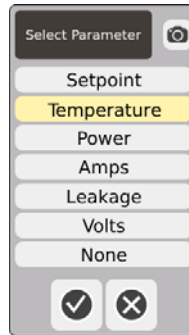
12.1.1 Viewing the Process





Change the zone:

1. Touch the box to the right of the Zone box.
2. Use the keypad and enter the new Zone number. Touch .

Change the parameter:

1. Touch the #1 parameter box.
2. In the dialog box, select the parameter. Touch .



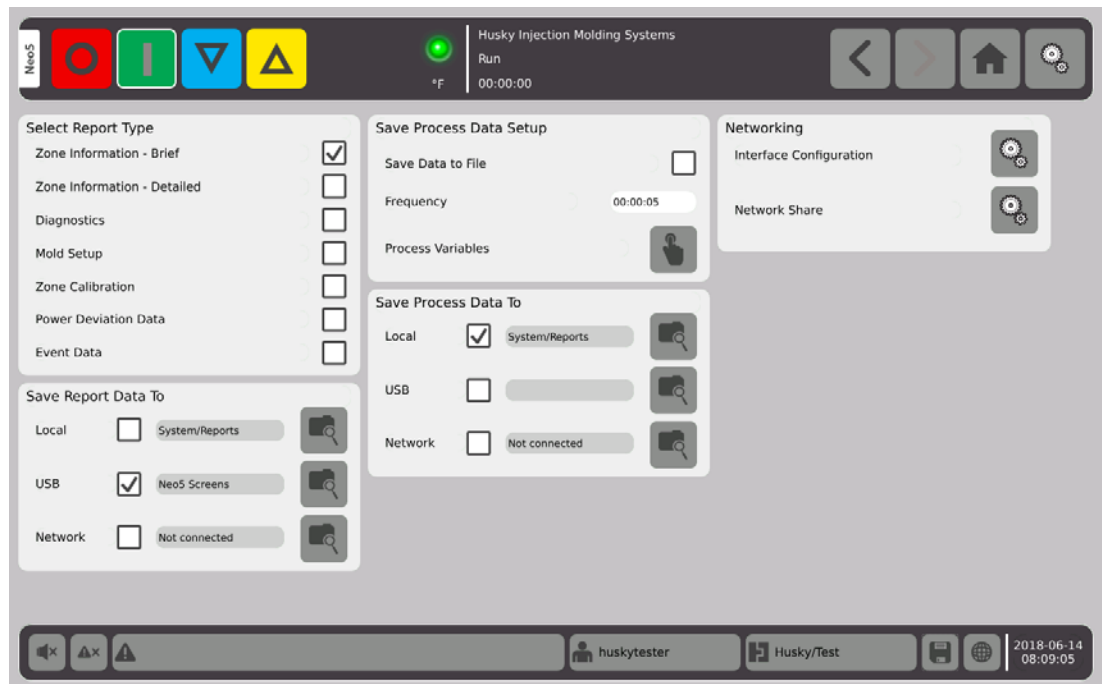
3. Do steps 1 and 2 for the 2 and 3 parameters.
4. The zone name will show above the left corner of the graph.
5. When you start the Neo5, the parameters for the selected zone will start to plot on the graph.
6. Use the   buttons to move the cursor (dashed vertical line) to the left and right. The value of the parameter will show in the box next to the parameter name, and the time will show in the box to the right of  .

Chapter 13 Data Exchange

You can store reports and images to the Neo5 hard drive. From the file management screen you can move the reports/images to a network or USB device for sharing, storing or printing. Or you can save directly to the USB device or network>


13.1 Select Reports Process Data and Settings

1. On the Home Screen, in the Data Collection and Monitoring row, select Data Exchange.



2. On the Data Exchange screen, select the reports that you want to save.

Item	Description
Select Report Type	Put a check in the box next to the report that you want to save.
Save Report Data To	Put a check in the box next to where you want to save the report. A USB Device must be installed in the USB port or the Neo5 must be connected to a network.

Item	Description
Save Process Data Setup	<p>Check the save data to File box to save the process data to the Neo5 hard drive. Touch the Frequency button and enter in the time intervals that you want Neo5 to save the current process data. Touch the select box for the process variables and put a check next to the process variables that you want to save.</p> 
Save Process Data To	<p>Put a check in the box next to where you want to save the process data. A USB device must be installed in the USB port, or the Neo5 must be connected to a network.</p>
Networking	<p>You can enter the network path for the shared network folder. You can upload files from or download files to the network. The format is \\server\shared folder.</p>

13.2 Report Descriptions

This section provides a description of each print report.

Reports will be saved to one of the locations that follow:

- System/Reports folder in the Neo5 hard drive,
- an installed USB device, if configured,
- a shared folder on a network, if configured.

Print Report Type	Description
Zone Information — Brief	From the Text View screen, the following will be saved to a file: <ul style="list-style-type: none"> • Zone Number • Setpoint and Units • Actual Temperature and Units
Zone Information — Detailed	From the Text View screen, the following will be saved to a file: <ul style="list-style-type: none"> • Zone Number • Zone Name • Setpoint • Temperature • Power • Amperage • Leakage • Regulation Mode • Alarm Limit • Abort Limit • Watts • Resistance • Full Load Watts • Voltage

Print Report Type	Description
Diagnostics	<p>From the Test Results screen, print the following to file:</p> <ul style="list-style-type: none"> • Zone Number • Zone Name • Sensor • Fuses • T/C • Amperage • Volts AC • Watts • Wiring • Isolation • Earth Leakage • Bake Out • Time • Resistance
Mold Setup	<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) • No Response

Print Report Type	Description
Zone Calibration	<ul style="list-style-type: none"> • Date and Time • Mold Folder and Mold Setup • System Status • Low Test Value • High Test Value • Zone Number: <ul style="list-style-type: none"> — Low Value Before Calibration — High Value Before Calibration • Zone Number: <ul style="list-style-type: none"> — Value After Calibration
Power Deviation Data	<ul style="list-style-type: none"> • Date and Time • Mold Folder and Mold Setup • System Status • Power Deviation Enable • Use Calculated Limit • Sample Period • Stabilization Time • Minimum Deviation Limit • User Specified Deviation Limit • Zone Number • Zone Name • Heater Type • Zone Status • Base Average • Relative Tolerance • Base Delta • Power Average • ± Tolerance • Deviation • Global Compensation • Compensation Power • Sample • Error Count • Error Active
Event Data	<ul style="list-style-type: none"> • Date and Time • Mold Folder and Mold Setup • System Status • Number of Events: <ul style="list-style-type: none"> — Date/Time — Source — Event Type — Mold Folder Name — Mold Setup Name — Event Details

Chapter 14 Digital I/O

The Neo5 has four Inputs and four Outputs available as a paid option.

The four Inputs are:

- Remote Standby
- Remote Boost
- Remote Start
- Remote Stop

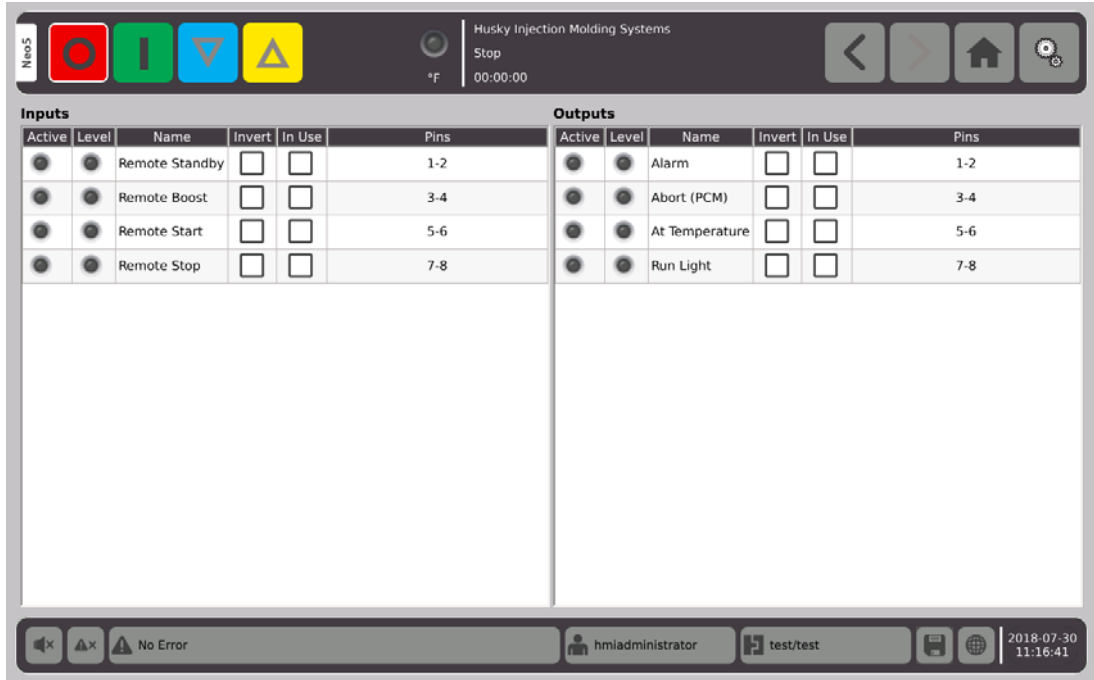
The four Outputs are:

- Alarm
- Abort (PCM)
- At Temperature
- Run Light

The input and output connectors are located on the back of the Neo5 (see [Section 15.2](#)). If you need help to connect the Neo5 inputs and outputs, contact your Husky Regional Service and Sales Office.

14.1 Configure the Digital I/O

On the **Home** screen, in the System Configuration row, select Digital I/O.



Item	Description
Active	Indicates the logical state of the I/O signal. This displays the final state of the signal after the optional invert is applied.
Level	Indicates the physical (electrical) state of the I/O at the pin. This state equals the logical state after it is optionally inverted, by a normally close signal.
Name	The name of the input/output.
Invert	The input/output signal is true when the signal goes high to low (versus normal low to high).
In Use	A check in the box turns the input/output on.
Pins	The connector pins used for the input/output.

After you have made the applicable connection, for each input and output being used, select invert if necessary. Select In Use to turn the input/output on.

14.2 Digital I/O Connector Pin-Out Description

The tables that follow include the connection descriptions for all of the optional Inputs and Outputs available for the Neo5.

14.2.1 Digital Input Descriptions

Digital Inputs	
Optional Name	Description
Remote Standby	Places all zones that have a Remote Standby setpoint into Standby mode (Lower setpoint) whenever this input signal is activated.
Remote Boost	Places all zones that have a Remote Boost setpoint into the Boost mode (Higher setpoint) whenever this input signal is activated.
Remote Start	Places the system in start mode whenever this signal is remotely activated. This state will remain until the STOP key is selected or Remote Stop is activated.
Remote Stop	Places the system in stop mode whenever this signal is remotely activated. This state will remain until the START key is selected or Remote Start is activated. NOTE: You cannot start the system when this input is active.

14.2.2 Digital Output Descriptions

Digital Outputs	
Optional Name	Description
Alarm	Activated when any Alarm or Abort condition occurs. This state will remain until the alarm condition is CLEARED or RESET.
Abort (PCM)	Activated when an Abort condition occurs and the PCM setting in the Quick Set screen is set to System for the problem zone. This state will remain until the alarm condition is CLEARED or RESET.
At Temperature	Activated ONLY when all zones are above the Under Temperature alarm limit. This state will remain until any zone drops below the Under Temperature alarm limit.
Run Light	Activated whenever the START button is pressed. This state will remain until the system is placed in STOP mode.

14.2.3 Input Connector Pin-Out

The table that follows shows the connection detail for all the inputs wired for dry contacts (No voltage).

CAUTION!

Electrical hazard - risk of damage to the equipment. DO NOT apply a voltage to any of the Inputs. Doing so could damage the Neo5.

Digital Inputs (Wiring for Dry or No Voltage Contacts)

Connector/Pin	Field Cable Wire Color	Signal Function
Input / 1	Black	Remote Standby
Input / 2	Red	
Input / 3	White	Remote Boost
Input / 4	Green	
Input / 5	Orange	Remote Start
Input / 6	Blue	
Input / 7	Brown	Remote Stop
Input / 8	Yellow	
Input / 9	Violet	Not Used

The table that follows shows the connection detail for all the inputs wired to accept voltage from an external source.

CAUTION!

Electrical hazard - risk of damage to the equipment. DO NOT apply a voltage greater than 30VDC to any of the inputs. Doing so could damage the Neo5.

Digital Inputs (Wiring to Accept Voltage from External Source)

Connector/Pin	Field Cable Wire Color	External Voltage Source	Signal Function
Input / 1	Black	Not Used	Remote Standby
Input / 2	Red	+5-30VDC	
Input / 3	White	Not Used	Remote Boost
Input / 4	Green	+5-30VDC	
Input / 5	Orange	Not Used	Remote Start
Input / 6	Blue	+5-30VDC	
Input / 7	Brown	Not Used	Remote Stop
Input / 8	Yellow	+5-30VDC	
Input / 9	Violet	-VDC	Reference

14.2.4 Output Connector Pin-Out

The table that follows shows the connection detail for all of the outputs.

CAUTION!

Electrical hazard - risk of damage to the equipment. DO NOT apply a voltage greater than 30VDC at 2 amps to any of the Outputs. Doing so could damage the Neo5.

Digital Outputs

Connector/Pin	Field Cable Wire Color	Signal Function
Input / 1	Black	Alarm
Input / 2	Red	
Input / 3	White	Abort (PCM)
Input / 4	Green	
Input / 5	Orange	At Temperature
Input / 6	Blue	

Digital Outputs

Connector/Pin	Field Cable Wire Color	Signal Function
Input / 7	Brown	Run Light
Input / 8	Yellow	

Chapter 15 Maintenance

This chapter describes the maintenance tasks required to maintain the Neo5. Do the maintenance tasks only when necessary.

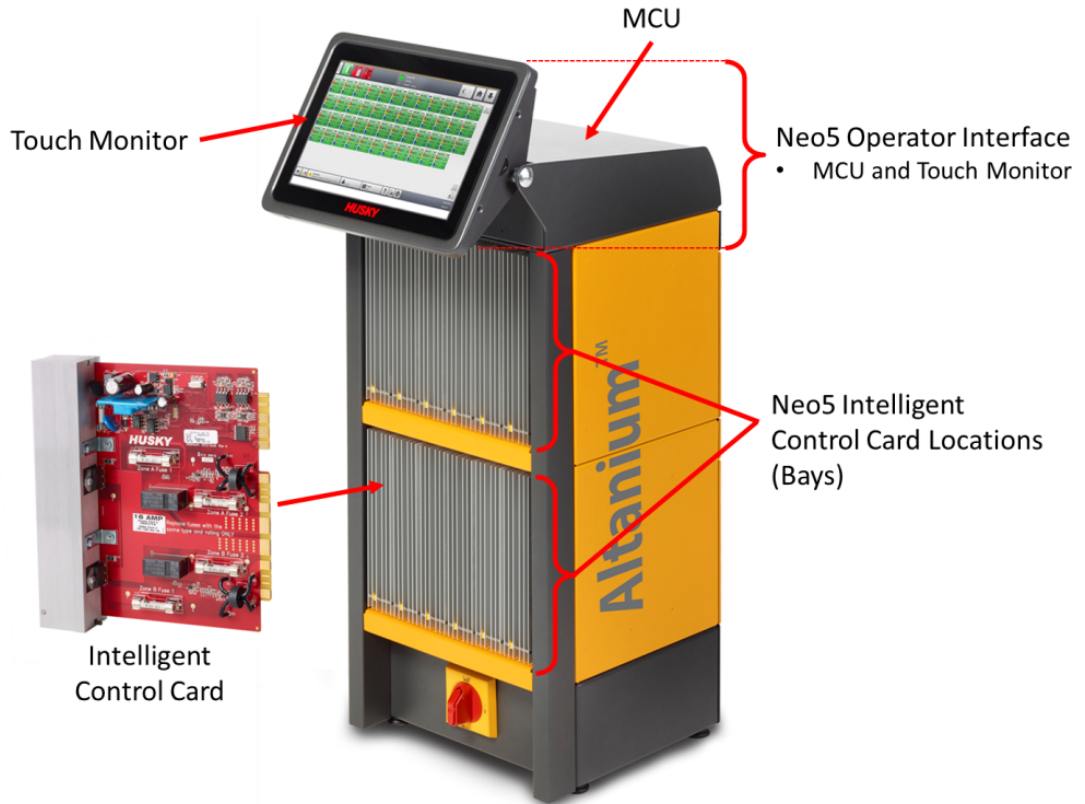
Periodically, and before starting the equipment, check that all cables and cable connections are free from wear or damage. Do not operate equipment if the cables are damaged. Replace all the cables that appear damaged.

Procedure	Reference
Replacing an Intelligent Control Card	Section 15.3.1
Replacing a Blown Fuse on an Intelligent Control Card	Section 15.3.2
Removing and Replacing the Touch Monitor — Integrated Configuration	Section 15.4.1
Removing and Replacing the Touch Monitor — Freestanding Configuration	Section 15.4.3
Removing and Replacing the MCU — Integrated Configuration	Section 15.4.2
Removing and Replacing the MCU — Freestanding Configuration	Section 15.4.4
Removing and Replacing the Operator Interface — Freestanding Configuration	Section 15.4.5
Cleaning the System	Section 15.6
Basic Troubleshooting	Section 15.7

15.1 Servicing the System

The Neo5 systems are based on two user serviceable components:

- X-Series or H-Series Intelligent Control Cards
- Neo5 Operator Interface



Neo5 Integrated Configuration (C6-2 Configuration shown)



Neo5 Freestanding System Configuration (Single Stack)

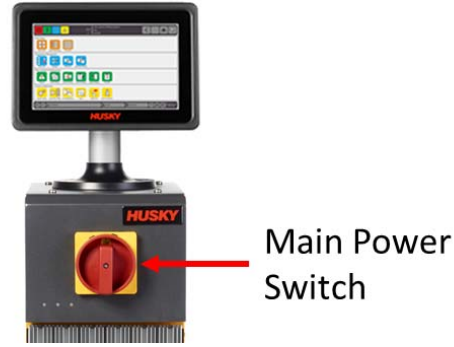


WARNING!

Hazardous voltages - risk of death or serious injury. Before servicing the Altanium Neo5 lock out and tag the Main Power switch in accordance with local codes.



Neo5 Main Power Switch - Integrated Configuration (C6-1 Configuration Shown)



Neo5 Main Power Switch - Freestanding Configuration (Single Stack)

15.2 Cable Connections

Depending on the Neo5 configuration, there will be cable connections at the back and front of the controller.

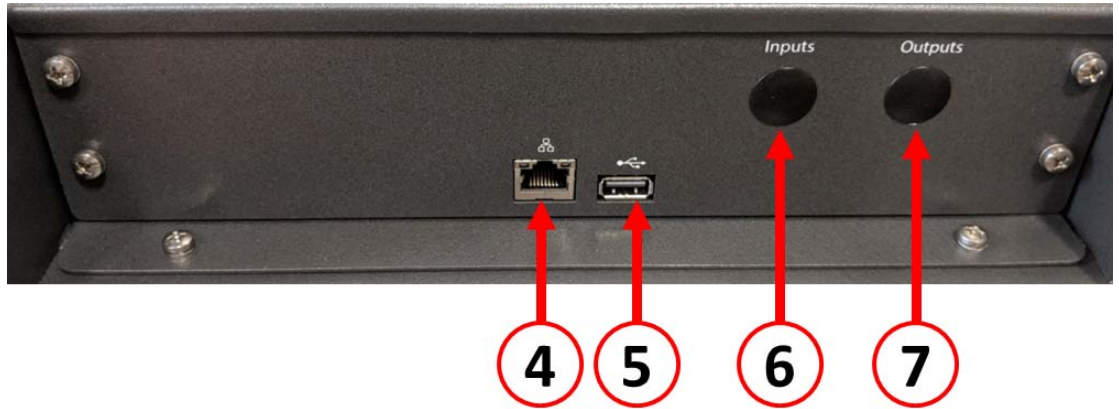
The insulation level of control cables and devices connected to the Neo5 connectors are:

- 500V when the devices are powered by a 380VAC or 415VAC system
- 300V when the devices are powered by a system up to 240VAC.

15.2.1 Cable Connections — Integrated Configuration



Cable Connections - Front of Neo5



Cable Connections - Rear of Neo5

Item	Cable Connection	Description
1	Horn	Audible alarm.
2	LCD1 (HDMI)	Video signal to touch monitor.
3	Touch Screen	Touch screen signal to the touch monitor.
4	Ethernet	User interface to customer networks.
5	USB	USB port for importing and exporting files.
6	Input	Digital inputs (Optional).
7	Output	Digital outputs (Optional).

15.2.2 Cable Connections — Freestanding Configuration

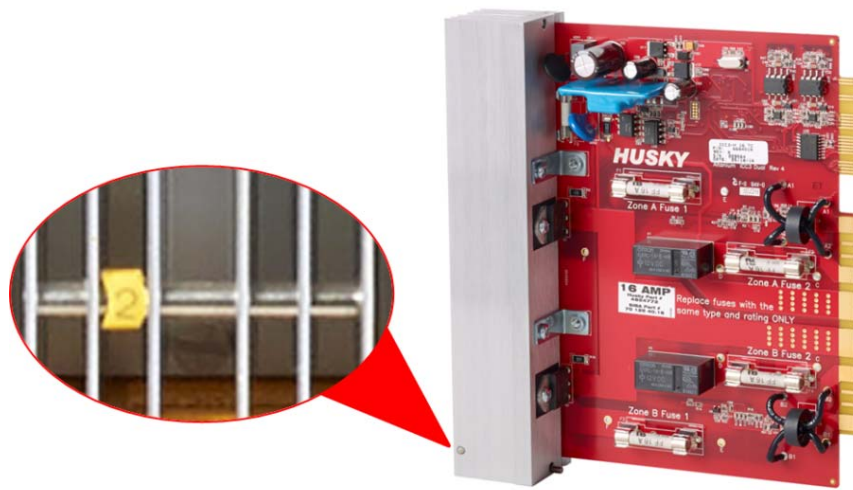


Item	Cable Connection	Description
1	100-240VAC In	Main AC power from the Altanium mainframe.
2	Output COMM	CANBus communication to the Altanium mainframe.
3	Touch Screen	Touch screen signal to the touch monitor.
4	Ethernet	User interface to customer networks.
5	USB	USB port for importing and exporting files. NOTE: Use the USB port at the front of unit for easier access.
6	LCD1 (HDMI)	Video signal to touch monitor.
7	Input	Digital inputs (Optional).
8	Output	Digital outputs (Optional).

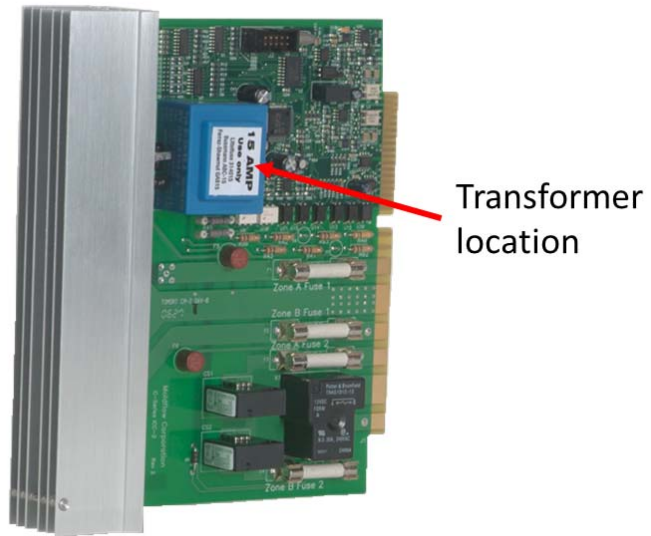
15.3 Intelligent Control Cards

There are two series of intelligent control cards (ICC) that you can install. The X-Series (ICC2) and H-Series intelligent control cards (ICC3). The X-Series card is identifiable by the large square blue or brown transformer mounted near the heatsink and is the older generation of Altanium cards. The H-Series card is identifiable by the yellow numbered label that indicates how many zones it supports. H-Series cards are the newest generation of Altanium cards.

Although they look similar, the X-Series and H-Series cards are not compatible with one another and must only be used in systems of like card types.



H-Series Intelligent Control Card



X-Series Intelligent Control Card



Mainframe Bay with Backplane Exposed

Both series of cards plug into backplanes that are installed into the bays of the Neo5. mainframe. The cards manage the power being delivered to the heaters, the thermocouple feedback and control and circuit protection.

**IMPORTANT!**

Although they look similar, X-Series and H-Series cards use different backplanes and are not compatible with each other.

**IMPORTANT!**

You must have an Intelligent Control Card present in the position labeled 1 in all backplanes for the system to function properly.

15.3.1 Replacing an Intelligent Control Card

**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. Follow the local Lock Out Tag Out procedures.

The ICC2 and ICC3 cards are electrostatic discharge sensitive. Use a ground strap when handling the cards.

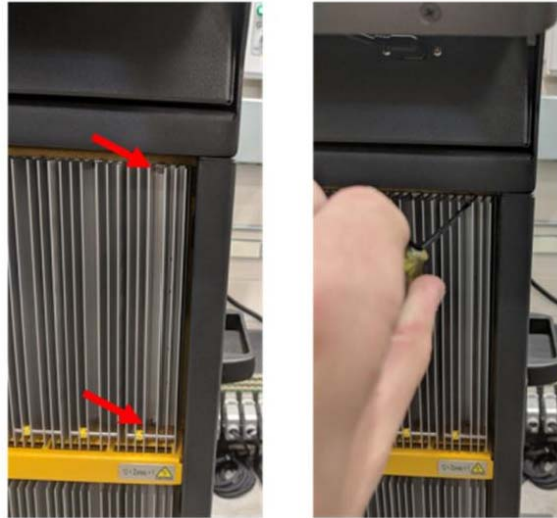
1. Locate the Card Cage that contains the faulty Intelligent Control Card.



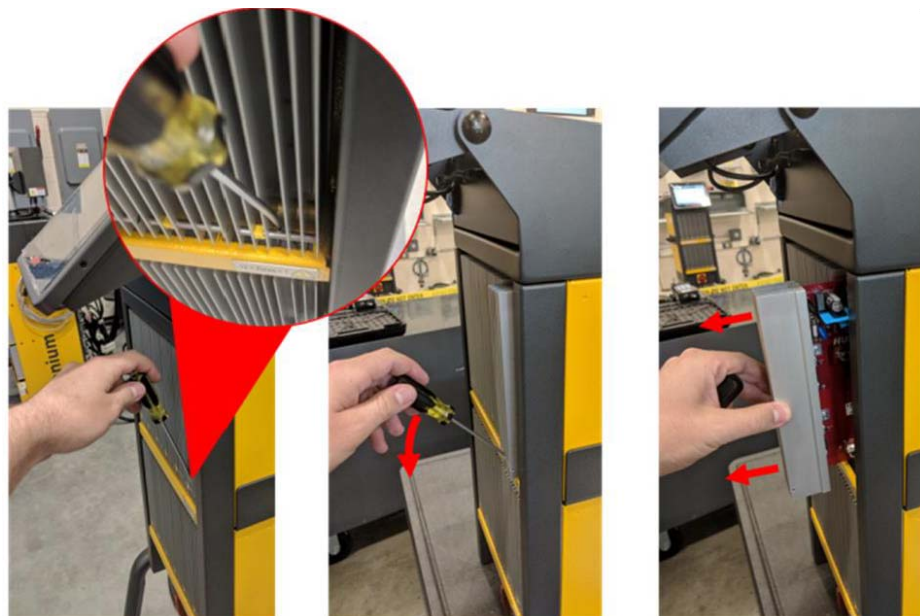
CAUTION!

Mechanical failure mode - attempting to remove a card when the upper and lower heatsink mounting fasteners 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 fasteners on the heat sink. These two fasteners are captive so they will 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 card out.

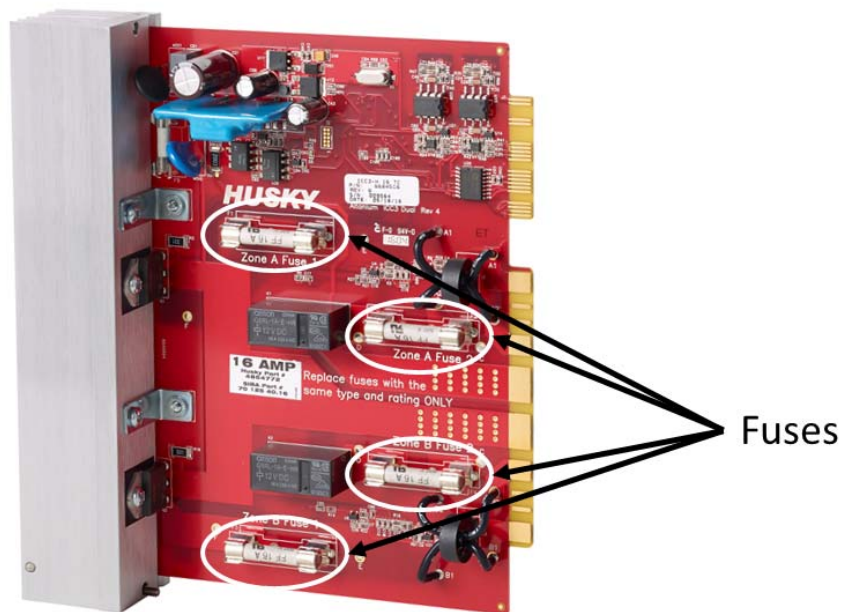


CAUTION!

Static electricity hazard - risk of damage to the equipment. The Intelligent Control Cards are electrostatic discharge sensitive. Do not, under any circumstances, place any Intelligent Control Card on carpets, rugs, or other material that is likely to create a static charge.

4. Carefully put 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 correctly.
6. Tighten the upper and lower slotted fasteners on the heat sink.

15.3.2 Replacing a Blown Fuse on an Intelligent Control Card



Fuse Location



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. Follow the local Lock Out Tag Out procedures.

The ICC2 and ICC3 cards are electrostatic discharge sensitive. Use a ground strap when handling the cards.

1. Locate the Card Cage that contains the Intelligent Control Card that has a blown fuse.
 2. Loosen the upper and lower slotted fasteners on the heat sink. These two fasteners are captive so they will 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 card out.
-

CAUTION!

Static electricity hazard - risk of damage to the equipment. A static charge could damage the Intelligent Control Card. Do not place the Intelligent Control Card on carpets, rugs, or other material that is likely to create a static charge.

4. Carefully put the card on an earthed/grounded surface.
5. Remove and replace the faulty fuse with one of identical type and rating. Husky recommends SIBA 712540 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.

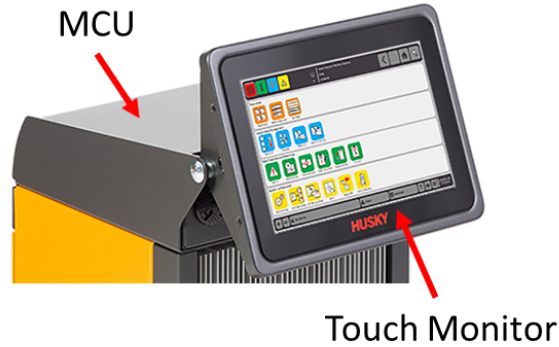
NOTE: 20 and 30 Amp cards will only have two fuses. 5 Amp cards will have 8 fuses.

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 correctly.
7. Tighten the upper and lower slotted fasteners on the heat sink.

15.4 Neo5 Operator Interface

The Neo5 operator interface is used to enter and display molding parameters. It consists of two main components; the touch monitor and the master control unit (MCU). It is also available in two different configurations; integrated and standalone.

The operator interface does not contain user-serviceable parts and should only be serviced by replacing the touch monitor or master control unit as complete subassemblies.



Neo5 Integrated Operator Interface



Neo5 Standalone Operator Interface

15.4.1 Replacing the Touch Monitor — Integrated Configuration



WARNING!

Electrical and mechanical hazard - risk of damage to the equipment. Turn off all power to the system and disconnect it completely from the main input power. Follow the local Lock Out Tag Out procedures.

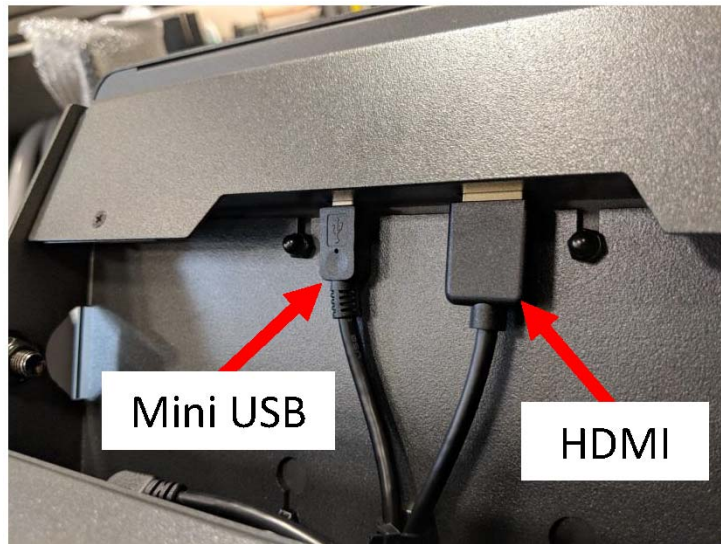
1. Rotate the touch monitor to the full forward position.



WARNING!

Pinch Point Hazard - keep hands and fingers clear of the Neo5 touch monitor hinge mechanism.

2. This will expose the mini USB connector, HDMI connector and top set of fasteners holding the touch monitor to the mounting bracket.



3. Unplug the mini USB and HDMI connectors at the back of the touch monitor.



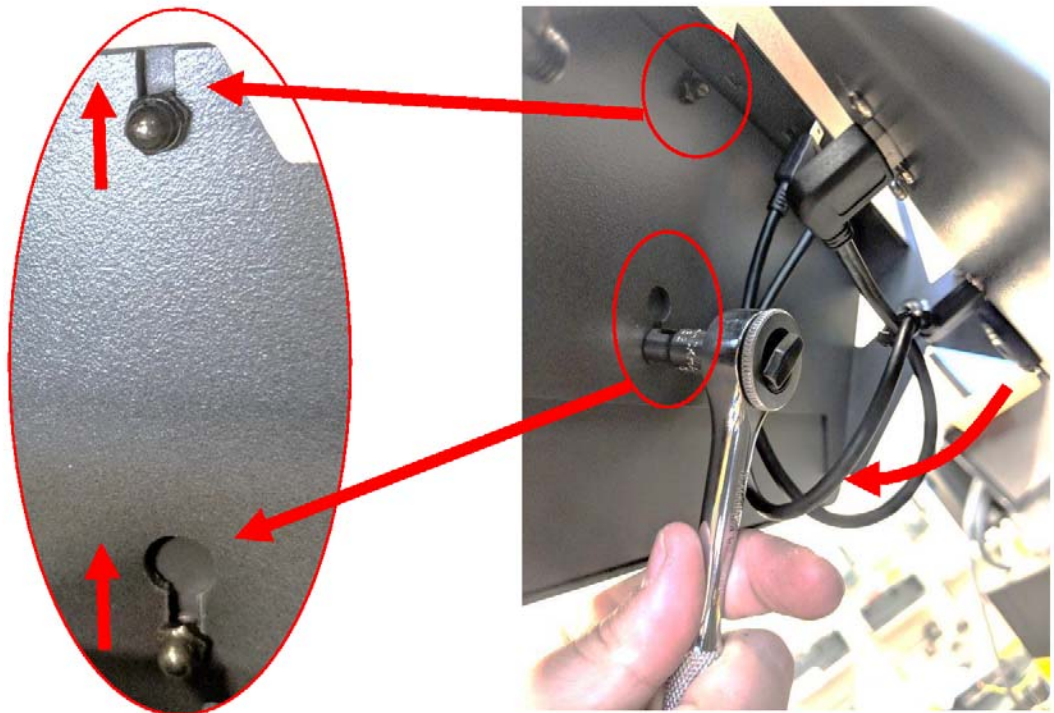
- Loosen the two upper fasteners using a 4mm socket wrench or nut driver.



IMPORTANT!

Only loosen the fasteners. The mounting holes in the bracket holding the touch monitor are slotted key holes that allow the monitor to be removed without removing the fasteners completely!

- Rotate the touch monitor to the full back position and loosen the two lower fasteners.



6. Securely grip the touch monitor and slide it upwards until the fasteners have cleared the upper mounting slots and lower key holes. Pull forward to remove the touch monitor from the mounting bracket.



7. Remove the two upper and lower fasteners from the touch monitor and install them on the threaded studs on the back of the new touch monitor. Do steps 1 thru 6 in reverse order to install the new touch monitor.



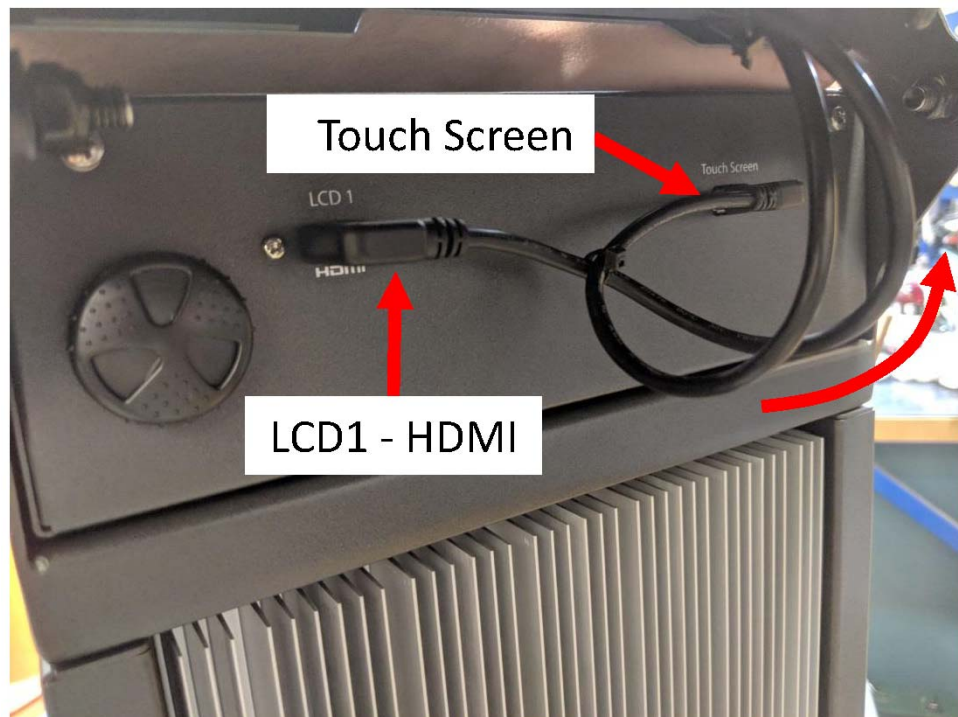
15.4.2 Replacing the MCU — Integrated Configuration



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. Follow the local Lock Out Tag Out procedures.

1. Rotate the touch monitor to the full back position to expose the Touch Screen and LCD1 connectors.



WARNING!

Pinch Point Hazard - keep hands and fingers clear of the Neo5 touch monitor hinge mechanism.

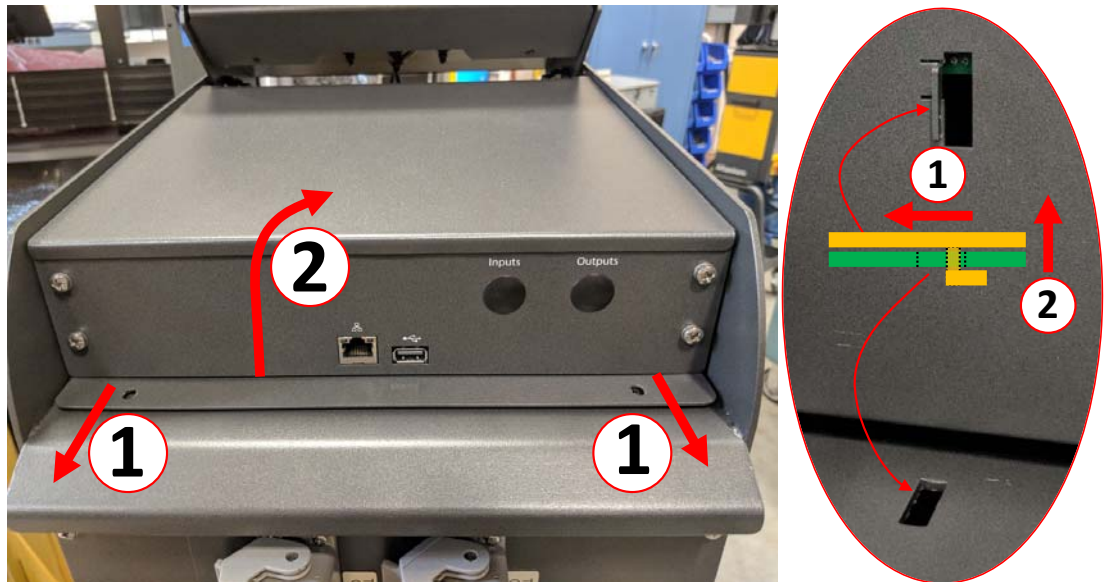
2. Unplug the Touch Screen and LCD1 connectors at the front of the MCU.



3. Locate and remove two mounting fasteners holding the MCU in place at the back of the unit.



- Put your hand on the front of the MCU and push it backwards to disengage the hidden hooks that hold it in place on top of the mainframe.



IMPORTANT!

Do not pull up on the MCU because it is held into position by hooks that fit into slots in the top of the mainframe and are hidden from sight! Push back on the MCU from the front to disengage the hooks and then lift up.

- Once the hooks have disengaged carefully rotate the MCU upwards towards the front of the unit to expose the power and communication cables.



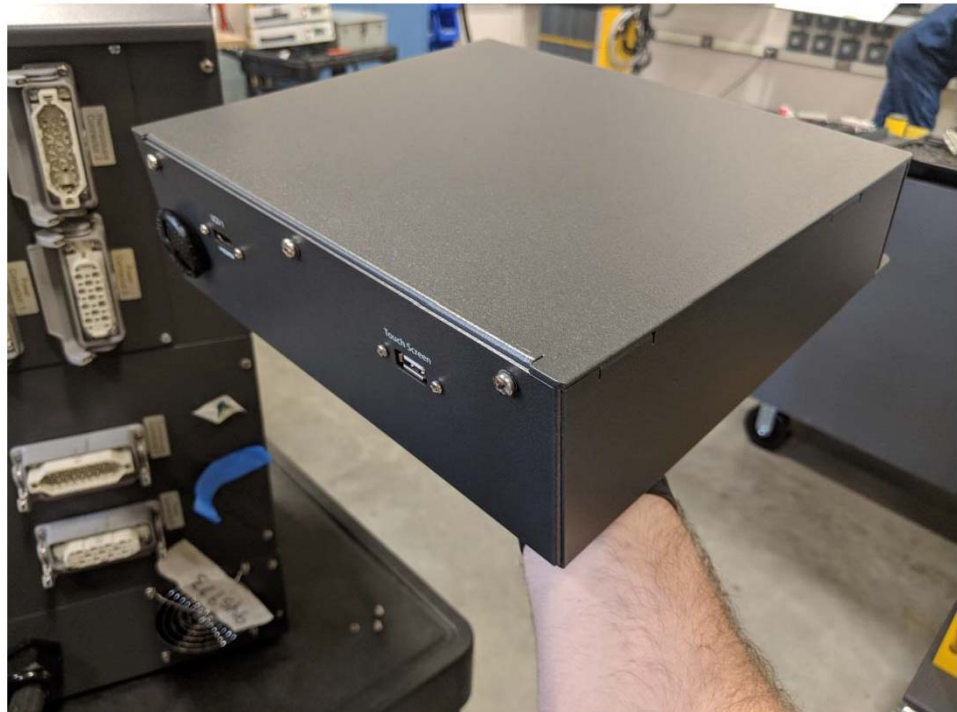
6. Carefully remove the power and communication couplings from the pocket at the bottom of the MCU and continue to rotate the unit upwards until it is resting on its front face.



7. Using your fingers, gently rotate the power and communication couplings to disconnect the cables from the top of the mainframe.



8. After the power and communication cables are disconnected, carefully lift the MCU from the mainframe.



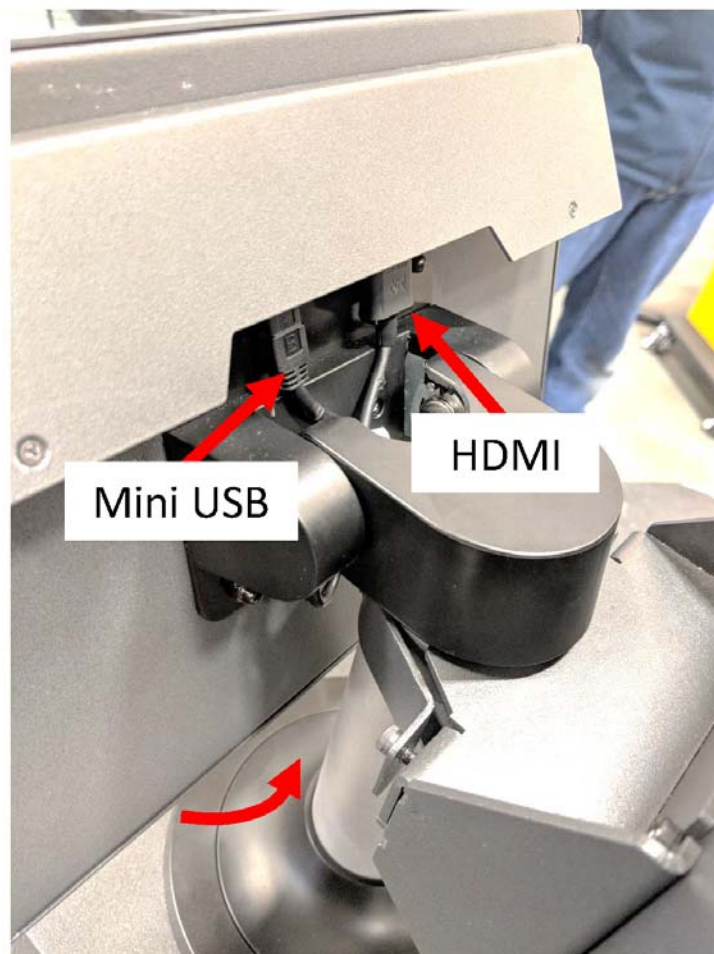
9. Follow steps 1 thru 8 in reverse order to install the new MCU.

15.4.3 Replacing the Touch Monitor — Freestanding Configuration

**WARNING!**

Electrical and mechanical hazard - risk of damage to the equipment. Turn off all power to the system and disconnect it completely from the main input power. Follow the local Lock Out Tag Out procedures.

1. Rotate the touch monitor to the full forward position to expose the mini USB connector, HDMI connector and top set of fasteners that hold the touch monitor to the mounting bracket.



**WARNING!**

Pinch Point Hazard - keep hands and fingers clear of the Neo5 touch monitor hinge mechanism.

2. Unplug the mini USB and HDMI connectors at the back of the touch monitor and loosen the two upper fasteners using a 4mm socket wrench or nut driver.



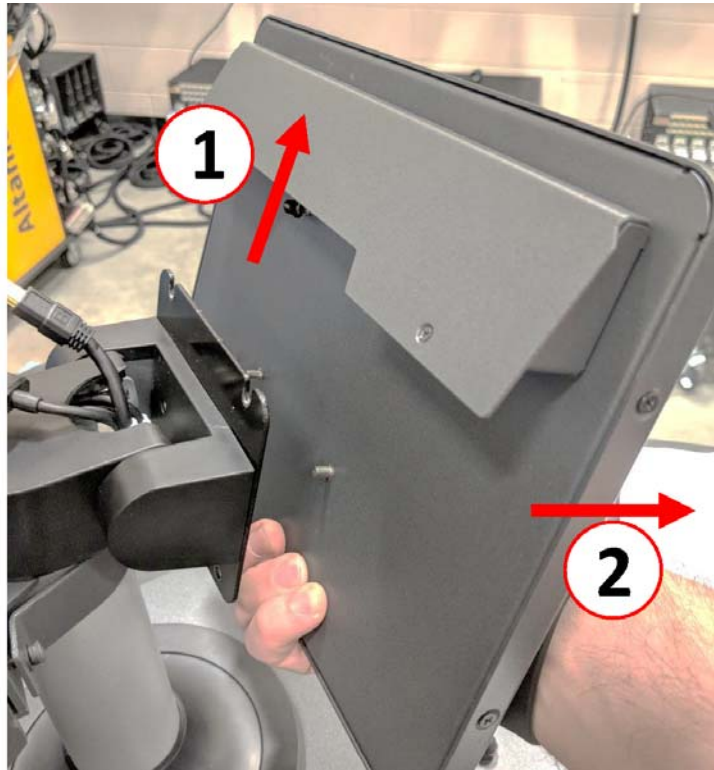
**IMPORTANT!**

Only loosen the top fasteners. The top mounting holes in the bracket holding the touch monitor are slotted and allow the monitor to be removed without removing the top fasteners completely!

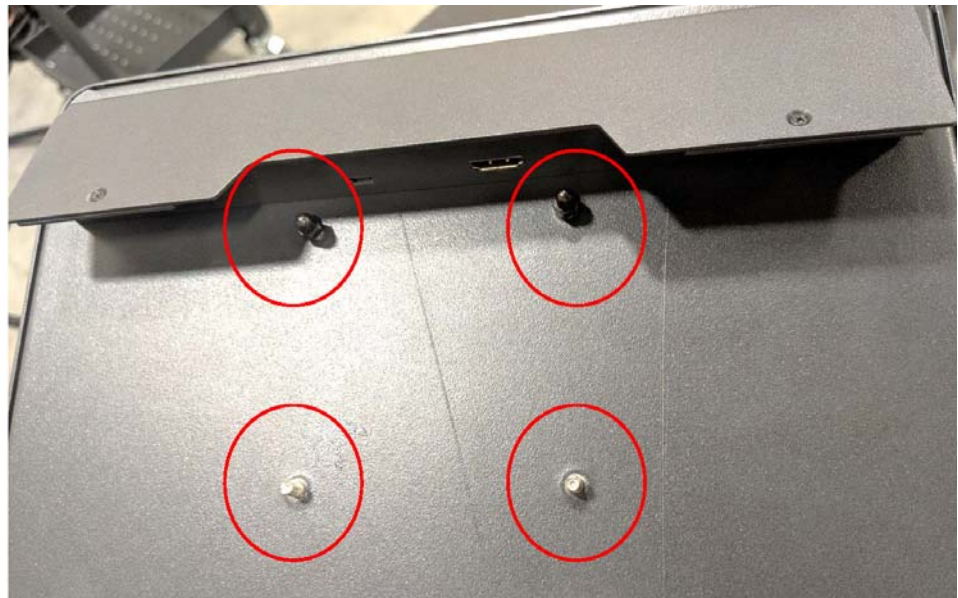
3. Rotate the touch monitor to the full back position and completely remove the two lower fasteners. These mounting holes are not slotted, so the nut has to be removed completely to allow the touch monitor to be removed.



4. Securely grip the touch monitor and slide it upwards until the fasteners have cleared the upper mounting slots and pull forward to remove the touch monitor from the mounting bracket.



5. Ensure the fasteners are preinstalled on the upper threaded studs and the fasteners are left off the lower studs on the back of the touch monitor. Follow steps 1 thru 4 in reverse order to install the new touch monitor.



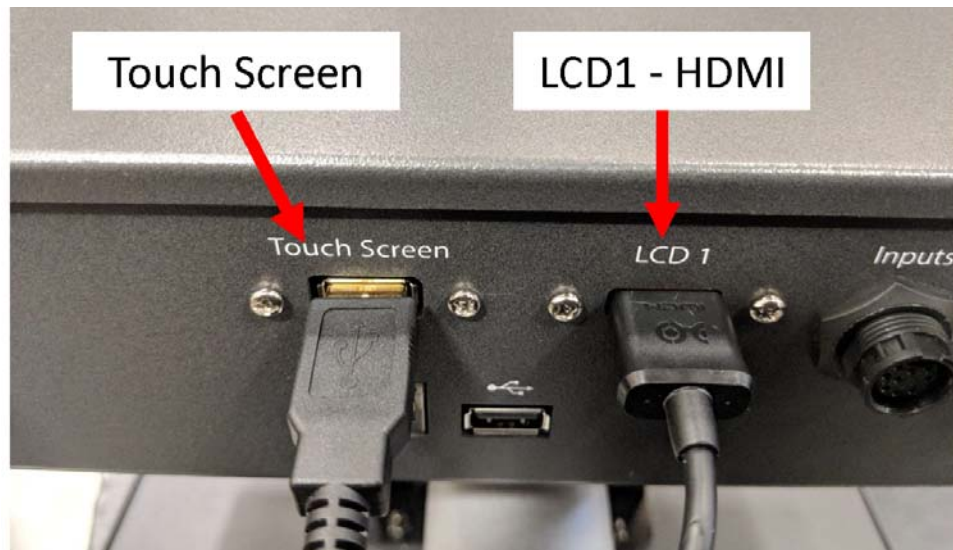
15.4.4 Replacing the MCU — Freestanding Configuration



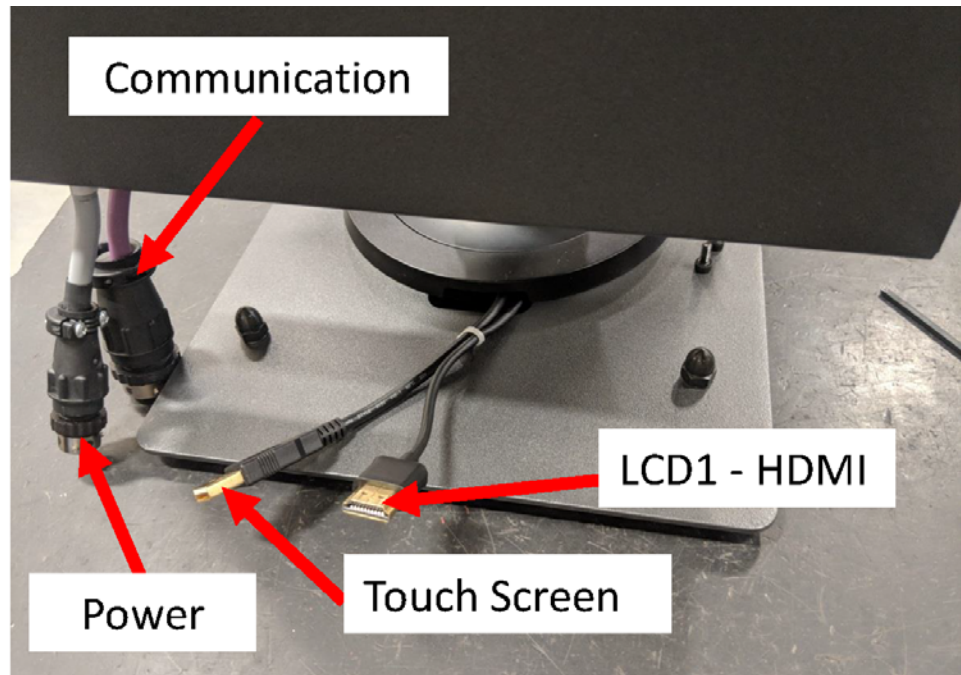
WARNING!

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. Follow the local Lock Out Tag Out procedures.

1. Locate the Touch Screen and LCD1 connectors at the bottom of the MCU enclosure.



2. Unplug the Touch Screen and LCD1 connectors at the bottom of the MCU and decouple the Power and Communication connectors.



3. Locate the four fasteners holding the MCU to the mounting bracket. The bracket is located between the Touch Monitor and the MCU enclosure.



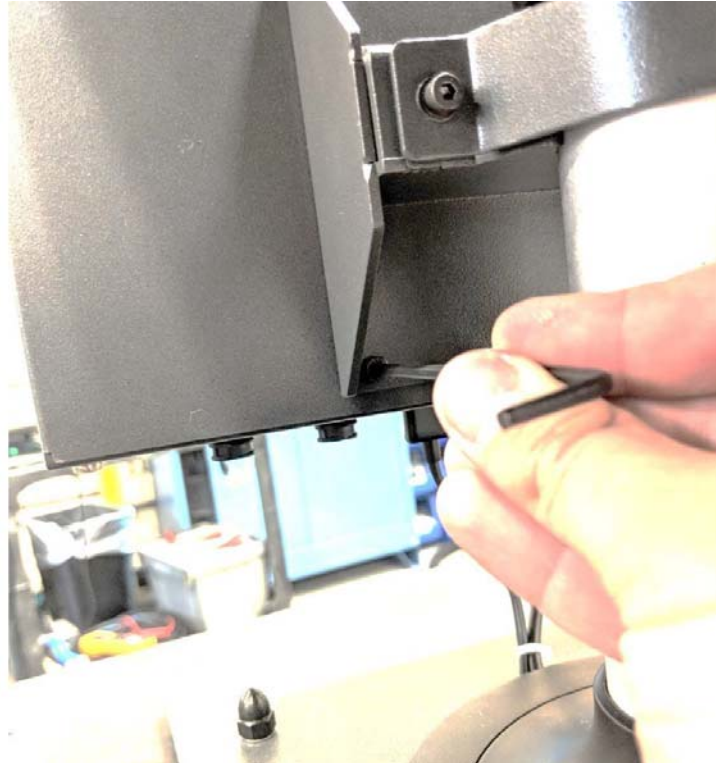
4. Loosen the two top fasteners holding the MCU to the mounting bracket using a 4mm Allen key or hex wrench.



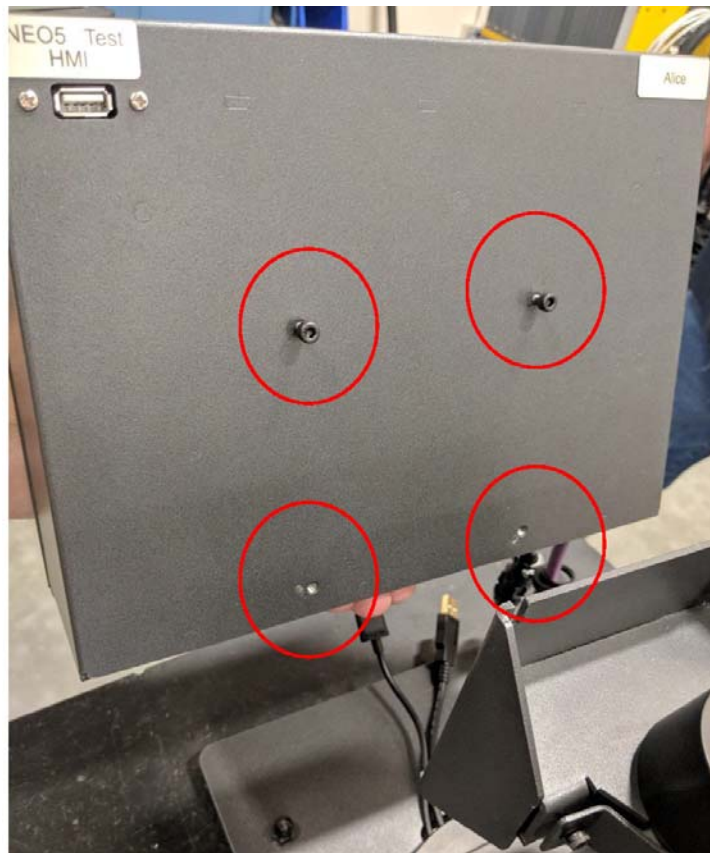
**IMPORTANT!**

Only loosen the top fasteners. The top mounting holes in the bracket holding the MCU are slotted and allow the unit to be removed without removing the top fasteners completely!

5. Locate and completely remove the two lower fasteners. These mounting holes are not slotted, so the screws have to be removed completely to allow the MCU to be removed.



- Securely grip the MCU and slide it upwards until the fasteners have cleared the upper mounting slots and pull forward to remove the MCU from the mounting bracket. Follow steps 1 thru 6 in reverse order to install the new MCU.



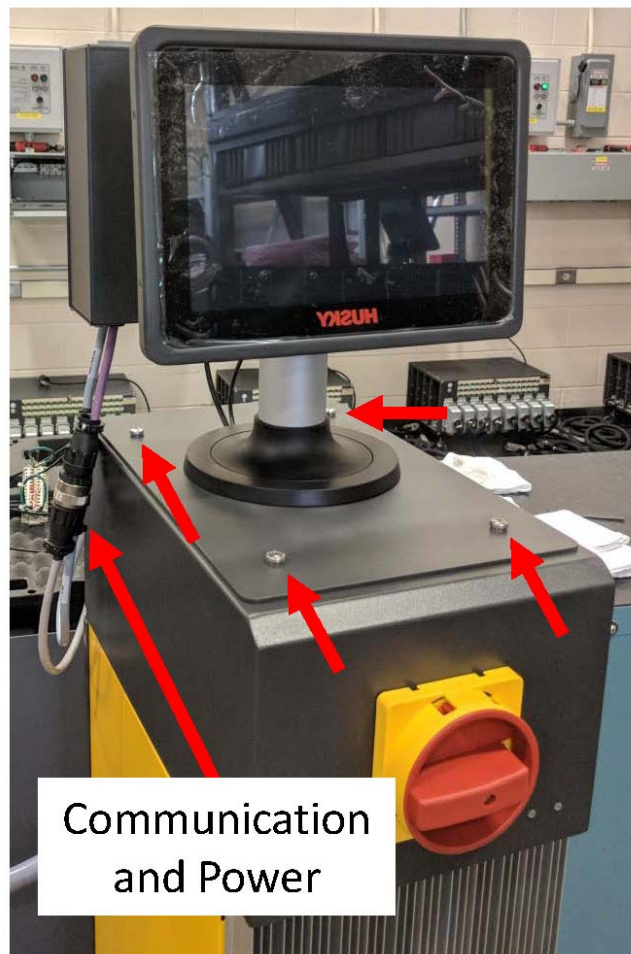
15.4.5 Replacing the Operator Interface — Freestanding Configuration



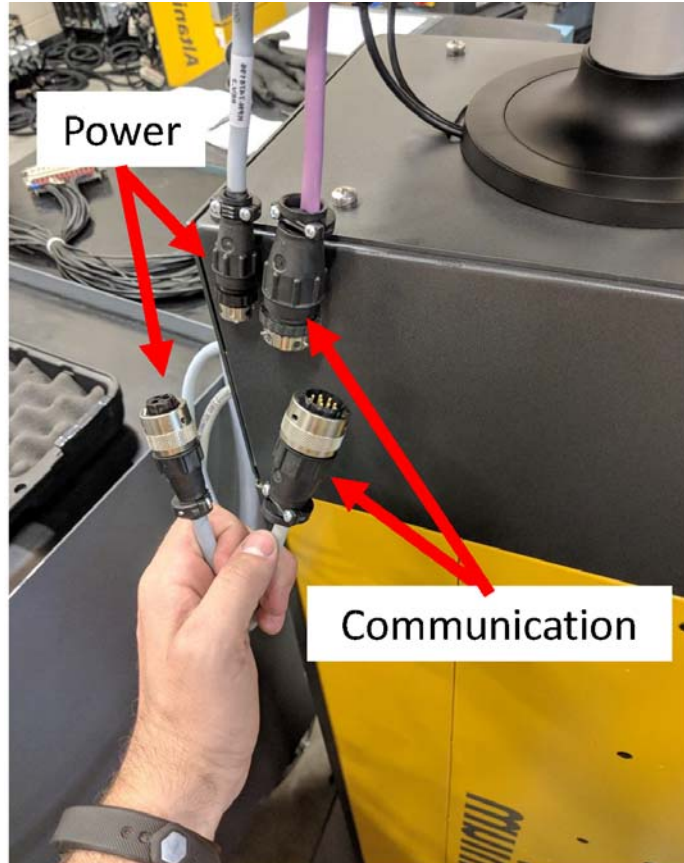
WARNING!

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. Follow the local Lock Out Tag Out procedures.

1. Locate the four fasteners holding the operator interface to the top of the mainframe and the power and communication connectors.



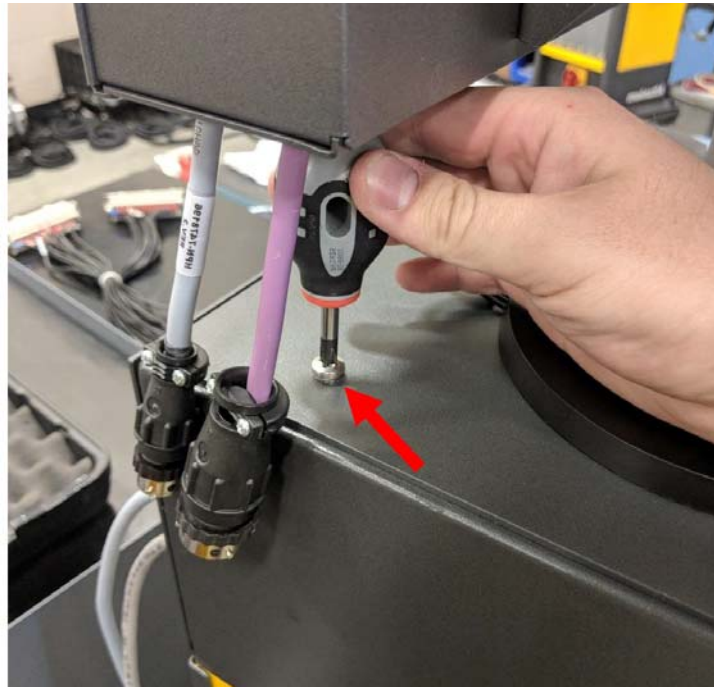
2. Decouple the Power and Communication connectors.



3. Locate and remove the two fasteners holding the operator interface at the front of mainframe.



4. Locate and remove the two fasteners holding the operator interface at the back of mainframe. This step will require a screwdriver short enough to clear the MCU located above the two back mounting screws.



5. Securely grip the operator interface from the silver mounting pole and carefully lift the unit from the top of the mainframe. Follow steps 1 thru 4 in reverse order to install the new operator interface.



15.5 Neo5 Mobile Stand

The Neo5 integrated configuration is available with a mobile stand as a paid option. The mobile stand allows the touch monitor of the Neo5 integrated configuration to be raised to an optimal viewing height (1320mm – 52in.) and easier to move from place to place. There are two variants of the mobile stand:

- C6-1 Mobile Stand (Tall stand assembly)
- C6-2 Mobile Stand (Short stand assembly)



Neo5 Mobile Stand Configurations

15.5.1 Installing Neo5 on the Mobile Stand

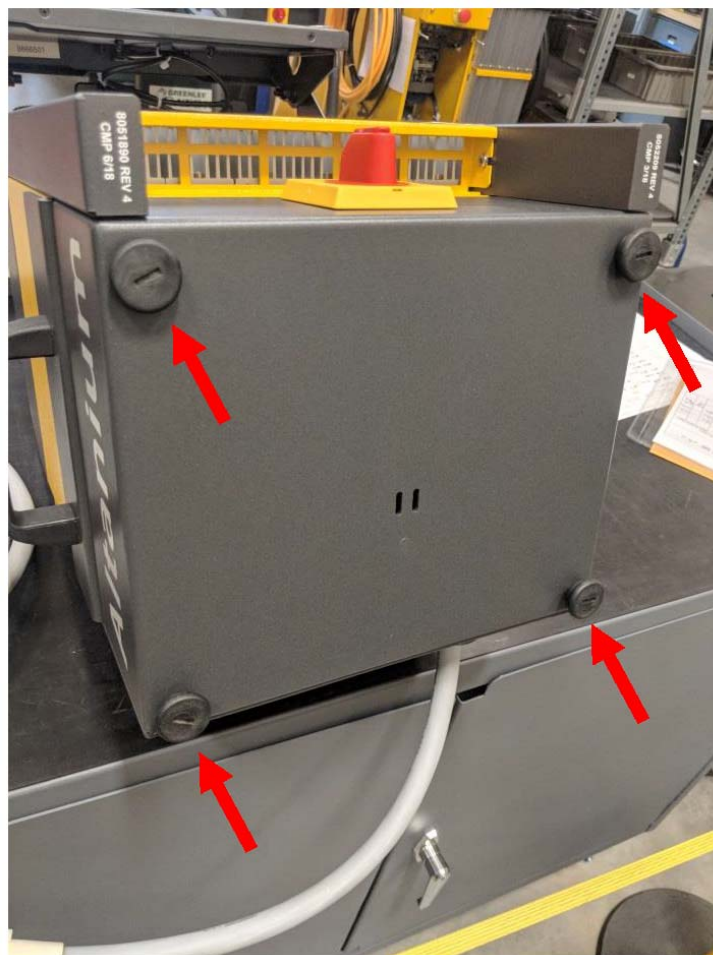
The Neo5 mobile stand and controller come as separate pieces and must be assembled.



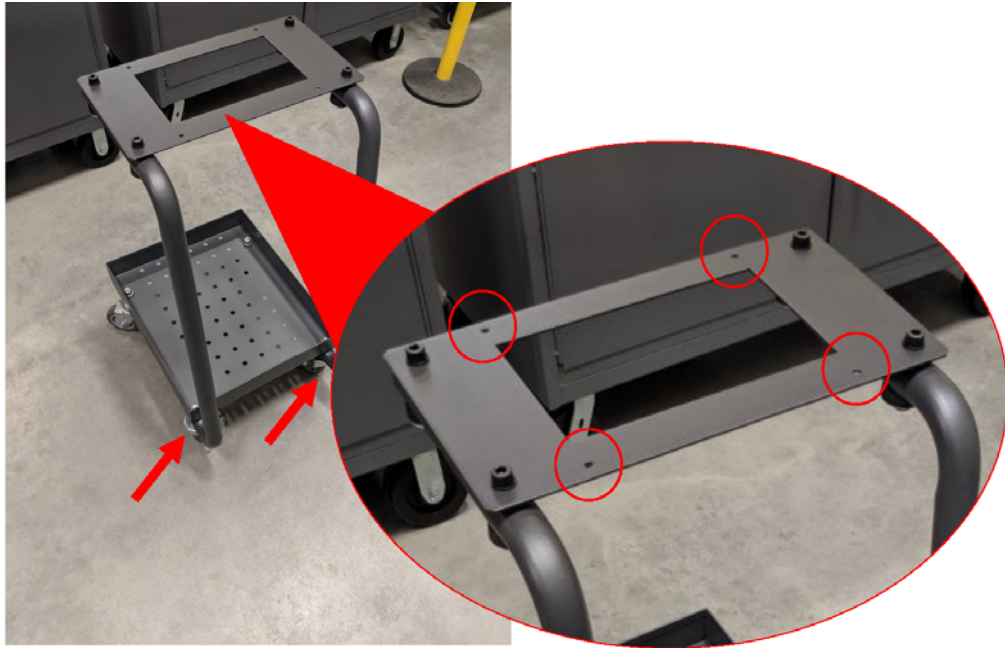
WARNING!

Electrical and mechanical hazard - risk of serious injury and/or damage to the equipment. Turn off all power to the system and disconnect it completely from the main input power. Follow the local Lock Out Tag Out procedures.

1. Carefully place the Neo5 controller on its side to locate and remove the 4x leveling pads. These pads are hand tight and do not require any tools for removal.



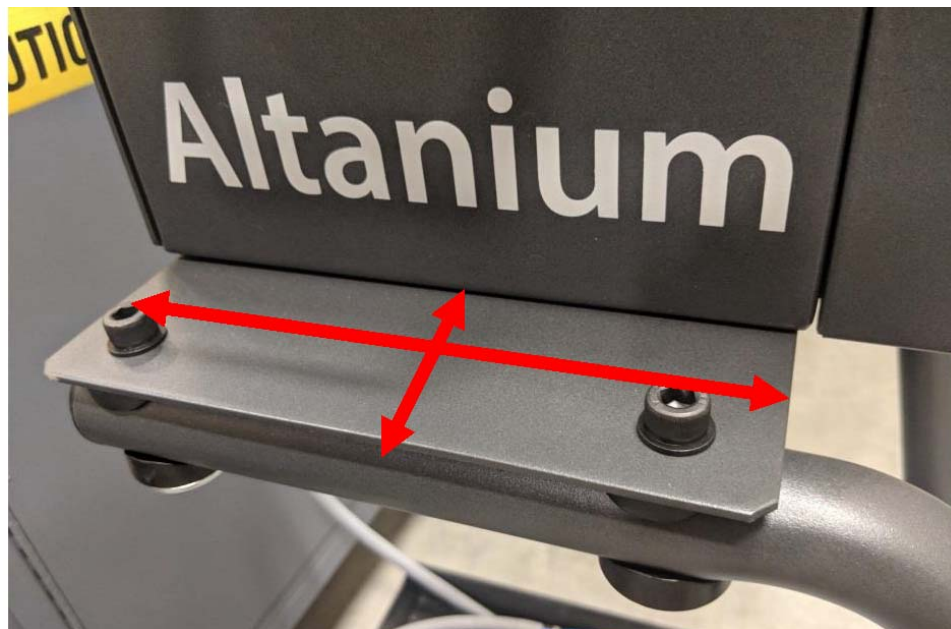
- Place the mobile stand in an open flat area of the floor and set the brakes (located on the front wheels). Locate the 4x mounting holes on the top plate of the mobile stand.



IMPORTANT!

Ensure that the correct stand and controller combination is used. This will prevent the assembly from becoming top heavy and tipping over. The C6-1 configuration fits to the taller mobile stand and the C6-2 fits to the shorter mobile stand.

- Using two people and proper lifting technique, refer to [Section 1.8.1](#), put the Neo5 on the Neo5 top plate. Center the Neo5 so that the mounting holes in the top plate align with the threaded holes at the bottom of the Neo5.

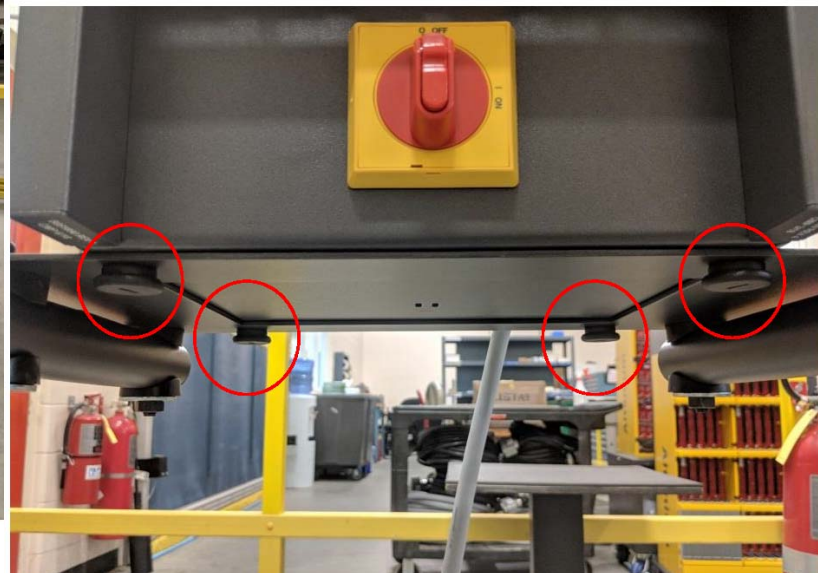




WARNING!

Heavy object - two person lift requirement. To avoid injury ask for assistance and use proper lifting technique when lifting the Neo5. Refer to [Section 1.8.1](#).

4. Once the Neo5 controller has been centered on the mobile stand, put the four leveling pads through the holes and firmly tighten by hand.



5. Use the tray at the bottom of the stand for storing any cables associated with the controller.



15.6 Cleaning the System



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.

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.

Use a ground strap when handling the components.

15.6.1 Mainframe (Cabinet)

- 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, a non-ammonia, non-alcohol based glass cleaner sprayed onto a cloth, not directly onto the cabinet, is recommended.

15.6.2 Touch Monitor

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 equipment damage. Do not spray or pour any liquid directly onto the screen or case. Spray cleaner onto a lint-free cloth. If the liquid droplets dry on the monitor, the liquid may permanently stain or discolor the monitor.

CAUTION!

Mechanical hazard - risk of equipment damage. 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 clean the panel. These products may permanently damage the panel and void the warranty.

15.7 Basic Troubleshooting



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Use a ground strap when handling the components.

Troubleshooting Procedures

Problem	Potential Cause	Solution
Read Time Out	The card cannot communicate (bad, not installed or not powered). The card is not at the address expected. The CAN bus (cables & backplanes) cannot convey data. The operator interface cannot communicate with the CAN bus.	If fault is on zone remove and reseat the card or replace the card. If fault is on many zones check the supply to the controller to ensure there is not a missing phase. If the fault is on all zones check the power and communication cable to the operator interface to ensure they are connected properly or change the operator interface computer.
Fuse Blown	Short circuit in mold or cabling. Output incompatible with the heater. Excessive voltage applied to controller.	Consult the mold electrical prints and use an ohmmeter or insulation resistance meter to inspect the cables and mold. This is unlikely to be a controller issue but the connectors on the back of the controller should be inspected as well.
Over/Under Temperature	This may be setup, sensor, output or control related.	Confirm that the Alarm window is set to an appropriate range and not too small. Recommended: +/-10°F (6°C). Re-ART (Tune) the zone under typical molding conditions ensuring that the mold is in the injection machine with mold cooling on and resin in the mold.

Troubleshooting Procedures

Problem	Potential Cause	Solution
Ground Fault	<p>Bad heater. Short in wiring. Bad Card. Mis-wired mold, cable or controller. Moisture in the heater.</p>	<p>Consult the mold electrical prints and use an ohmmeter or insulation resistance meter to inspect the cables and mold. This is unlikely to be a controller issue but the connectors on the back of the controller should be inspected as well. Swap the card with a known good unit and confirm if the error returns. If not, replace the card. If moisture is suspected, place the zone setpoint at a 200°F (93°C) and apply heat until the moisture has been baked out of the heater.</p>
No Response	<p>Heater is not heating sufficiently (Undersized or low input voltage). Temperature of the heater cannot be sensed (Pinched or displaced thermocouple).</p>	<p>Insufficient heat can be low supply voltage. Check the supply voltage and confirm that this mold has run successfully at the present voltage. If not, connect the controller to a supply with sufficient voltage. In some cases the current reading may be used to determine if current is flowing through the heater. If no current is flowing, a wiring fault or bad heater is likely. Shorted, detached, mis-positioned or pinched thermocouples are possibilities. Check the cables and wiring in the mold to ensure thermocouples are properly routed and terminated.</p>
Reverse T/C	<p>Thermocouple has been connected with reversed polarity. Card is not calibrated. Card is nonfunctional. Mold is much colder than ambient.</p>	<p>Insufficient heat can be low supply voltage. Check the supply voltage and confirm that this mold has run successfully at the present voltage. If not, connect the controller to a supply with sufficient voltage. In some cases the current reading may be used to determine if current is flowing through the heater. If no current is flowing, a wiring fault or bad heater is likely. Shorted, detached, mis-positioned or pinched thermocouples are possibilities. Check the cables and wiring in the mold to ensure thermocouples are properly routed and terminated.</p>

Troubleshooting Procedures

Problem	Potential Cause	Solution
No Connection, T/C	Thermocouple circuit is broken. Bad thermocouple. Card is not seated. Card is not calibrated. Card is nonfunctional. Zone far beyond 1100°F or 600°C .	Shorting the thermocouple input should display an ambient temperature on the operator interface. If it does, the problem is most likely a wiring issue. Inspect the cables and mold for a bad connection or broken thermocouple. If shorting the thermocouple input does not display an ambient temperature, the problem is most likely a loss of calibration or a nonfunctional card. Try recalibrating the zone and if this does not work, replace the card.
Temperature is showing 32°F or 0°C	No communication with the card.	Refer to Read Time Out Error solution.
No Screen	Bad touch monitor or computer. Missing phase.	Check the supply to the controller to ensure there is not a missing phase. Replace the touch monitor with a known good unit to confirm if the image is restored. If so, replace the touch monitor. Replace the computer with a known good unit to confirm if the image is restored. If so, replace the computer.

