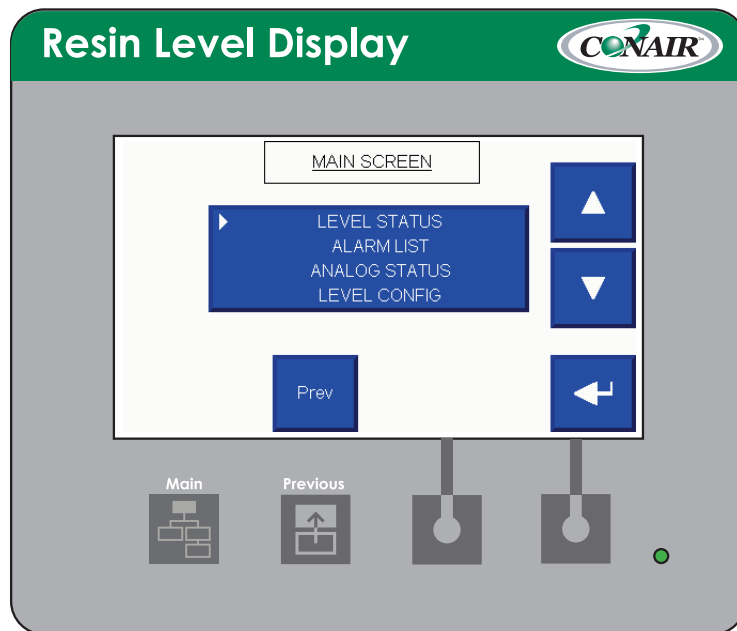


USER GUIDE
UGS003-0713

RLD

Resin Level Display



Please record your equipment's model and serial number(s) and the date you received it in the spaces provided.

It's a good idea to record the model and serial number(s) of your equipment and the date you received it in the User Guide. Our service department uses this information, along with the manual number, to provide help for the specific equipment you installed.

Please keep this User Guide and all manuals, engineering prints and parts lists together for documentation of your equipment.

Date:

Manual Number: UGS003-0713

Serial Number(s):

Model Number(s):

DISCLAIMER: Conair shall not be liable for errors contained in this User Guide or for incidental, consequential damages in connection with the furnishing, performance or use of this information. Conair makes no warranty of any kind with regard to this information, including, but not limited to the implied warranties of merchantability and fitness for a particular purpose.

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Introduction

Purpose of the user guide. 1-2

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 Read this so no one gets hurt 1-4

Purpose of the User Guide

This User Guide describes Conair's Resin Level Display and explains step-by-step how to operate, maintain, and configure this equipment.

Before using this product, please take a few moments to read the User Guide and review the diagrams and safety information in the instruction packet. You also should review manuals covering associated equipment in your system. This review won't take long, and it could save you valuable installation and operating time later.

How the Guide is Organized

Symbols have been used to help organize the User Guide and call your attention to important information regarding safe installation and operation.



Symbols within triangles warn of conditions that could be hazardous to users or could damage equipment. Read and take precautions before proceeding.



Numbers indicate tasks or steps to be performed by the user.



A diamond indicates the equipment's response to an action performed by the user.



An open box marks items in a checklist.



A circle marks items in a list.



Indicates a tip. A tip is used to provide you with a suggestion that will help you with the maintenance and the operation of this equipment.



Indicates a note. A note is used to provide additional information about the steps you are following throughout the manual.

Your Responsibility as a User

You must be familiar with all safety procedures concerning operation, maintenance, and configuration of this equipment. Responsible safety procedures include:

- Thorough review of this User Guide, paying particular attention to hazard warnings, appendices, and related diagrams.
- Thorough review of the equipment itself, with careful attention to voltage sources, intended use, and warning labels.
- Thorough review of instruction manuals for associated equipment.
- Step-by-step adherence to instructions outlined in this User Guide.

ATTENTION:

Read this so no one gets hurt

We design equipment with the user's safety in mind. You can avoid the potential hazards identified on this machine by following the procedures outlined below and elsewhere in the User Guide.



WARNING: Improper installation, operation, or servicing may result in equipment damage or personal injury.

This equipment should be installed, adjusted, and serviced by qualified technical personnel who are familiar with the construction, operation, and potential hazards of this type of machine.

All wiring, disconnects, and fuses should be installed by qualified electrical technicians in accordance with electrical codes in your region. Always maintain a safe ground. Do not operate the equipment at power levels other than what is specified on the machine serial tag and data plate.



WARNING: Electrical hazard

Before performing any work on this item, disconnect and lock out electrical power sources to prevent injury from unexpected energization or startup.

Description

What is the Resin Level Display (RLD)? 2-2

What is the Resin Level Display (RLD)?

The Resin Level Display (RLD) has been designed for material fill sensing and alarming applications.


The RLD monitors material levels for up to 40 silos or surge bins. All material levels are conveniently displayed from one centralized control platform.


The RLD is capable of being configured to monitor low, mid or high levels of material within a silo or surge bin, the RLD can be customized to fit your material level monitoring needs. Audible and visual warning indicators will energize to alert you to individual warning indications for each monitored silo, surge bin, or other storage vessels.

Three Configurations

Configuration*	Maximum Number of Devices	Level Indicators
1	40	Low (Configurable Alarm)
2	20	Low (Configurable Alarm) High (Configurable Alarm)
3	12	Low (Configurable Alarm) Mid High (Configurable Alarm)

*Optional analog continuous silo level monitoring is available for each of the configurations shown above.

 **WARNING:** Electrical connections should be made only by qualified personnel.

 **IMPORTANT:** Changes in configuration require wiring changes.

Configurable low and high alarms:

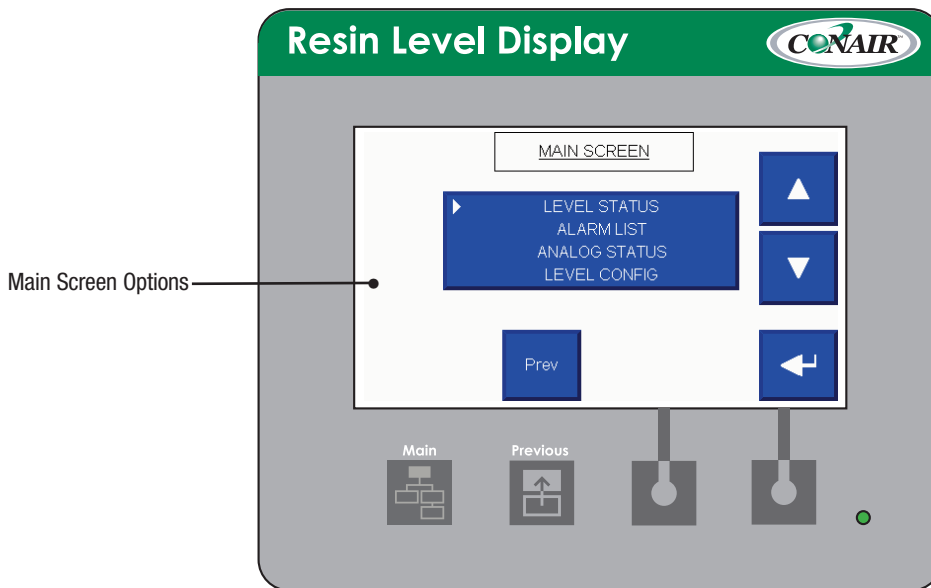
- Configurable recurring low and high alarms;
- Configurable recurring alarm time (15 minutes to 4 hours);
- Configurable remote horn;
- Graphical representation of devices;
- PLC back up and restore;
- Audible and visual alarming;
- Configurable contacts (N.O. or N.C.) for level indicators; and
- Security (password protected operations).
- Optional continuous silo level monitoring (with 4, 8, or 12 available quantities of analog input modules.
- Optional Ethernet Communications.

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RLD Control Features

The RLD operator interface allows you to view the status of the monitored material vessels/devices at a glance. It also provides access to view alarms, configure devices such as silos/surge bins, perform maintenance and change system configurations. Shown below are the Main Screen selection options with a brief description of the tasks associated with the option.



Level Status

- View the status of the configured devices (silos/surge bins).

Alarm List

- View active acknowledged alarms.

Level Configuration

- Enable/Disable devices configure low and high alarms associated. (*Super login Required*)

Inhibit Analog

- Inhibits continuous silo level monitoring. Analog option must be configured and monitoring sensor must have inhibit feature available.

Maintenance

- RLD HMI and PLC Revisions
- Clear all active alarms (*Super Login Required*)
- Change passwords (*Super2 Login Required*)
- Save or Restore RLD configuration to memory module (*Super2 Login Required*)
- View and reset PLC errors (*Super2 Login Required*)
- System Configurations (Recurring alarm, analog configurations, analog options, contact configurations, and controller configurations)
 - Configure recurring alarm timer preset. (*Super Login Required*)
 - Configure remote horn. (*Super2 Login Required*)
 - Configure device contacts. (*Super2 Login Required*)
 - Configure RLD. (*Super2 Login Required*)

RLD Control Features (continued)

Control Button Descriptions



Up/Down arrows are used to step through the Main Screen menu options and/or single step through options or alphanumeric characters.



“Main” button is used to return to the Main Screen. In some cases, the “Main” button is used as an option button. In these instances, text will appear on the interface above the button.



“Previous” button is used to return the previous screen viewed. In some cases, the “Previous” button is used as an option button. In these cases, text will appear on the interface above the button.



Choice buttons are used to select the option and/or function above the button on the interface.



“Enter” button is used to complete an operation.

Security



NOTE: Super and Super 2 passwords can be changed by authorized personnel. Instructions for changing the passwords can be found in the maintenance section, *See Maintenance section entitled, Password Maintenance.*

The RLD provides security for screens that have operational effects on the way the RLD will function. There are three levels of security: The security levels are operator (which is the default), Super, and Super2. The chart below shows the level of password required to complete common tasks.

Tasks	Password Level Required			
	OPERATOR	SUPER	SUPER2	SERVICE
View Level Status	YES	YES	YES	YES
View / Acknowledge Alarms	YES	YES	YES	YES
Inhibit Analog Measurements	YES	YES	YES	YES
Enable/Disable Devices	NO	YES	YES	YES
Setup Devices Alarms	NO	YES	YES	YES
Clear Alarms	NO	YES	YES	YES
Configure Recurring Alarm Timer	NO	NO	YES	YES
Remote Horn Configuration	NO	NO	YES	YES
Password Maintenance	NO	NO	YES	YES
Save/Restore Configuration	NO	NO	YES	YES
Contact Configuration	NO	NO	YES	YES
Analog Config	NO	NO	YES	YES
Analog Options	NO	NO	YES	YES
Controller Configuration	NO	NO	YES	YES
Clear Major PLC Errors	NO	NO	YES	YES

Default Passwords.

Security Levels	Passwords
Operator	(not required)
Super	2
Super2	3

Password Prompts

When a username and password is required to enter a screen, a pop up keypad will appear with Username and Password text fields above the keypad.

- 1 Touch the Username field.**
- 2 Use the keypad to enter your username.**
- 3 Touch the Password field.**
- 4 Use the keypad to enter your password.**
- 5 Press the enter key on the keypad.**

Other options:

ESC: Operation canceled and returns to previous screen.

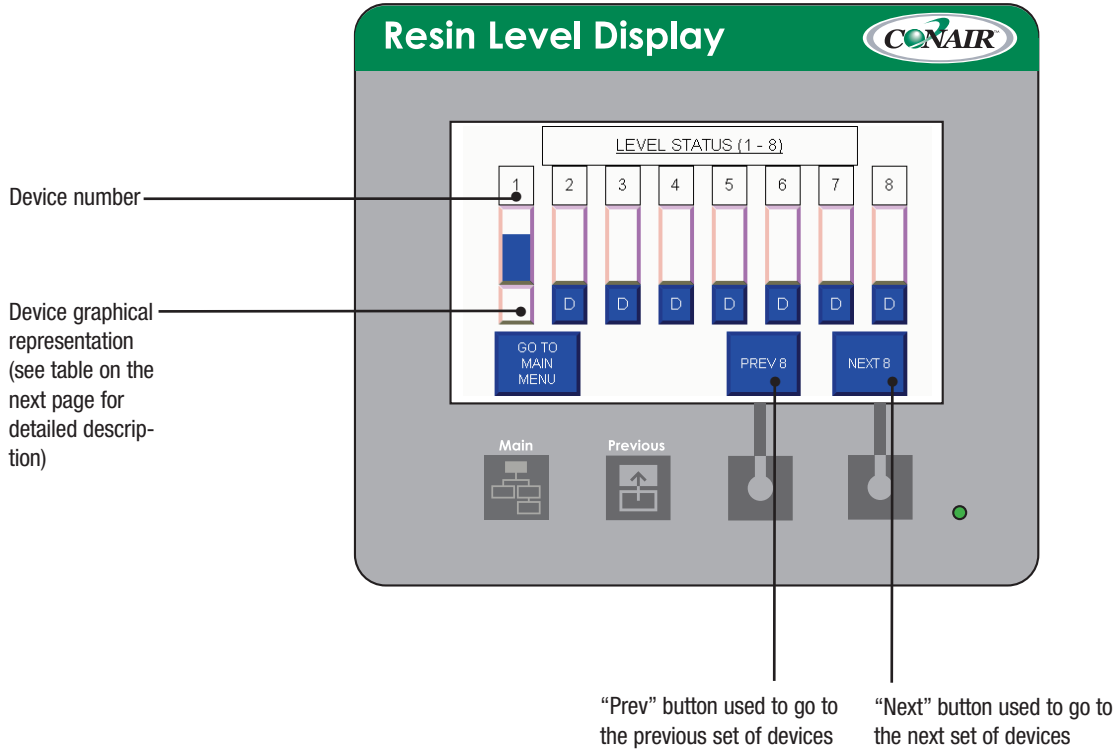
CLR: Clears all characters enter in password field.

INS: Inserts a character before the cursor.

DEL: Deletes character at cursor position.

Description of Level Status Screen

The Level Status provides a graphical representation based upon the indicator inputs. A maximum of eight devices will be displayed on the screen. The "Prev/Next" buttons will need to be used to view other devices.

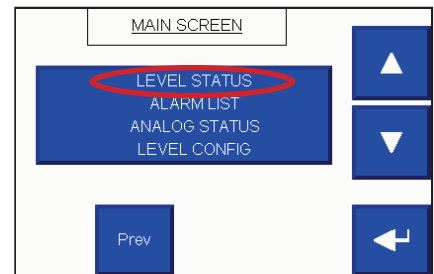


View Level Status









To view Level Status from the Main Screen:

1 Use the Up/Down arrows  to scroll to Level Status.

2 Press the "Enter" button .



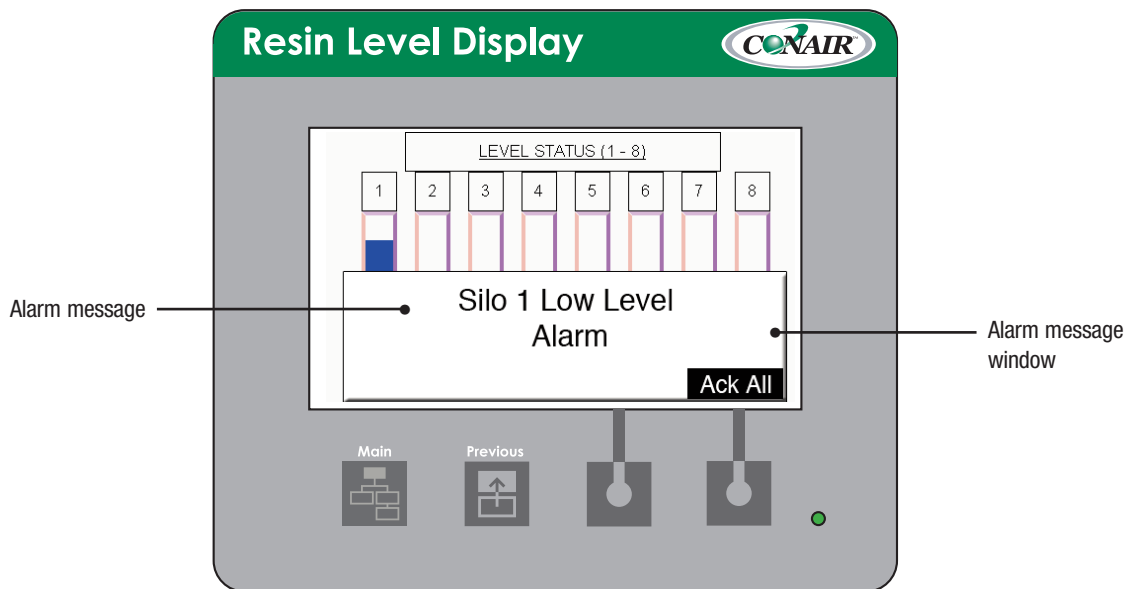
Description of Level Status Screen (continued)

Graphic	Description		
	Configuration 1 40 Low Indicators	Configuration 2 20 Low/High Indicators	Configuration 3 12 Low/Mid/High Indicators
 D	<ul style="list-style-type: none"> Disabled 	<ul style="list-style-type: none"> Disabled 	<ul style="list-style-type: none"> Disabled
 L L	<ul style="list-style-type: none"> Below Low Indicator Low Alarm Is Enabled and Active 	<ul style="list-style-type: none"> Below Low Indicator Low Alarm Is Enabled and Active 	<ul style="list-style-type: none"> Below Low Indicator Low Alarm Is Enabled and Active
	<ul style="list-style-type: none"> Below Low Indicator Low Alarm Is Disabled 	<ul style="list-style-type: none"> Below Low Indicator Low Alarm Is Disabled 	<ul style="list-style-type: none"> Below Low Indicator Low Alarm Is Disabled
	N/A	N/A	<ul style="list-style-type: none"> Above Low Indicator and Below Mid Indicator
	<ul style="list-style-type: none"> Above Low Indicator 	<ul style="list-style-type: none"> Above Low Indicator and Below High Indicator. 	<ul style="list-style-type: none"> Above Mid Indicator and Below High Indicator
	N/A	<ul style="list-style-type: none"> Above High Indicator High Alarm Is Disabled 	<ul style="list-style-type: none"> Above High Indicator High Alarm Is Disabled
 H H	N/A	<ul style="list-style-type: none"> Above High Indicator High Alarm Is Enabled and Active 	<ul style="list-style-type: none"> Above High Indicator High Alarm Is Enabled and Active
 F F	Illegal State (Faulty Indicator or Wired Wrong)	Illegal State (Faulty Indicator or Wired Wrong)	Illegal State (Faulty Indicator or Wired Wrong)

Sequence of Events When an Alarm Occurs

The RLD provides visual and audible alarms.

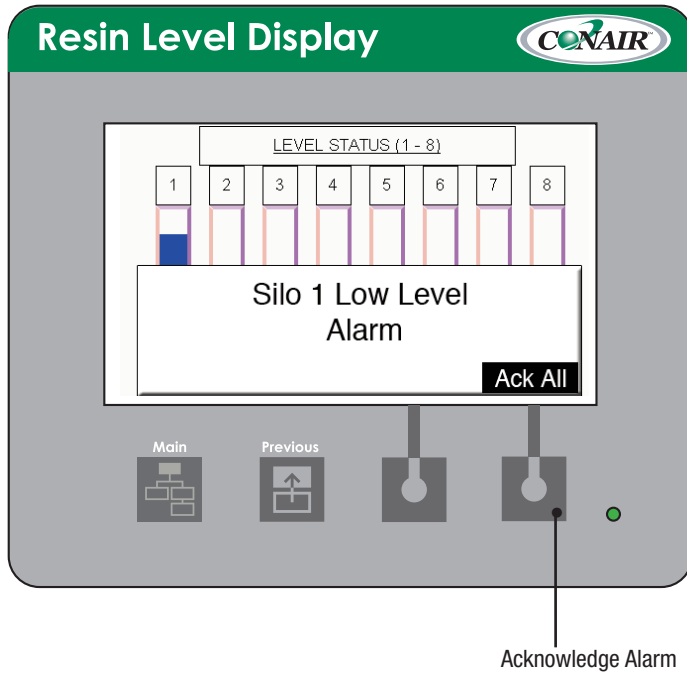
- Alarm occurs
- An alarm message window is displayed on the operator interface.



- An audible alarm sounds.
- The red indicator light on the top of the panel illuminates.
- The alarm message window, audible alarm and indicator light will remain active until the alarm is acknowledged. The red indicator light on the top of the panel illuminates.
- Acknowledging the alarm will silence the audible alarm and close the alarm message window. The indicator light will remain active until the alarm condition is satisfied (cleared). All active and acknowledged alarms can be viewed in the Alarm List screen.

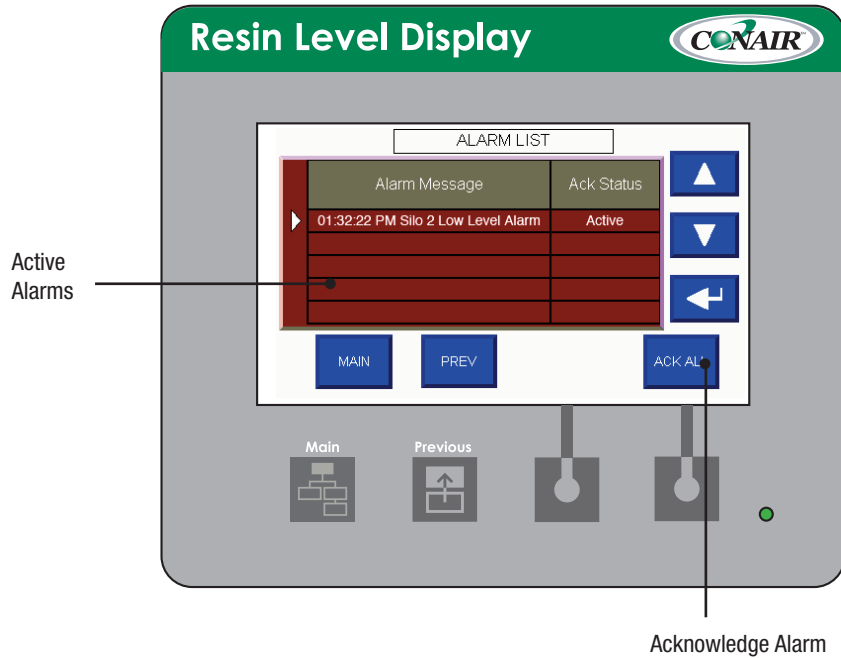
Acknowledge Alarm

To acknowledge an alarm press the “Ack All” button. This will silence the audible alarm and close the alarm message window.



Alarm List Screen Overview

The Alarm List screen displays active acknowledged alarms with a time stamp.

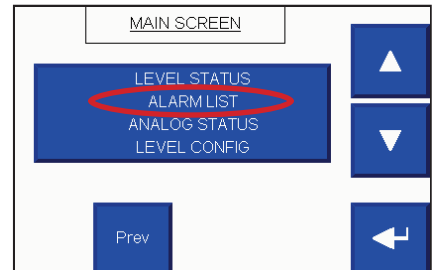


View Alarm List

To view the Alarm List from the main screen:

1 Use the Up/Down arrows  to scroll to Alarm List.

2 Press the “Enter” button  .



Description of Alarms

The following are a list of alarms in the RLD.

Alarm	Cause	Solution
Silo # (number assigned to silo) Low Level Alarm	The level of the device is below the low indicator.	Fill the device above the low indicator.
Silo # (number assigned to silo) High Level Alarm	The level of the device is above the high indicator.	Fill device above high indicator.
Battery Low. Replace Battery	Battery for PLC is either missing or low.	Check battery on the PLC, replace if necessary.
PLC Fault	PLC has a major fault.	Reset PLC errors. <i>See Maintenance section entitled, Clear PLC errors (including I/O alarms).</i>

Configuring Devices

The Level Configuration screen is used to configure a device. Configurations associated with a device are Enable/Disable, Low Alarm and High Alarm (controller configurations 2 and 3 only). The Level Configuration screen is password protected.

Descriptions of Configurations

Enable/Disable:

- When enabled the device will be active.

Low Alarm (the alarm is triggered when the level within the device is below the low indicator):

- **Disabled**
 - No visual
 - No audible alarm
- **Low Alarm Enabled**
 - A visual alarm will be triggered and stay active until the alarm is cleared (level returns above the low indicator)
 - An audible alarm will be triggered and stay active until acknowledged
- **Low Recurring Alarm Enabled**
 - A visual alarm will be triggered and stay active until the alarm is cleared (level returns above the low indicator)
 - An audible alarm will be triggered and stay active until acknowledged
If the level within the device does not go above the low indicator within the configured time, the audible alarm will be reactivated




Configuring Devices (continued)

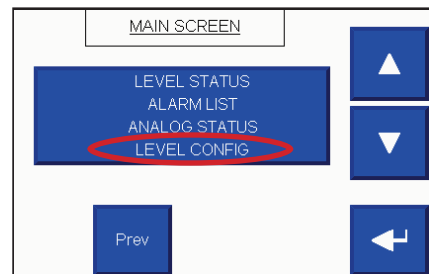
High Alarm (the alarm is triggered when the level within the device is above the high indicator):

- **Disabled**
 - No visual alarm
 - No audible alarm
- **High Alarm Enabled**
 - A visual alarm will be triggered and stay active until the alarm is cleared (level returns below the high indicator)
 - An audible alarm will be triggered and stay active until acknowledged
- **High Recurring Alarm Enabled**
 - A visual alarm will be triggered and stay active until the alarm is cleared (level returns below the high indicator)
 - An audible alarm will be triggered and stay active until acknowledged. If the level within the device does not go below the high indicator within the configured time the audible alarm will be reactivated

Navigation to the Level Configuration Screen

To view the Level Configuration screen from the Main Screen:

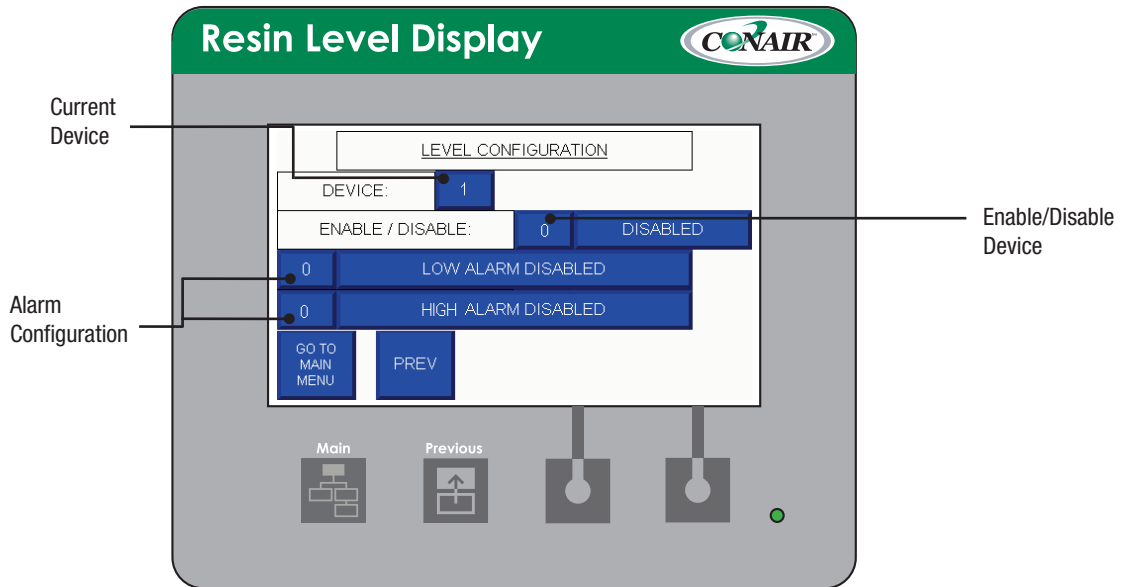
- 1** Use the Up/Down arrows  to scroll to Level Config.
- 2** Press the “Enter” button .
- 3** When prompted for the username and password, use the pop up keypad to enter the username and password. *See the Operations section, entitled Password Prompts for more detail.*
- 4** Once the password is entered press the “Enter” button .



(Continued)

Configuring Devices (continued)

Level Configuration Screen Overview

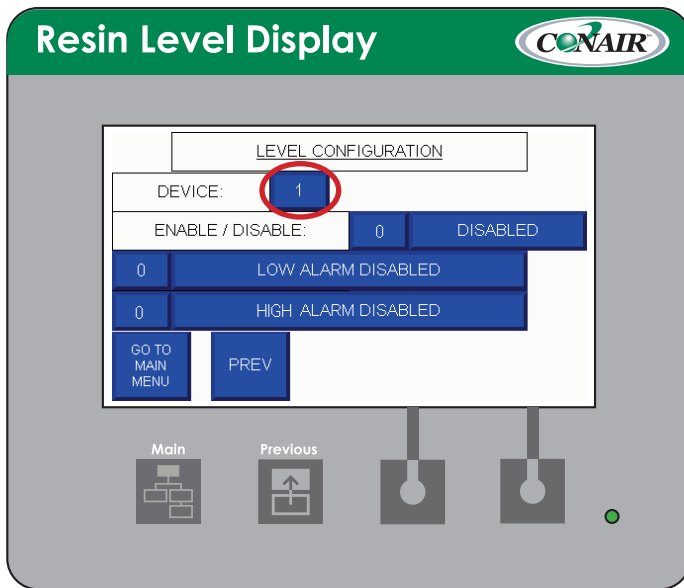


Configuring Devices (continued)

Configure Device

To select a device:

- 1 Touch the Device field.** A pop up number pad will appear.
- 2 Using the number pad, enter the number of the device you would like to configure.**



(Continued)


Configuring Devices (continued)

To enable or disable a device:

- 1 Touch the Enable/Disable field. A pop up number pad will appear.

The screenshot shows the 'LEVEL CONFIGURATION' screen. At the top, it says 'LEVEL CONFIGURATION'. Below that, there are three rows: 'DEVICE:' with a value of '1', 'ENABLE / DISABLE:' with a value of '0' (circled in red), and 'DISABLED'. Below these are two rows: '0 LOW ALARM DISABLED' and '0 HIGH ALARM DISABLED'. At the bottom left are two buttons: 'GO TO MAIN MENU' and 'PREV'.

- 2 Enter a “1” to enable the device, or a “0” to disable the device.

 **NOTE:** Entering a number outside the range of 0 or 1 will not be accepted. An error will occur and you will be forced to enter another number.

To configure a device for low alarm:

- 1 Touch the Low Alarm field. A pop up number pad will appear.
- 2 Enter a “1” to enable the alarm, a “0” to disable the alarm, or a “2” to enable a recurring alarm.

The screenshot shows the 'LEVEL CONFIGURATION' screen. At the top, it says 'LEVEL CONFIGURATION'. Below that, there are three rows: 'DEVICE:' with a value of '1', 'ENABLE / DISABLE:' with a value of '0', and 'DISABLED'. Below these are two rows: '0 LOW ALARM DISABLED' (with the '0' circled in red) and '0 HIGH ALARM DISABLED'. At the bottom left are two buttons: 'GO TO MAIN MENU' and 'PREV'.

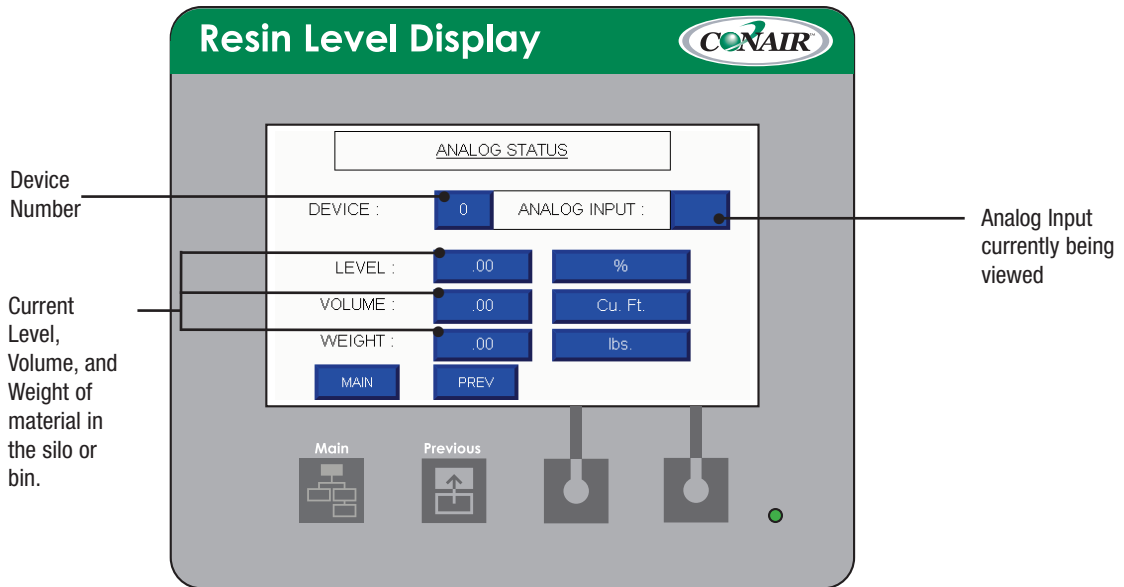
To configure a device for high alarm:

- 1 Touch the High Alarm field. A pop up number pad will appear.
- 2 Enter a “1” to enable the alarm, a “0” to disable the alarm, or a “2” to enable a recurring alarm.



The screenshot shows the 'LEVEL CONFIGURATION' screen. At the top, it says 'LEVEL CONFIGURATION'. Below that, there are three rows: 'DEVICE:' with a value of '1', 'ENABLE / DISABLE:' with a value of '0', and 'DISABLED'. Below these are two rows: '0 LOW ALARM DISABLED' and '0 HIGH ALARM DISABLED' (with the '0' circled in red). At the bottom left are two buttons: 'GO TO MAIN MENU' and 'PREV'.

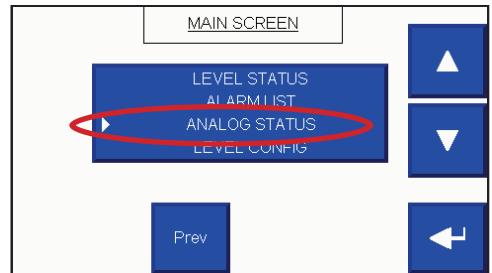
Description of Analog Status Screen

The following screen is only available when 4, 8, or 12 Analog Inputs have been configured. The level, volume, and weight are based upon the Analog Input reading and updated based upon the last measurement.




To view analog status:

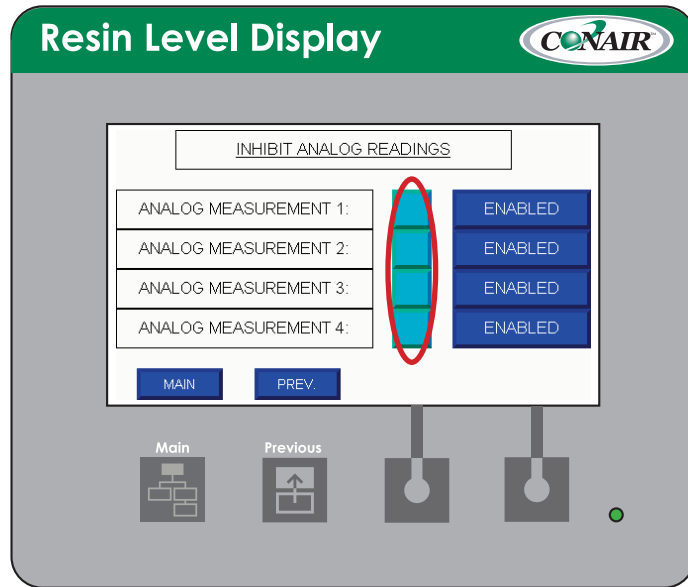
- 1** From the main screen, use the Up/Down arrows  to scroll to ANALOG STATUS.
- 2** Press the enter arrow  .





Description of Inhibit Analog Screen

The following screen is only available when Analog Inputs have been configured. There are 4 Inhibit Analog Outputs which can be used to inhibit measurements to the attached measuring devices.

 **NOTE:** Measuring devices must have inhibited capability and inhibit signals must be connected properly. RLD electrical drawings provide additional notes when wiring.



View Inhibit Analog Screen:

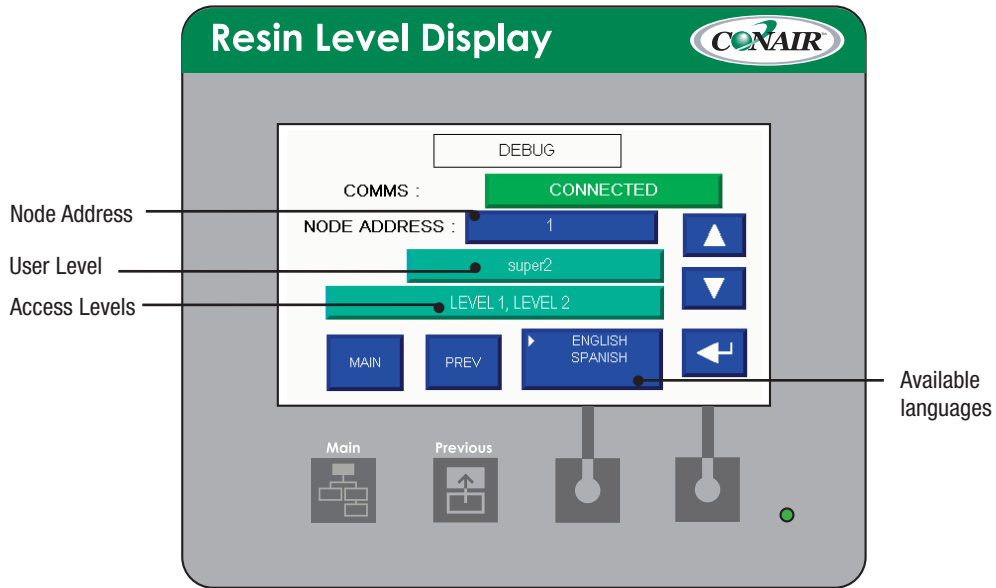
- 1** From the Main screen, use the Up/Down arrows  to scroll to INHIBIT ANALOG.
- 2** Press the enter arrow .

Inhibit/Enable Analog Measurement:



- 1** Touch the field of the Analog measurement to be inhibited or enabled. A pop up number pad will appear.
- 2** Using the number pad, enter a “1” to inhibit measurement, or a “0” to enable measurement.

Description of Debug Screen

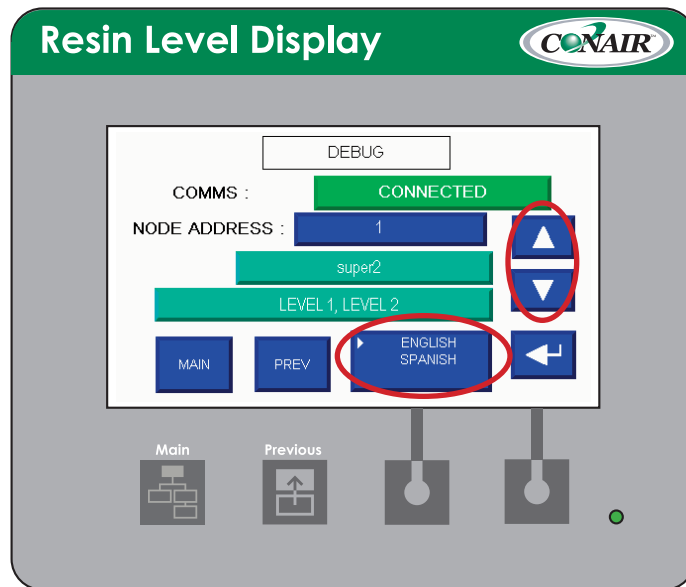
Navigate to the Debug Screen through the Main Menu. The Debug Screen allows you to check communication status, view the node address, and view the current login and security level.





View Debug screen:

- 1 From the Main screen, use the Up/Down arrows  to scroll to the Debug screen.
- 2 Press the enter arrow .

Changing Languages on the Debug Screen



To change language:

- 1** Touch the language field of the Debug screen.
- 2** Use the Up/Down arrows  to change between languages.
- 3** To make the language selection, press the enter arrow .

Maintenance






Clearing interface alarms	4-2
Password maintenance	4-4
Clear PLC errors (including I/O alarms)	4-6
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Clearing Interface Alarms

Clearing the alarms only clears the alarm history in the operator interface. It does not fix or clear the actual alarm. It is recommended this function be completed during troubleshooting or maintenance. Super login is required.

Navigation to Clear Alarms

To view the Clear Alarms from the Main Screen:

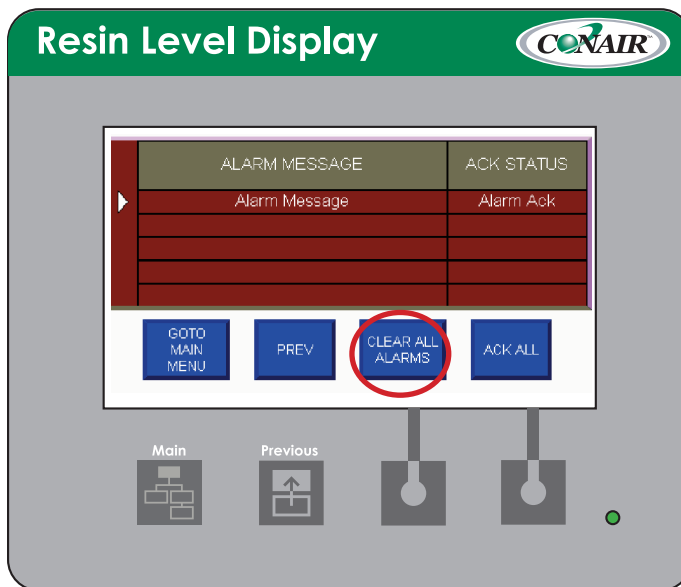
- 1** Use the Up/Down arrows  to scroll to Maintenance.
- 2** Press the “Enter” button  .
- 3** Use the Up/Down arrows  to scroll to Clear Alarms.
- 4** Press the “Enter” button  .
- 5** When prompted for a username and password, use the pop up keypad to enter the username and password. *See the Operations section, entitled Password Prompts for more detail.*
- 6** Once the password is entered, press the “Enter” button  .

Clearing Interface Alarms (continued)


Clear Alarm List

To clear the Alarm list:

- 1 From the Main screen, navigate to the maintenance menu and choose “Clear Alarms”.



- 2 Press the Clear All Alarms button.

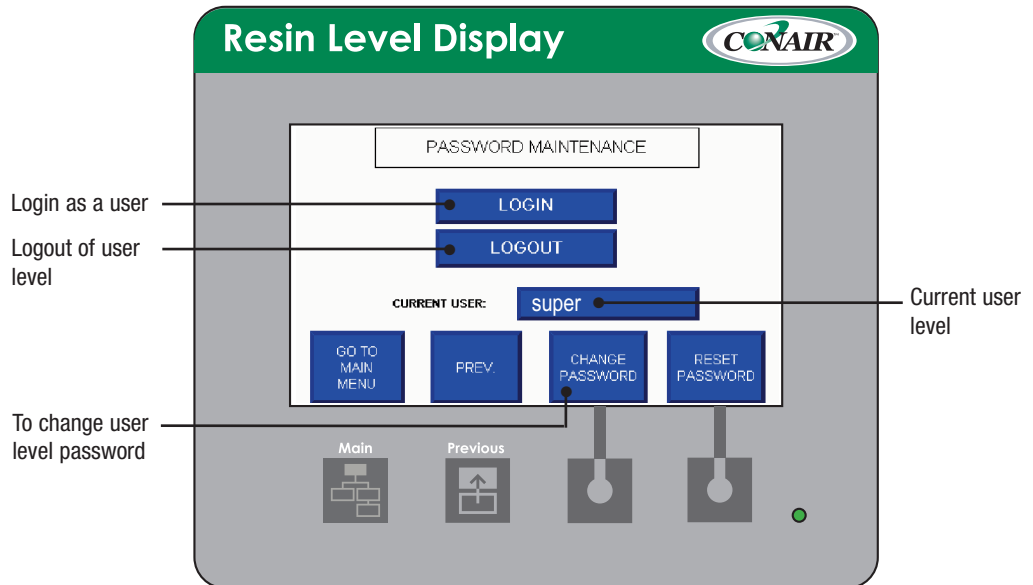
 **NOTE:** To abort (cancel operation and leave alarms in list), press the Menu button.



Password Maintenance

The passwords for Super and Super2 can be changed. You must be logged in at the user level for which would like to change the password.







Overview of Password Maintenance Screen

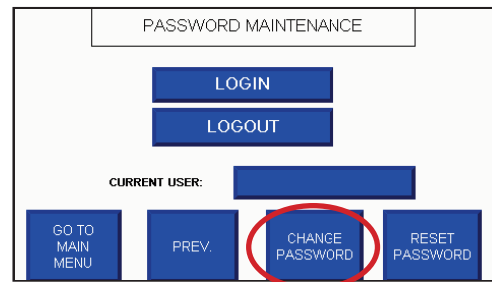


Password Maintenance (continued)

Change the Password from the Main Screen

To change the password from the Main Screen:






- 1 Use the Up/Down arrows  to scroll to Maintenance.
- 2 Press the “Enter” button  .
- 3 Use the Up/Down arrows  to scroll to Password Maint.
- 4 Press the “Enter” button  .
- 5 When prompted for a username and password, use the pop up keypad to enter the username and password. *See the Operations section, entitled Password Prompts for more detail.* Once the password is entered press the “Enter” button  .
- 6 Press the “Change Password” button. A pop up keypad will appear.
- 7 On the new pop up keypad, use the fields for Username, New Password and Verify New Password to enter your username and the new password.
- 8 Once complete, press the “Enter” button  .
- 9 When prompted that password has been changed, press the “OK” button. If the password change was unsuccessful, press “Change Password” again.

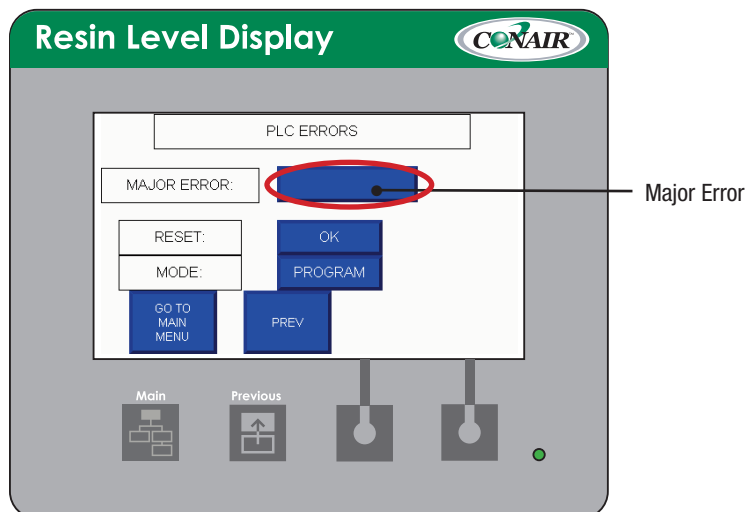


Clear PLC Errors (Including I/O Alarms)

PLC and I/O (input/output) alarms will stop the RLD control. These errors may be caused by problems with the power supply, processor modules and input or output modules. The error is indicated by error codes on the PLC errors screen or by LEDs on the PLC and/or associated hardware. It is recommended prior to clearing PLC errors to write down the error code and verify hardware *See Appendix B for PLC Troubleshooting and Error Codes*. Super2 login is required.



To Clear PLC Errors from the Main Screen:

- 1 Use the Up/Down arrows  to scroll to Maintenance.
- 2 Press the “Enter” button  .
- 3 Use the Up/Down arrows  to scroll to PLC Errors.
- 4 Press the “Enter” button  .
- 5 When prompted for a username and password, use the pop up keypad to enter the username and password. *See the Operations section, entitled Password Prompts for more detail*. Once the password is entered press the “Enter” button  .
- 6 Press the Major Error field to view the error code. You may want to write down and log the Major Error for future troubleshooting purposes.

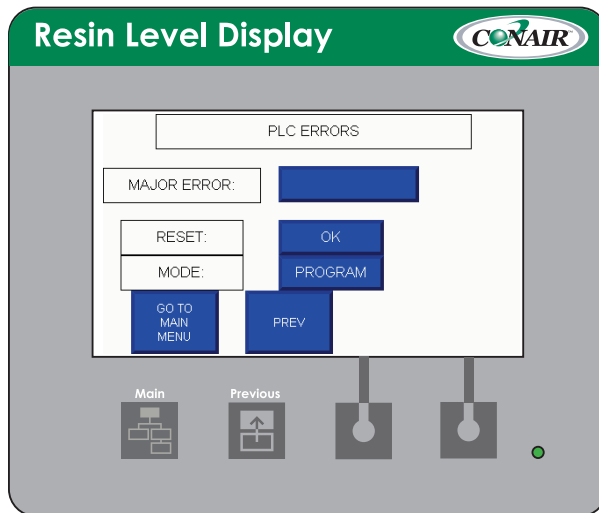


Clear PLC Errors (Including I/O Alarms) (continued)

7 Clear the Major Error.


- Press the Major Error field.
- The entry field should read 00000.
 - If the entry field reads 00000, press the “Enter” button .
 - If the entry field does not read 00000, use the pop up number pad to enter 00000. Press the “Enter” button upon completion .

- 8 Press “OK” in the Reset field.** The mode will be “Program”.



- 9 A qualified electrical service technician should open the control enclosure and locate the small access door on the left side of the PLC.** Inside this access door is a toggle switch.

- 10 Toggle the RUN/REM/PROG switch to “RUN, then “PROG” then “RUN”.** The mode displayed on the screen should now be “Run”. If the mode did not change, contact Conair Service.





 **WARNING:** The electrical enclosure cabinet should be opened only by qualified personnel.

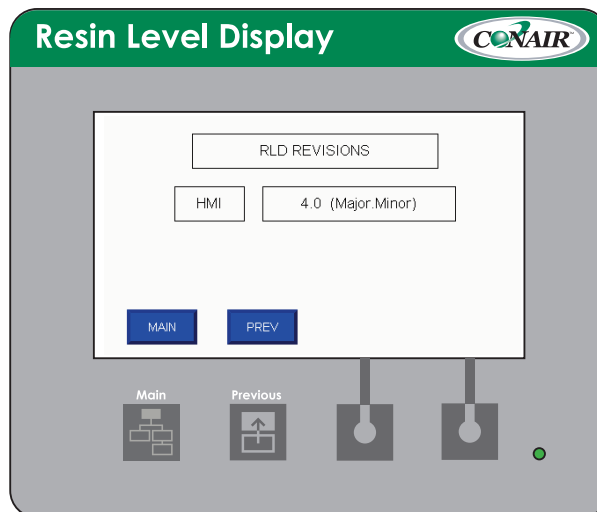
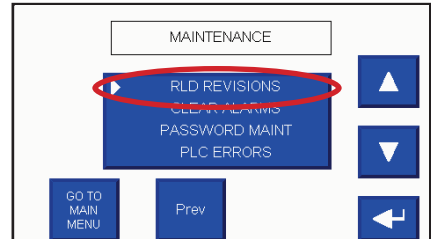
Conair’s Instant Access 24/7 Parts and Service number is 800-458-1960. Outside the U.S., dial 814-437-6861.

View RLD Revisions

The RLD revisions consist of the PLC revision is read from the PLC and the Operator Interface revision. This information is important when contacting service.

To view RLD revisions from the Main screen:

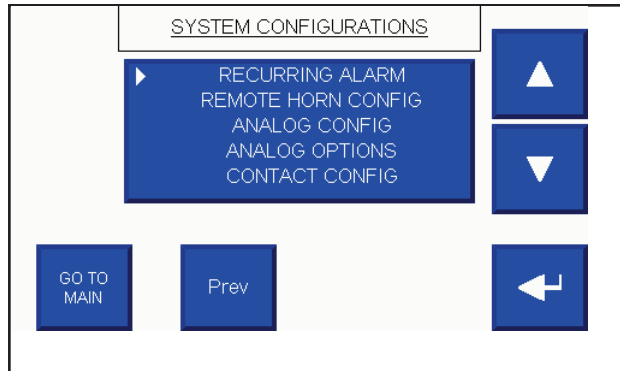
- 1 Use the Up/Down arrows  to scroll to Maintenance.
- 2 Press the “Enter” button  .
- 3 Use the Up/Down arrows  to scroll to RLD Revisions.
- 4 Press the “Enter” button  .



System Configurations

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Description of System Configurations Screen



- Recurring Alarm – Used to set the time for an alarm to occur again after an interval.
- Analog Config – Used to assign the Analog input to a device and configure the Analog inputs.
- Analog Options – Used to set up automatic measurements for the Analog Inputs.
- Contact Config - Used to change program's default contact configuration to the sensor's contact type.
- Controller Config – Set up the Controller configuration based upon hardware installed.

Navigation to System Configurations

To view system configurations from the main screen:

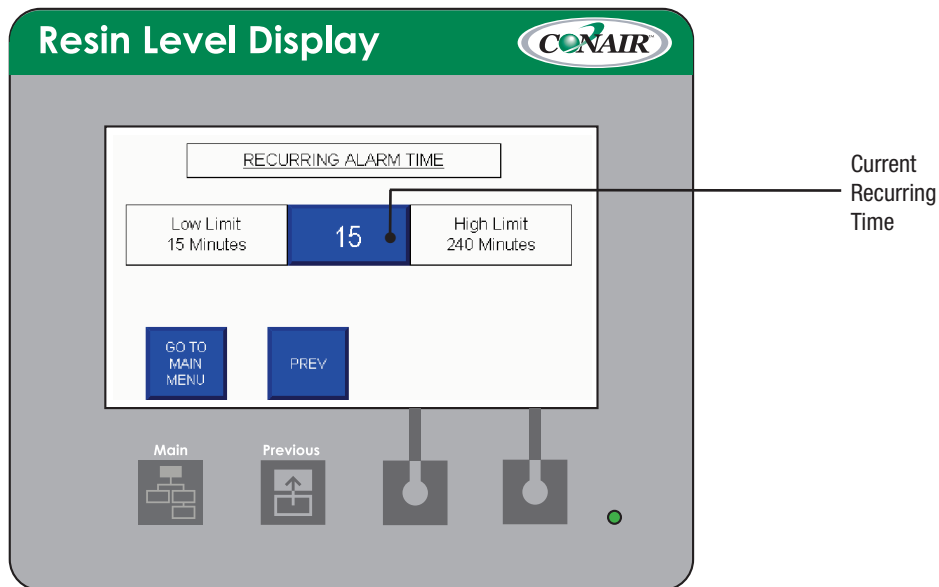
- 1** Use the Up/Down arrows  to scroll to Maintenance.
- 2** Press the “Enter” button  .
- 3** Use the Up/Down arrows  to scroll to Configurations.
- 4** Press the “Enter” button  .

Recurring Alarm

Conair representative typically sets up the system configurations during installation. Changing the configurations will effect the operation of the RLD. Super2 login is required.




The recurring alarm timer is used to retrigger acknowledged alarms if the alarm is not cleared after the configured time. The time for alarms to be reactivated is 15 minutes to 4 hours (240 minutes).

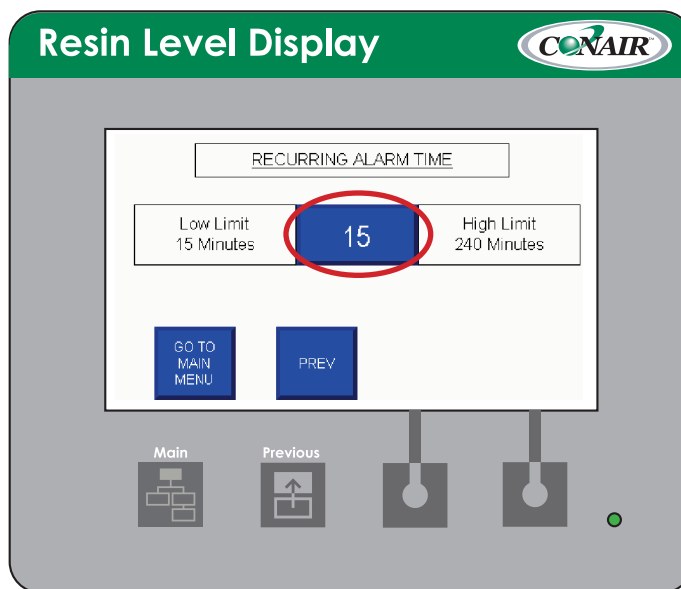
Overview of Recurring Alarm Screen



Change Recurring Alarm Time

To view/change the Recurring Alarm from the System Configurations screen:

- 1 Use the Up/Down arrows  to scroll to Recurring Alarm.
- 2 Press the “Enter” button  .
- 3 When prompted for username and password, use pop up keypad to enter the username and password. *See the Operations section, entitled Password Prompts for more detail.* Once the password is entered press the “Enter” button  .
- 4 Set the desired recurring alarm time. The time can be set from 15 minutes to 4 hours (240 minutes). Pressing the time field and a pop up number pad will appear.



- 5 Press enter and the recurring alarm time will be set.




Remote Horn Configuration (optional)

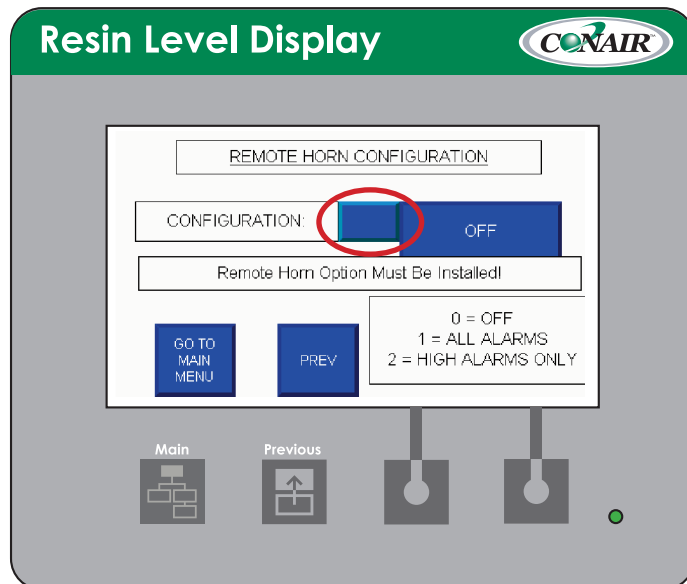
The Remote Horn Configuration screen is used to configure how the remote horn will operate. The remote horn option must be installed.

The remote horn configurations are as follows:

Configuration	Description
Off	(Default) Output for remote horn will not be turned on.
All Alarms	Remote horn output will turn on for all alarms.
High Alarms Only	Remote horn output will turn on only for high alarms

To view/change the Remote Horn Configuration from the System Configurations screen:

- 1 Use the Up/Down arrows  to scroll to Remote Horn Configurations screen.
- 2 Press the “Enter” button  .
- 3 When prompted for username and password, use the pop up keypad to enter the username and password. (See the Operations section, entitled Password Prompts for more detail). Once the password is entered press the “Enter” button.  .
- 4 Press the field for the remote horn configuration. A pop up number pad will appear.
- 5 Enter “0” for off, “1” for all alarms, and “2” for high alarms only.



Contact Configuration




The Contact Configuration screen allows both “Normally Open” and “Normally Closed” contacts be used on any input. The contact must be configured for the contact type of the sensor. Changing this configuration will effect the operation of the RLD. Super2 login is required.

Typical Contact Configurations

Sensor	Typical Configuration
LOW	N.O. (Normally Open)
MID	N.O. (Normally Open)
HIGH	N.O. (Normally Open)

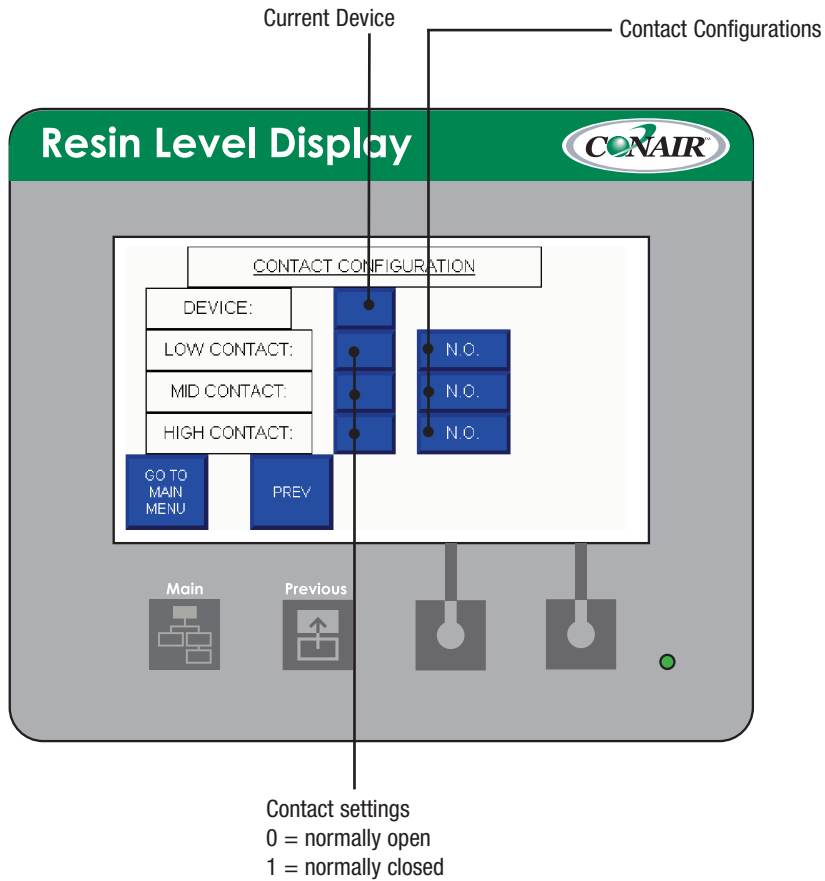
Navigation to Contact Configuration Screen

To view/change the Contact Configuration from the System Configurations screen:

- 1 Use the Up/Down arrows**  **to scroll to Contact Config.**
- 2 Press the “Enter” button** .
- 3 When prompted for username and password, use the pop up keypad** to enter the username and password. *See the Operations section, entitled Password Prompts for more detail.* Once the password is entered press the “Enter” button .

Contact Configuration (continued)

Contact Configuration Screen Overview

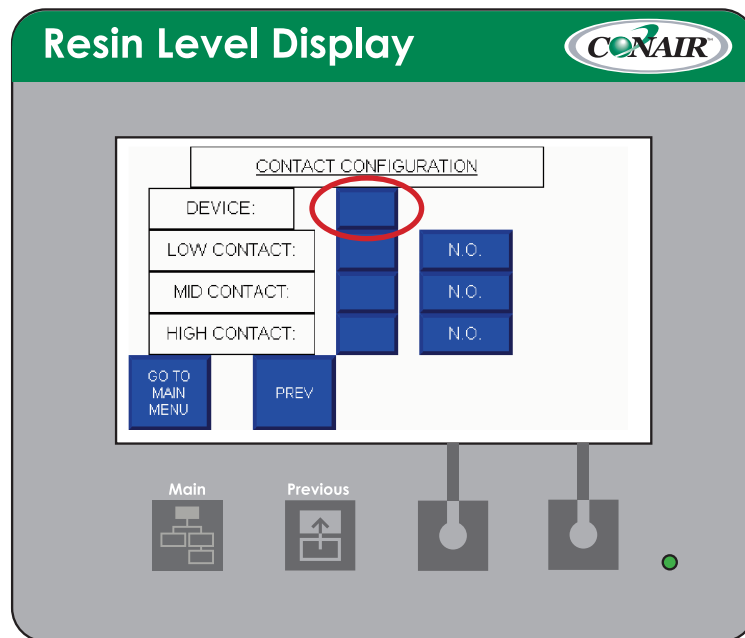


Contact Configuration (continued)

Configure Contact

To select a device:

- 1 Touch the Device field.** A pop up number pad may appear depending on the number of devices in your system.
- 2 Enter the device number that you would like to start configuring.**




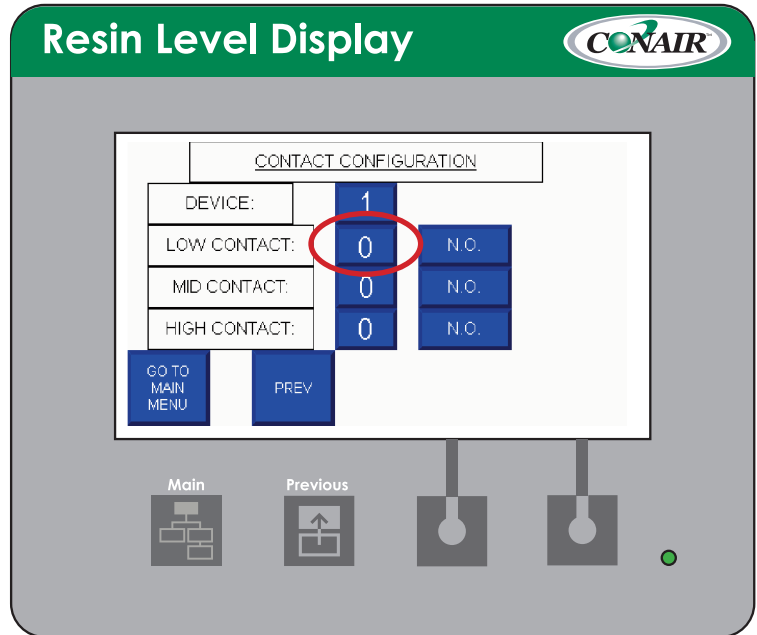
(Continued)

Contact Configuration (continued)

To configure a low contact:

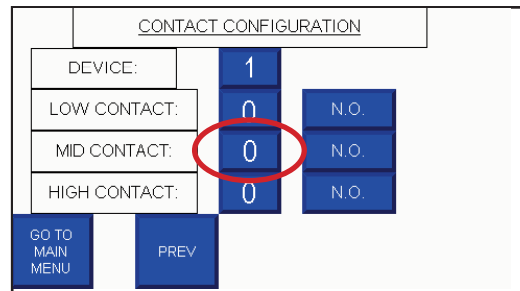
- 1 Touch the Low Contact field. A pop up number pad will appear.
- 2 Use the number pad to change the contact type.
 - For N.O. (normally open), enter “0”.
 - For N.C. (normally closed), enter “1”.

 **NOTE:** Depending on your system configuration, your screen may appear slightly different than shown.



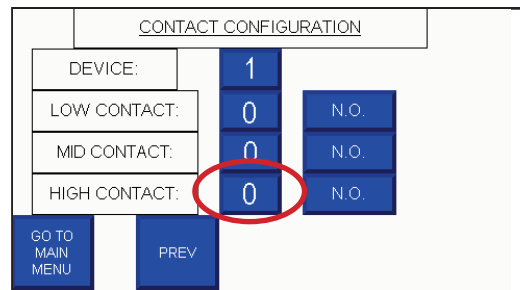
To configure a mid contact
(Controller Configuration 3
only):

- 1 Touch the Low Contact field. A pop up number pad will appear.
- 2 Use the number pad to change the contact type.
 - For N.O. (normally open), enter “0”.
 - For N.C. (normally closed), enter “1”.



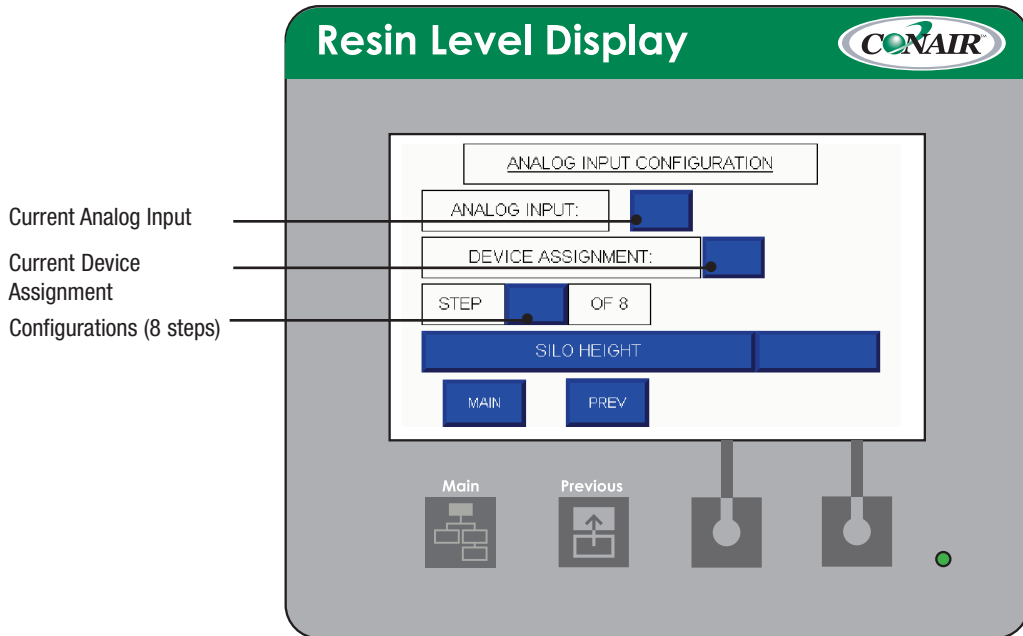
To configure a high contact (Controller Configuration
2 and 3):

- 1 Touch the Low Contact field. A pop up number pad will appear.
- 2 Use the number pad to change the contact type.
 - For N.O. (normally open), enter “0”.
 - For N.C. (normally closed), enter “1”.




Description of Analog Configuration Screen

The following screen is only available when 4, 8, or 12 analog inputs have been configured. The analog input must be configured prior to operation.



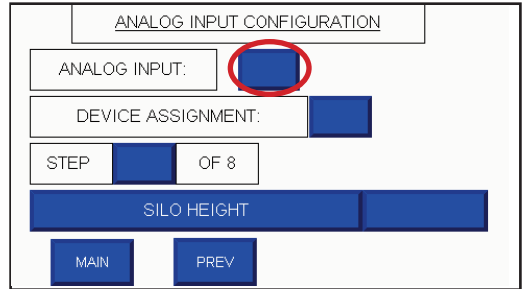
View Analog Configuration

To view Analog Status from the System Configuration screen:

- 1 Use the Up/Down arrows  to scroll to Analog Configuration.
- 2 Press the “Enter” button .

Selecting Analog Input

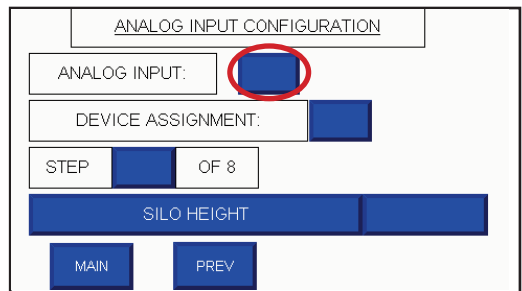
- 1 Touch the Analog Input field.
- 2 Use the number pad to navigate to the input you would like to configure.



The screenshot shows the 'ANALOG INPUT CONFIGURATION' screen. At the top is a title bar with the text 'ANALOG INPUT CONFIGURATION'. Below it are several fields: 'ANALOG INPUT:' with a blue selection box highlighted by a red circle; 'DEVICE ASSIGNMENT:' with a blue selection box; 'STEP' with a blue selection box and 'OF 8' to its right; a large blue horizontal bar labeled 'SILO HEIGHT'; and two buttons at the bottom labeled 'MAIN' and 'PREV'.


Analog Input Device Assignment

- 1 Select Analog input to assign device to.
- 2 Touch the Device Assignment field.
- 3 Use the pop up number pad to enter the device number of the device you would like to assign.



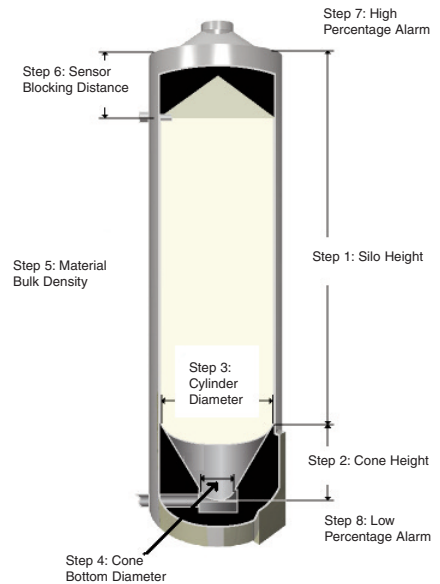
The screenshot shows the 'ANALOG INPUT CONFIGURATION' screen. At the top is a title bar with the text 'ANALOG INPUT CONFIGURATION'. Below it are several fields: 'ANALOG INPUT:' with a blue selection box highlighted by a red circle; 'DEVICE ASSIGNMENT:' with a blue selection box; 'STEP' with a blue selection box and 'OF 8' to its right; a large blue horizontal bar labeled 'SILO HEIGHT'; and two buttons at the bottom labeled 'MAIN' and 'PREV'.

Analog Input Configuration

 **NOTE:** For initial configuration, start with step 1 and continue to step 8 after each configuration.

- 1** Select analog input to configure.
- 2** Touch the Step field to select the Analog Configuration Step #. A pop up number pad will appear.
- 3** Enter the number of the configuration to be added or changed. Listed below are the 8 configurations:

STEP	CONFIGURATION
1	Silo Height
2	Cone Height
3	Cylinder Diameter
4	Cone Bottom Diameter
5	Material Bulk Density
6	Sensor Blocking Distance
7	High Alarm Percentage
8	Low Alarm Percentage



ANALOG INPUT CONFIGURATION

ANALOG INPUT:

DEVICE ASSIGNMENT:

STEP OF 8

SILO HEIGHT

MAIN
PREV

- 4** Once the step configuration is selected, press the configuration data to enter. A pop up number pad will appear.

ANALOG INPUT CONFIGURATION

ANALOG INPUT:


DEVICE ASSIGNMENT:

STEP OF 8

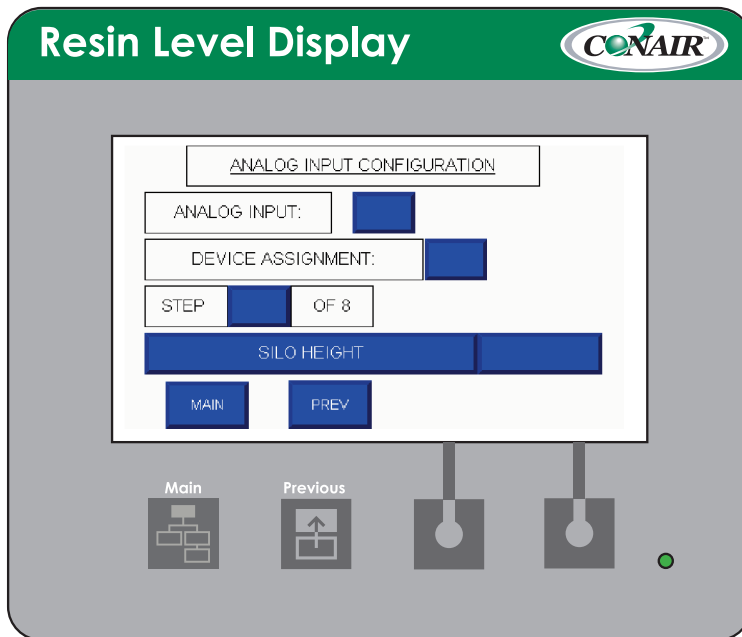
SILO HEIGHT

MAIN
PREV

Analog Input Configuration (continued)


- 5 Enter the value, then press the Enter button  .
- 6 Repeat steps 2 through 5 to enter/change another configuration.

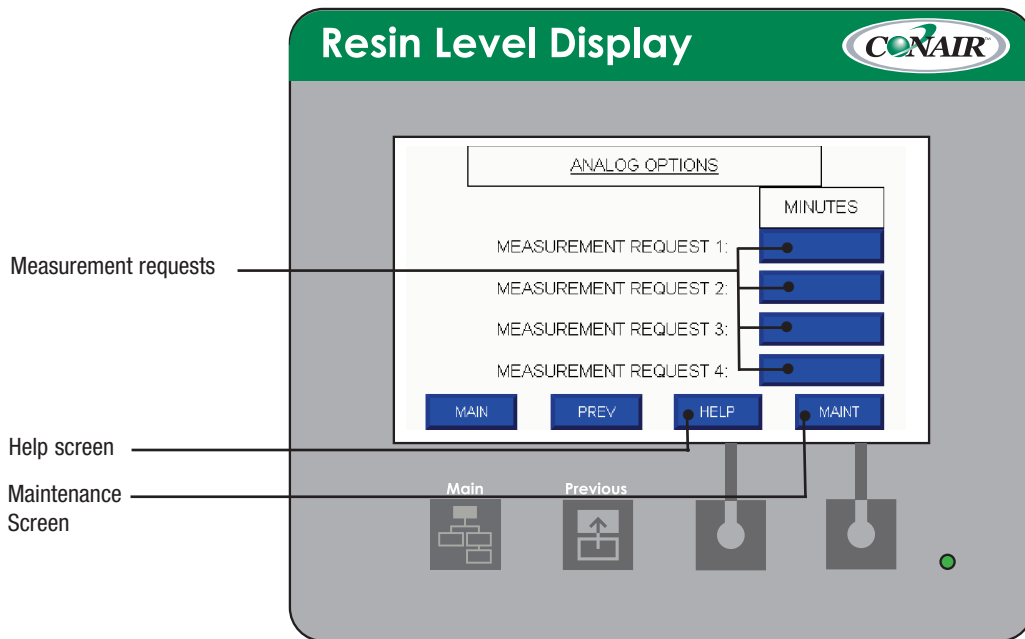
 **NOTE:** The ESC key cancels the operation and returns to the previous screen.



Description of Analog Options Screen

The following screen is only available when analog inputs have been configured. There are four (4) Measurement Request Outputs which can be used to automatically trigger measurements at a user-defined interval.

 **NOTE:** Measuring devices must have measure request capability and measure request outputs must be connected properly. RLD electrical drawings provide additional notes when wiring.



View Analog Options

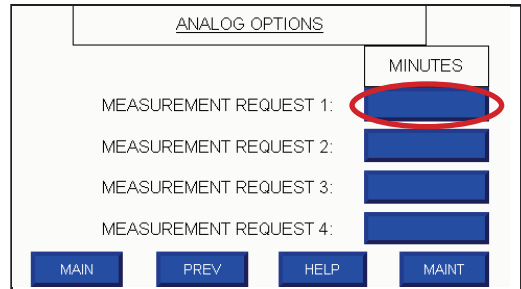
To view Analog Status from the SYSTEM CONFIGURATION screen:

1 Use the Up/Down arrows  to scroll to Analog Options.


2 Press the "Enter" button .

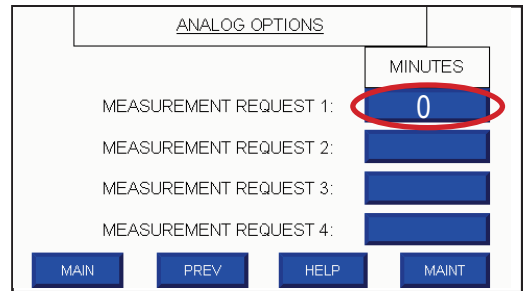
Configure Measurement Request

- 1 Touch the desired measurement request.
- 2 Use the pop up number pad to enter the numeric input.
- 3 Repeat steps 1 and 2 for each request.



Disable Measurement Request

- 1 Touch the desired measurement request.
- 2 Use the pop up number pad to enter "0" into the field.
- 3 Press the Enter button .



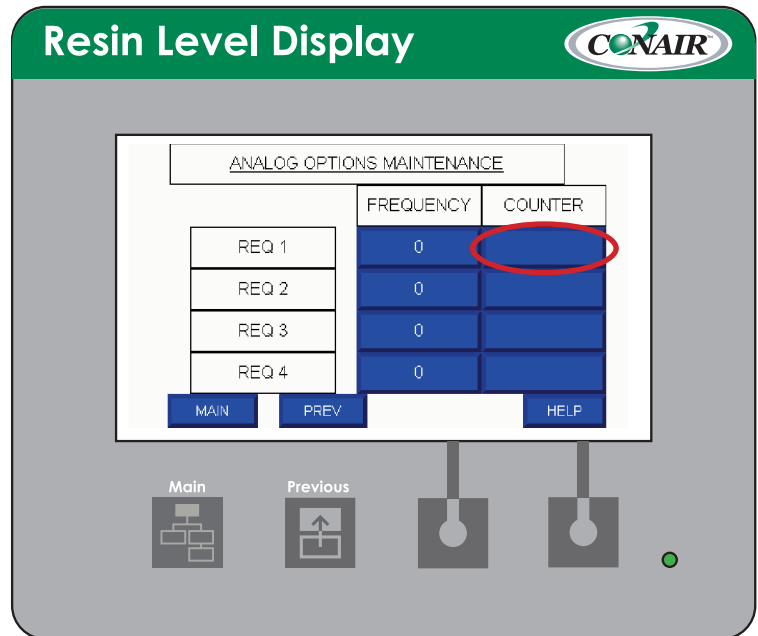
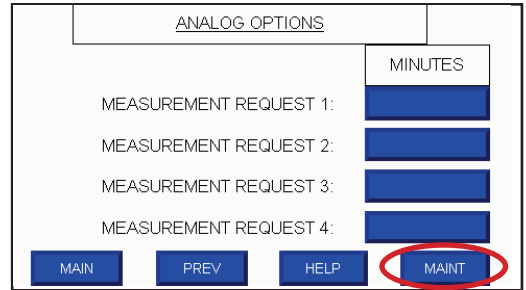
To Reset Counter

To Reset the Counter, enter a “0” into the counter numeric input using the following instructions.

1 From the Analog Options screen, select “Maint.”

2 Touch the desired Measurement request.

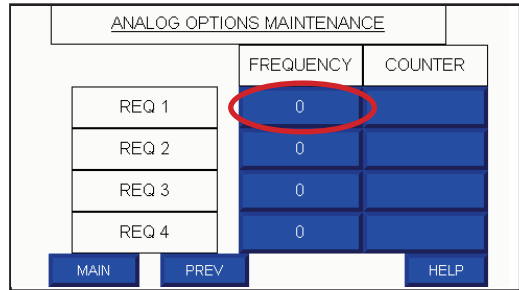
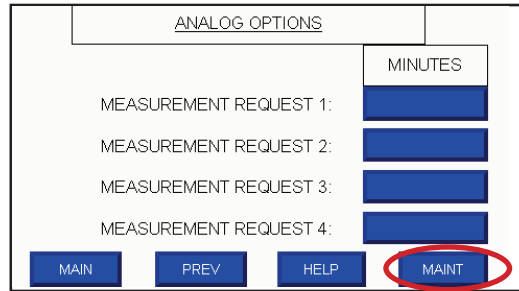
3 Using the pop up number pad, enter a “0” in the field.



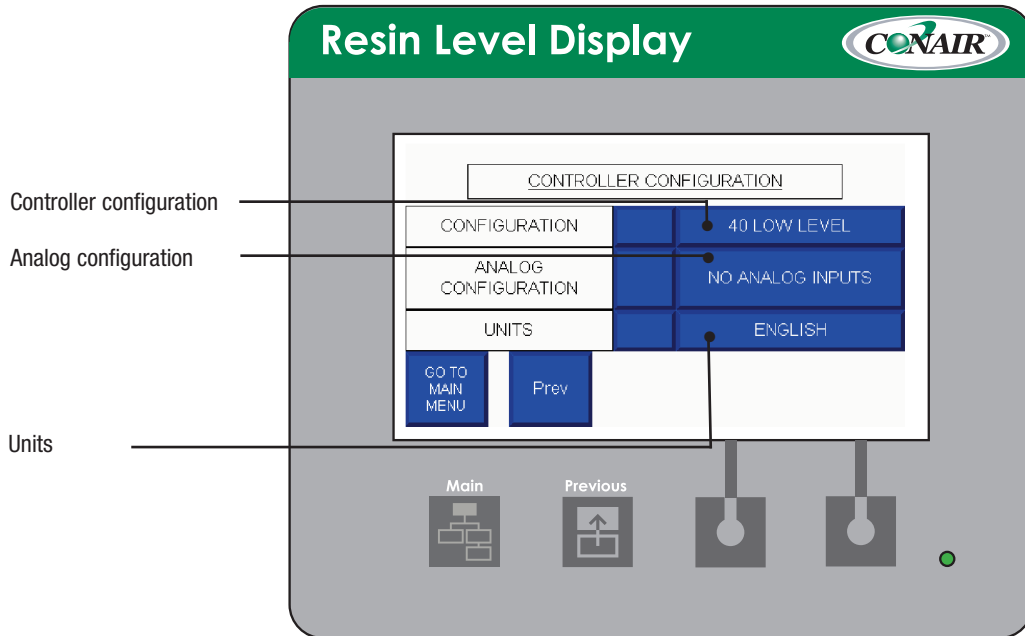
To Enter Specific Time of Day for Measurement Request

To enter a specific time of the day for the measurement request, enter the time of day in minutes into the counter numeric input using the following instructions. For example, if the request is set for daily (1440 minutes), the desired time for measurement is 5:00 PM (1700 hours), and the current time is 11:00 AM (1100 hours), then set the counter to 1080 (the number of hours elapsed X 60 minutes).

- 1 From the Analog Options screen, select “Maint.”**
- 2 Touch the desired Measurement Request Frequency.**
- 3 Use the pop up number pad to enter the number of minutes of your desired measurement time.**
- 4 Repeat steps 2 and 3 for each request.**



Description of Controller Configuration Screen



View Controller Configuration


To view analog status from the System Configuration screen:

- 1 Use the Up/Down arrows  to scroll to Controller Config.
- 2 Press the Enter arrow  .

Change Controller Configuration

- 1 Touch the field next to Configuration.
- 2 Use the pop up number pad to select the controller configuration. 1 = 40 Low Level. 2 = 20 Low/High Level.

CONTROLLER CONFIGURATION		
CONFIGURATION	<input type="text"/>	40 LOW LEVEL
ANALOG CONFIGURATION	<input type="text"/>	NO ANALOG INPUTS
UNITS	<input type="text"/>	ENGLISH
GO TO MAIN MENU	Prev	

 **NOTE:** See the System Configuration section, entitled Controller Configuration for more detail.

Change Analog Configuration

- 1 Touch the field next to Analog Configuration.
- 2 Use the pop up number pad to select the analog configuration option.
1 = 4 inputs. 2 = 8 inputs. 3 = 12 inputs.

CONTROLLER CONFIGURATION		
CONFIGURATION	<input type="text"/>	40 LOW LEVEL
ANALOG CONFIGURATION	<input type="text"/>	NO ANALOG INPUTS
UNITS	<input type="text"/>	ENGLISH
GO TO MAIN MENU	Prev	

Change Units of Measurement

- 1 Touch the field next to Units.
- 2 Use the pop up number pad to select the units.
0 = English. 1 = Metric.

CONTROLLER CONFIGURATION		
CONFIGURATION	<input type="text"/>	40 LOW LEVEL
ANALOG CONFIGURATION	<input type="text"/>	NO ANALOG INPUTS
UNITS	<input type="text"/>	ENGLISH
GO TO MAIN MENU	Prev	

Controller Configuration



IMPORTANT:

Always refer to the wiring diagrams that came with your RLD before making electrical connections.

The RLD has three configurations. Each configuration coincides with the input wiring. Refer to the electrical drawings for proper wiring.

Description of Controller Configurations

Configuration	Description
CONFIGURATION 1 - 40 LOW LEVEL	Maximum of 40 devices, Each with: <ul style="list-style-type: none"> • Low Level Indicator • A Configurable Low Alarm
CONFIGURATION 2 - 20 LOW/HIGH LEVEL	Maximum of 20 Devices Each with: <ul style="list-style-type: none"> • Low Level Indicator • High Level Indicator • A Configurable Low Alarm • A Configurable High Alarm
CONFIGURATION 3 - 12 LOW/MID/HIGH LEVEL	Maximum of 12 Devices Each with: <ul style="list-style-type: none"> • Low Level Indicator • Mid Level Indicator • High Level Indicator • A Configurable Low Alarm • A Configurable High Alarm

If the Optional Continuous silo level monitoring (4, 8, or 12 available quantities of analog input modules) have been installed, they must be configured.

Analog Configuration	Description
(0) NO ANALOG INPUTS	No Analog Inputs are available
(1) 4 ANALOG INPUTS	Up to 4 devices can be assigned to an analog input
(2) 8 ANALOG INPUTS	Up to 8 devices can be assigned to an analog input
(3) 12 ANALOG INPUTS	Up to 12 devices can be assigned to an analog input



NOTE: The units of the analog values can be entered in English or Metric. (English is the default.)



CAUTION: Electrical connections should be made only by qualified personnel.


We're Here to Help

Conair has made the largest investment in customer support in the plastics industry. Our service experts are available to help with any problem you might have installing and operating your equipment. Your Conair sales representative also can help analyze the nature of your problem, assuring that it did not result from misapplication or improper use.

How to Contact Customer Service

To contact Customer Service personnel, call:



 **NOTE:** Normal operation hours are 8:00 AM - 5:00 PM (EST). After hours emergency service is available at the same phone number.

You can commission Conair service personnel to provide on-site service by contacting the Customer Service Department. Standard rates include an on-site hourly rate, with a one-day minimum plus expenses.

Before You Call...

If you do have a problem, please complete the following checklist before calling Conair:

- Make sure you have all model, serial and parts list numbers for your particular equipment. Service personnel will need this information to assist you.
- Make sure power is supplied to the equipment.
- Make sure that all connectors and wires within and between control systems and related components have been installed correctly.
- Check the troubleshooting guide of this manual for a solution.
- Thoroughly examine the instruction manual(s) for associated equipment, especially controls. Each manual may have its own troubleshooting guide to help you.
- Check that the equipment has been operated as described in this manual.
- Check accompanying schematic drawings for information on special considerations.

Additional manuals and prints for your Conair equipment may be ordered through the Customer Service or Parts Department for a nominal fee. Most manuals can be downloading free of charge from the product section of the Conair website.
www.conairgroup.com

Equipment Guarantee

Conair guarantees the machinery and equipment on this order, for a period as defined in the quotation from date of shipment, against defects in material and workmanship under the normal use and service for which it was recommended (except for parts that are typically replaced after normal usage, such as filters, liner plates, etc.). Conair's guarantee is limited to replacing, at our option, the part or parts determined by us to be defective after examination. The customer assumes the cost of transportation of the part or parts to and from the factory.

Performance Warranty

Conair warrants that this equipment will perform at or above the ratings stated in specific quotations covering the equipment or as detailed in engineering specifications, provided the equipment is applied, installed, operated and maintained in the recommended manner as outlined in our quotation or specifications.

Should performance not meet warranted levels, Conair at its discretion will exercise one of the following options:

- Inspect the equipment and perform alterations or adjustments to satisfy performance claims. (Charges for such inspections and corrections will be waived unless failure to meet warranty is due to misapplication, improper installation, poor maintenance practices or improper operation.)
- Replace the original equipment with other Conair equipment that will meet original performance claims at no extra cost to the customer.
- Refund the invoiced cost to the customer. Credit is subject to prior notice by the customer at which time a Return Goods Authorization Number (RGA) will be issued by Conair's Service Department. Returned equipment must be well crated and in proper operating condition, including all parts. Returns must be prepaid.

Purchaser must notify Conair in writing of any claim and provide a customer receipt and other evidence that a claim is being made.

Warranty Limitations

Except for the Equipment Guarantee and Performance Warranty stated above, Conair disclaims all other warranties with respect to the equipment, express or implied, arising by operation of law, course of dealing, usage of trade or otherwise, including but not limited to the implied warranties of merchantability and fitness for a particular purpose.

Appendix B

PLC troubleshooting error codes B-2

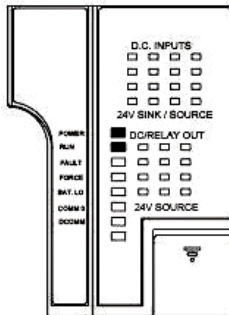
Appendix B - PLC Troubleshooting and Error Codes

Additional Resources

- 1764-UM001A-US-P, MicroLogix 1500 User Manual
- 1762-RM001B-US-P, MicroLogix 1200 and 1500 Programmable Controllers Instruction Set Reference Manual
- 1764-IN001A-ML-P, MicroLogix 1500 Base Units

Understanding PLC LEDS

The Controller status LEDs provide a mechanism to determine the current status of the controller if a programming device is not present or available.



LED	Color	Indicates
POWER	off	no input power
	green	power on
RUN	off	controller is not in Run mode or REM Run
	green	controller is in Run mode or REM Run
	green flashing	system is not in Run mode; memory module transfer is in progress
FAULT	off	no fault detected
	red flashing	faulted user program
	red	processor hardware fault or critical fault
FORCE	off	no forces installed
	amber	forces installed
BATTERY LOW	off	battery OK
	red	battery needs replacement (See page B-2.)
COMM 0	off	flashes when communications are active
	green	
COMM 1 (1764-LRP only)	off	flashes when communications are active
	green	
DCOMM ⁽¹⁾	off	user configured communications mode is active
	green	default communications mode active
INPUTS	off	input is not energized
	amber	input is energized (logic status)
OUTPUTS	off	output is not energized
	amber	output is energized (logic status)

(1) When using a 1764-LRP processor, the DCOMM LED applies only to Channel 0.

(Continued)

Appendix B - PLC Troubleshooting and Error Codes (continued)

Normal Operating Conditions

The Power and Run LEDs are on. The COM 0 LED will be on to indicate communication between the controller and the operator interface. If a force condition is active, the Force LED turns on and remains on until all forces are removed.

Force Conditions

In normal operating conditions no forces should be installed. If a force is active, the Force LED turns on and remains on until all forces are removed.

Fault/Error Condition

If an error exists within the controller, the controller LEDs operate as described in the following table.

If the LEDs Indicate:	The Following Error Exists	Probable Cause	Recommended Action
All LED off	No input power or Power supply error	No line power	Verify Proper line voltage and Connections to the controller.
		Power Supply Overload	This problem can occur intermittently if power supply is overloaded when output loading and temperature varies.
Power and FAULT LEDs on solid	Hardware faulted	Processor Hardware Error	Cycle power. Contact your local Conair Service representative if the error persists.
		Loose Wiring	Verify connections to the controller.
Power LED on and FAULT LED flashing	Application Fault	Hardware/Software Major Fault Detected	<ol style="list-style-type: none"> 1. Obtain PLC error code. 2. Remove hardware/software condition causing fault. 3. Reset PLC error. 4. Place controller in Run Mode. 5. Contact your local Conair Service Representative if the error persists.

Appendix B - PLC Troubleshooting and Error Codes (continued)

Fault Messages

This section contains fault messages that can occur during operation of the RLD controller. Each table lists the error code description, the probable cause, and the recommended descriptive action.

Error Code (Hex)	Advisory Message	Description	Fault Classification	Recommended Action
0001 1 (dec)	NVRAM ERROR	The default program is loaded to the controller memory. This occurs: <ul style="list-style-type: none"> • if a power down occurred during program download or transfer from the memory module. • RAM integrity test failed. • FLASH integrity test failed (<i>MicroLogix 1200 only</i>). 	Non-User	<ul style="list-style-type: none"> • Re-download or transfer the program. • Verify battery is connected (<i>MicroLogix 1500 only</i>). • Contact your Conair Service representative if the error persists.
0002 2 (dec)	UNEXPECTED RESET	<ul style="list-style-type: none"> • The controller was unexpectedly reset due to a noisy environment or internal hardware failure. • The default program is loaded. (<i>MicroLogix 1500 only</i>) • Retentive Data is lost. See page C-12. (<i>MicroLogix 1200 only</i>) 	Non-User	<ul style="list-style-type: none"> • Refer to proper grounding guidelines and using surge suppressors in your controller's User Manual. • Verify battery is connected (<i>MicroLogix 1500 only</i>). • Contact your Conair service representative if the error persists.
0003 3 (dec)	MEMORY MODULE USER PROGRAM IS CORRUPT	Memory module memory error. This error can also occur when going to the Run mode.	Non-User	Re-program the memory module. If the error persists, replace the memory module.
0004 4 (dec)	MEMORY INTEGRITY ERROR	While the controller was powered up, ROM or RAM became corrupt.	Non-User	<ul style="list-style-type: none"> • Cycle power on your unit. Then, re-download your program and start up your system. • Refer to proper grounding guidelines and using surge suppressors in your controller's User Manual. • Contact your Conair Service representative if the error persists.

Appendix B - PLC Troubleshooting and Error Codes (continued)

Error Code (Hex)	Advisory Message	Description	Fault Classification	Recommended Action
0006 6 (dec)	MEMORY MODULE HARDWARE FAULT	The memory module hardware faulted or the memory module is incompatible with OS.	Non-User	<ul style="list-style-type: none"> Upgrade the OS to be compatible with memory module. Obtain a new memory module.
0007 7 (dec)	MEMORY MODULE TRANSFER ERROR	Failure during memory module transfer.	Non-User	Re-attempt the transfer. If the error persists, replace the memory module.
0008 8 (dec)	FATAL INTERNAL SOFTWARE ERROR	An unexpected software error occurred.	Non-User	<ul style="list-style-type: none"> Cycle power on your unit. Then, re-download your program and re-initialize any necessary data. Start up your system. Refer to proper grounding guidelines and using surge suppressors in your controller's User Manual. Contact your Conair Service representative if the error persists.
0009 9 (dec)	FATAL INTERNAL HARDWARE ERROR	An unexpected hardware error occurred.	Non-User	<ul style="list-style-type: none"> Cycle power on your unit. Then, re-download your program and re-initialize any necessary data. Start up your system. Refer to proper grounding guidelines and using surge suppressors in your controller's User Manual. Contact your Conair Service representative if the error persists.
000A 10 (dec)	OS MISSING OR CORRUPT	The operating system required for the user program is corrupt or missing.	Non-User	<ul style="list-style-type: none"> Download a new OS using ControlFlash. Contact your local Rockwell Automation representative for more information about available operating systems your controller.
000B 11 (dec)	BASE HARDWARE FAULT	The base hardware faulted or is incompatible with the OS.	Non-User	<ul style="list-style-type: none"> Upgrade the OS using ControlFlash. Replace the Controller (<i>MicroLogix 1200 only</i>). Replace the Base Unit (<i>MicroLogix 1500 only</i>). Contact your Conair Service representative for more information about available operating systems your controller.
0011 17 (dec)	EXECUTABLE FILE 2 IS MISSING	Ladder File 2 is missing from the program.	Non-User	<ul style="list-style-type: none"> Re-compile and reload the program.
0012 18 (dec)	LADDER PROGRAM ERROR	The ladder program has a memory integrity problem.	Non-User	<ul style="list-style-type: none"> Reload the program or re-compile and reload the program. If the error persists, be sure to use RSI programming software to develop and load the program. Refer to proper grounding guidelines and using surge suppressors in your controller's User Manual.
0015 21 (dec)	I/O CONFIGURATION FILE ERROR	The user program I/O configuration is invalid.	Non-User	Re-compile and reload the program, and enter the Run mode. If the error persists, be sure to use RSI programming software to develop and load the program.

Appendix B - PLC Troubleshooting and Error Codes (continued)

Error Code (Hex)	Advisory Message	Description	Fault Classification	Recommended Action
0016 22 (dec)	STARTUP PROTECTION FAULT	The user fault routine was executed at power-up, prior to the main ladder program. Bit S:1/13 (Major Error Halted) was not cleared at the end of the User Fault Routine. The User Fault Routine ran because bit S:1/9 was set at power-up.	Recoverable	<ul style="list-style-type: none"> Either reset bit S:1/9 if this is consistent with the application requirements, and change the mode back to RUN, or clear S:1/13, the Major Error Halted bit, before the end of the User Fault Routine.
0017 23 (dec)	NVRAM/MEMORY MODULE USER PROGRAM MISMATCH	Bit S:2/9 is set in the controller and the memory module user program does not match the controller user program.	Non-Recoverable	Transfer the memory module program to the controller and then change to Run mode.
0018 24 (dec)	MEMORY MODULE USER PROGRAM INCOMPATIBLE WITH OS	The user program in the memory module is incompatible with the OS.	Non-User	<ul style="list-style-type: none"> Upgrade the OS using ControlFlash to be compatible with the memory module. Obtain a new memory module. Contact your local Rockwell Automation representative for more information about available operating systems your controller.
001A 26 (dec)	USER PROGRAM INCOMPATIBLE WITH OS AT POWER-UP	The user program is incompatible with the OS.	Non-User	<ul style="list-style-type: none"> Upgrade the OS using ControlFlash. Contact your Conair Service representative for more information about available operating systems your controller.
0020 32 (dec)	MINOR ERROR AT END-OF-SCAN DETECTED	A minor fault bit (bits 0-7) in S:5 was set at the end of scan.	Recoverable	<ul style="list-style-type: none"> Correct the instruction logic causing the error. Enter the status file display in your programming software and clear the fault. Enter the Run mode.
0021 33 (dec)	EXPANSION POWER FAIL (EPF) <i>(MicroLogix 1500 only)</i>	A power failure is present on the expansion I/O bank. This error code is present only when the controller is powered, and power is not applied to the expansion I/O bank. This is a self-clearing error code. When power is re-applied to the expansion I/O bank, the fault is cleared. See Important note below.	Non-User	Re-apply power to the expansion I/O bank. See Important note below.
	IMPORTANT	<p>If this fault occurs while the system is in the RUN mode, the controller faults. When expansion I/O power is restored, the controller clears the fault and re-enters the RUN mode.</p> <p>If you change the mode switch while this fault is present, the controller may not re-enter the RUN mode when expansion I/O power is restored.</p> <p>If an EPF condition is present and expansion I/O power is OK, toggle the mode switch to PROGRAM and then to RUN. The fault should clear and the controller enters the RUN mode.</p>		
0022 34 (dec)	WATCHDOG TIMER EXPIRED, SEE S:3	The program scan time exceeded the watchdog timeout value (S:3H).	Non-Recoverable	<ul style="list-style-type: none"> Determine if the program is caught in a loop and correct the problem. Increase the watchdog timeout value in the status file.
0023 35(dec)	STI ERROR	An error occurred in the STI configuration.	Recoverable	See the Error Code in the STI Function File for the specific error.

(Continued)

Appendix B - PLC Troubleshooting and Error Codes (continued)

Error Code (Hex)	Advisory Message	Description	Fault Classification	Recommended Action
0028 40 (dec)	INVALID OR NONEXISTENT USER FAULT ROUTINE VALUE	<ul style="list-style-type: none"> A fault routine number was entered in the status file, number (S:29), but either the fault routine was not physically created, or the fault routine number was less than 3 or greater than 255. 	Non-User	<ul style="list-style-type: none"> Either clear the fault routine file number (S:29) in the status file, or create a fault routine for the file number reference in the status file (S:29). The file number must be greater than 2 and less than 255.
0029 41 (dec)	INSTRUCTION INDIIRECTION OUTSIDE OF DATA SPACE	An indirect address reference in the ladder program is outside of the entire data file space.	Recoverable	Correct the program to ensure that there are no indirect references outside data file space. Re-compile, reload the program and enter the Run mode.
002E 46(dec)	EII ERROR	An error occurred in the EII configuration.	Recoverable	See the Error Code in the EII Function File for the specific error.
0030 48 (dec)	SUBROUTINE NESTING EXCEEDS LIMIT	The JSR instruction nesting level exceeded the controller memory space.	Non-User	Correct the user program to reduce the nesting levels used and to meet the restrictions for the JSR instruction. Then reload the program and Run.
0031 49 (dec)	UNSUPPORTED INSTRUCTION DETECTED	The program contains an instruction(s) that is not supported by the controller.	Non-User	<ul style="list-style-type: none"> Modify the program so that all instructions are supported by the controller. Re-compile and reload the program and enter the Run mode.
0032 50 (dec)	SQO/SQC/SQL OUTSIDE OF DATA FILE SPACE	A sequencer instruction length/ position parameter references outside of the entire data file space.	Recoverable	<ul style="list-style-type: none"> Correct the program to ensure that the length and position parameters do not point outside data file space. Re-compile, reload the program and enter the Run mode.
0033 51 (dec)	BSL/BSR/FFL/FFU/LFL/LFU CROSSED DATA FILE SPACE	The length/position parameter of a BSL, BSR, FFL, FFU, LFL, or LFU instruction references outside of the entire data file space.	Recoverable	<ul style="list-style-type: none"> Correct the program to ensure that the length and position parameters do not point outside of the data space. Re-compile, reload the program and enter the Run mode.
0034 52 (dec)	NEGATIVE VALUE IN TIMER PRESET OR ACCUMULATOR	A negative value was loaded to a timer preset or accumulator.	Recoverable	<ul style="list-style-type: none"> If the program is moving values to the accumulated or preset word of a timer, make certain these values are not negative. Reload the program and enter the Run mode.
0035 53 (dec)	ILLEGAL INSTRUCTION IN INTERRUPT FILE	The program contains a Temporary End (TND), Refresh (REF), or Service Communication instruction in an interrupt subroutine (STI, EII, HSC) or user fault routine.	Non-Recoverable	<ul style="list-style-type: none"> Correct the program. Re-compile, reload the program and enter the Run mode.
0036 54(dec)	INVALID PID PARAMETER	An invalid value is being used for a PID instruction parameter.	Recoverable	Process Control Instruction for more information about the PID instruction.
0037 55(dec)	HSC ERROR	An error occurred in the HSC configuration.	Recoverable	See the Error Code in the HSC Function File for the specific error.
003B 59(dec)	PTO ERROR	An error occurred in the PTO instruction configuration.	Recoverable or Non-User	See the Error Code in the PTO Function File for the specific error.
003C 60(dec)	PWM ERROR	An error occurred in the PWM instruction configuration.	Recoverable or Non-User	See the Error Code in the PWM Function File for the specific error.

Appendix B - PLC Troubleshooting and Error Codes (continued)

Error Code (Hex)	Advisory Message	Description	Fault Classification	Recommended Action
003D 61 (dec)	INVALID SEQUENCER LENGTH/POSITION	A sequencer instruction (SQO, SQC, SQL) length/position parameter is greater than 255.	Recoverable	Correct the user program, then re-compile, reload the program and enter the Run mode.
003E 62 (dec)	INVALID BIT SHIFT OR LIFO/FIFO PARAMETER	A BSR or BSL instruction length parameter is greater than 2048 or an FFU, FFL, LFU, LFL instruction length parameter is greater than 128 (word file) or greater than 64 (double word file)	Recoverable	Correct the user program or allocate more data file space using the memory map, then reload and Run.
003F 63 (dec)	COP/FLL OUTSIDE OF DATA FILE SPACE	A COP or FLL instruction length parameter references outside of the entire data space.	Recoverable	<ul style="list-style-type: none"> Correct the program to ensure that the length and parameter do not point outside of the data file space. Re-compile, reload the program and enter the Run mode.
0050 80 (dec)	CONTROLLER TYPE MISMATCH	A particular controller type was selected in the user program configuration, but did not match the actual controller type.	Non-User	<ul style="list-style-type: none"> Connect to the hardware that is specified in the user program, or Reconfigure the program to match the attached hardware.
0051 81 (dec)	BASE TYPE MISMATCH	A particular hardware type (AWA, BWA, BXB) was selected in the user program configuration, but did not match the actual base.	Non-User	<ul style="list-style-type: none"> Connect to the hardware that is specified in the user program, or Reconfigure the program to match the attached hardware.
0052 82 (dec)	MINIMUM SERIES ERROR	The hardware minimum series selected in the user program configuration was greater than the series on the actual hardware.	Non-User	<ul style="list-style-type: none"> Connect to the hardware that is specified in the user program, or Reconfigure the program to match the attached hardware.
0070 112 (dec)	EXPANSION I/O TERMINATOR REMOVED <i>(MicroLogix 1500 only)</i>	The required expansion I/O terminator was removed.	Non-Recoverable	<ul style="list-style-type: none"> Check the expansion I/O terminator on the last I/O module. Cycle power.
xx71 ⁽¹⁾	EXPANSION I/O HARDWARE ERROR	The controller cannot communicate with an expansion I/O module.	Non-Recoverable	<ul style="list-style-type: none"> Check connections. Check for a noise problem and be sure proper grounding practices are used. Replace the module. Cycle power.
xx79 ⁽¹⁾	EXPANSION I/O MODULE ERROR	An expansion I/O module generated an error.	Non-Recoverable	<ul style="list-style-type: none"> Refer to the I/O Module Status (IOS) file. Consult the documentation for your specific I/O module to determine possible causes of a module error.
0080 128 (dec)	EXPANSION I/O TERMINATOR REMOVED <i>(MicroLogix 1500 only)</i>	The required expansion I/O terminator was removed.	Non-User	<ul style="list-style-type: none"> Check expansion I/O terminator on last I/O module. Cycle power.
xx81 ⁽¹⁾	EXPANSION I/O HARDWARE ERROR	The controller cannot communicate with an expansion I/O module.	Non-User	<ul style="list-style-type: none"> Check connections. Check for a noise problem and be sure proper grounding practices are used. Replace the module. Cycle power.

(Continued)

Appendix B - PLC Troubleshooting and Error Codes (continued)

Error Code (Hex)	Advisory Message	Description	Fault Classification	Recommended Action
0083 131 (dec)	MAX I/O CABLES EXCEEDED	The maximum number of expansion I/O cables allowed was exceeded.	Non-User	<ul style="list-style-type: none"> Reconfigure the expansion I/O system so that it has an allowable number of cables. Cycle power.
0084 132 (dec)	MAX I/O POWER SUPPLIES EXCEEDED	The maximum number of expansion I/O power supplies allowed was exceeded.	Non-User	<ul style="list-style-type: none"> Reconfigure the expansion I/O system so that it has the correct number of power supplies.
0085 133 (dec)	MAX I/O MODULES EXCEEDED	The maximum number of expansion I/O modules allowed was exceeded.	Non-User	<ul style="list-style-type: none"> Reconfigure the expansion I/O system so that it has an allowable number of modules. Cycle power.
xx86 ⁽¹⁾	EXPANSION I/O MODULE BAUD RATE ERROR	An expansion I/O module could not communicate at the baud rate specified in the user program I/O configuration.	Non-User	<ul style="list-style-type: none"> Change the baud rate in the user program I/O configuration, and Re-compile, reload the program and enter the Run mode, or Replace the module. Cycle power.
xx87 ⁽¹⁾	I/O CONFIGURATION MISMATCH	<ul style="list-style-type: none"> The expansion I/O configuration in the user program did not match the actual configuration, or The expansion I/O configuration in the user program specified a module, but one was not found, or The expansion I/O module configuration data size for a module was greater than what the module is capable of holding. 	Non-User	<ul style="list-style-type: none"> Either correct the user program I/O configuration to match the actual configuration, or With power off, correct the actual I/O configuration to match the user program configuration.
xx88 ⁽¹⁾	EXPANSION I/O MODULE CONFIGURATION ERROR	The number of input or output image words configured in the user program exceeds the image size in the expansion I/O module.	Non-User	<ul style="list-style-type: none"> Correct the user program I/O configuration to reduce the number of input or output words, and Re-compile, reload the program and enter the Run mode.
xx89 ⁽¹⁾⁽²⁾	EXPANSION I/O MODULE ERROR	An expansion I/O module generated an error.	Non-User	<ul style="list-style-type: none"> Refer to the I/O status file. Consult the documentation for your specific I/O module to determine possible causes of a module error.
xx8A ⁽¹⁾⁽²⁾	EXPANSION I/O CABLE CONFIGURATION MISMATCH ERROR	<ul style="list-style-type: none"> Either an expansion I/O cable is configured in the user program, but no cable is present, or an expansion I/O cable is configured in the user program and a cable is physically present, but the types do not match. 	Non-User	<ul style="list-style-type: none"> Correct the user program to eliminate a cable that is not present Re-compile, reload the program and enter the Run mode, or Add the missing cable. Cycle power.

Appendix B - PLC Troubleshooting and Error Codes (continued)

Error Code (Hex)	Advisory Message	Description	Fault Classification	Recommended Action
xx8B ⁽¹⁾⁽²⁾	EXPANSION I/O POWER SUPPLY CONFIGURATION MISMATCH ERROR	<ul style="list-style-type: none"> • Either an expansion I/O power supply is configured in the user program, but no power supply is present, or • an expansion I/O power supply is configured in the user program and a power supply is physically present, but the types do not match. 	Non-User	<ul style="list-style-type: none"> • Correct the user program to eliminate a power supply that is not present • Re-compile, reload the program and enter the Run mode, or • With power removed, add the missing power supply.
xx8C ⁽¹⁾⁽²⁾	EXPANSION I/O OBJECT TYPE MISMATCH	An expansion I/O object (i.e. cable, power supply, or module) in the user program I/O configuration is not the same object type as is physically present.	Non-User	<ul style="list-style-type: none"> • Correct the user program I/O configuration so that the object types match the actual configuration, and • Re-compile, reload the program and enter the Run mode. Or • Correct the actual configuration to match the user program I/O configuration. • Cycle power.
0x1F39	INVALID STRING LENGTH ⁽³⁾	The first word of string data contains a negative, zero, or value greater than 82.	Recoverable	Check the first word of the string data element for invalid values and correct the data.

(1) xx indicates module number. If xx = 0, problem cannot be traced to a specific module.

(2) The xx in this error code means that the error occurs at the location of the last properly configured Expansion I/O module +1. You should use this information in conjunction with the specific error code to determine the source of the problem.

(3) Applies to MicroLogix 1500 1764-LSP Series B and 1764-LRP Processors.