

USER GUIDE  
UGC022/1104

# Integrated Loading System

ILS Model - ControlLogix, Versaview



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:

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Manual Number: UGC022/1104

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Serial Number(s):

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Model Number(s):

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# Introduction

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# Purpose of the User Guide

This User Guide describes the installation and operation of the ILS control.

Before installing 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 operation of this equipment.



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

# Your Responsibility as a User

You must be familiar with all safety procedures concerning installation, operation and maintenance 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 the machine serial tag and data plate.



### **WARNING: Voltage hazard**

This equipment is powered by single-phase alternating current, as specified on the machine serial tag and data plate.

A properly sized conductive ground wire from the incoming power supply must be connected to the chassis ground terminal inside the electrical enclosure. Improper grounding can result in severe personal injury and erratic machine operation.

Always disconnect and lock out the incoming main power source before opening the electrical enclosure or performing non-standard operating procedures, such as routine maintenance. Only qualified personnel should perform troubleshooting procedures that require access to the electrical enclosure while power is on.



# Description

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# What is the Intelligent Loading System?

The Integrated Loading System (ILS) is a flexible, configurable, loading control system. It is available in three basic architectures: local I/O, remote I/O, and fully distributed. Architectures can be deployed simultaneously.

## **Local I/O Architecture**

In the local I/O architecture, the PLC processor and operator interface, as well as enough I/O to support up to 48 loaders and 14 pumps, are located in a single enclosure.

## **Remote I/O Architecture**

Up to six additional enclosures can be remotely installed that can each support 16 loaders. Each of these enclosures can be mounted centrally to a group of loaders to minimize wiring runs.

## **Fully Distributed Architecture**

With the fully distributed architecture, the PLC and operator interface are mounted in separate enclosure without local I/O. Instead, remote Allen Bradley MaXum I/O drops are distributed throughout the plant, connecting to the PLC via DeviceNet flat media. Two networks can be installed which allow totally flexible configuration. Up to 54 Maxum blocks can be added to each scanner's network. Of these 54 blocks, 48 can be used to attach loaders, multi-source loaders or granulators. The remaining six Maxum blocks are reserved for pumps.

Once connected, these devices can be configured on the operator interface.

This control system configuration greatly simplifies installation, reducing labor, and wiring costs and allows system expansion by simply adding more I/O modules.

The system architectures use Allen Bradley Compact Logix PLC for control. An Allen Bradley ten inch Versaview operator interface is connected to the processor via Ethernet communications. Three additional operator interfaces can be remotely mounted, as needed, elsewhere in the plant. Additionally, the operator interfaces can be upgraded from 10 to 15 inches.

# Typical Applications

Conveying applications with more than 32 loaders, 32 material sources regrind evacuation or multiple interfaces.

# Specifications

Model	ILS
<b>Performance Characteristics</b>	
Maximum number of standard devices*	245
Maximum number of pumps	26
Controller	Allen Bradley CompactLogix
Operator interface inches {mm}	10 {254} Allen Bradley Versaview 15 {381} Allen Bradley Versaview (optional) Up to 4 operator interfaces, simultaneously
Communications	Ethernet, DeviceNet
Output voltage to devices	24 VDC or 24 VAC
Input voltage from devices	24 VDC
<b>Dimensions inches {mm}</b>	
Fully distributed base unit (controller and operator interface)	
Height	24 {610}
Width	24 {610}
Depth	10 {254}
Local I/O base unit (controller, I/O, and operator interface)	
Height	42 {1067}
Width	36 {914}
Depth	12 {305}
Remote I/O base unit (I/O)	
Height	30 {762}
Width	24 {610}
Depth	8 {203}
Distributed I/O power supply unit	
Height	20 {508}
Width	20 {508}
Depth	9 {229}
<b>Weight lb {kg}</b>	
Fully distributed base unit (controller and operator interface)	
Installed	50 {22.7}
Shipping	80 {36.3}
Local I/O base unit (controller, I/O, and operator interface)	
Installed	120 {54.4}
Shipping	160 {72.6}
Remote I/O base unit (I/O)	
Installed	75 {34.0}
Shipping	105 {47.6}
Distributed I/O power supply unit	
Installed	30 {13.6}
Shipping	75 {34.0}
<b>Voltages Total amps</b>	
Fully distributed base unit (controller and operator interface)	120 VAC/5 A/60 Hz
Local I/O base unit (controller, I/O, and operator interface)	120 VAC/15 A/60 Hz
Remote I/O base unit (I/O)	120 VAC/15 A/60 Hz
Distributed I/O power supply unit	120 VAC/5 A/60 Hz

 **NOTE:** \*: A device may be a vacuum receiver, a grinder or a regrind vacuum receiver.

# Installation

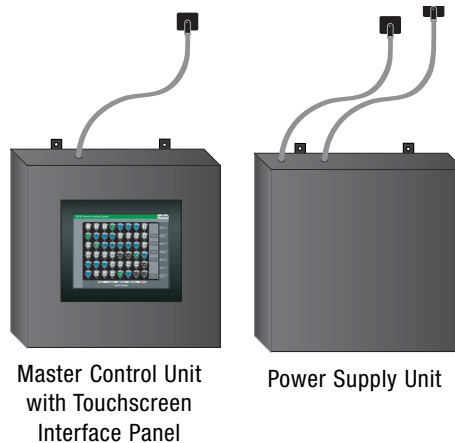
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# Unpacking the Boxes

The ILS distributed loading control comes in one or more boxes, depending on the options ordered. The boxes should include:

- Base unit with touchscreen interface panel;
- Remote operator panel;
- Power supply unit;
- MaXum I/O modules and bases;
- DIN blocks and bases;
- Termination blocks and bases;
- Kwik-Link flat DeviceNet cable;
- Cable installation brackets.



- 1 Carefully remove the ILS components** from their shipping containers, and set upright.
- 2 Remove all packing material, protective paper, tape and plastic.**
- 3 Carefully inspect all components to make sure no damage occurred during shipping.** Notify the shipper immediately if damage is found.
- 4 Take a moment to record serial numbers, the software version number and electrical power specifications** in the blanks provided on the back of the the User Guide's title page. The information will be helpful if you ever need service or parts.
- 5 You are now ready to begin installation.** Follow the preparation steps on the next page, paying particular attention to all wiring consideration and recommendations.

# Preparing for Installation

You should plan the location of the ILS base unit to ensure easy access and minimal wiring. Remote touchscreen panels can be connected to the control via an ethernet port inside the control enclosure of the primary touchscreen interface.

## 1 Select a mounting location for the base unit.

The base unit interface can be mounted on a wall or other stable vertical surface. Select a location that:

- ❑ **Is central to loaders that the ILS will control.** Keep the ILS base unit as close as possible to the loading stations to minimize the amount of wire needed to connect the vacuum receivers to the control.
- ❑ **Provides adequate clearance for safe operation and maintenance.** The base unit should be mounted at a height that allows the operator to easily see and use the touch screen. Maintain at least 3 feet (1 m) clearance in front of the base unit for safe access to the Input/Output enclosure.
- ❑ **Provides a clean, dry, vibration-free environment.** Exposure to wide temperature variations, high ambient temperature, power line fluctuations, caustic fumes or excessive amounts of dust, dirt, vibration, shock and moisture could harm performance and reduce the life of this equipment.
- ❑ **Provides a grounded source of 120 VAC power.** The three-prong power cords supplied with the ILS base unit and power supply requires a grounded 120 VAC outlet rated for at least 15 amp service.

## 2 Plan the power/communication cable routes.


- ❑ **Review all wiring guidelines and diagrams** provided in the manuals and electrical diagrams supplied with the ILS system and your conveying equipment before beginning installation. *See Wiring Considerations.*
- ❑ **Keep communication wires away from sources of static electricity.** Static electricity can damage the controls. Communication cables should *not* be run near the material lines and hoses, which produce large amounts of static electricity when material is conveyed.
- ❑ **Avoid running communication cables across power feed lines.** If you must run the cable across power feed lines, run the cable at right angles (90°) to the lines.
- ❑ **Do not run power cable together with communication cables** inside cable trays. Communication cables include ethernet and DeviceNet communications.

# Installing the ILS

Installation consists of:

- Installing the Kwik-Link flat DeviceNet cables.
- Installing the MaXum bases and termination blocks.
- Installing the MaXum I/O units.
- Mounting the base unit and power supply.
- Installing the loader drop cables.
- Wiring the purge and pocket valves included in the system.
- Installing the drop cables between the pump MaXums and the pump starters.
- Installing remote operator panel(s).
- Initial setup of the system control.

# Wiring Considerations

 **WARNING:** Improper installation may result in equipment damage or personal injury.

- Disconnect and lock out the main power supply to equipment in the conveying system before attempting to wire power and communication cables between the ILS control, vacuum receivers, pumps, dust collectors and material valves.
- Install all wiring, disconnects and fuses in accordance with electrical codes in your region. All electrical installations should be done only by qualified electrical technicians.
- Always refer to the wiring diagrams supplied with your control before making electrical connections. The diagrams show the most accurate electrical component information.
- Protect communication cables from sources of static electricity and electrical noise.
  - Use shielded cable or run wire through a contiguous metal conduit or wireway. Failure to use a metal shield can expose the controls to static electricity, which can damage electronic components.
  - Do not run communication cables near material lines and hoses, which produce large amounts of static electricity when conveying material.
  - Keep communication cables at least 5 ft. (1.5 m) from electric motors, transformers, rectifiers, arc welders, generators, induction furnaces and sources of microwave radiation.
  - Avoid running communication cable across power feed lines. If you must run cable across power lines, run the cable at right angles to the line. Keep the cable at least 6 inches (0.15 m) from AC power lines of less than 20 A; 1 foot (0.30 m) from lines of 20A to 100 kVA; and 2 feet (0.60 m) from lines of 100 kVA or more.
- Always maintain a safe ground. Follow the safe grounding procedures in the wiring diagram package. Ground the shielded cable inside the Input/Output enclosure only.
- Do not operate the equipment at power levels other than those specified on the the equipment data plate.

# Mounting the Base Unit and Power Supply

The ILS base unit and power supply should be mounted on a wall, or other secure vertical surface, at a height providing easy access and a clear view of the touchscreen panel.

**1 Bolt the base unit and** power supply to the mounting surface. Use the mounting brackets on the base unit enclosures.

**2 Ground the base unit cabinet.** Connect a ground wire to the base unit enclosure. Follow procedures outlined by your regional electrical codes and the wiring diagrams included with this manual.



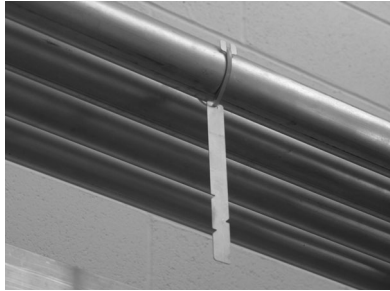
# Installing the Brackets

**⚠ WARNING:** Improper installation may result in equipment damage or personal injury.

Always refer to the wiring diagrams that came with your controls before making electrical connections. The diagrams show the most accurate electrical component information.

It is important to keep the communication wires away from conveying lines, which can produce large amounts of static electricity.

- 1** Install the Kwik-Link flat DeviceNet cable brackets provided or prepare your chosen method of cable support.



- 2** Install the two Kwik-Link flat DeviceNet cables. The gray cable provides communications and inputs; the black cable provides output power. Insure that the cables are installed so that the tabbed edge of the cable may be installed into the MaXum bases and termination blocks correctly.



- 3** Install the MaXum base brackets or prepare your chosen method of MaXum support wherever there is a loader or a pump.



# Installing the Bases and Cables

- 1** Install the MaXums bases on the base brackets.



- 2** Install the Kwik-Link flat DeviceNet cables in the MaXum bases. Insure that the cables are properly installed in the bases and the piercing caps are clamped evenly. If the cables are not flat in their slots, the contacts will not pierce the cables correctly. Remove the bases and discard. Install a new base 1/2 inch to 1 inch from the removed base. Refer to Allen Bradley MaXum MaXum I/O Cables Bases Manual (Publication 1792D-5.9) included with the bases for further details.

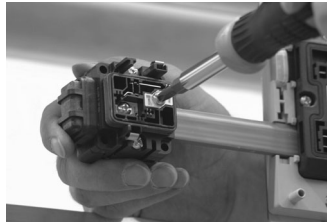
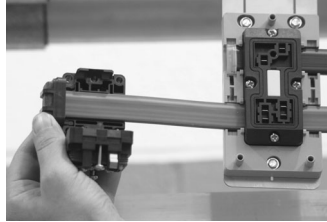


Initially install just two bases, one loader and one pump. The remaining bases can be installed one at a time after the system is powered up.



# Installing the Terminal Blocks

- 1** Install the termination blocks on the two ends of the gray cable. Install any link couplers if the system has multiple segments and multiple power supplies.



- 2** Install the base unit anywhere along the length of the flat cable run within 25 feet of the cable. Install the DeviceNet Mini-DIN termination tap on the gray flat cable. Connect the base unit to the DeviceNet cable using the attached Mini-DIN connector.



# Attaching Power Supply Units

**1 Install the power supply units along the DeviceNet cable** so that the power from the units will be evenly distributed along the cable. For example if there are ten loaders evenly spaced along a 75 meter cable, the power supply should be placed in the center of the cable with five loaders on one side and five on



the other. If nine of the loaders were on one end and the tenth loader on the other end, the power supply should probably be placed somewhere in the middle of the nine loaders on the one end. The desired result will be that half of the current from the power supply will flow one direction down the auxiliary power cable and half of the current will flow in the other direction. If there are questions refer to your Allen-Bradley DeviceNet Cable System Planning and Installation Manual (Cat. No. DN-6.7.2), or contact your Conair representative. Install the power supply units within 25 feet of the DeviceNet cable.

**2 Install the two power supply taps on the DeviceNet cable.** The two power supply cables from the power supply unit must be placed on the correct flat cable. The cable marked “DeviceNet Power Supply” should be attached to the gray DeviceNet cable and the cable marked “Auxiliary Power” should be attached to the black auxiliary power cable.

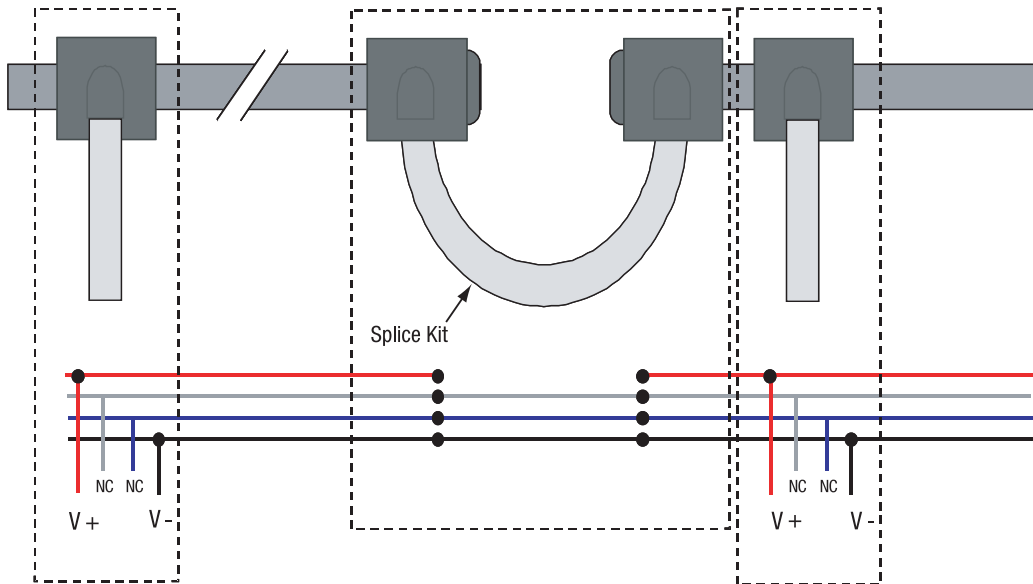


# Installing a Splice Kit

You will need to install a splice kit for every 16 loaders or 75 meters of cable installed. You can order a splice kit from the Conair Parts department (800.458.1960, or outside the US 814.437.6861)

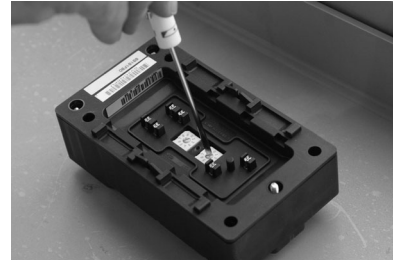
- 1 Install a base on either end of the DeviceNet cable run.  
*See Section 3, "Installing the Bases and Cables."*
- 2 Install a splice kit on the bases.

## Connecting Multiple Power Supplies with Flat Media

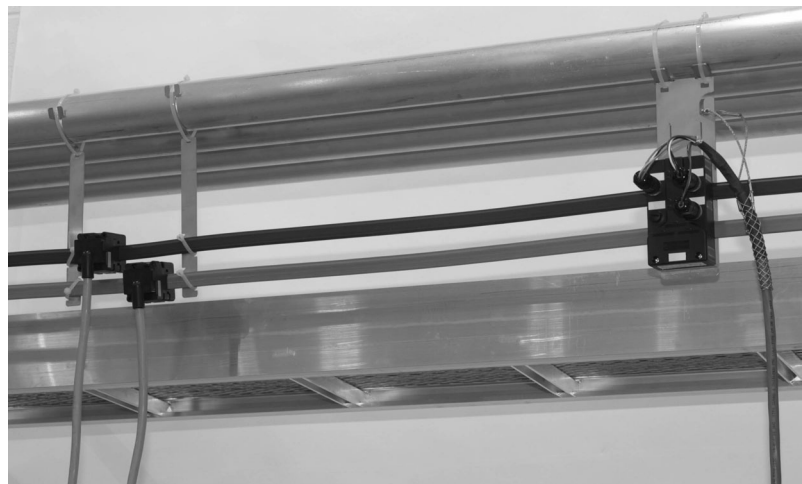


# Installing the I/O Units

**1 Install the MaXum I/O units on the bases.** Set the rotary switches on the bottom of the block to the desired node number. MaXum should be set to 1-54. Do not duplicate addresses on the same network. Mark the white tag on the block with the node number for future reference. Please refer to Allen Bradley MaXum MaXum 4 Input/4 Output Module Manual (Publication 1792D-IN012B-EN-P) included with the MaXums for further details.



**2 Install the loader drop cables between the MaXums and the Universal Terminal Boxes (UTB).** The connectors should be installed on the MaXums so that the connector with four wires is installed on the upper left MaXum connectors. Install the connector with three wires on the upper right MaXum connectors. The final loader drop cable connector should be installed on the lower right hand MaXum connector.



## Installing the I/O Units (continued)

- 3 Install the wiring for any purge and pocket valves** included with the system. The purge/pocket valve should be wired from the junction box on the valve to the nearest Universal Terminal Box (UTB). The wiring should be connected to the UTB using the supplied green Phoenix connector. The pocket valve is given a number based on the loader it is connected to. For example the pocket valve that is connected to loader number 12's UTB will be addressed as material source number 12 in the settings screen.

- 4 Install the drop cables from the pump** MaXums to the pump starters. Insure that the input side of the MaXum goes to the input connection on the starter and that the output side of the MaXum goes to the output connection on the starter.



## Wiring Pocket Conveying Valves (optional)

The ILS can operate pocket conveying valves, which are used in central drying and distribution systems. The pocket valve allows multiple loaders to draw dry material as needed from a single drying hopper. Since the valves are located at the material source instead of the loader, separate wiring connections to the nearest loader universal terminal box (UTB) are required.



**NOTE:** Purge valves and pocket conveying valves connect to the same outputs on the ILS control. Therefore, pocket conveying valves cannot be used with loaders that are connected to purge valves.

# Connecting to Main Power

The ILS base unit and power supply are equipped with a three-prong plugs and power cords.

- 1 Plug the power cords into grounded 120 VAC outlets** rated for at least 15 Amp service.
- 2 Make sure the base unit is grounded.**



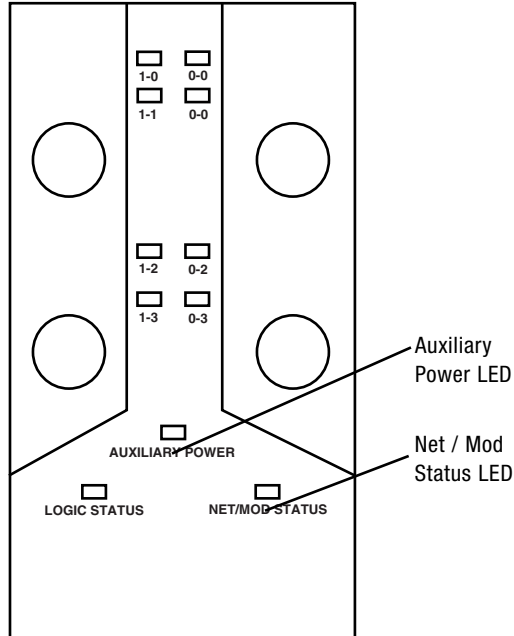
**WARNING: Electrical shock hazard**

Failure to provide proper grounding can cause control malfunctions and could result in personal injury from electrical shock.

The control must be connected to a grounded power source. A properly sized conductive ground wire must be connected to the chassis ground terminal inside the base unit enclosure.

# Starting Up the ILS

- 1 Once the system is completely assembled** check that all connections are terminated correctly.
- 2 Turn on the power supply unit and test to make sure** that power is correctly distributed. It is recommended that you remove the MaXum that is located farthest from the power supply and, using a voltmeter, check to insure that both the DeviceNet and Auxiliary power is 24 VDC.
- 3 Once the power supply unit is turned on,** check each MaXum to insure that the Auxiliary Power LED is on and glowing green. If not, the MaXum base is not clamped correctly and will need to be removed, discarded, and a new base installed. Install the new base so that the piercing contacts enter the flat cable at a different location than the incorrectly mounted base. In the event that the LEDs fail to illuminate, a known good MaXum should be temporarily fitted to the base to check if the MaXum module may be bad.



(continued)

## Starting Up the ILS (continued)

- 4** Once the first two MaXums display a green Auxiliary Power LED, turn on the power switch on the base unit to start the controller and touchscreen. With the processor in run mode, check all the MaXums for the condition of the Net/Mod Status LED. On all MaXums, the Net/Mod status LED show as blinking red or blinking green. If any block shows a solid red Net/Mod status light, either the address is incorrect on the rotary switches for one or more blocks may be defective. Check all switch positions and correct/replace the block(s) as necessary.
  
- 5** When the MaXums show solid green on auxiliary power, and the Net/Mod status LEDs blinking green, the enable the nodes via the operator interface. *See Section 3, Installing the I/O Units.* When a node is enabled, the blinking red light changes to solid green (this may take a few seconds).
  
- 6** Install remaining MaXum base and MaXums. This can be done all at once or one at a time. Enable the blocks as they are installed and check the status LEDs for the correct status.
  
- 7** After MaXums are enabled and show a solid green Auxiliary Power LED and a solid green Net/Mod Status light, the system is ready to run.




**NOTE:** MaXums and bases can be added or removed from the system while the system is powered on.

# Remote I/O System Architecture

## Installing the I/O Enclosures

- 1 Install the DeviceNet Mini-DIN termination tap on the gray flat cable.**  
(See Section 3 "Installing the Terminal Blocks" for detailed information.)
- 2 Connect the I/O rack to the DeviceNet cable using the attached Mini-DIN connector.**

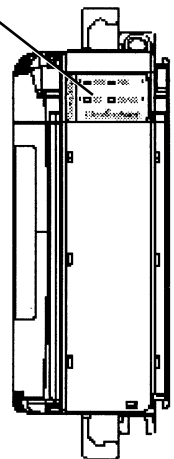


 **Note:** The following installation procedures apply to the Proofing Station I/O Enclosure and the 16-Device Enclosure.

## Starting Up the I/O Enclosure

- 1 Turn on the I/O Enclosure.**
- 2 Once the enclosure is turned on, check the Module Status Indicator (MS).** It should be on and solid green, indicating the device is operational. In addition, the Network Status Indicator (NS) should also be solid green, indicating the device is on-line and connected. Finally, the I/O Status Indicator (IO) should be solid green, indicating the device is operational and all I/O modules are in Run Mode. If these three indicators are not solid green, please refer to the troubleshooting section.

LED Indicators



### Main Enclosure

The main enclosure can accommodate up to 32 loaders and 14 vacuum pumps.

In addition to the local I/O modules, up to three DeviceNet scanners can be added to the I/O configuration. Each scanner can be configured for analog block and/or remote I/O.

The local I/O is referred throughout the manual as Network 0.

### Distributed I/O

Up to 54 Maxum blocks can be added to each loading scanner's network. Of these 54 blocks, 48 can be used to attached loaders, multi-source loaders or granulators whose DeviceNet addresses are 1-48. The remaining six Maxum blocks with addresses 49-54 are reserved for pumps. The pumps on the first scanner network are designated as Pump 15-20. The pumps on the second loading scanner network are designated as Pump 21-26. The distributed I/O on the first scanner is referred throughout the manual as Network 1 and the distributed I/O on the second scanner is referred to as Network 3. Distributed I/O on the third scanner is referred to as Network 5.

### Remote I/O

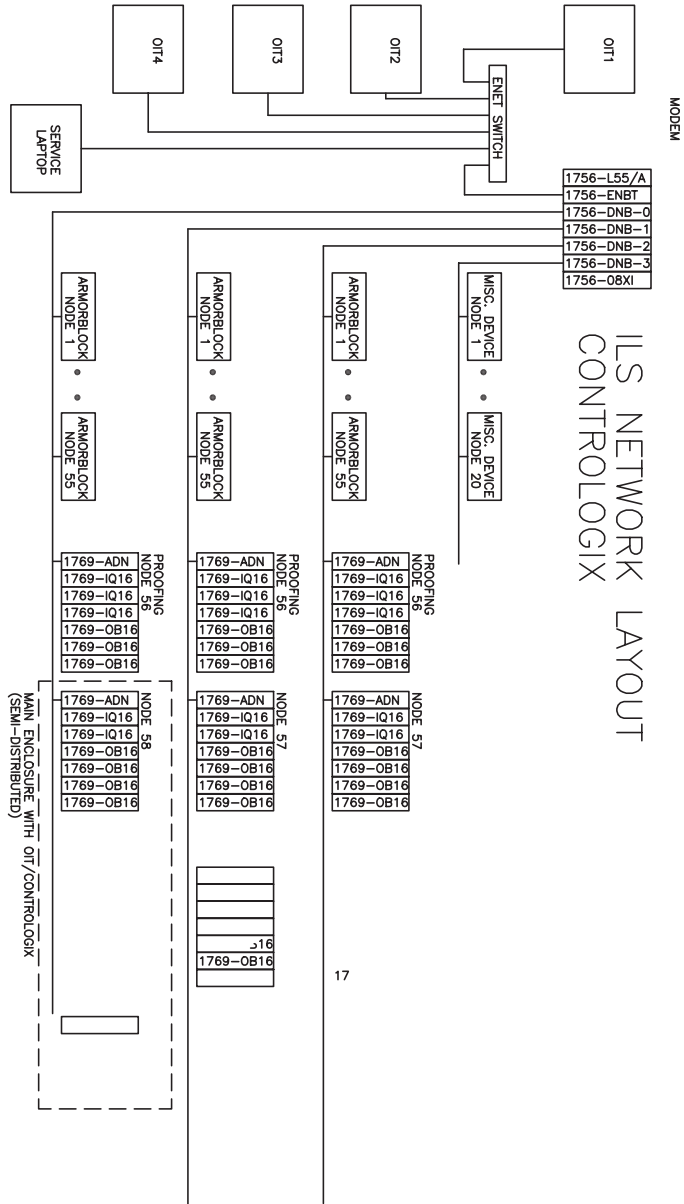
Each scanner can support up to 3 Remote I/O nodes. These nodes can each support up to 16 loaders, sources or granulators. These nodes have DeviceNet addresses 57, 58, 59, and 60.

Scanner 1 Address	Scanner 2 Address	Scanner 3 Address
58-network 0 17-32	57-network 2 1-16	57-network 4 1-16
59-network 0 33-48	58-network 2 17-32	58-network 4 17-32
60-network 0 1-16	59-network 2 33-48	59-network 4 33-48
60-pumps 1-14		

### Proofing Station

One proofing station can be added to the scanner 1 and scanner 2. The switch setting is factory set to 56.

# ILS Network Layout - ControLogix



# Operation

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Upon power-up, the PLC and operator interface(s) turn on and the main screen is displayed initially. At this point, the security level is "Default".



Security level  
is set to  
Default at  
this point

# Setting or Changing the Security Level

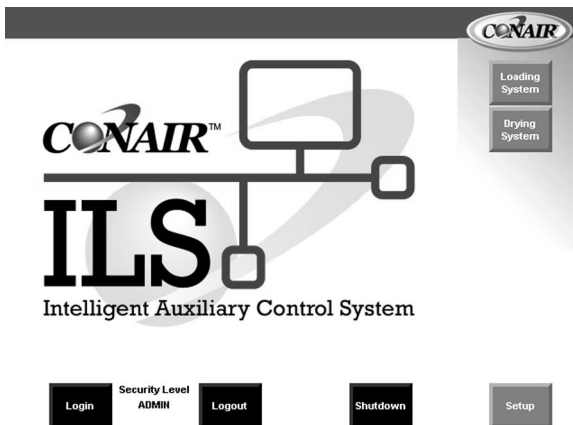
In order to set or change security level, the user needs to log in by pressing the Login button. Login status is shown just below the button.

There are three levels of security.

- 1** The lowest security level is "Default" (Oper) which is the Operator Level. This level of security allows the user to enable or disable devices.
- 2** The second security level is "Super" which is the Supervisory Level. This level of security allows existing devices to be configured (for example: change discharge time on a loader).
- 3** The highest level of security is "Admin" which is the Administrator Level. This level of security allows devices to be added to each network. In addition, Proofing can only be configured at this level.

The password for each "Oper", "Super", "Admin" is the same as the user name.

After 5 minutes of non-use, the security level is set back to "Default".



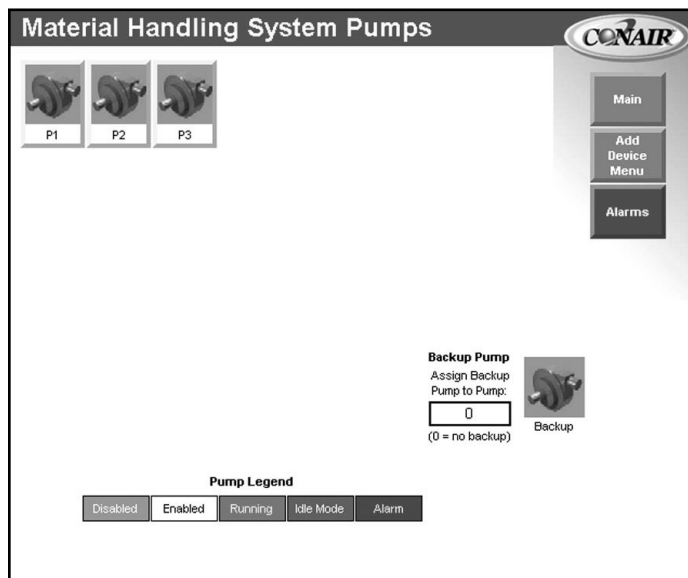
# HMI

A maximum of 4 operator interface terminals can exist on a single network. These are referred to as HMI1, HMI2, HMI3 and HMI4.

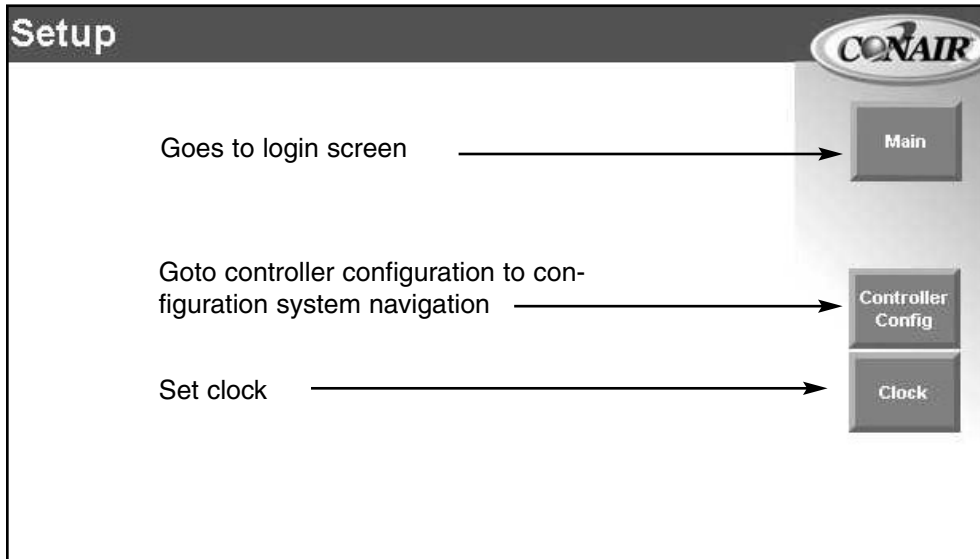
The PLC Ethernet address is 192.168.10.3 and the four operator interface terminals are factory set to 192.168.10.4, 192.168.10.5, 192.168.6 and 192.168.10.7. The subnet mask for all units is 255.255.255.0.

## System Navigation

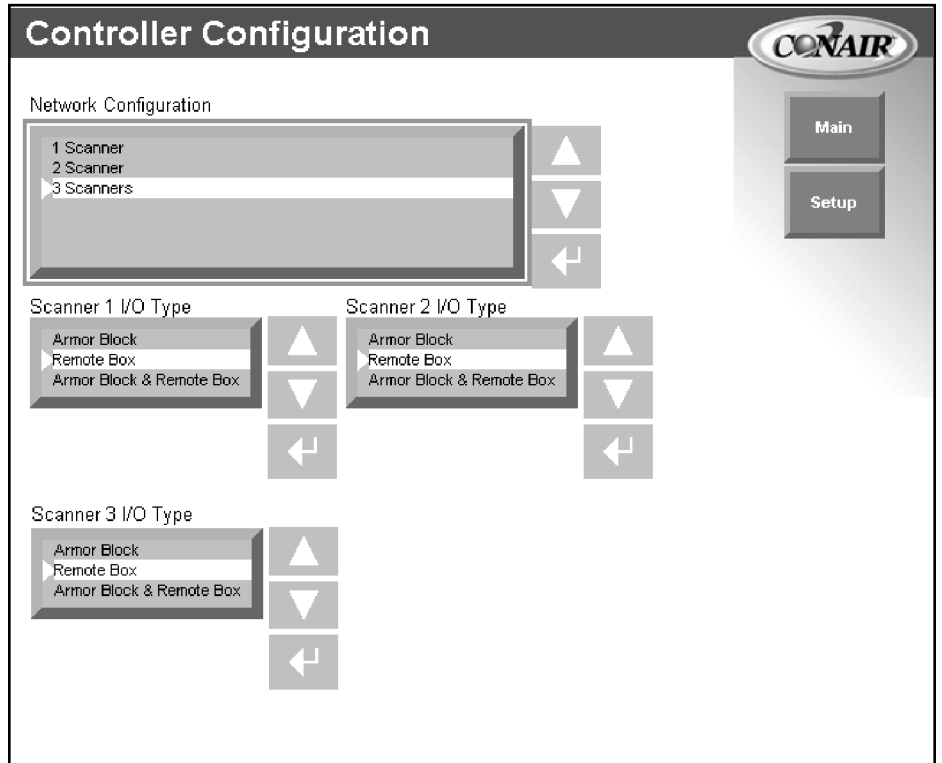
The system supports up to 26 pumps, each of which can service up to 28 loaders. Pressing the Loading System button from the main screen navigates to the Pump Overview screen.



# System Navigation



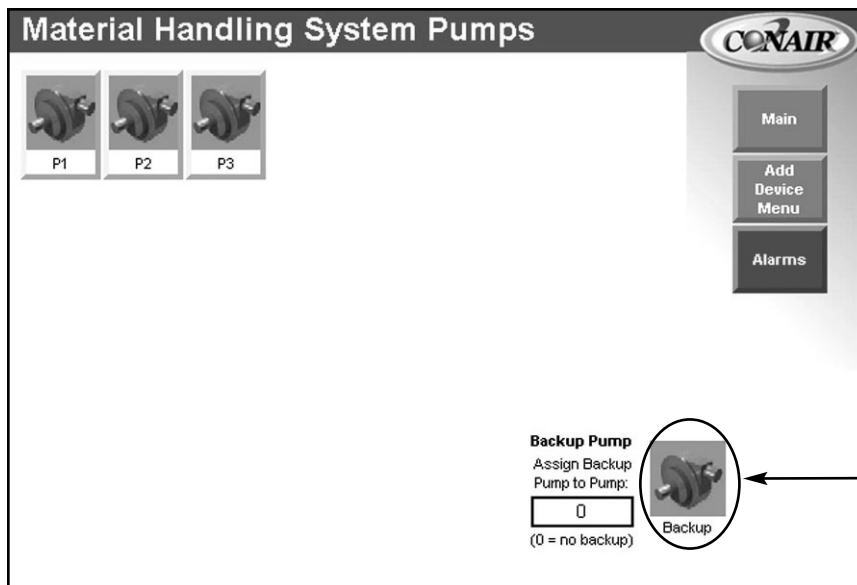
# System Navigation



The controller configuration is based on the physical hardware.

# Material Handling Systems Pumps Overview Screen

On this screen, all pumps having attached loaders will be shown. Each pump icon displays the name and status of the pump and is also a navigation button to that pump's configuration screen. The pump status can be determined by the color of the icon's background which can be deciphered from the legend at the bottom of the screen.



On this screen, the operator can navigate back to the Main screen by pressing the Main button, view Alarm information by pressing the Alarms button or view the Backup Pump status.

# Pumps Overview Screen continued

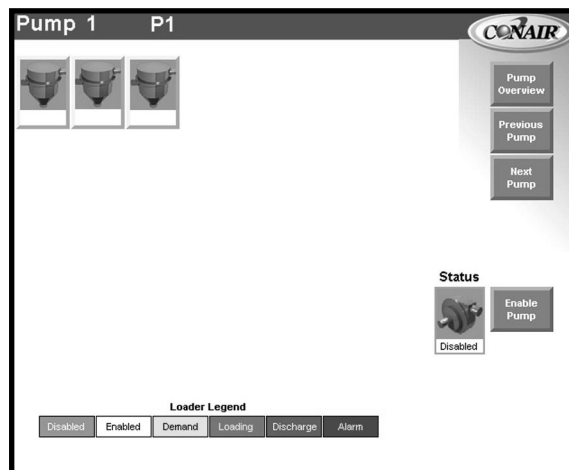
If one of the pumps fails or is in need of service, a backup pump is available. The number of the pump (1-26) is shown in the numeric field. A 0 in this field indicates that no pumps are being backed up. In order to change this value, the user must be logged on as a supervisor. Prior to assigning the backup pump number, the user must ensure that the air lines are connected properly.

Once connected and assigned, the pump will run and service the loaders assigned to the pump being backed up. To modify any of the pump's or its attached loaders' parameters, press the icon of the pump being backed up and change the values as needed. The status (enabled, running, discharge, etc) of the backup pump is displayed.

The final action that can be taken on the pump overview screen is to add devices to screens. This is done by pressing the Add Device button which is only visible if the user is logged on as a supervisor. See Section 4, *Adding Loaders for instructions on adding a device.*

## Pump Screen

From the pump overview screen, pressing on one of the pumps navigates to the screen for that pump. All of the loaders including their name and status being serviced by the pump are shown. Each loader icon is also a navigation button to that loader's configuration screen. As with the pump overview screen, a legend at the bottom deciphers each loader's status.



In the title bar, the pump number (e.g., Pump 2) is displayed, along with the pump name. Users at the supervisor level can change the name by pressing on the title bar and entering the name on the pop-up keypad.

At the Default or Oper security level, the user can enable or disable the pump or navigate to the loaders.

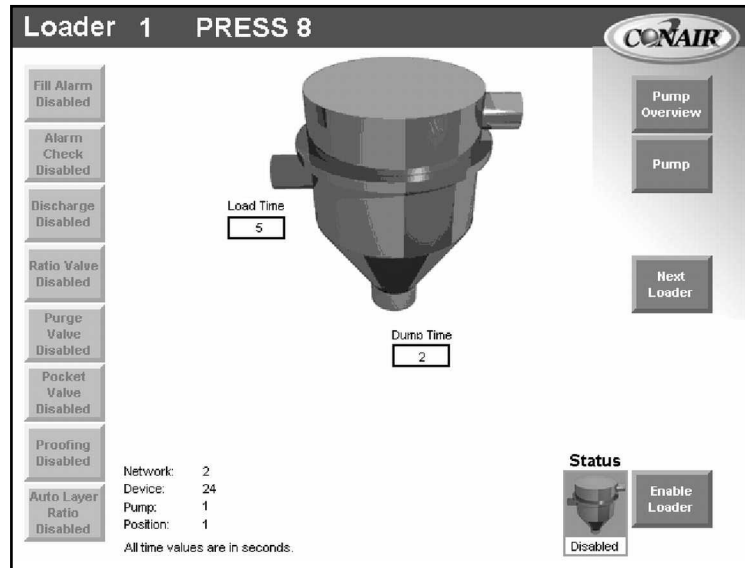
At the supervisor level, the user can enable or disable the Idle Mode Valve.

The loaders appear under the loader in the order they were added to the pump, regardless of the network or location they are located. This is also the order in which loaders are serviced by the pump. The first loader added to the pump will be in position 1, the second added loader will be in position 2 and so forth. When a new loader is added, it will be the last one shown. When a loader is removed from the pump, all the loader numbers above it will shift down one position.

The user may scroll through the pumps by pressing the Next Pump and Previous Pump buttons. When Pump 1 is displayed, the Previous Pump button disappears. When the high number pump is displayed (14, 21 or 26 depending on number of scanners), the Next Pump button disappears.

# Loader Screen

From the pump screen, press the icon of the attached loader to be configured. The loader's screen will open to display its configuration.



In the title bar, the loader number (e.g., Loader 1) is displayed, along with the loader name. Users at the supervisor level can change the name by pressing on the title bar and entering the name on the pop-up keypad.

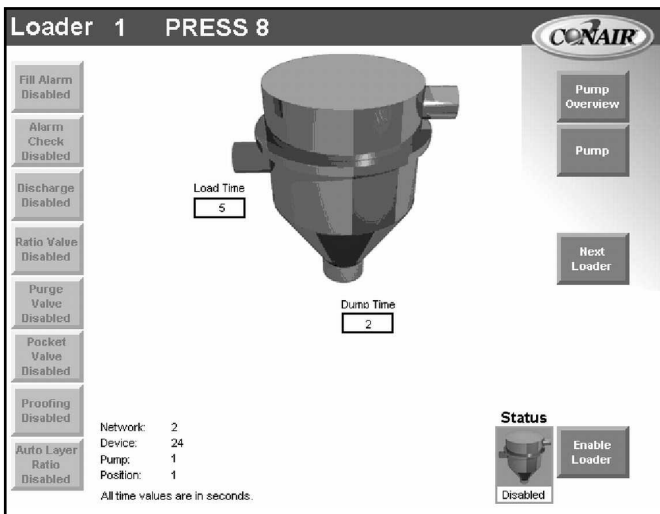
In the lower left hand corner is information about the network configuration of the loader including which network, which position within the network, which pump the loader is attached to, and the position of the loader.

There are numerous configuration settings available on the loader screen. In order to change or enable them, the user must be logged on as a supervisor. At the operator or default security level, the user can enable or disable a loader as well as view the settings (for example, load time, dump time, etc.) that have been enabled. At a minimum, the load time and dump time are displayed.

The following list is a description of the loader parameters:

- **Load Time:** The number of seconds (1-300) that the receiver loads material.

- **Regrind Time:** The number of seconds (1-300) that regrind, or a second material, should be loaded with virgin material when a ratio valve is used. This parameter is only visible when the ration valve is enabled.
- **Dump Time:** The number of seconds (1-300) that the receiver will discharge material into a vessel before the next load cycle begins.
- **Purge Time:** The number of seconds (1-300) that the vacuum continues to pull material through the line after a purge or pocket convey valve closes to the material source. This clears the line of material. This parameter is only visible if either the purge valve or pocket convey valve options are enabled.
- **Ratio Cycle:** The number of times (1-5) that a ratio valve switches between virgin and regrind material when a ratio vale is is used. This parameter is only visible if the ratio valve option is enabled.

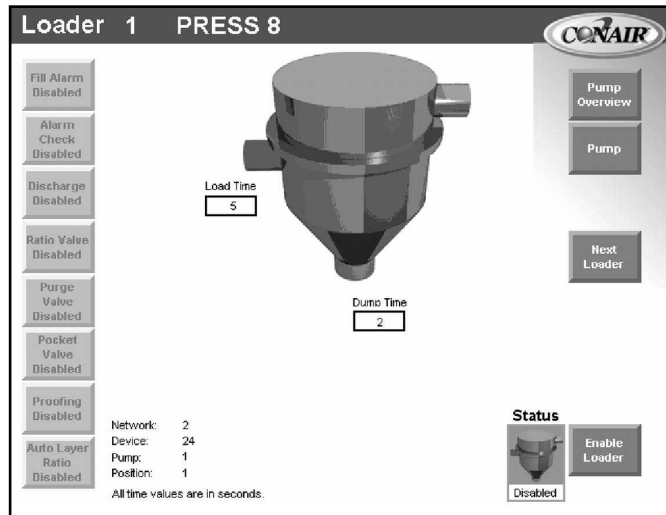


**Example of a ratio cycle screen**

- **Alarm Check:** The number of times (1-20) that the system will try to load a receiver before an alarm is sounded when the demand has not been satisfied.
- **Source Network:** The communication network (0-4) that identified a material source equipped with a purge or pocket convey valve. This setting is also used for material line proofing. This parameter is only visible if the purge or pocket convey valve option is enabled.
- **Source Device:** The location (1-48) within the source network that identifies the material source.
- **Source Name:** Name of the material source.

# Loader Screen Continued

Except for the Source Name, all of the previously listed parameters can be modified. The input fields are most easily identified by a black square box around the numeric value.



When logged on as a supervisor, buttons to enable or disable various options are displayed on the left hand side of the screen. The following is a list of these options.

- Fill Alarm Disabled
- Alarm Check Disabled
- Discharge Disabled
- Ratio Valve Disabled
- Purge Valve Disabled
- Pocket Valve Disabled
- Proofing Disabled
- Auto Layer Ratio Disabled
- Alarm Check: Activates a material alarm if the receiver or hopper is not filled by the loader within the number of tries set by the user. This function requires a demand sensor in the vessel. When enabled, the alarm check parameter is made visible.

- **Fill Alarm:** Activates a fill alarm if the loader does not fill before the load time is reached. This option requires an optional fill sensor in the receiver.
- **Ratio Valve:** Allows control of more than one material into one vacuum receiver. This function requires an optional ratio valve at the material inlet of the receiver. When enabled, the large loader icon changes to show the ratio valve.
- **Purge Valve:** Purges material from the conveying line at the end of the loading cycle. This function requires an optional ratio valve at the material inlet of the receiver.
- **Pocket Convey Valve:** Releases material from the source into the conveying line. This function requires the installation of a valve at the base of the drying hopper or other vessel.
- **Proofing:** Indicates that a material line is connected to the correct material source. This function required material line couplings equipped with electrical plugs.
- **Auto-layer Ratio:** Automatically layers virgin and regrind material based on the number of ratio cycles.



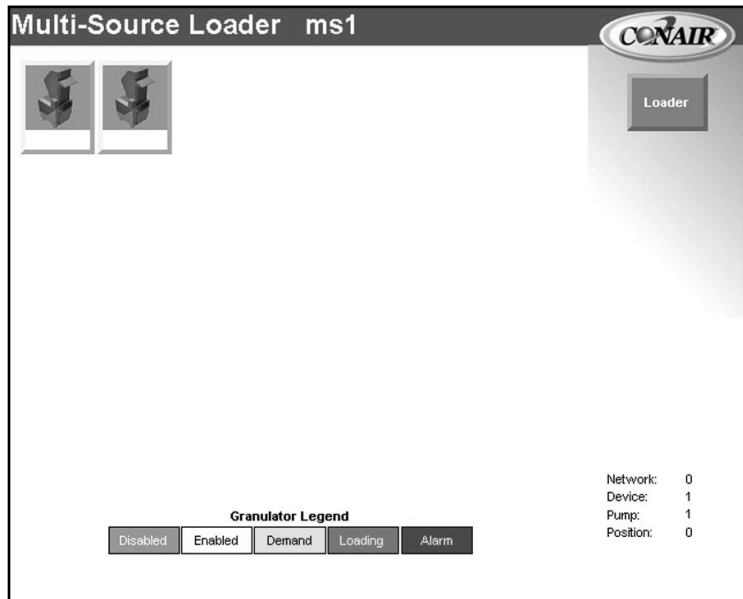
**NOTE:** The total time a loader is under vacuum is:  
**Regrind Time + Load Time + Purge Time = Total Time**

# Local I/O Options

If the loader is connected to the main panel I/O, all options are available.

## Multi-source Loader Screen

If one or more loaders attached to a pump are configured as multi-source loaders, they will appear on the pump screen as a loader with a MS across the icon. The primary difference between a multi-source loader and any other loader is the multi-source loader loads material from more than one source, typically granulators. As such, granulators can be attached to a multi-source loaders in the same manner that loaders are attached to pumps.



## Multi-source Loader Screen (continued)

Pressing a multi-source loader icon from the pump screen navigates to the multi-source loader. All of the attached granulators will be shown on the screen. The setup is nearly identical to the pump screen.

In the title bar, the name of the multi-source loader is displayed. Users at the supervisor level can change the name by pressing on the title bar and entering the name on the pop-up keypad.

In the lower left hand corner is information about the network configuration of the loader including which network, which position within the network, which pump the loader is attached to, and the position of the loader.

There are numerous configuration settings available on the loader screen. In order to change or enable them, the user must be logged on as a supervisor. At the operator or default security level, the user can enable or disable a loader as well as change the Alarm Check value and Dump Time.

At the supervisor level, the Discharge, Hopper Alarm and Proofing options can be enabled and disabled.

The following list is a description of the multi-source loader parameters:

- **Dump Time:** The number of seconds (1-300) that the receiver will discharge material into a vessel before the next load cycle begins.
- **Alarm Check:** The number of times (1-20) that the system will try to load a receiver before an alarm sounds when the demand has not been satisfied.

When logged on as a supervisor, buttons to enable or disable various options are displayed on the right hand side of the screen. The following is a list of these options:

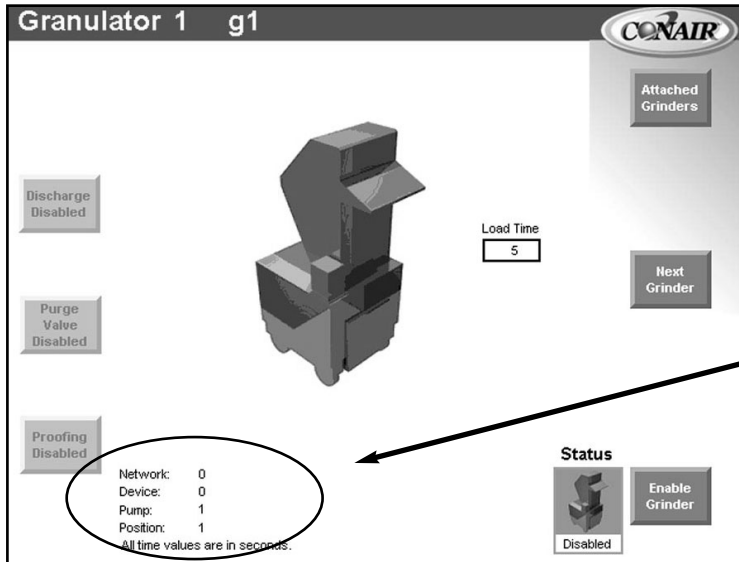
- **Hopper Alarm:** Activates a material alarm if the receiver or hopper is not filled by the loader within the number of tries set by the user. This function requires a demand sensor in the vessel. When enabled, the alarm check parameter is made visible.
- **Discharge:** Controls an optional air activated positive discharge valve on the loader.

## **Multi-source Loader Screen** (continued)

- **Proofing:** Indicates that a material line is connected to the correct material source. This function requires material line couplings equipped with electrical plugs.
- **Remove Loader:** In order to remove a multi-source loader from a pump, there can be no granulator attached to it. Once there are no granulators attached to the multi-source loader, this button becomes visible and pressing it removes it.

# Granulation Configuration

Pressing a granulator icon from the multi-source screen navigates to the granulator screen. This screen consists of a couple of options and parameters.



Information about the network configuration of the granulator.

In the title bar, the number and name of the granulator is displayed. Users at the supervisor level can change the name by pressing on the title bar and entering the name on the pop-up keypad.

In the lower left hand corner is information about the network configuration of the granulator including which network, which position within the network, which multi-source loader the granulator is attached to, and the position of the granulator.

There are numerous configuration settings available on the granulator screen. In order to change or enable them, the user must be logged on as a supervisor. At the operator or default security level, the user can enable or disable a granulator as well as view the Load Time and Purge Time.

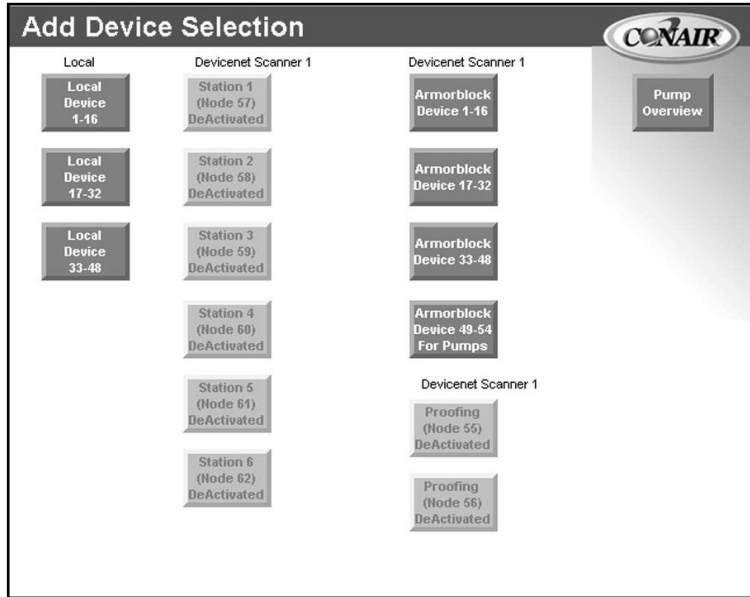
The following list is a description of the loader parameters:


- Load Time: The number of seconds (1-300) that the receiver loads material.
- Purge Time: The number of seconds (1-300) that the vacuum continues to pull material through the line after the purge valve closes. This clears the line of material. This field is visible only if the purge button is enabled.

When logged on as a supervisor, the Purge Valve button is visible. This valve allows material to be purged from the conveying line at the end of the loading cycle.

# Device Configuration

In order to add a device (loader, multi-source loader or granulator) to the system configuration, the user must first be logged on as a supervisor. Then, from the Pump Overview screen, press the Add Device button.



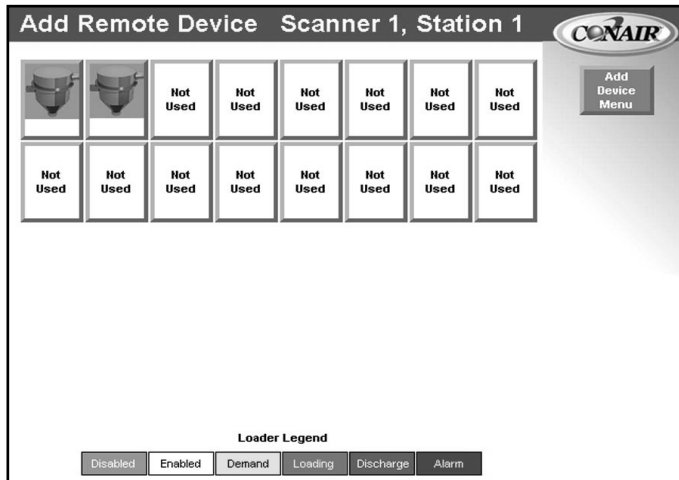
 **NOTE:** Depending of the number of scanners attached to your system you may see fewer buttons on your screen.

# 10 inch operator interface

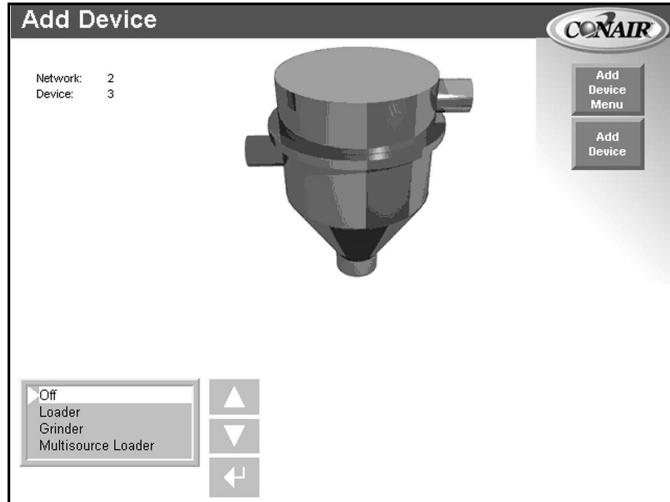
From the Add Device screen, the configuration of the local rack is set, the remote I/O boxes are activated and navigation to the various groups of 16 devices is effected. Once on the various Add Device screens, the logic of adding a device is the same for each type of device.

The next several pages are examples of each of the screens you would see if you were adding a new loader.

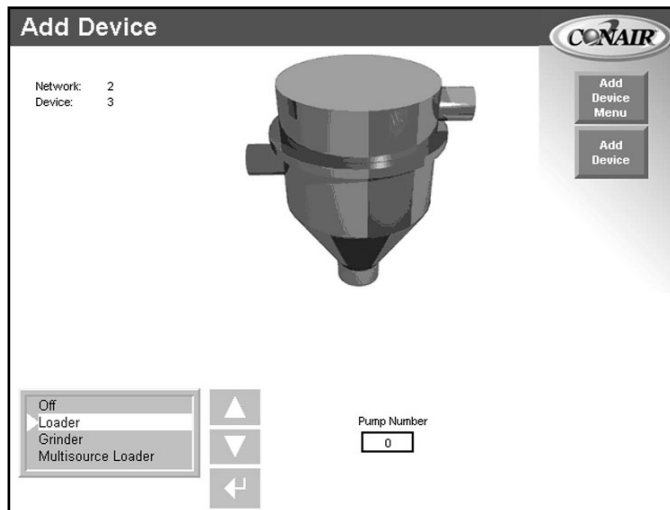
From the Add Local Devices screen, select any unused portions 1-16.



# 10 inch operator interface



Once the loader has been selected, an entry box for pump number will appear, press the pump number entry box and the keypad will appear, enter the pump number. To enter a name press the green bar above the loader and the name data entry field will become visible. (10 characters max)



# Adding Loaders

From the Add Local Devices screen, press the Loader button under the heading "Select Device Type". The button will turn white when selected and a pump list will appear to the right, including the pump names. Press the data entry field to select the pump to which the loader will be added.

Once the pump has been selected, a New Device Name data entry field will become visible. Press the field and enter the name of the device (10 characters max).

Once the name has been entered, a black box around each available I/O position will become visible. Select the position by pressing inside the box.

Once a position has been selected, the remaining boxes disappear. At this point, to complete the device addition, press the Add Device button in the lower right hand corner.

If more devices need to be added, press the Loader button, the MS Loader button (if available) or the Granulator button (if available). If no additional devices need to be added, press the Pump Overview button.

# Adding Multi-source Loaders

From the Add Local Devices screen, press the MS Loader button under the heading "Select Device Type". The button will turn white when selected and a MS Loader list will appear to the right including the MS Loader names. Unlike the pump list which is a list of pumps the loader is to be attached to, the MS Loader list is a list of already assigned MS Loaders and the number entered should not match any of those MS Loaders listed. There can be no more than 28 MS Loaders assigned to the system.

After a number has been assigned to the MS Loader, the pump list appears. Press the data entry field to select the pump to which the loader will be added.

Once the pump has been selected, a New Device Name data entry field will become visible. Press the field and enter the name of the device (10 characters max).

Once the name has been entered, a black box around each available I/O position will become visible. Select the position by pressing inside the box.

Once a position has been selected, the remaining boxes disappear. At this point, to complete the device addition, press the Add Device button in the lower right hand corner.

If more devices need to be added, press the Loader button, the MS Loader button (if available) or the Granulator button (if available). If no additional devices need to be added, press the Pump Overview button.

# Adding Granulators

From the Add Local Devices screen, press the Loader button under the heading "Select Device Type". The button will turn white when selected and a pump list will appear to the right, including the pump names. Press the data entry field to select the pump to which the loader will be added.

Once the pump has been selected, a New Device Name data entry field will become visible. Press the field and enter the name of the device (10 characters max).

Once the name has been entered, a black box around each available I/O position will become visible. Select the position by pressing inside the box.

Once a position has been selected, the remaining boxes disappear. At this point, to complete the device addition, press the Add Device button in the lower right hand corner.

If more devices need to be added, press the Loader button, the MS Loader button (if available) or the Granulator button (if available). If no additional devices need to be added, press the Pump Overview button.

# Adding Granulators (continued)

## Add Armorblock or Remote Device

Adding a device as an Armorblock or as a Remote Device is very similar to adding a local device. Differences are as follows:

- **Armorblock:** Devices 1-48 can be added. The device number corresponds to the DeviceNet address. Ensure the Armorblock is physically added first before adding it to the configuration via the operator interface. In addition, this is the screen that the Armorblock pumps are activated. After physically adding the Armorblock, the pumps are activated by pressing the appropriate Pump Activate button on the right hand side of the screen.
- **Remote Device:** Devices 1-48 can be added. These devices are split into 3 groups of 16 (1-16, 17-32, 33-48) at DeviceNet nodes 57, 58 and 59. When the Remote I/O box has been physically added to the network, it can be activated by pressing the Station 1, Station 2 or Station 3 Activated/De-Activated buttons. Once these buttons are pressed and the box has been activated, the appropriate group of 16 devices become visible and can be assigned as loaders, multi-source loaders and granulators.

Unlike local I/O, there are no configuration restrictions that limit any device from being assigned as a Loader, MS Loader or Granulator.

Unlike local I/O, there are no configuration restrictions that limit any device from being assigned as a Loader, MS Loader or Granulator.





# Maintenance

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Maintenance Checklist . . . . . 5-2

Operator Interface Calibration . . . . . 5-3

# Maintenance Checklist

You should develop a preventive maintenance schedule for all components in the conveying system to ensure optimum operation and performance.

The ILS requires the following maintenance checks:

- **Whenever you change materials**
  - Verify the loader settings for pump systems** or loaders effected by the material change. Pay particular attention to load times, dump times, and material source identification if you have pocket conveying valves and material line proofing. *See “Changing Loader Settings”* in the Operation section.
  
- **Quarterly**
  - Check power and cable connections and wires.** Over time, the power and cable connections between the ILS and conveying system components may become loose or wires may become worn. Tighten any loose connections and replace any wire or cable that has become worn or damaged.
  
- **After loading new software, or as needed**
  - Recalibrate the operator interface.** If the operator panel becomes unresponsive to a touch on the screen, you may need to recalibrate the touchscreen. This could happen after reloading or updating the ILS software. *See “Operator Interface Calibration.”*

# Operator Interface Calibration

If the operator interface becomes unresponsive to a touch on the screen, you may need to recalibrate the touchscreen. In order to calibrate the Operator Interface touchscreen, the security level must be "Admin".

From the Network screen, press the Shutdown button. The system takes several seconds to respond, so there is no need to keep tapping the shutdown button. After approximately ten seconds, the RSViewME Station screen appears. From this screen, press the Terminal Settings button. From the Terminal Settings screen, select Input Devices and press Enter. From the Input Devices screen, select Touchscreen and press Enter. From the Touchscreen screen, select Calibration and press Enter.

Follow the instructions by touching the four corners when prompted. Once complete, touch the screen within 30 seconds. The screen is now calibrated. Press the Close button on the next three screens until the RSViewME Station screen appears. Press Run.



**CAUTION: Changes to other settings in the PanelView Plus may result in improper operation.**



# Troubleshooting

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# Before Beginning

Before you begin troubleshooting:

- Find the manuals and wiring diagrams that were shipped with your equipment. These materials contain details you will need to diagnose and repair problems in specific components, including custom wiring, features or I/O options not covered in this User Guide.

## A Few Words of Caution



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

The ILS should be installed, adjusted, and serviced only by qualified technical personnel who are trained in the operation and troubleshooting of this type of equipment.



**DANGER: Electrical shock hazard**

Diagnosing the cause of electrical system and CPU problems in this equipment may require the use of precision electronic measuring equipment, as well as access to the electrical enclosure while power is on. Only qualified electrical technicians, trained in the use of the equipment and in avoiding exposure to voltage hazards, should perform procedures that require access to the enclosure while power is on.



**WARNING: Develop and follow procedures for safe operation and maintenance of the system.**

The ILS allows operators and maintenance personnel to disable and enable conveying system components. Unexpected energization of these components could result in equipment damage or injury.

Safe maintenance procedures should include:

- Disconnect any loader, pump or material valve from main power and/or compressed air sources before servicing. Ensure that all energy sources for the device are locked out and tagged.
- Before removing lockout devices and enabling system components, verify that all personnel are clear of the machine, tools have been removed, and any safety guards have been reinstalled.

# Operator Interface Alarms

The following is a description of the alarms that can be displayed on the Operator Interface screen.

Alarm	Description
Overload on pump	Indicates a pump overload.
Material Alarm	The number of load cycles exceeds the alarm check value without satisfying the demand.
Fill	The material fails to reach the fill sensor within the cycle time.
Proofing	Indicates that proofing failed for the given device.
Configuration Fault	Indicates that a loader is has been enabled without being assigned to a valid pump.

When an alarm is triggered, the alarm buzzer is energized and the alarm screen pops up and displays the alarm time, the time the alarm is acknowledged and the alarm message described above. Available buttons include the following::

- Acknowledge - acknowledges the highlighted alarm
- Acknowledge all - acknowledges all alarms
- Silence - silence the alarm buzzer
- Clear alarm history - clears all alarms from the screen
- Close - closes the alarm window

"The information provided is an excerpt from a user manual and is not meant to replace the complete document. As such, it may not contain all the safety precautions or all of the information necessary to configure your automation system that is available in the complete user manual. Please refer to the full product installation and user documentation paying particular attention to all safety precautions prior to implementation."

# Network Errors - Fully-Distributed System or Remote I/O System

## DeviceNet Network Errors

### What This Section Contains

This section describes the diagnostics provided by the LED diagnostic indicators on the front panel of the 1769-SDN scanner module.

Diagnostic Indicators

Error Codes

Interpreting the Three LED Status Indicators

MOD/NET Status Indicator

IO Status Indicator

OK Status Indicator

### Diagnostic Indicators

The first step in troubleshooting is to observe the 1769-SDN scanner module's LEDs and 7-segment numeric displays. The indicators function as follows.

- The bicolor (green/red) Module Status LED indicated whether the scanner has power and is functioning properly.
- The bicolor (green/red) Network Status LED provides information about the Devicenet channel communication link.
- The numeric display shows Node Address and Status Display information. Status information precedes the node address.

The following tables summarizes the meaning of the LEDs and numeric codes.

# LED Status Indicators

Indicator	Color/Status	Indicates	Recommended Action
IO	Off	No power /not online	Device is not online, check power.
	Flashing Green	Online, not connected	Activate nodes, check connections.
	Solid Green	Normal operation	No action required.
	Flashing Red	Connection time-out	Check status of io connections.
	Solid Red	Critical link failure	Verify module connectors are properly seated. If they are, cycle power to controller.

# LED Status Indicators

Indicator	Color/Status	Indicates	Recommended Action
OK	Off	Not powered	Device is not online, check power.
	Flashing Green	Device in standby (device needs commissioning)	Check for processor in run mode.
	Solid Green	Normal operation	No action required.
	Flashing Red	Minor fault	Recycle power or reset device.
	Solid Red	Unrecoverable fault or self test	If module is not in power up, recycle power.  If this does not correct the problem, replace the scanner.

# LED Status Indicators

Indicator	Color/Status	Indicates	Recommended Action
Mod/Net	Off	Not powered/not online	Device is not online, check power.
	Flashing Green	Device in standby (device needs commissioning)	Device needs commissioning due to incomplete, or incorrect configuration.
	Solid Green	Normal operation	No action required.
	Flashing Red	Recoverable fault	Complete flash update or start a new update.
	Solid Red	Unrecoverable fault	Verify module connectors are properly seated. If they are, cycle power to another controller. If this does not correct the problem, replace the controller. If replacing the controller does not correct the problem, replace the scanner.
	Flashing red/green	Device self testing	No action required.

# Operator Interface Alarms

Indicator	Color/Status	Indicates	Recommended Action
Network	Solid Red	Critical network failure. Duplicate DeviceNet node address detected.	Reset module. Change module's node address or change conflicting device's node address. If failure continues, replace module.

Indicator	Color/Status	Indicates
7-Segment Numeric Display	Node Address and Status Display	<p>Indicates diagnostic information about the status of the module.</p> <ul style="list-style-type: none"> <li>• When the numeric display is showing 0 to 63, it is indicating the scanner's DeviceNet node address.</li> <li>• When it shows 70 to 99, it indicates an Error Code for the displayed node address.</li> <li>• When it flashes alternating numbers, one is the Error Code (70 to 99), and the other is the Node Number (0 to 63) that has generated the error.</li> </ul> <p><i>See section 6, Network Errors for a list of error codes.</i></p>

# Node Address/Status Indicator

<b>Numeric Code</b>	<b>Description</b>	<b>Action</b>
<b>70 - Duplicate Node</b>	Controller has failed Duplicate Node Address Check. The node address selected is already in use.	Change the module's or conflicting device's network address (node number) to an available one.
<b>71 - Illegal Scanlist Data</b>	Illegal data in scanlist	Reconfigure the scan list table and remove any illegal data.
<b>72 - Slave Timeout</b>	One of the module's slave devices has stopped communicating	Inspect the module's slave devices and verify the DeviceNet connections.
<b>73 - Electronic Key Mismatch</b>	The slave device Vendor ID key parameter does not match the slave's configuration in the module's scanlist.	Make sure that the device at the flashing node address matches the desired electronic key (vendor, product code, product type).
<b>75- No Messages Received</b>	No network traffic received by the scanner. 10 seconds have elapsed and no network traffic for the module or for any other device have been received.	Verify the scanlist is correctly configured to scan slave devices. Verify DeviceNet network connections.
<b>76- No Message For Scanner</b>	No direct network traffic for the scanner detected. 10 seconds elapsed and no DeviceNet input being screened by the module has been received.	None. There are other active devices on the network, initiating messages, but none of the messages are for the module.
<b>77- Slave Data Size Mismatch</b>	The data being received from the slave device does not match the configuration in the scanlist.	Either reconfigure the slave device, or change the module's scanlist to match the slave device.
<b>78- No Such Device</b>	Slave device in scanlist does not exist.	Either add the device to the DeviceNet network or delete the device's entry in the scanlist.

# Node Address/Status Indicator

(continued)

<b>Numeric Code</b>	<b>Description</b>	<b>Action</b>
<b>79 - Transmit Failure</b>	The module has failed to transmit a message.	Make sure that the module is connected to a valid network. Check for disconnected cables.
<b>80 - In Idle Mode</b>	The module has failed to transmit a message.	Make sure that your module is connected to a valid network. Check for disconnected cables.
<b>81- Scanner Faulted</b>	The Scanner has stopped producing and consuming I/O data. This condition does not affect the scanner's system or messaging modes.	Check the FAULT valve in the module command array.
<b>82 - Fragmentation Error</b>	Error detected in sequence of fragmented I/O messages from device.	Check scanlist table entry for slave device to make sure that input and output data lengths are correct. Check slave device configuration.
<b>83 - Slave Init Error</b>	Slave device is returning error responses when the module attempts to communicate with it.	Check slave device's configuration. Reboot slave device.
<b>84 - Not Yet Initialized</b>	Module has not completed its initial attempt to establish communications with its slaves.	None. This code clears itself once the module attempts to initialize all the slave devices on the network.
<b>85 - Receive Buffer Overflow</b>	Data size returned is larger than expected.	Configure the slave device for a smaller data size.
<b>86 - Device Went Idle</b>	Device is producing idle state.	Check the device configuration and slave nose status.

# Node Address/Status Indicator

(continued)

<b>Numeric Code</b>	<b>Description</b>	<b>Action</b>
<b>90 - Disabled Network</b>	DeviceNet Port is Disabled.	Check for the DISABLE being set in the Module Command Array.
<b>91 - Bus Off</b>	Bus off condition detected on integral DeviceNet port.	Check the DeviceNet connections and physical media integrity. Check system for failed slave devices of network interference. Check the Baud Rate.
<b>92 - No DeviceNet Power</b>	No network power detected on DeviceNet port.	Provide network power. Make sure the module drop cable is providing the proper power to the DeviceNet port.
<b>95 - FLASH Update</b>	Flash update in progress.	None. Do not disconnect the module from the network while a FLASH update is in progress.
<b>98 - Firmware Corrupted</b>	Firmware is corrupted.	Reflash module firmware. Do not power cycle the module. Doing so will cause the module to become inoperable. If the problem persists contact Rockwell Automation Technical support.
<b>97- Hard Fault</b>		Cycle power. Reflash module firmware. Contact Rockwell automation technical support.


Indicator	Color	Description
<b>RUN</b>	Off	The controller is in Program or Test mode.
	Solid green	The controller is in Run mode.
<b>FORCE</b>	Off	No tags contain I/O force values. I/O forces are inactive (disabled).
	Solid amber	I/O forces are active (enabled). I/O forces values may or may not exist.
<b>BAT</b>	Off	The battery supports the memory.
	Solid red	Either the battery is not installed or it is 95% discharged and should be replaced.
<b>I/O</b>	Off	Either there are no devices in the I/O configuration of the controller or the controller does not contain a project (controller memory is empty).
	Solid green	The controller is communicating with all the devices in its I/O configuration.
	Flashing green	One or more devices in the I/O configuration of the controller are not responding.

## IO Status Indicator

This bi-color (Green/Red) LED indicates the status of the communication link.

## IO Status Indicator

Indicator	Color	Description
I/O continued	Flashing red	The controller is not communicating to any devices. The controller is faulted.
OK	Off	No power is applied.
	Flashing red	If the controller is: a new controller the controller requires a firmware update. If the controller is not new a major fault occurred. To clear the fault, either: - Turn the keyswitch from PROG to RUN to PROG - Go online with RSLogix 5000 software.
	Solid red	The controller detected a non-recoverable fault, so it cleared the project from memory. To recover: 1. Cycle power to the chassis. 2. Download the project. 3. Change to Run mode. If OK LED remains solid red, contact your Rockwell Automation representative or local distributor.
	Solid green	Controller is OK.
	Flashing green	The controller is storing or loading a project to or from nonvolatile memory.

 **NOTE:** (1) The flash rate of the LED is approximately 1 flash per second. The LED should be on for approximately 0.5 seconds and off for approximately 0.5 seconds.

## RS-232 serial port LEDs (channel 0)

<b>Indicator</b>	<b>Color</b>	<b>Description</b>
RS-232	Off	No-RS-232 activity.
	Flashing green	RS-232 activity.

# Network Status Indicator

The Network (NET) Status LED provides the following information.

State	Status	Description
<b>Off</b>	Not powered No IP address	The module is not powered, or does not have an IP address. <ul style="list-style-type: none"><li>• Verify there is chassis power and that the module is completely inserted into the chassis and backplate.</li><li>• Make sure the module has been configured.</li></ul>
<b>Flashing Green</b>	No connections	The module has obtained an IP address, but has no established connections.
<b>Green</b>	CIP connections	The module has an IP address and at least one established connection.
<b>Flashing Red</b>	Connection timeout	One or more of the connections in which the module is the target has timed out.
<b>Red</b>	Duplicate IP address	The module has detected that its IP address is already in use. Assign a unique IP address to the module.

## Link Status Indicator

The Link Status LED provides the following information.

State	Status	Description
Off	No data transmission	Module is not ready to communicate.
Green	Ready	Module is ready to communicate.
Flashing Green	Data transmission in progress	Module is communicating over the network.

## OK Status Indicator

The OK Status LED provides the following module information.

State	Status	Description
Off	No power	Module does not have 24 V DC power. Verify there is chassis power and the module is completely inserted into the chassis and backplate.
Flashing Green	Standby	Module is not configured.
Green	Operational	Module is operating correctly.
Flashing Red	Minor fault	A recoverable fault has been detected. This could be caused by an error in the configuration.
Red	Major fault	An unrecoverable fault has been detected. Recycle power to the module. If this does not clear the fault, replace the module.
Flashing Red and Green	Self test	The module is performing a power-up self-test.

# Network Errors - Remote I/O System

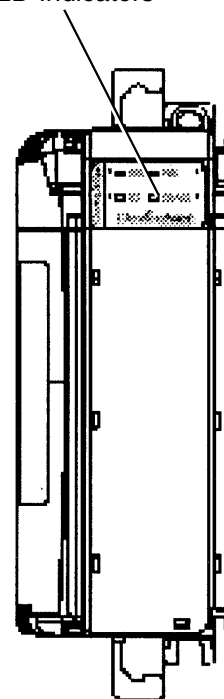
## Troubleshooting with the Indicators

This section addresses the diagnostic indicators for a local or remote I/O system and their meanings.

### Diagnostic Indicators

LED Indication	Meaning
<b>Module Status (MS)</b>	
OFF	No power
Flashing GREEN/OFF	On-line, but configuration missing
Solid GREEN	Device is operational
Flashing RED/OFF	Recoverable fault: <ul style="list-style-type: none"> <li>• Configuration is incorrect</li> <li>• Duplicate MAC ID (node address) check failed</li> <li>• Node address switch changed</li> <li>• Main program checksum failed</li> <li>• Configured I/O size is too large</li> </ul>
Solid RED	Unrecoverable fault: <ul style="list-style-type: none"> <li>• Terminator/end cap is missing</li> <li>• Connector/cable between modules is missing/not connected</li> <li>• Bad configuration memory</li> <li>• Watchdog tripped</li> </ul>
<b>Network Status (NS)</b>	
OFF	No power or no network access
Flashing GREEN/OFF	On-line, but not connected
Solid GREEN	On-line and connected
Flashing RED/OFF	Connection time-out
Solid RED	Critical network failure

LED Indicators



(continued)

<b>LED Indication</b>	<b>Meaning</b>
<b>I/O Status (IO)</b>	
OFF	No power or outputs are off
Flashing GREEN/OFF	Idle/program mode - one or more I/O modules in Idle Mode
Solid GREEN	Device operational - all I/O modules in Run Mode
Flashing RED/OFF	Recoverable fault - one or more I/O modules may be in Fault Mode
Solid RED	Unrecoverable fault - one or more I/O modules may be in Fault Mode
<b>Diagnostic Status (DIAG)</b>	
OFF	No power or no diagnostics running
Flashing Amber	Main program detected an error - number of flashes indicates the error
Flashing RED/OFF	Diagnostics found error - number of flashes indicates which test failed: <ul style="list-style-type: none"> <li>• One flash - RAM test failed</li> <li>• Two flashes - Boot program checksum failed</li> <li>• Three flashes - Main program checksum failed</li> <li>• Four flashes - Configuration checksum failed</li> <li>• Five flashes - Access to program or configuration failed</li> </ul>

## EtherNet/IP: Module Status (NET) indicator

<b>Condition</b>	<b>Status</b>	<b>Indicates</b>	<b>Recommended Action</b>
Off	No power	The controller does not have power or no IP Address.	Check the controller power supply and configuration.
Flashing green	No connections	Module has IP Address but no connection.	Verify that the BOOTP server is running.
Solid green	OK	Module is operating correctly.	Normal operation. No action required.
Solid red	Duplicate IP address.	The module has detected that its IP Address is already in use.	Check for duplicate IP Addresses.
Flashing red	Connection timeout	One of more of the connections has timed out.	Check power and cables to network devices.

## EtherNet/IP: Link Status indicator

Condition	Status	Indicates	Recommended Action
Off	No data xmit.	The module is not ready to communicate.	Verify that all Ethernet cables are connected.  Verify that the Ethernet switch is provided.
Flashing green	Data xmit in progress	The module is communicating over the network.	Normal operation.
Solid green	Ready	The module is ready to communicate.	Power all connections.





# 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.

**Additional manuals and prints for your Conair equipment may be ordered through the Customer Service or Parts Department for a nominal fee.**

## How to Contact Customer Service

To contact Customer Service personnel, call:



From outside the United States, call: 814-437-6861

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.

## 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.**