

User
Manual

LETS Machine Interface (LMI)®

1140100

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Changes for Revision B of the LMI User Manual (1140100)

This revision of the LMI user manual covers LMI software version 2.21 and higher. The changes include:

- Revised drawings, wiring configuration, and specifications for the new LMI control module (see relevant sections of Chapter 2)
- Inclusion of a procedure for setting the LMI's IP address (see page 2-19)
- Documentation of the new Rate Calculation screen (see page 3-5)
- Documentation of the new "Instantaneous" setting for the **Production Rate Calculation Interval** field on the Production Settings screen and for the new **Maximum Time Between Pulses** field (see page 3-14)
- Documentation of the new **Operations-Cycle Ratio** field on the Adjust Scrap Data and OP/Cycle Ratio screen (see page 4-3)

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How To Use This Manual

This manual shows you how to install, set up, and operate the LETS Machine Interface (LMI).

Chapter 1 provides an overview of LMI components and operation.

Chapter 2 shows you how to mount and wire the LMI. Installation instructions are provided for both enclosure and panel mount versions and for color and monochrome display options.

Chapter 3 shows you how to set up the LMI, providing instructions for configuring inputs and making production, forced dialog, and security settings.

Chapter 4 shows you how to operate the LMI. The chapter shows you how to set the parts count preset, cycle and scrap count multipliers, operations-cycle ratio, and operator number; program tool, part, and job numbers, and load jobs; and select downtime reasons for machine idle time.

Chapter 5 documents the system messages that display on the Status line of the LMI display and on the line beneath it.

Appendix A shows you how to create a downtime menu in LETS and download the menu to the LMI.

Appendix B explains how LETS “discovers” tools at the LMI when the LETS Scheduling option is installed.

The Glossary provides definitions of some of the terms used in the manual that may be unfamiliar to you.

A wiring diagram is provided at the back of the manual.

Important Highlighted Information

Important danger, warning, caution and notice information is highlighted throughout the manual as follows:

DANGER

A DANGER symbol indicates an imminently hazardous situation, which, if not avoided, will result in death or serious injury.

WARNING

A WARNING symbol indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury.

CAUTION

A CAUTION symbol indicates a potentially hazardous situation, which, if not avoided, may result in property damage.

NOTICE

A NOTICE symbol indicates important information that you should remember, including tips to aid you in performance of your job.

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LETS MACHINE INTERFACE (LMI)
USER MANUAL
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Chapter 1. Introduction

The LETS Machine Interface (LMI) is a data collection and reporting device that you install on a machine to make machine status, downtime reasons, production rate, and parts count information available to LETS (Line Efficiency Tracking Software). This chapter provides an introduction to the LMI. It is organized in the following sections:

- *LMI Components* (below)
- *Inputs and Outputs* (page 1-2)
- *Configuring Inputs* (page 1-2)
- *Machine States* (page 1-3)
- *Programming and Reporting Downtime Reasons* (page 1-4)
- *Programming Jobs, Parts, and Tools* (page 1-4)
- *Getting Help* (page 1-5)
- *Specifications* (page 1-6)

LMI Components

LMI is available in an enclosure or as a panel mount for installation in a customer console or enclosure. The unit consists of a control module and a color or monochrome display with touch screen, as shown in Figure 1-1.

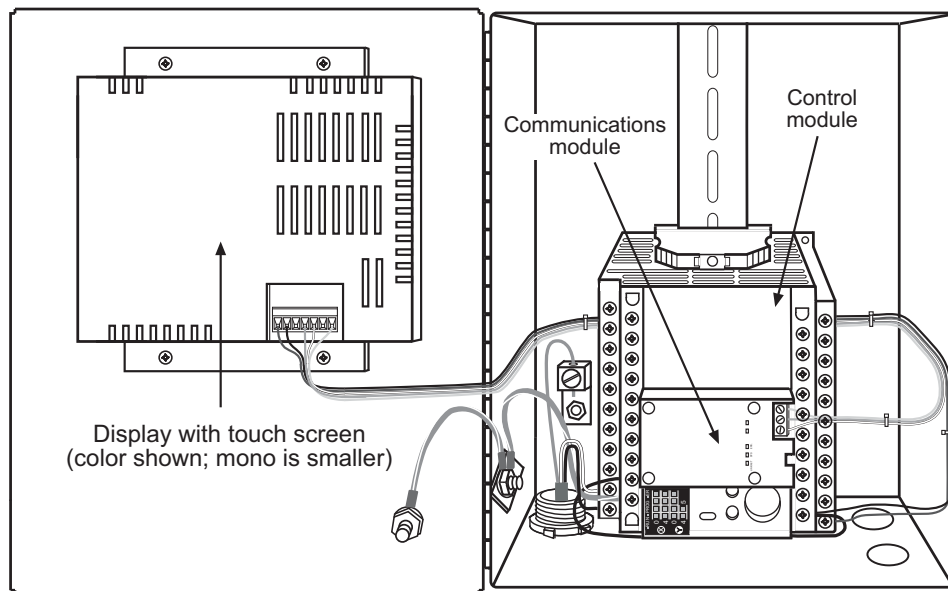


Figure 1-1. LMI Components (Enclosure with Color Display Shown)

The touch screen provides labelled buttons that you press to set up and operate the unit. The LMI Main Menu, the screen that displays when you first power up the LMI, is shown in Figure 1-2, page 1-2.

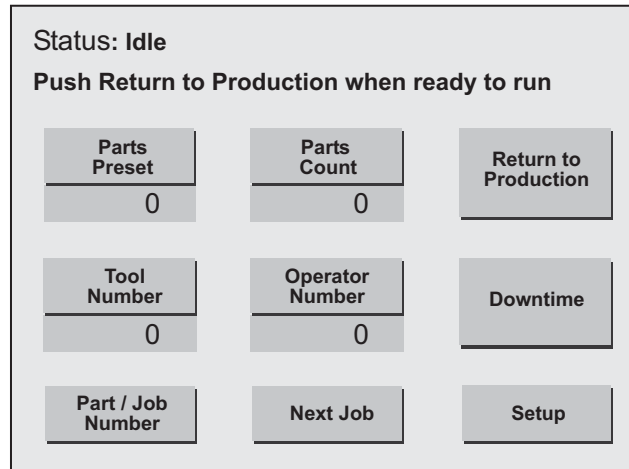


Figure 1-2. LMI Main Menu

Inputs and Outputs

The LMI includes four inputs on its control module that provide the unit with machine state, production rate, and parts count information:

- Cycle sensor—Indicates when a part has been made or a stage in the production process has been completed, and is used to calculate the production rate. The Cycle sensor may be programmed to indicate when the machine is running.
- Run/Idle contact—Indicates when the machine is running and when it is idle.
- Scrap contact—Indicates when a part should be counted as scrap.
- Setup Mode—Indicates when the machine is in a non-production mode so the LMI does not collect machine state, production rate, or parts count information.

Further details about each of these inputs including wiring instructions are provided starting on page 2-11.

The LMI control module provides two outputs that can be used to prevent the machine from being operated when the LMI is programmed to require the operator to enter a downtime reason during machine idle time. See page 2-14 for additional information about these outputs as well as wiring instructions.

Configuring Inputs

The LMI provides configuration settings for Cycle Sensor, Run/Idle, and Scrap inputs.

- Cycle Sensor—You can add a delay time to Cycle Sensor actuation to maintain accurate parts counts when the machine cycles multiple times in the creation of a single part. You can specify the units/time interval (i.e., feet/minute, meters/hour, etc.) in which the production rate is measured and program the number of cycles required for each unit, enabling the LMI to calculate a production rate for virtually any machine. You can also program the Cycle Sensor to indicate when the machine is running if you don't wire a Run/Idle contact. See *Configuring the Cycle Input*, page 3-3 for further details.

- **Run/Idle Contact**–You must enable the Run/Idle input if you want the LMI to use actuation of the input to indicate that the machine is running. You can add a delay time to Run/Idle input actuation just as you can for the Cycle Sensor. If the Run/Idle input is enabled and you have wired a Cycle input, the LMI is configured by default to “detect” a Running state when the Cycle Sensor actuates immediately after the Run/Idle contact actuates. You can change this default setting so that the LMI records a change to the Running state when only the Run/Idle input turns on. Further information about these settings is provided in *Configuring the Run/Idle Input*, page 3-8.
- **Scrap Input**–You must enable the Scrap input in order for the LMI to collect and report scrap counts. See *Configuring the Scrap Input*, page 3-11 for additional information.

Machine States

LETS logs all elapsed time at each machine to one of six categories called machine states. The sum of all the times assigned to these categories for an individual machine is the number of hours in a production day (e.g., 12 hours, 24 hours, etc.). LETS selects the machine state to which to log machine time on the basis of downtime reporting and other information it receives from the LMI. Machine states are differentiated as follows:

- **Running Time**–Machine is running and making parts
- **Idle Time**–Machine is stopped, and the reason has not been documented at the LMI
- **Unplanned Downtime**–Machine is stopped, and the reason has been documented at the LMI with a downtime reason other than Planned Downtime or Changeover (see next items)
- **Planned Downtime**–Machine is stopped, and the reason has been documented at the LMI as Planned Downtime

NOTICE

The Planned Downtime machine state should only be assigned for lunch and coffee breaks, meetings, training, etc. Planned Downtime is not used in calculating Overall Equipment Effectiveness (OEE) and, therefore, does not reduce the OEE value.

- **Changeover Time**–Machine is stopped, and the reason has been documented at the LMI as Changeover
- **Offline Time**–Machine is stopped because there is no power to the machine or the network is down

All time during which the machine is stopped for any reason other than a power interruption or network failure is logged by LETS to Idle Time unless a downtime reason or a “Planned Downtime” or “Changeover” machine state is reported from the LMI. Since Overall Equipment Effectiveness (OEE) and other efficiency metrics assign high ratings to machines with low Idle Time values, LMI has been designed to allow very precise reporting of downtime to LETS and may be programmed to require the operator to select a specific downtime reason each time the press enters an Idle state. When operator intervention is required, periods of press inactivity are more likely to be assigned to a specific downtime reason than to be logged as Idle Time.

Programming and Reporting Downtime Reasons

The LMI provides settings that enable you to require operator entry of a downtime reason whenever the machine has been idle for longer than a specified period of time. Instructions for making these settings are provided starting on page 3-18. Instructions for operator selection of downtime reasons is provided starting on page 4-14.

Downtime reasons are created in LETS and downloaded to the LMI. See Appendix A for instructions.

Configuring Parts and Scrap Counts

You can configure the way in which parts are counted, enabling the LMI to maintain accurate counts for machines that produce multiple items on a single cycle, a single item on multiple cycles, and different ratios of cycles to parts. You can specify the number of machine cycles performed and the number of parts produced on each cycle. You can also configure the LMI so that multiple scrap items are counted for each machine cycle. See *Making Parts and Scrap Count Settings*, page 4-3 and *Configuring the Scrap Counter*, page 4-6 for further information.

Programming Jobs, Parts, and Tools

Entering job, part, part preset, and tool information at the LMI is handled differently depending on whether your LETS installation has the Scheduling module.

Programming Jobs with the LETS Scheduler

If your LETS installation has the Scheduling module, setup of tools and scheduling of jobs at the LMI are performed in LETS. The LMI operator, however, is responsible for entering and loading tool numbers so that LETS can “discover” them and make them available for setup and scheduling (see page 4-8 for instructions in how to enter and load tool numbers and Appendix B for a description of the tool discovery process). The operator must also load each job when its position in the schedule is reached (see page 4-12).

Programming Jobs without the LETS Scheduler

When the LETS Scheduler is not installed, job, part, part preset, and tool information must be entered and tools loaded at the LMI at the beginning of each job. See *Setting the Parts Preset*, page 4-2 and *Entering and Loading Tools When Scheduler Is Not Installed*, page 4-10 for further details.

Getting Help

You can get help for any LMI screen by touching the screen in its upper left-hand corner. Figure 1-3 shows the screen that displays when you access help for the LMI Main Menu (see Figure 1-2). As instructed at the bottom of the Help screen, touch the screen anywhere to return to the previous screen.

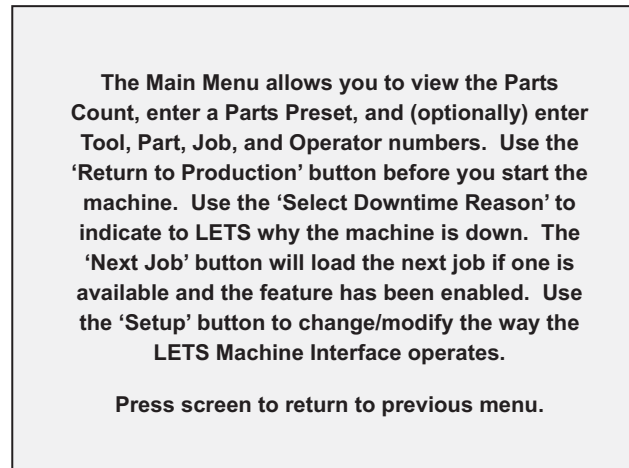


Figure 1-3. Help Screen for LMI Main Menu

When Help screens are insufficient to answer your questions or you are having trouble installing, setting up, or operating the LMI, you can contact Wintriss directly. The Wintriss Tech. Support contact number (800-586-8324) is displayed on the About LMI screen (see Figure 3-25, page 3-24), which also shows the PLC and HMI code version numbers and the password code. You will need the version numbers when you contact Wintriss for technical support. The password code is required if you misplace the system password.

The password code and PLC code version number are also shown at the bottom of the Adjust Scrap Data and OP/Cycle Ratio screen (see page 4-3).

Specifications

LMI specifications are shown in Table 1-1.

Table 1-1. LMI Specifications

Dimensions	Enclosure: 8.00 in. (203.2 mm) x 10.00 in. (252.0 mm) x 4.00 in. (187.2 mm) Panel mount Color display: 6.43 in. (163.2 mm) x 5.07 in. (128.8 mm) x 1.57 in. (40.0 mm) Mono display: 4.33 in. (110.0 mm) x 3.63 (92.2 mm) x 1.17 in. (29.8 mm) Control module: 3.94 in. (100 mm) x 3.54 (90 mm) x 3.62 in. (92 mm)
Electrical (System Power)	Input: 100-240 Vac, 50-60 Hz
Parts Counter	Preset for maximum count. Set to 7 digits.
Inputs	Cycle count: PNP, +24 Vdc maximum Run/Idle state: +24 Vdc On Scrap: +24 Vdc On Setup mode: +24 Vdc On
Outputs	2 stop circuits: Contact rating 1 A, dry contacts DC: 42V; AC: 30V

Chapter 2. Installation

This chapter shows you how to install both enclosure and panel mount versions of the LETS Machine Interface (LMI). The document is organized in the following sections:

- *Installation Guidelines* (below)
- *Mounting LMI* (page 2-2)
- *Wiring LMI* (page 2-7)
- *Checking Wiring Connections* (page 2-15)
- *Setting the IP Address* (page 2-19)

If you encounter problems when installing LMI, call Wintriss Tech. Support.

⚠ WARNING

ELECTRIC SHOCK HAZARD

- Disconnect main power before installation.
- Turn off all power to the machine and equipment used with the machine
- Ensure that installation is performed by qualified personnel.
- Complete all installation and wiring procedures before connecting to the AC power source.

Failure to comply with these instructions could result in death or serious injury.

Installation Guidelines

Observe the following guidelines when planning your installation:

- Never run wires for 120V and for lower voltages (e.g., 24V) inside the same conduit.
Run flexible, liquid-tight conduit for high voltage lines (e.g., 120V power) to the knockout at the bottom left of the LMI enclosure (see Figure 2-6, page 2-9) or to the appropriate location on your console if you have an LMI panel mount.
Run a conduit for low voltage lines (i.e., 24 Vdc inputs and machine inhibit outputs) through the rear knockout at the bottom right of the LMI enclosure (see Figure 2-6) or to the appropriate location on your console.
Run a conduit for the Ethernet cable through the front knockout at the bottom right of the LMI enclosure or to the appropriate location on your console.

NOTICE

You may choose to run 24 Vdc input wires, machine inhibit output wires, and Ethernet cable through the same conduit.

The LMI enclosure is rated NEMA 12 (protected against dust and oil). If you have ordered the enclosure, you must use conduit of the same rating and make proper connections to ensure NEMA 12 protection.

- Good grounds at the LMI are important. Make sure that the LMI is properly grounded. The ground wire from LMI should be connected to the main ground point of the machine. This may be near the control transformer ground.

NOTICE

Before starting the installation, make sure to check all modes of machine operation. Verification that the machine operates and stops properly is extremely important because LMI will be connected to the machine's inhibit circuit. Do not forget to mark on your electrical prints where you wire in LMI.

Mounting LMI

LMI is provided in an enclosure or as a panel mount. Mounting instructions for both LMI configurations are given in the following sections.

Before you begin, determine a convenient place to mount your LMI. Ideally, the unit should be close to the machine control so operators and setup personnel can easily see and reach the displays on the touch screen.

Mounting the LMI Enclosure

The LMI enclosures used in color and monochrome display options have identical dimensions except for the size of the display cutout hole. The enclosure can be mounted to the machine, on a free-standing pedestal, or on a pendant. To mount the enclosure, follow these steps, referring to Figure 2-1, page 2-3 for mounting dimensions.

NOTICE**PLACE ENCLOSURE AT A CONVENIENT HEIGHT**

The LMI enclosure should be installed at a convenient height for all users. An ideal height is to have the top edge of the unit approximately at chin level. Experiment to determine a good height for everybody prior to wiring and mounting.

1. Drill four holes for mounting, and tap if necessary. Mounting bolts are 1/4-20. Use a No. 7 drill and 1/4-20 tap.
2. Allow up to 9 in. of service loop when performing the wiring connections (see *Wiring LMI*, page 2-7). Also make sure all cables will reach the enclosure.

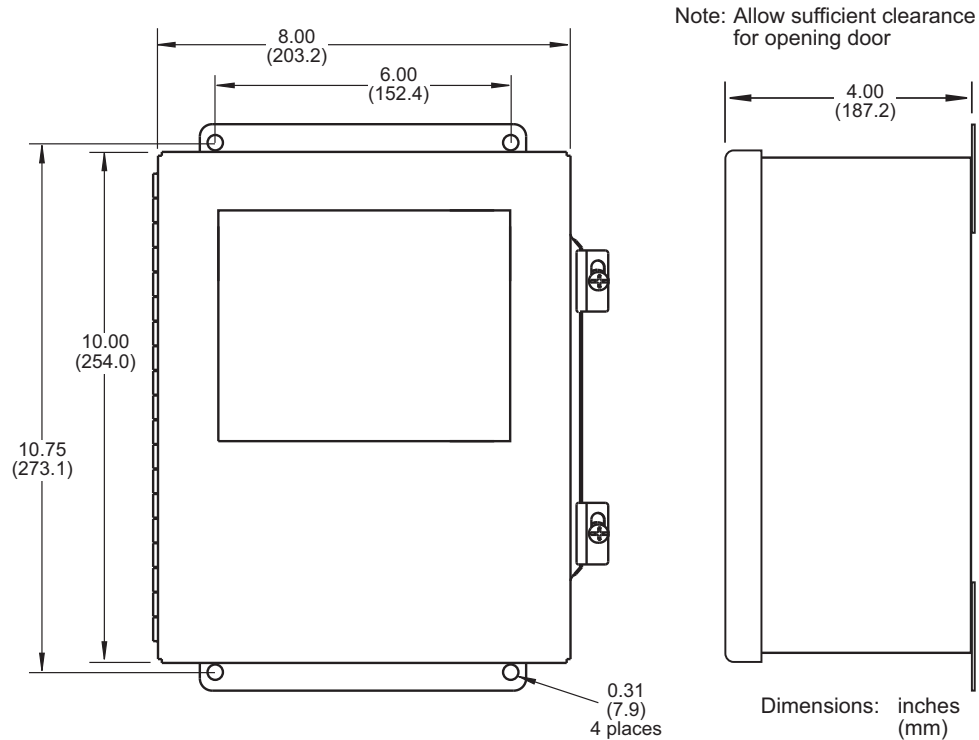


Figure 2-1. LMI Enclosure: Mounting Dimensions (Color Display Option Shown)

Mounting the LMI Panel Mount

The LMI panel mount, like the LMI enclosure, comes in both color and monochrome display versions. Both options include a display (the monochrome display is smaller) and a control module.

Mounting the Display

To install the LMI display in your enclosure or console, perform the following steps:

1. Cut a mounting hole, referring to Figure 2-2, page 2-4 (color display) or Figure 2-3, page 2-5 (monochrome display) for cutout dimensions.
2. Making sure that the gasket is in place on the flange of the display, insert the display into the cutout from outside the enclosure or console; then insert the two brackets provided with your order into the slots on top and bottom of the display, turn the screws (two for each bracket) through the threaded holes, and clamp the display to the inside of the enclosure/console, as shown in Figure 2-4, page 2-6. The brackets for the color display are slightly different from the brackets for the monochrome display, which are the ones shown in Figure 2-4.

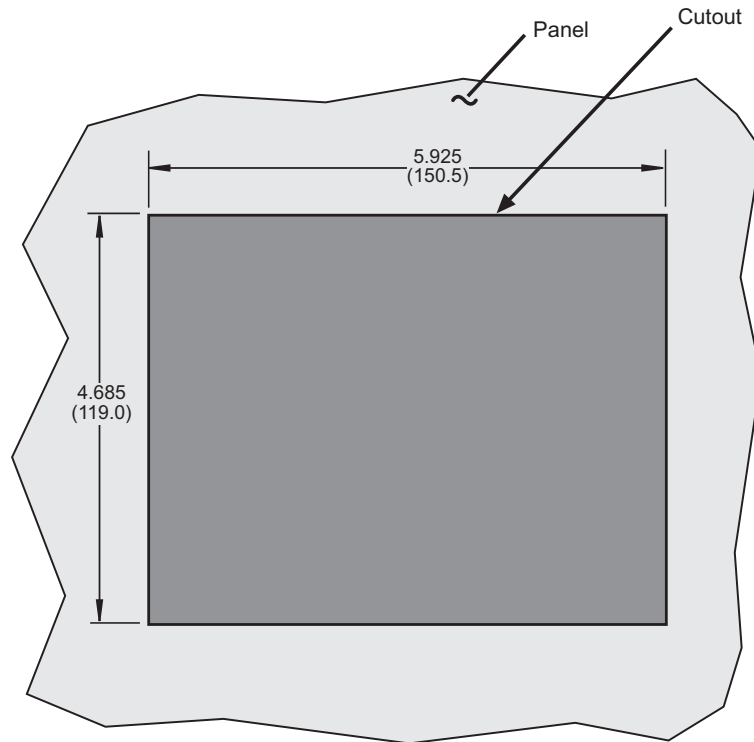
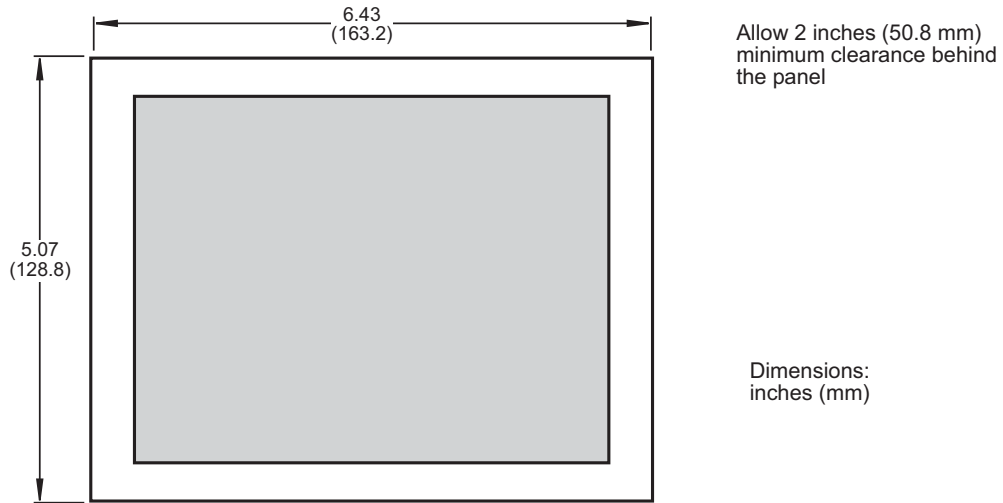


Figure 2-2. LMI Color Display: Mounting and Cutout Dimensions

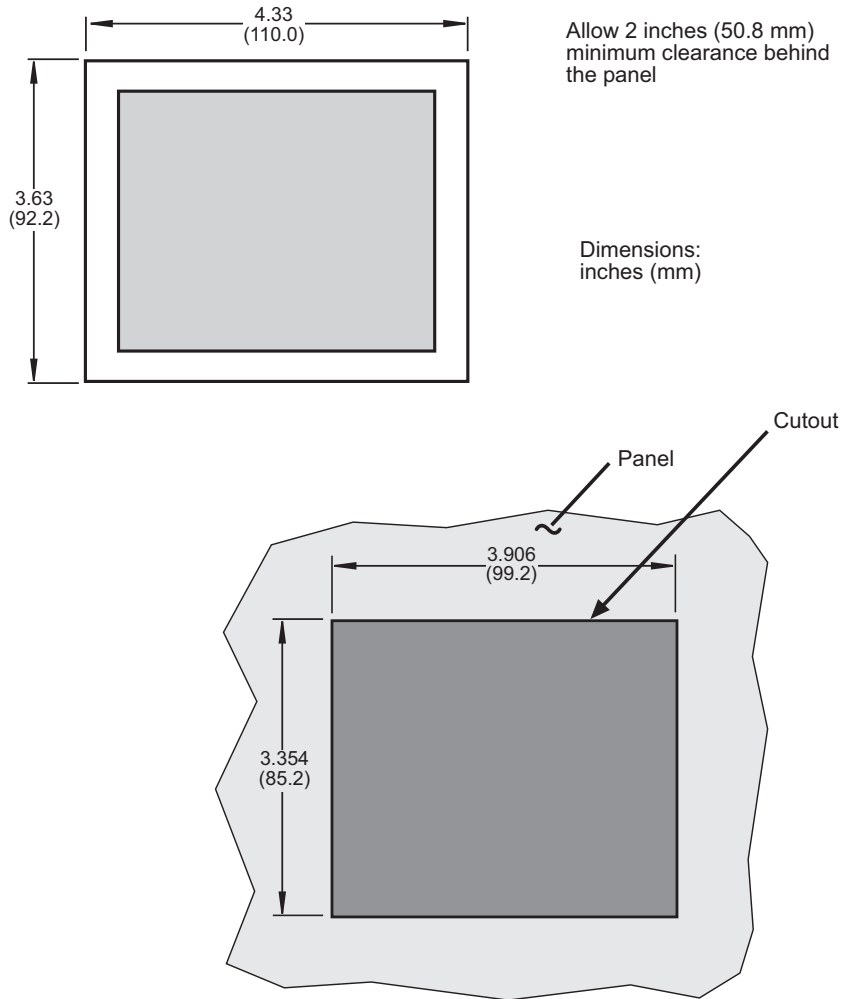


Figure 2-3. LMI Monochrome Display: Mounting and Cutout Dimensions

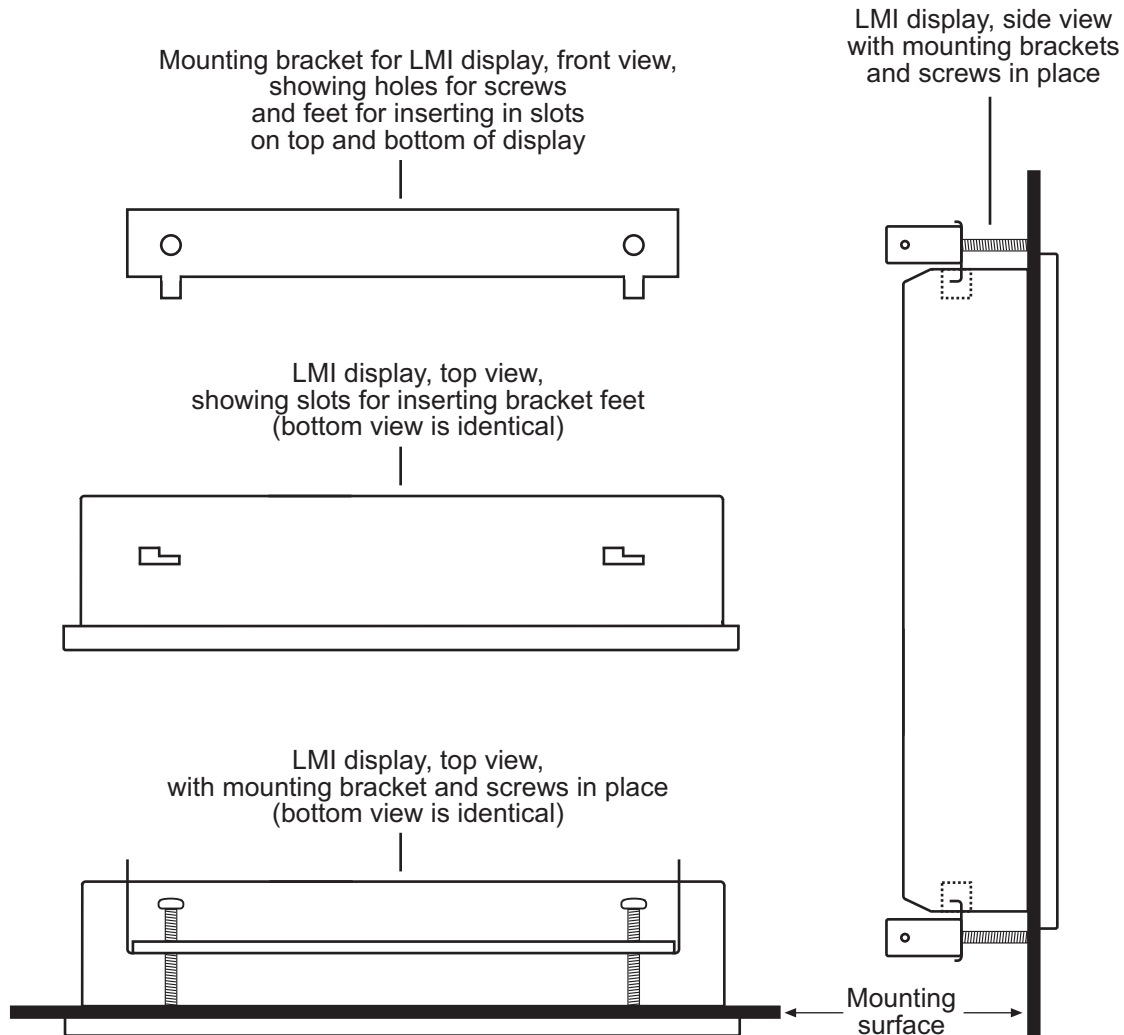


Figure 2-4. LMI Display: Installation in Enclosure or Console
Monochrome Display Shown; Color Display Is Similar

Mounting the Control Module

The control module is designed for DIN rail mounting. Perform the following step to mount the unit:

1. Mount the control module by tilting the unit to the left, sliding the left, notched edge of the groove at the bottom of the case over the left flange of the DIN rail, and snapping the right, latched edge of the groove over the right DIN rail flange.

Wiring LMI

Inserting Wires into LMI Terminals

To insert a wire into a terminal on the LMI control module, communications module, or display, follow these steps, referring to Figure 2-5:

1. Find the correct terminal and loosen the screw over it by turning the screw counterclockwise.
2. Strip the correct wire for this terminal 1/4" (6.4 mm) from the end.
3. Insert the bare wire into the terminal 90% of the way.
4. Tighten the screw. The metal tooth inside the terminal will clamp down on the bare wire for a tight connection. Make sure that the metal tooth is clamped down on the bare part of the wire, not on the insulation.

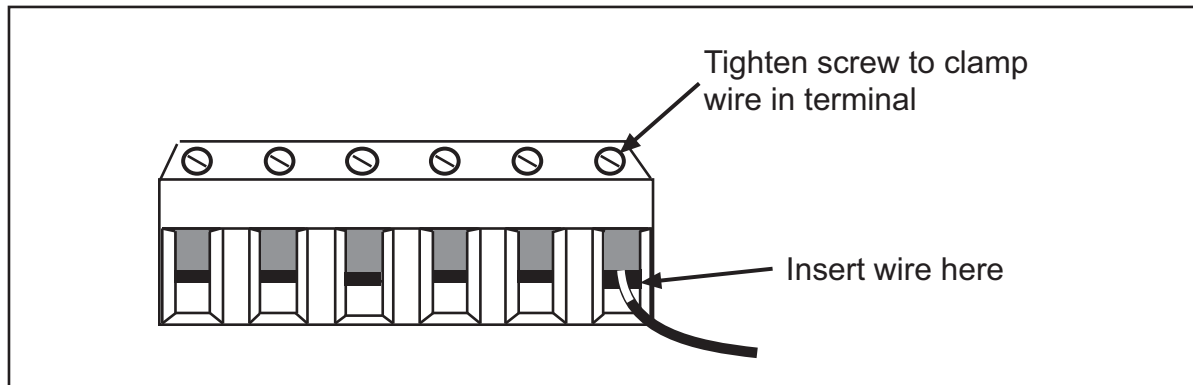


Figure 2-5. Correct Way to Connect Wire to Terminal

Connecting AC Wiring to the LMI Enclosure

To make AC input connections to the LMI enclosure, do the following, referring to Figure 2-6, page 2-9 and Figure 1 at the end of the document. Remember to allow plenty of room to make wiring connections.

1. Determine how you will bring wiring from your 115 Vac power source (or 230 Vac source if applicable) to the unit. These wires should be connected directly to the machine control supply voltage. No. 16 wire is recommended; use No. 14 wire if local codes require it.

For 115 Vac, you need three wires—line (black), neutral (white) and ground (green). For 230 Vac, wires are black and red with green or green/yellow for ground.

2. Loosen the screws on the clamps securing the front panel of the enclosure (see Figure 2-1, page 2-3), pull the clamps away from the panel's side flange, and swing open the enclosure door.

⚠ WARNING**ELECTRIC SHOCK HAZARD**

Do not apply AC power until all other electrical connections and installation procedures are complete.

Failure to comply with these instructions could result in death or serious injury.

3. Run the AC power wires to LMI through flexible liquid tight conduit to the knockout in the lower left corner of the enclosure. Because LMI is rated NEMA 12 (protected against dust and oil), you must use conduit of the same rating and make proper connections to ensure NEMA 12 protection.

4. Connect the ground (green or green/yellow) wire to the setscrew terminal on the ground stud on the left rear wall of the enclosure near the bottom (see Figure 2-6).

To make the connection, strip the wire 1/2" (12.7 mm) from the end, loosen the screw on the terminal, insert the exposed wire into the hole, and tighten the screw down.

5. Connect power wires to the input connectors on the LMI control module labelled "L" and "N", as shown in Figure 2-6 and Figure 1 at the end of the manual.

⚠ WARNING**ELECTRIC SHOCK HAZARD**

Do not apply AC power until all other electrical connections and installation procedures are complete.

Failure to comply with these instructions could result in death or serious injury.

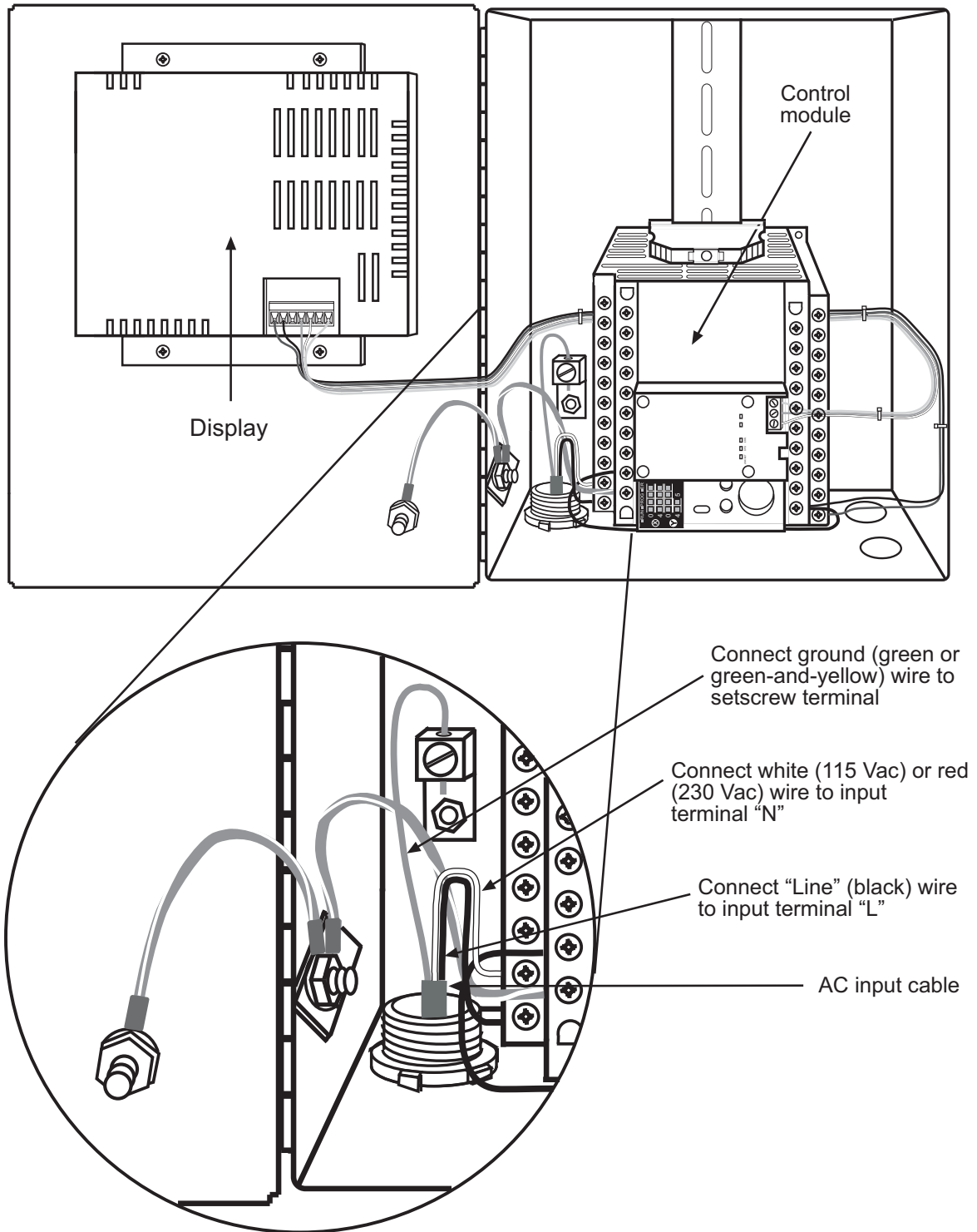


Figure 2-6. AC Wiring Connections, LMI Enclosure (Color Display Shown)

Wiring the LMI Panel Mount

The panel mount version of LMI provides the following components:

- Control module
- Display (color or monochrome)
- Display cable (20 ft.)

You connect AC wiring to the control module. DC and communications wiring is connected between the control module and display.

AC Wiring Connections

To make AC input connections to the LMI panel mount, do the following, referring to Figure 2-6, page 2-9 and Figure 1 at the end of the document. Remember to allow plenty of room to make wiring connections.

1. Determine how you will bring wiring from your 115 Vac power source (or 230 Vac source if applicable) to the unit. These wires should be connected directly to the machine control supply voltage. No. 16 wire is recommended; use No. 14 wire if local codes require it.

For 115 Vac, you need three wires—line (black), neutral (white) and ground (green). For 230 Vac, wires are black and red with green or green/yellow for ground.

WARNING

ELECTRIC SHOCK HAZARD

Do not apply AC power until all other electrical connections and installation procedures are complete.

Failure to comply with these instructions could result in death or serious injury.

2. Connect the ground (green or green/yellow) wire to a ground stud on your enclosure or console.

Connect power wires to the input connectors on the LMI control module labelled “L” and “N”, as shown in Figure 2-6 and Figure 1 at the end of the manual.

WARNING

ELECTRIC SHOCK HAZARD

Do not apply AC power until all other electrical connections and installation procedures are complete.

Failure to comply with these instructions could result in death or serious injury.

DC and Communications Wiring Connections

DC power and communications wiring connections are made between the control module and display, using the display cable provided, as shown in Table 2-1 and Table 2-2, below, and in Figure 1 at the back of the manual. Refer also to Figure 2-6.

Table 2-1. DC Wiring Connections, LMI Panel Mount

Display Connector Inputs	Wire Color	Control Module Outputs
+24 Vdc	Red	+24 Vdc
0 Vdc	Black	0 Vdc

Table 2-2. Communications Wiring Connections, LMI Panel Mount

Display Connector	Wire Color	Communications Module
SD	White	RD
RD	Green	SD
SG	Shield	SG

Connecting Input Wiring

You can make up to four input connections to the LMI:

- Machine cycle sensor (PNP) input
- Run/idle contact input
- Scrap contact input
- Setup mode input

You must wire either a Cycle Sensor or a Run/Idle contact input in order for LMI to detect that the machine is running. If you want LMI to also count parts, you must wire the Cycle Sensor input. The Scrap contact input should be wired if you want LMI to maintain a scrap count, the Setup mode input if you want LMI to maintain the current machine state and suspend counting of parts during machine setup.

To make wiring connections, run the input wires you intend to use through flexible liquid tight conduit and into the rear knockout at the bottom right of the LMI enclosure or to the appropriate location on your console. If you ordered the enclosure, it is rated NEMA 12 (protected against dust and oil), and you must use NEMA-12-rated conduit and make proper connections to ensure NEMA 12 protection.

NOTICE

You should run +24 Vdc input wires in the same conduit as machine inhibit output wires. See *Connecting Machine Inhibit Output Wiring*, page 2-14.

Wiring a Cycle Sensor Input

The Cycle Sensor input maintains a count of machine cycles, incrementing LMI's Good Parts Counter each time the input transitions from low (approximately 0 Vdc) to high (+24 Vdc). The cycle sensor should be installed in a location where it can sense the completion of a machine cycle and actuate each time a part is made. The sensor should be a PNP, solid-state device. If the monitored machine is used in high-speed applications of greater than 300 cycles per second, the Cycle input should operate with a 50% duty cycle.

You need three wires for the machine cycle sensor connections: an output wire, a ground wire, and a 24 Vdc power wire. To wire the sensor, do the following:

- Connect the PNP Output wire to input pin "X0" on the LMI control module (see Figure 2-7, page 2-13 and Figure 1 at the end of the document).
- Connect the Ground wire to the input "COM" pin on the control module.
- Connect the Power In wire to the output pin labelled "+24 VDC" on the control module.

No settings are required for the Cycle Sensor input, but there are three optional settings:

- You can add a delay time to the actuation of the Cycle Sensor, enabling you to make accurate parts counts when multiple sensor actuations occur during a single cycle.
- You can configure the units/time (e.g., cycles/min., feet/hr., etc.) in which the production rate is calculated and the number of Cycle Sensor input pulses that produce each unit.
- If you wire and enable a Run/Idle contact, LMI by default reports a Running state when the Cycle Sensor actuates following actuation of the Run/Idle contact. You can change this setting so the LMI reports that the machine is running when only the Run/Idle contact actuates.
- If you do not wire a Run/Idle contact, you can configure the LMI to use the Cycle Sensor input to determine when the machine is running by setting the Production Idle Timer.

See *Configuring the Cycle Input*, page 3-3 for instructions on how to make these settings.

You can view the state (Off or On) of the Cycle Sensor input on the Input Status screen (see *Viewing Input Status*, page 3-12).

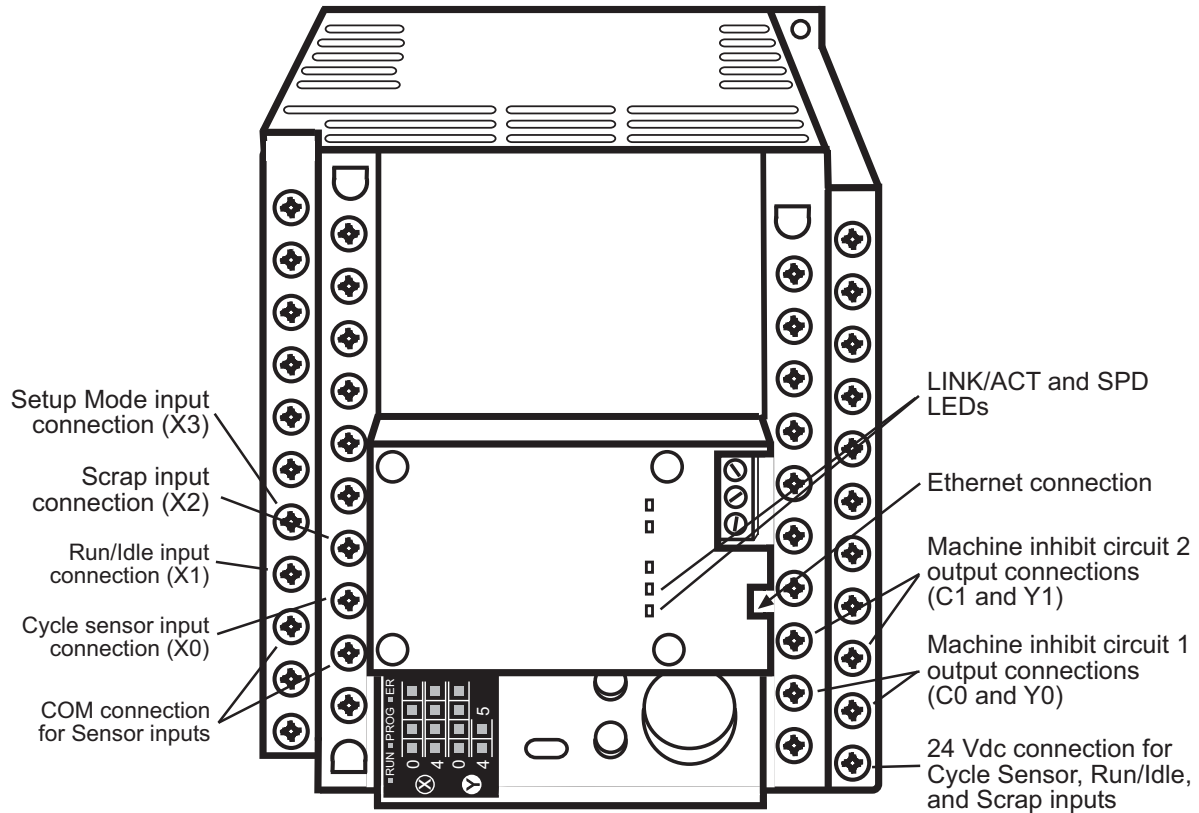


Figure 2-7. LMI Control Module with Input, Output, and Ethernet Connections Labelled

Wiring a Run/Idle Input

The Run/Idle input enables the LMI to detect when the machine is running and when it is stopped. Whenever this input is high (i.e., +24 Vdc), the LMI detects that the machine is running (i.e., in the Running state) and reports that status to LETS. Whenever the input is low (i.e., 0 Vdc), the LMI detects that the machine is stopped (i.e., in the Idle state) and reports an Idle status to LETS unless a downtime reason is selected.

To wire a Run/Idle contact input using a dry contact, connect one wire to input pin “X1” on the LMI control module and the other wire to the output pin labelled “+24 VDC” on the control module (see Figure 2-7 and Figure 1).

You must enable the Run/Idle input in order for the LMI to use it to detect changes in machine state. When the input is enabled, you can stipulate that the Cycle Sensor input must actuate after the Run/Idle input actuates in order for the LMI to report that the machine is in the Running state. Instructions in how to make these settings are provided in *Configuring the Run/Idle Input*, page 3-8.

The Run/Idle input must also be enabled to view its state (Off or On) on the Input Status screen (see *Viewing Input Status*, page 3-12).

Wiring a Scrap Input

The Scrap input maintains a count of bad parts, incrementing a scrap counter each time the input transitions from low (approximately 0 Vdc) to high (+24 Vdc).

To wire the Scrap input using a dry contact, connect one wire to input pin “X2” on the LMI control module and the other wire to the output pin labelled “+24 VDC” on the control module (see Figure 2-7 and Figure 1).

NOTICE

If you are installing the LMI on a press brake or other machine that requires multiple cycles to produce a part, wire an N/O push-button momentary switch between X2 and +24 Vdc.

You must enable the Scrap input in order for the LMI to maintain a count of scrap (see *Configuring the Scrap Input*, page 3-11 for instructions). The Scrap input must also be enabled to view its status on the Input Status screen (*Viewing Input Status*, page 3-12).

Wiring a Setup Mode Input

The Setup Mode input instructs the LMI to ignore the Run/Idle and Cycle inputs whenever the input transitions from low (approximately 0 Vdc) to high (+24 Vdc). This input enables the machine the LMI is monitoring to be run in a non-production mode, such as during setup or troubleshooting, without the LMI responding to changes in running state or to machine cycles. During these non-production periods, the LMI holds the current machine state, including the downtime reason if one is in effect, and does not count parts.

The Setup Mode input should be connected to a switch or output from the machine control that actuates (i.e., goes to +24 Vdc) whenever the machine is not in production mode, such as a setup or programming switch or a switch that places the machine in Jog or Inch mode.

To wire a Setup Mode input, connect one wire to input pin “X3” on the LMI control module and the other wire to the output pin labelled “+24 VDC” on the control module (see Figure 2-7 and Figure 1).

You can view the state (Off or On) of the Setup Mode input by checking the *Disable Inputs* indicator on the Input Status screen (see *Viewing Input Status*, page 3-12).

Connecting Machine Inhibit Output Wiring

To make wiring connections for one or two machine inhibit output circuits, do the following, referring to Figure 2-7 and to Figure 1 at the end of the manual. Make sure to number all wires in a way consistent with your machine’s electrical prints.

1. Determine how you will run the wires from your machine control to the LMI control module outputs. Refer to your machine control manual or other electrical prints. You need two wires for each machine inhibit circuit.
2. Run the machine inhibit circuit wires to LMI through flexible liquid tight conduit to the rear knockout at the bottom right of the LMI enclosure or to the appropriate location on

your console. If you ordered the enclosure, it is rated NEMA 12 (protected against dust and oil), and you must use NEMA-12-rated conduit and make proper connections to ensure NEMA 12 protection.

NOTICE

You should run machine inhibit output wires in the same conduit as +24 Vdc input wires. See *Connecting Input Wiring*, page 2-11.

3. Connect the wires for one machine inhibit circuit to output terminals C0 and Y0 on the LMI control module. These outputs are dry-contact (2A @ 250 Vac or 30 Vdc).
4. If you wish to wire a second machine inhibit circuit, make connections to output terminals C1 and Y1 on the control module, which are also dry-contact (2A @ 250 Vac or 30 Vdc).

Connecting LMI to Your Ethernet

To connect the LMI to your Ethernet, do the following:

1. Run an Ethernet cable through flexible liquid tight conduit into the front knockout at the bottom right of the LMI enclosure or to the appropriate location on your console. If you ordered the enclosure, it is rated NEMA 12 (protected against dust and oil), and you must use NEMA-12-rated conduit and make proper connections to ensure NEMA 12 protection.
2. Plug the Ethernet cable into the Ethernet connector on the LMI communications module (see Figure 2-7 for location).

Checking Wiring Connections

Before using LMI, perform the following checks to make sure that you have wired the unit correctly.

Checking Power Connections

To check LMI power connections, do the following:

1. If you have an LMI enclosure, connect AC wires from the enclosure to the power source. If you have an LMI panel mount, make sure that your AC power supply is connected.
2. Turn on power to LMI.

The LMI Main Menu, shown in Figure 2-8, page 2-16, should display, with the message “Push Return to Production when ready to run” displayed at the top of the screen.

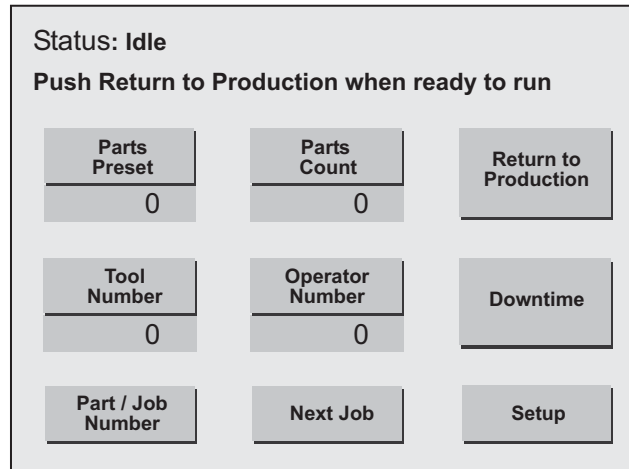


Figure 2-8. LMI Main Menu with “Push Return to Production” Prompt

3. If the Main Menu does not display, turn off power to LMI and recheck all power connections.
4. If the power connections check out and you still cannot get the Main Menu to display, call Wintriss Tech. Support.

Checking Input Wiring

To check that your input wiring connections have been made properly, do the following:

1. Locate the input/output LED display on the LMI control module (see Figure 2-9, page 2-17). The states of the inputs X0 through X7 are shown in the two rows of LEDs to the right of the letter “X.” The first row contains the LEDs for the Cycle, Run/Idle, Scrap, and Setup Mode inputs, as shown in the figure.
2. To test an input connection, apply voltage to that input. If the connection is good, the LED should illuminate, as shown for the Cycle input in Figure 2-9.
3. If the LED for the input you are testing does not illuminate, turn off power to the LMI and check the wiring connection, making corrections as necessary.
4. If the input connection checks out and the LED still does not illuminate, call Wintriss Tech. Support.
5. Repeat steps 2 through 4 for each input you want to test.

You can also check input connections on the Input Lines screen (see *Viewing Input Status*, page 3-12). Simply apply voltage to the desired input, and check the state displayed for that input. The state should change from “Off” to “On.”

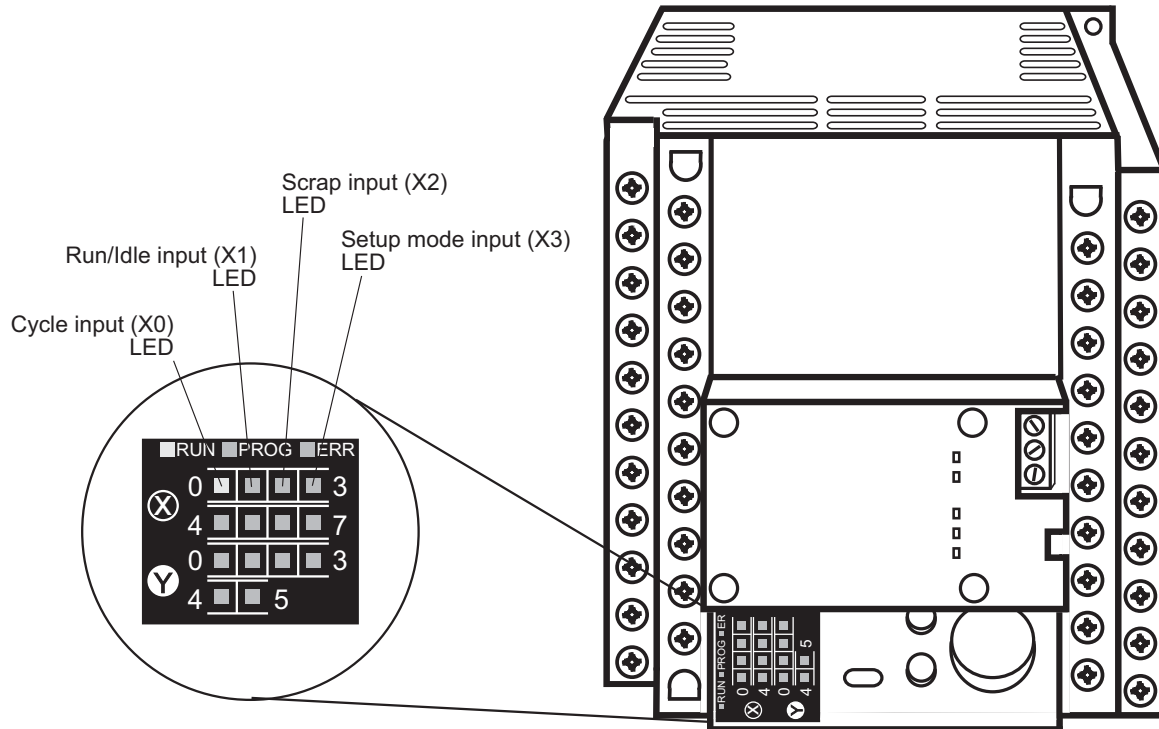


Figure 2-9. LMI Control Module with Input/Output LED Display

Checking Machine Inhibit Output Wiring

The machine inhibit circuit prevents the machine from being restarted after the interval programmed for the Forced Dialog Timer has elapsed and the Select Downtime Reason screen (see Figure 2-12, page 2-19) has displayed. To check the wiring connections for this circuit, do the following:

1. On the LMI Main Menu, press the *Setup* button.
2. When the Setup Menu displays, press the *Forced Dialog Settings* button. The Forced Dialog Settings screen, shown in Figure 2-10, page 2-18, displays.
3. On the Forced Dialog Settings screen, make sure that the status message beneath the *Forced Dialog Mode* button is “Enabled w/Manual Backfill,” the default setting. If the status is “Disabled,” press the *Forced Dialog Mode* button to change the message to “Enabled w/Manual Backfill.”

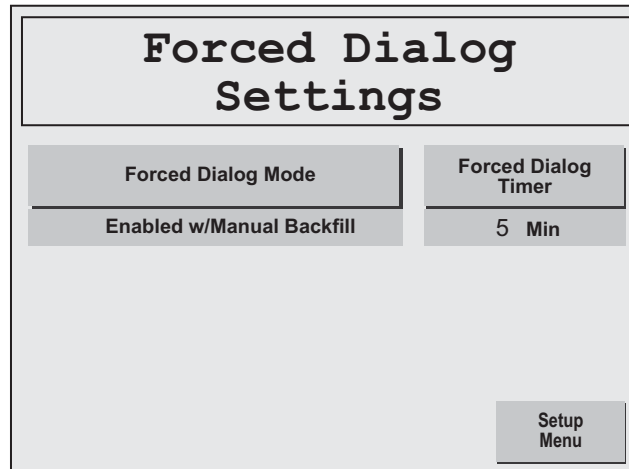


Figure 2-10. Forced Dialog Settings Screen

4. The time interval displayed beneath the *Forced Dialog Timer* button should be “5 Min,” the default setting. You can set it to a different interval (e.g., 1 minute, 10 minutes, etc.) by pressing the *Forced Dialog Timer* button, which displays the Forced Dialog Timer screen (see Figure 2-11). The current timer setting is displayed as a flashing number in reverse video just above the *CLR* key.

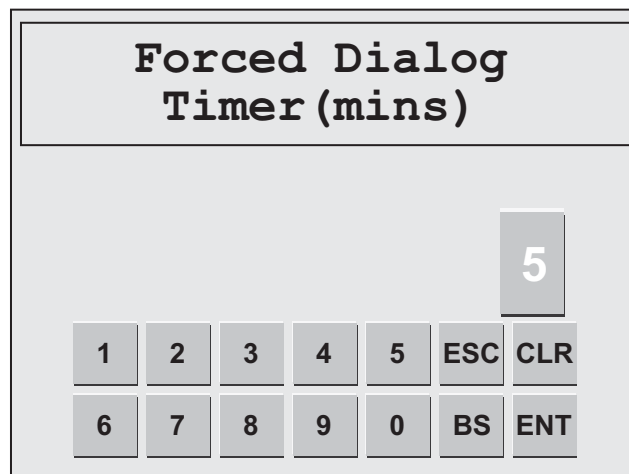


Figure 2-11. Forced Dialog Timer Screen

5. To test the output wiring, decrease the Forced Dialog Timer setting to 1 minute by pressing the *1* key (the number in the flashing display changes to “1”), then the *ENT* (for ENTER) key.

You are returned to the Forced Dialog Settings screen with the setting “1 Min” displayed in the window beneath the *Forced Dialog Timer* button.

6. If your Machine Inhibit output wiring is correct, you should be unable to restart the machine after one minute has elapsed and the Select Downtime Reason screen (see Figure 2-12, page 2-19) has displayed.

Forced Downtime Selection Page 1	Changeover	Select
	Planned Downtime	Select
	Mechanical Problem	Select
	Electrical Problem	Select
Previous Page	QA Inspection	Select
Next Page	Waiting for Operator	Select

Figure 2-12. Select Downtime Reason Screen

If you are able to restart the machine after a minute has elapsed, check the Machine Inhibit output wiring.

7. If the Machine Inhibit circuit is wired correctly and you are unable to prevent the machine from restarting after the forced dialog time, call Wintriss Tech. Support.
8. When you are finished, reset the Forced Dialog Timer to 5 minutes, the default setting, or to a different setting of your choice.

Checking Ethernet Connectivity

To check that LMI is properly connected to your Ethernet, do the following:

1. Verify that the green LINK/ACT and SPD LEDs on the communications module are illuminated (see Figure 2-7 for location).
2. If one or both of these LEDs are not lit, check the connection between your Ethernet cable and the Ethernet connector.
3. If the Ethernet connection checks out and one or both of the LEDs still do not come on, call Wintriss Tech. Support.

Setting the IP Address

You must set the LMI’s IP address in order for the unit to communicate with LETS. To do so, you download Configurator WD from the Panasonic Web site to a computer or server on the same network as the LMI you want to configure. Configurator WD is compatible with the following Windows operating systems: 2000, XP, 2003/2008 Server, Vista, and Windows 7.

To set the IP address for the LMI, perform the following steps:

1. Access the Panasonic download site at <http://pewa.panasonic.com/downloads/>. A screen like the one shown in Figure 2-13, page 2-20 displays.

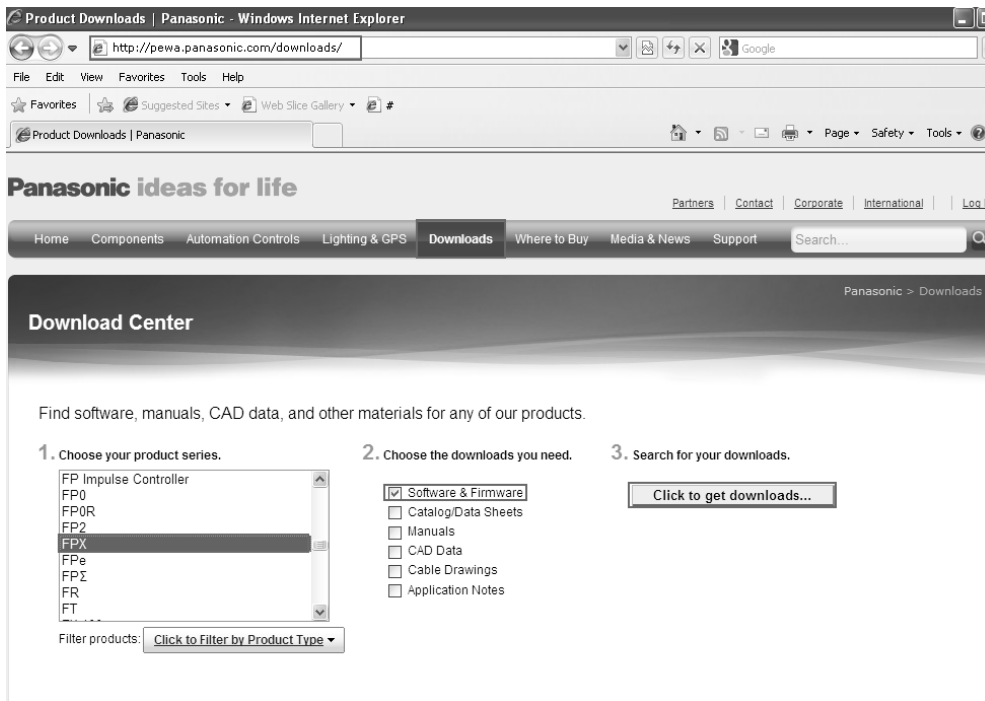


Figure 2-13. Panasonic Download Center Screen

2. Scroll through the list of products under “Choose your product series,” and highlight *FPX*.
3. Unselect all items under “Choose the downloads you need” except *Software & Firmware*, leaving the check mark in the selection box for that item.
4. Click on the *Click to get downloads...* button under “Search for your downloads.” A screen like the one shown in Figure 2-14, page 2-21 displays, showing the software and firmware available for the *FPX* item you selected in step 2.



Figure 2-14. Panasonic Download Center Screen Showing List of Software and Firmware

- Click on *ConfigWD v1.50* in the Download Name column. If a more recent version of Configurator WD is displayed, click on that version. A screen captioned File Download displays (see Figure 2-15).



Figure 2-15. File Download Screen

- Click on the *Open* button to download the compressed Configurator WD software. A window captioned "WinZip" opens, displaying the Configurator WD executable file (e.g., configwd_freew150.exe).
- Double-click on the file, and follow the instructions in the series of InstallShield Wizard screens to install Configurator WD on the computer.
- When a window opens displaying the Configurator WD application file, click on the Configurator WD icon to open the application. A screen like the one shown in Figure 2-16, page 2-22 displays.

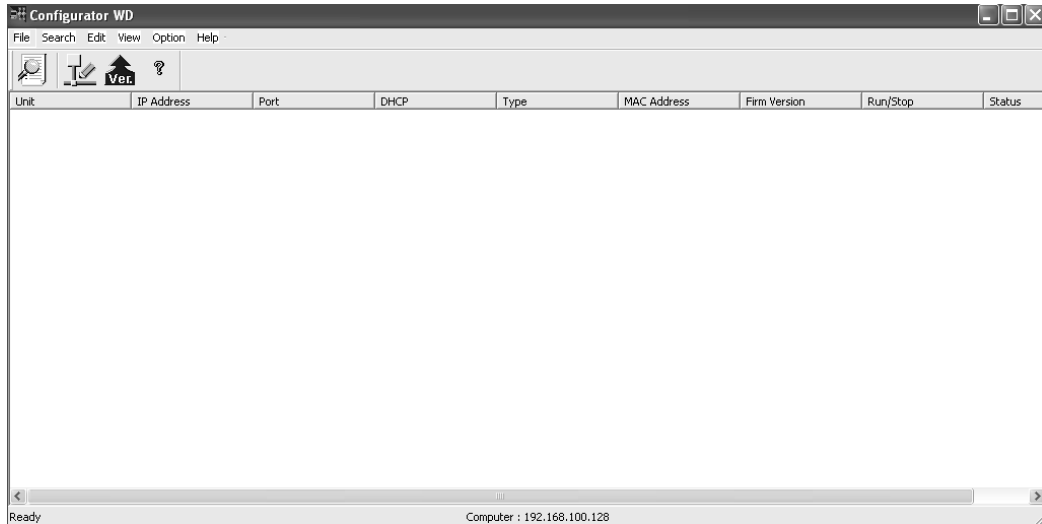



Figure 2-16. Configurator WD Screen

9. With all LMIs on your network connected and powered on, click on the *Search Unit* button (). A line of information for each network LMI is displayed, including its serial number, shown in the Unit column, and MAC address (see Figure 2-17). You can verify these identifiers. The serial number is located on the LMI's mounting flange, the MAC address on the side of the communications module (see Figure 1-1, page 1-1).

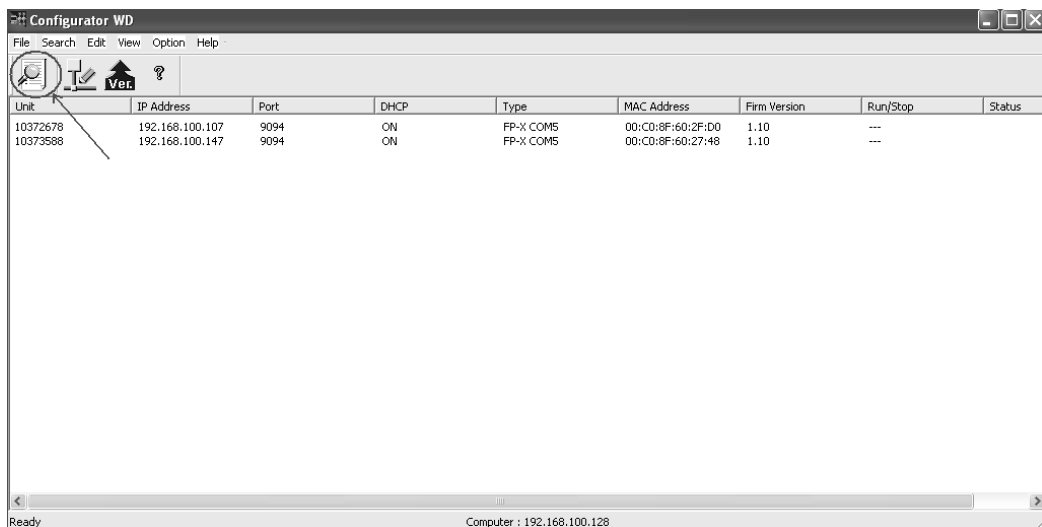



Figure 2-17. Configurator WD Screen with LMI Units Displayed

10. Select the LMI for which you want to set the IP address by clicking on it. That line of information is highlighted.
11. Click on the *Setting IP Address* button (). Refer to Figure 2-18, page 2-23 for location.

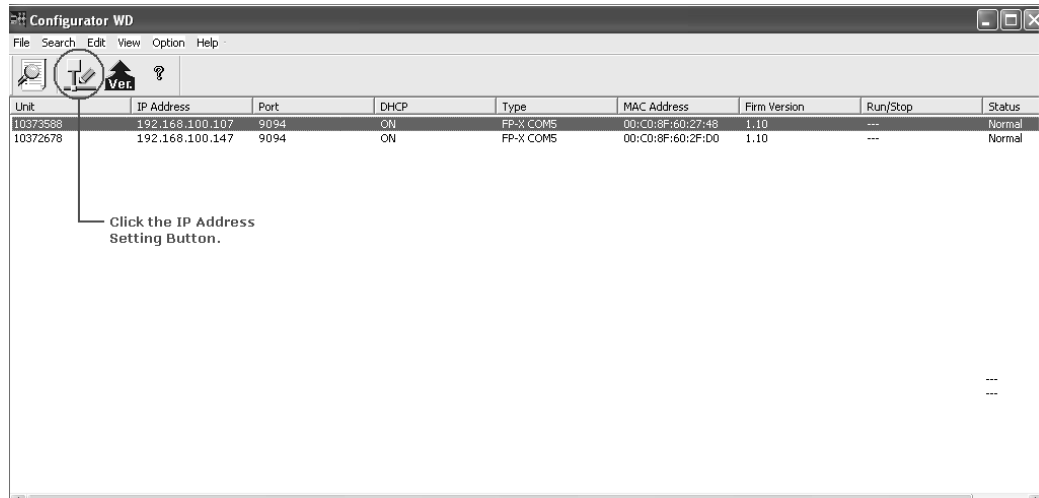


Figure 2-18. Configurator WD Screen with LMI Unit Selected

The Setting IP Address screen displays (see Figure 2-19) with the serial number of the LMI you selected displayed in the **Unit Name** field.

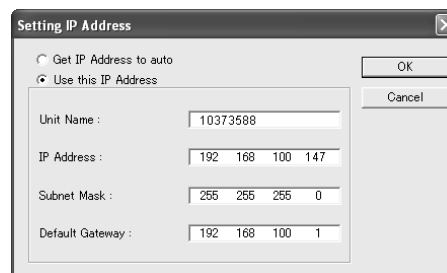


Figure 2-19. Setting IP Address Screen

NOTICE

LETS requires that LMIs with which it communicates be set with fixed IP addresses.

12. Click on the “Use this IP address” radio button to select it if it is not already selected. The three fields beneath **Unit Name** become undimmed.
13. Enter the required information in the **IP Address**, **Subnet Mask**, and **Default Gateway** fields, clicking first in each field to select it.

NOTICE

Wintriss recommends that you not change the **Unit Name** setting.

14. Click on the **OK** button. The message shown in Figure 2-20, page 2-24 displays.

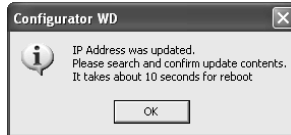


Figure 2-20. Configurator WD Message Screen

15. Wait about 10 seconds, then click on the *OK* button in the message window.
16. Search for the LMI, as instructed in the message, to verify that the IP address you set is displayed (see step 9).
17. Click on *File | Exit* to exit the Configurator WD application.

Chapter 3. Setup

This chapter shows you how to set up the LMI, providing instructions for configuring inputs and making production, Forced Dialog, and security settings. The chapter is organized in the following sections:

- *Accessing the Setup Menu* (below)
- *Configuring Inputs* (page 3-2)
- *Making Production Settings* (page 3-13)
- *Making Forced Dialog Mode Settings* (page 3-18)
- *Making Security Settings* (page 3-20)
- *Viewing Technical Support Contact Information* (page 3-24)

NOTICE

For help with any LMI screen, touch the screen in its upper left-hand corner.

Accessing the Setup Menu

When you power up the LMI, the Main Menu displays with the prompt “Push Return to Production when ready to run” shown beneath the Status message (see Figure 2-8, page 2-16). The status of the machine the LMI is monitoring will be “Changeover,” “Planned Downtime,” or “Unplanned Downtime” if this was the machine state when the LMI was powered down; otherwise, the status of the machine will be “Idle.” Press the *Return to Production* button to clear the prompt. The Main Menu should now look like the example shown in Figure 3-1. Note that the Status message is “Idle.”

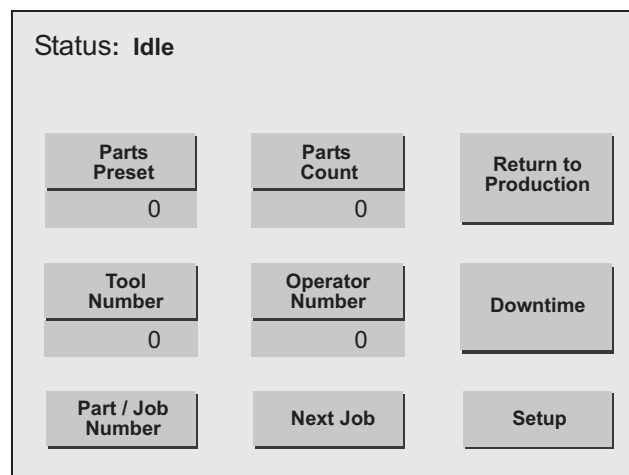


Figure 3-1. LMI Main Menu

To access the Setup Menu (see Figure 3-2, page 3-2) from the Main Menu, press the *Setup* button.

NOTICE

Access to the Setup Menu may require entry of the system password (see page 3-21). If the Password screen displays when you press the *Setup* button, press the number key(s) for the current password, and press *ENT* (Enter).

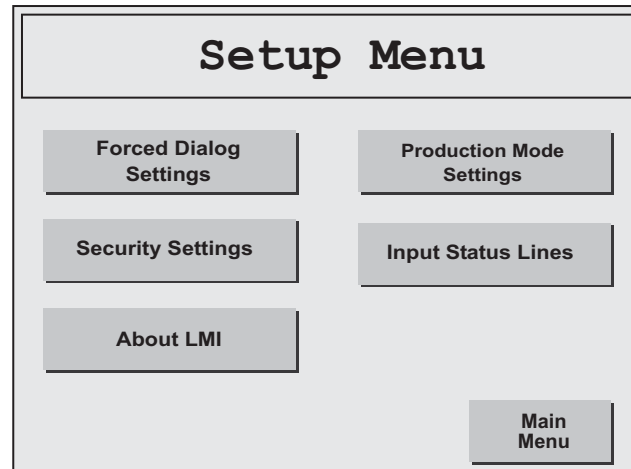


Figure 3-2. Setup Menu

The buttons on the Setup Menu allow you to perform the following functions:

- *Input Status Lines*—Allows you to configure and view the state (Off/On) of LMI inputs
- *Production Settings*—Allows you to set the Production Rate Calculation Interval and Production Idle Timer and enable the optional LETS Scheduling module
- *Forced Dialog Settings*—Allows you to enable Forced Dialog Mode and the set the Forced Dialog Timer
- *Security Settings*—Allows you to change the LMI system password and require operator entry of the password for access to the Setup Menu and to the “Adjust Scrap” function. Also allows you to restore LMI settings to their factory defaults.
- *About LMI*—Allows you to view the Wintriss Tech. Support phone number as well as the current LMI firmware version numbers and password code, which you may need to provide when you contact Wintriss. The password code is also displayed on the Adjust Scrap Data and OP/Cycle Ratio screen (see page 4-3).

Configuring Inputs

The following sections show you how to configure the Cycle, Run/Idle, and Scrap inputs and view the state (Off/On) of these inputs as well as that of the Setup Mode input. You access the screens on which you make these settings from the Input Lines Menu (see Figure 3-3, page 3-3), which you select by pressing the *Input Status Lines* button on the Setup Menu.

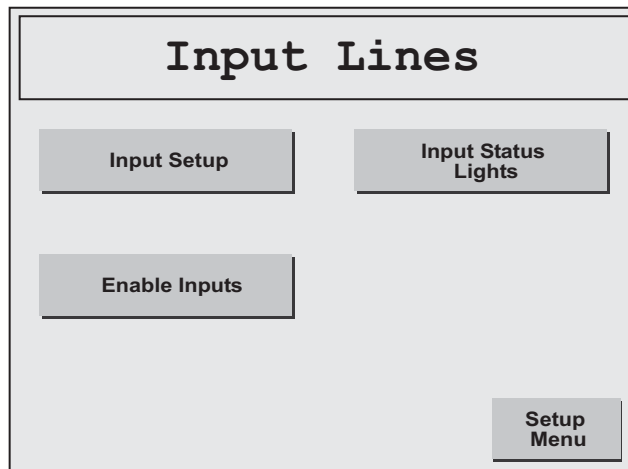


Figure 3-3. Input Lines Menu

Configuring the Cycle Input

If you have wired a PNP-type cycle sensor to the LMI (see *Connecting Input Wiring*, page 2-11), the Input Lines menu provides access to optional settings you can make to configure the input and a screen on which you can view the input's state (Off or On).

Adding a Delay Time

If the machine you are monitoring uses a multi-step process that requires more than one cycle to produce a part, you can add a “delay time” to the cycle input to prevent subsequent cycles that occur within that time window from being recorded as good parts. You access the screen on which you make this setting by pressing the *Input Setup* button on the Input Lines menu, displaying the Input Setup menu (see Figure 3-4),

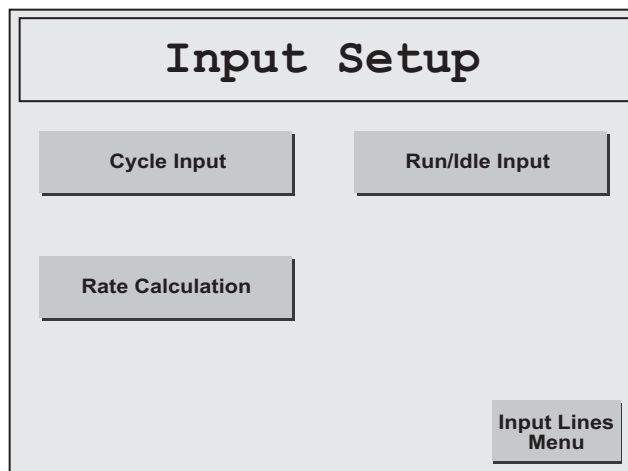


Figure 3-4. Input Setup Menu

then pressing the *Cycle Input* button to display to the Cycle Input Setup screen (see Figure 3-5, page 3-4).

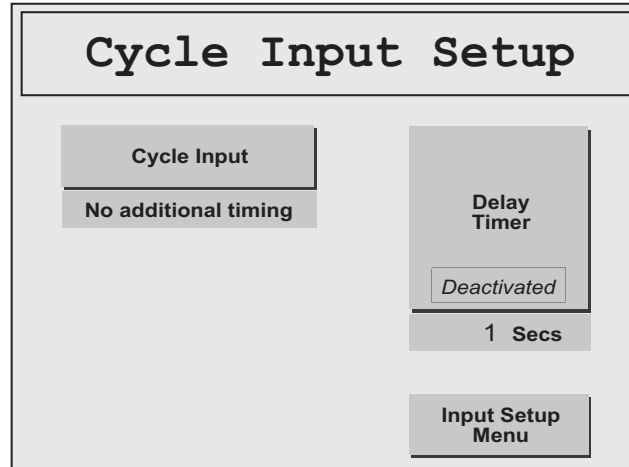


Figure 3-5. Cycle Input Setup Screen with Default Settings Displayed

The default setting for the Cycle input is “No additional timing,” as shown in the Cycle Input window. When this setting is selected, the LMI counts each machine cycle as a good part. To add a “delay time” between cycles, do the following:

1. Press the *Cycle Input* button to toggle the setting in the Cycle Input window to “Off Delay.” The Status message on the *Delay Timer* button changes from “Deactivated” to “For Off Delay,” as shown in Figure 3-6. The value shown in the Delay Timer window in the figure is the default setting, 1 second.

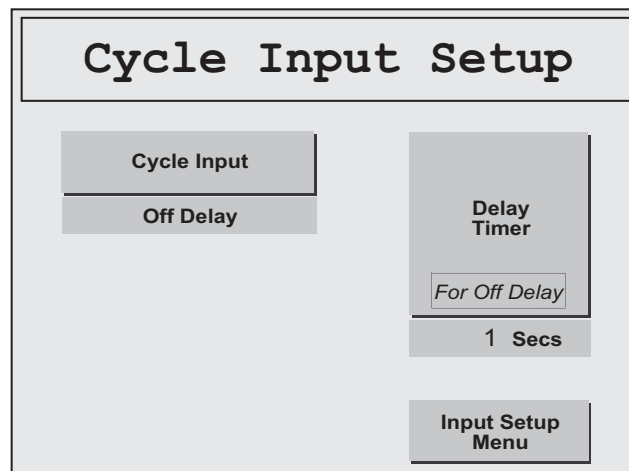


Figure 3-6. Cycle Input Setup Screen with “Off Delay” Settings Displayed

2. Press the *Delay Timer* button. The Time Delay screen, shown in Figure 3-7, page 3-5, displays with the current delay time (default is 1 second) displayed above the CLR key, the final digit shown in flashing reverse video.

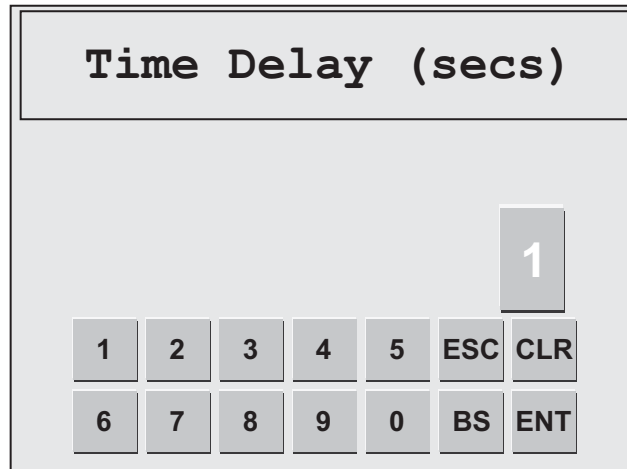


Figure 3-7. Time Delay Screen

3. Press the *CLR* (Clear) key to clear the current delay time setting, press the number key(s) for the delay time you want (your entry appears in the display above the *CLR* key), and press *ENT* (Enter). You are returned to the Cycle Input Setup screen with your entry displayed in the Delay Timer window.

NOTICE

The maximum value you can enter on the Time Delay screen is 3600 seconds. When you attempt to enter a value greater than the maximum, your entry defaults to "3600."

NOTICE

To clear an entry on the Time Delay screen, press *CLR* (Clear). To clear the last number you entered and backspace to your previous position, press *BS* (Back Space). To exit the screen without making an entry, press *ESC* (Escape).

4. Press the *Input Setup Menu* button to return to the Input Setup menu.
5. Press the *Input Lines Menu* button to return to the Input Lines menu.

Configuring the Cycle Input for a Production Rate

The Cycle input can be configured so the LMI is able to calculate a production rate in the units and time interval appropriate to virtually any machine. To configure the Cycle input, you specify a unit/time period (e.g., items/minute, feet/minute, etc.) and the number of cycles, or pulses, required to produce each unit. You make these settings on the Rate Calculation screen (see Figure 3-8, page 3-6), which you access on the Input Setup menu (see Figure 3-4, page 3-3) by pressing the *Rate Calculation* button.

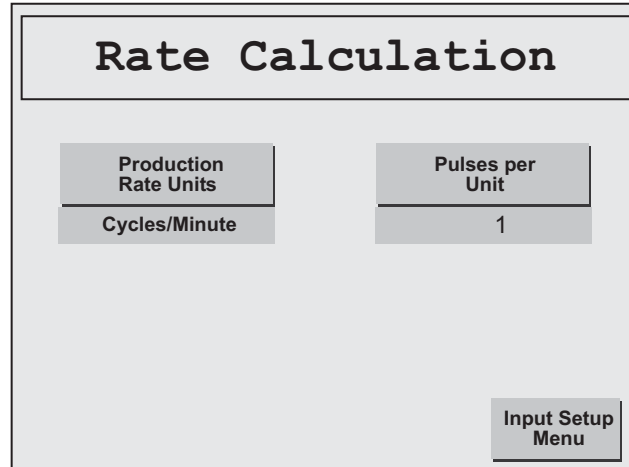


Figure 3-8. Rate Calculation Screen with Default Settings Displayed

EXAMPLE 1

The LMI is installed on a CNC machine that produces a part every few minutes. The Cycle input pulses once for each part produced. You would set the Production Rate Units item on the Rate Calculation screen to “Items/Hour” and the Pulses per Unit item to “1.”

EXAMPLE 2

The LMI is installed on a continuous plating line. The Cycle input pulses 16 times for each foot of travel. You would set Production Rate Units to “Feet/Minute” and Pulses per Unit to “16.”

To configure the Cycle input for a production rate, perform the following steps:

1. Press the *Production Rate Units* button on the Rate Calculation screen repeatedly until the units/time period setting you want displays in the Production Rate Units window. Available settings are: Cycles/Minute, Cycles/Hour, Feet/Minute, Feet/Hour, Meters/Minute, Meters/Hour, Items/Minute, and Items/Hour.
2. Press the *Pulses per Unit* button. A screen like the one shown in Figure 3-9, page 3-7 displays with the current pulses/unit setting (default is 1 second) displayed above the *CLR* key, the final digit shown in flashing reverse video. The screen is captioned “Pulses Per Cycle,” “Pulses Per Foot,” “Pulse Per Meter,” or “Pulses Per Item,” depending on the Production Rate Units option you selected in step 1.
3. Press the *CLR* (Clear) key to clear the current pulses/unit setting, press the number key(s) for the number of pulses you want (your entry appears in the display above the *CLR* key), and press *ENT* (Enter). You are returned to the Rate Calculation screen with your entry displayed in the Pulses per Unit window.

NOTICE

The maximum value you can enter on the Pulses per Unit screen is 1024 seconds. When you attempt to enter a value greater than the maximum, your entry defaults to “1024.”

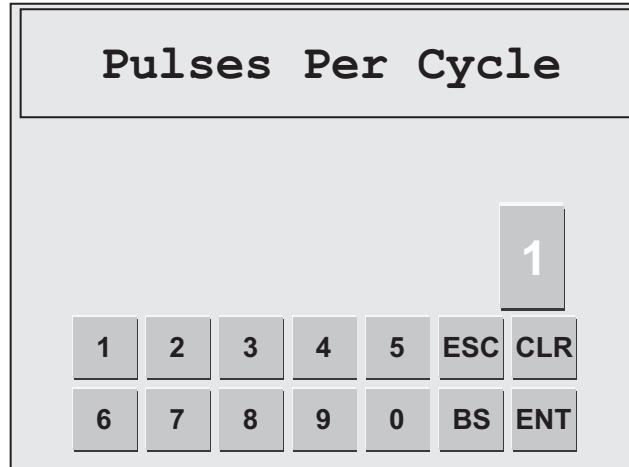


Figure 3-9. Pulses per Unit Screen

NOTICE

To clear an entry on the Pulses Per Unit screen, press *CLR* (Clear). To clear the last number you entered and backspace to your previous position, press *BS* (Back Space). To exit the screen without making an entry, press *ESC* (Escape).

4. Press the *Input Setup Menu* button to return to the Input Setup menu.
5. Press the *Input Lines Menu* button to return to the Input Lines menu.

Once you have configured the Cycle input for production units, time interval, and pulses per unit, you must select a Production Rate Calculation Interval on the Production Settings screen (see page 3-14). This setting specifies the method LMI uses to calculate the production rate.

Configuring the Cycle Input to Indicate a “Running” State

The following sections show you how to configure the Cycle input to indicate a “Running” machine state when a Run/Idle input is not wired or when a Run/Idle input is wired.

Configuring the Cycle Input When the Run/Idle Input Is Not Wired

If you have not wired a Run/Idle input to indicate the change from an “Idle” to a “Running” state, you can set the Cycle input so that its 24 Vdc signal is used by the LMI to indicate that the machine is running. To do so, you set the Production Idle Timer (see *Setting the Production Idle Timer*, page 3-15). The Run/Idle input must be disabled in order to make this setting.

Configuring the Cycle Input When the Run/Idle Input Is Wired

If you have wired a Run/Idle input to indicate the change from an “Idle” to a “Running” state, you can set the Cycle input so that its 24 Vdc signal in conjunction with the 24 Vdc signal from the Run/Idle input is used by the LMI to indicate that the machine is running. To do so, you make a setting on the Enable Inputs screen (see *Configuring Run/Idle and Cycle Inputs to Operate Independently*, page 3-10).

Viewing the State of the Cycle Input

You can view the state (Off or On) of the Cycle input on the Input Status screen (see *Viewing Input Status*, page 3-12).

Configuring the Run/Idle Input

If you have wired a Run/Idle contact to the LMI, the Input Lines menu (see Figure 3-3) provides access to optional settings you can make to configure the input and a screen on which you can view the input's state (Off or On).

Enabling the Run/Idle Input

If you want the LMI to use the Run/Idle input to detect the change from an “Idle” to a “Running” machine state, you must enable the input. To do so, perform the following steps:

1. On the Input Lines menu, press the *Enable Inputs* button. The Enables Inputs screen, shown in Figure 3-10, displays.

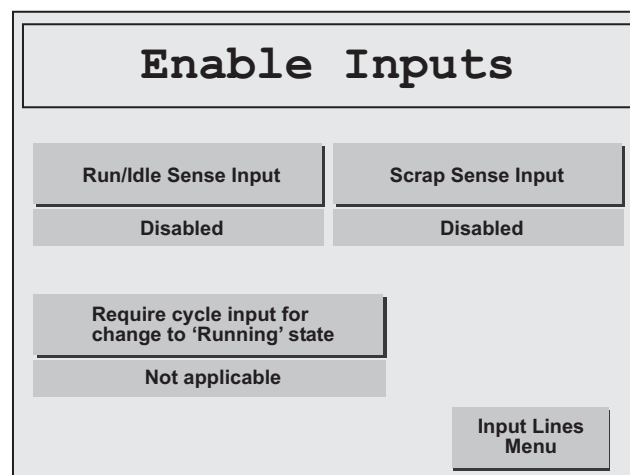


Figure 3-10. Enable Inputs Screen with Default Settings Displayed

2. Press the *Run/Idle Sense Input* button to toggle the setting in the Run/Idle Sense Input window from “Disabled,” the default, to “Enabled.”

Note that the setting in the “Require cycle input for change to ‘Running’ state” window changes from “Not applicable” to “Yes.” When the Run/Idle input is enabled and a Cycle input is wired, the LMI by default records an “Idle”-to-“Running” machine state change only when the Cycle input turns on immediately after the Run/Idle input turns on. If you wish to configure the LMI so that the Run/Idle input signal is used alone to indicate that the machine is running, refer to *Configuring Run/Idle and Cycle Inputs to Operate Independently*, page 3-10).

3. Press the *Input Lines Menu* button to return to the Input Lines menu.

Adding a Delay Time

You can add a “delay time” to the Run/Idle input just as you can for the Cycle input, but the Run/Idle input must be enabled for LMI to implement the setting. To add a delay time, perform the following steps:

1. Enable the Run/Idle input if you have not already done so (see *Enabling the Run/Idle Input*, page 3-8).
2. On the Input Lines menu, press the *Input Setup* button. The Input Setup menu displays (see Figure 3-4).
3. Press the *Run/Idle Input* button to display the Run/Idle Input Setup screen (see Figure 3-11).

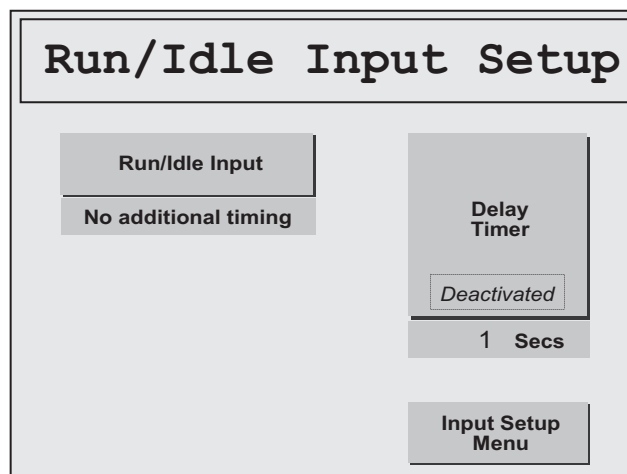


Figure 3-11. Run/Idle Input Setup Screen with Default Settings Displayed

The default setting for the Run/Idle input is “No additional timing,” as shown in the Run/Idle Input window in Figure 3-11. When this setting is selected, the LMI records each 24 Vdc signal from the Run/Idle input as a machine state change from “Idle” to “Running.”

4. Press the *Run/Idle Input* button to toggle the setting in the Run/Idle Input window from “No additional timing,” the default, to “Off Delay.” The Status message on the *Delay Timer* button changes from “Deactivated” to “For Off Delay,” as shown in Figure 3-12, page 3-10. The value shown in the Delay Timer window in the figure is the default setting, 1 second.

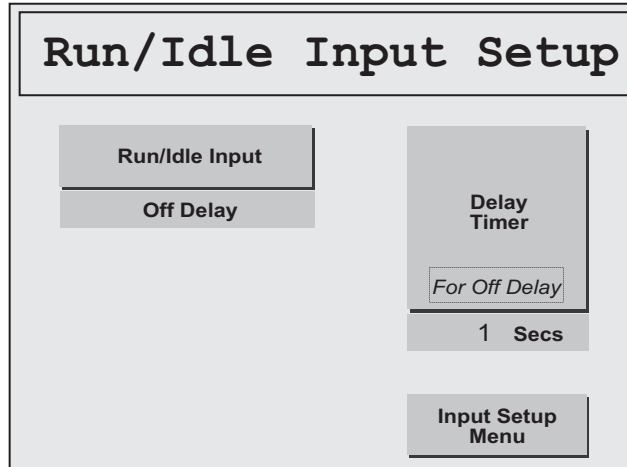


Figure 3-12. Run/Idle Input Setup Screen with “Off Delay” Setting Displayed

5. Press the *Delay Timer* button. The Time Delay screen (see Figure 3-7), displays with the current delay time (default is 1 second) displayed above the *CLR* key, the final digit shown in flashing reverse video.
6. Press the *CLR* (Clear) key to clear the current delay time setting, press the number key(s) for the delay time you want (your entry appears in the display above the *CLR* key), and press *ENT* (Enter). You are returned to the Run/Idle Input Setup screen with your entry displayed in the Delay Timer window.

NOTICE

The maximum value you can enter on the Time Delay screen is 3600 seconds. When you attempt to enter a value greater than the maximum, your entry defaults to “3600.”

NOTICE

To clear an entry on the Time Delay screen, press *CLR* (Clear). To clear the last number you entered and backspace to your previous position, press *BS* (Back Space). To exit the screen without making an entry, press *ESC* (Escape).

7. Press the *Input Setup Menu* button to return to the Input Setup menu.
8. Press the *Input Lines Menu* button to return to the *Input Lines* menu.

Configuring Run/Idle and Cycle Inputs to Operate Independently

If you have wired both Run/Idle and Cycle inputs and have enabled the Run/Idle input (see page 3-8), the LMI is set by default to record an “Idle”-to-“Running” machine state change only when the Cycle input turns on immediately after the Run/Idle input turns on. If you wish to configure the LMI so that the Run/Idle input signal is used alone to indicate the change to a “Running” state, perform the following steps:

1. On the Input Lines menu, press the *Enable Inputs* button. If you have enabled the Run/Idle input, the Enable Inputs screen that displays should look like the example shown in Figure 3-13.

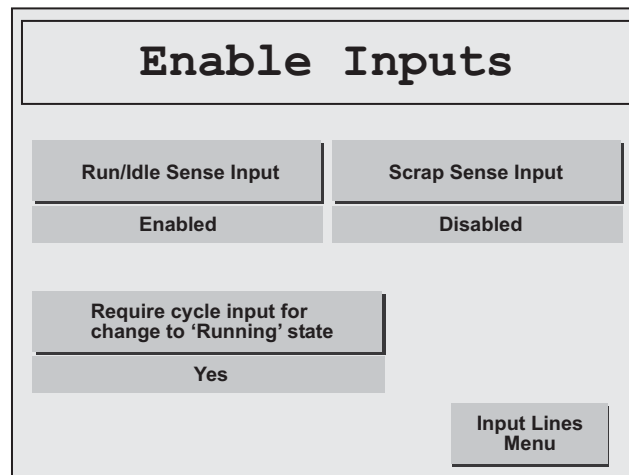


Figure 3-13. Enable Inputs Screen with Run/Idle Input Enabled

2. Verify that the Run/Idle input is enabled. If it isn't, enable it, following the instructions on page 3-8.
3. Press the *Require cycle input for change to 'Running' state* button to toggle the setting in the window beneath the button from “Yes,” the default setting when the Run/Idle input is enabled, to “No.”

The LMI will now record a machine state change from “Idle” to “Running” only when the Run/Idle input is high (i.e., 24 Vdc).

4. Press the *Input Lines Menu* button to return to the Input Lines menu.

Viewing the State of the Run/Idle Input

You can view the state (Off or On) of the Run/Idle input on the Input Status screen (see *Viewing Input Status*, page 3-12).

Configuring the Scrap Input

If you have wired a Scrap input to the LMI, the Input Lines menu (see Figure 3-3) allows you to enable the Scrap input and view the input's state (Off or On).

Enabling the Scrap Input

If you have wired a Scrap input to the LMI and you want the LMI to increment the scrap counter when the machine makes a bad part, you must enable the Scrap input. To do so, perform the following steps:

1. On the Input Lines menu, press the *Enable Inputs* button. The Enables Inputs screen displays (see Figure 3-10).

2. Press the *Scrap Sense Input* button to toggle the setting in the Scrap Sense Input window from “Disabled,” the default, to “Enabled.”
3. Press the *Input Lines Menu* button to return to the Input Lines menu.

Viewing the State of the Scrap Input

You can view the state (Off or On) of the Scrap input on the Input Status screen (see *Viewing Input Status*, next).

Viewing Input Status

The Input Lines menu provides access to a screen on which you can view the state (Off or On) of the Cycle, Run/Idle, Scrap, and Setup Mode inputs. You access the Input Status screen (see Figure 3-14) by pressing the *Input Status Lights* button.

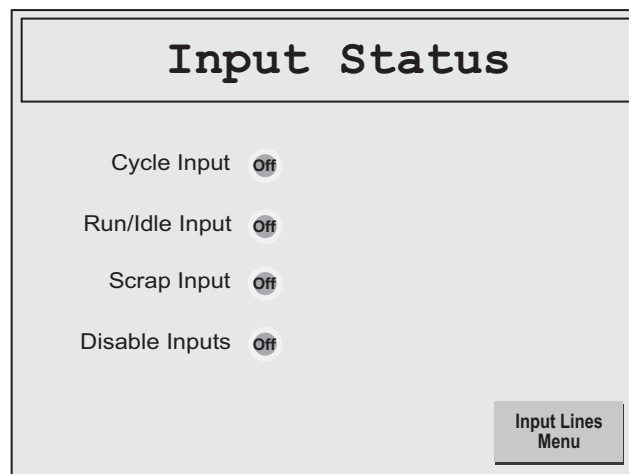


Figure 3-14. *Input Status Screen with All Inputs in “Off” Status*

The Input Status screen displays an Off/On indicator to the right of the caption for each input. (“Disable Inputs” is the caption for the Setup Mode input.) When an input is not energized (i.e., when 0 Vdc is applied to the input), its indicator is unlit and displays the status “Off.” When the input is energized (i.e., 24 Vdc is applied to the input), the indicator becomes lit and displays the status “On,” in large letters, as shown for the Cycle Input in Figure 3-15, page 3-13.

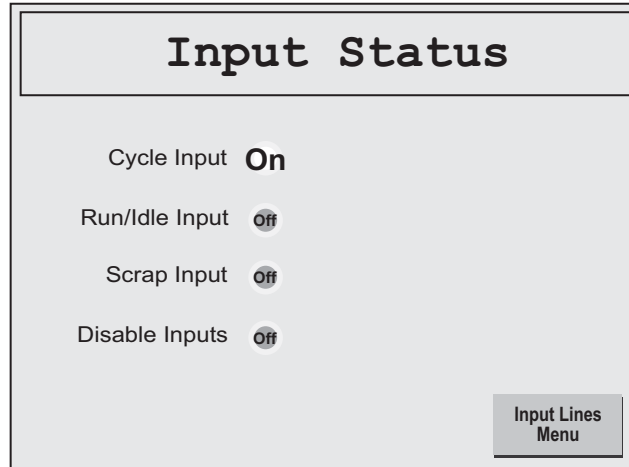


Figure 3-15. Input Status Screen with Cycle Input in “On” Status

You can also view the state of your inputs on the input/output LED display on the LMI control module (see *Checking Input Wiring*, page 2-16).

Making Production Settings

The following sections show you how to set the interval LMI uses to calculate the production rate, specify the period of time LMI waits after activation of the Cycle input before changing the machine state from “Running” to “Idle,” and enable the LETS Scheduler if this feature is a LETS option. You make these settings on the Production Settings screen (see Figure 3-16), which you access from the Setup Menu by pressing the *Production Mode Settings* button (see Figure 3-2).

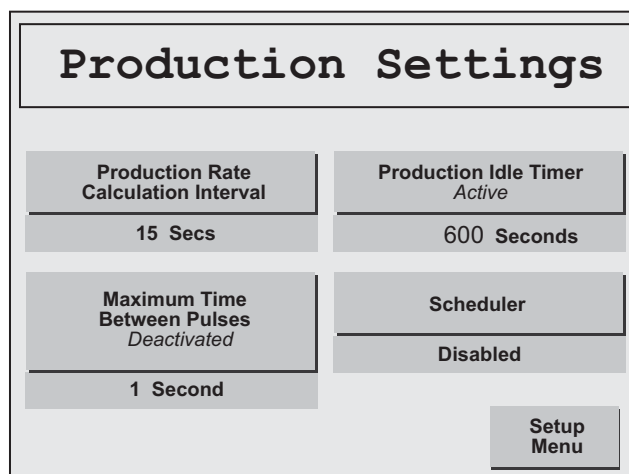


Figure 3-16. Production Settings Screen with Defaults Displayed

Setting the Production Rate Calculation Interval

The Production Rate Calculation Interval setting enables you to specify how the LMI calculates the production rate of the monitored machine. The method LMI uses depends on the type of machine being monitored. The setting you select should be appropriate to the production units/time interval entries you made for the Cycle sensor on the Rate Calculation screen (see page 3-5).

If the machine is one on which it is appropriate to measure the production rate in parts or cycles per unit of time (e.g., stamping press, CNC machine, etc.) and you have set Production Rate Units to “Items/Minute,” “Items/Hour,” “Cycles/Minute,” or “Cycles/Hour” (see page 3-6), you should select one of the numeric settings (i.e., 15, 30, 60, or 120 seconds). The LMI counts the number of cycles that occur within the interval you choose and multiplies the result by the ratio of 60 seconds to the interval, producing multipliers of 4 (i.e., 60/15), 2 (60/30), 1 (60/60), and 1/2 (60/120). The default setting is 15 seconds, as shown in Figure 3-16. Wintriss recommends that you set the calculation interval based on the number of strokes, or parts, the machine makes in a minute, as shown in Table 3-1.

Table 3-1. Production Rate Calculation Interval Settings

Production Rate (Parts/Minute)	Calculation Interval Settings (Seconds)
More than 10	15
4-10	30
2-3	60
One (1) or less	120

If the machine is one on which the production rate is most effectively measured in distance travelled per unit of time (e.g., powder paint line, continuous plating line, etc.) and you have set Production Rate Units to “Feet/Minute,” “Feet/Hour,” “Meters/Minute,” or “Meters/Hour”, you should select the “Instantaneous” setting (see Figure 3-17).

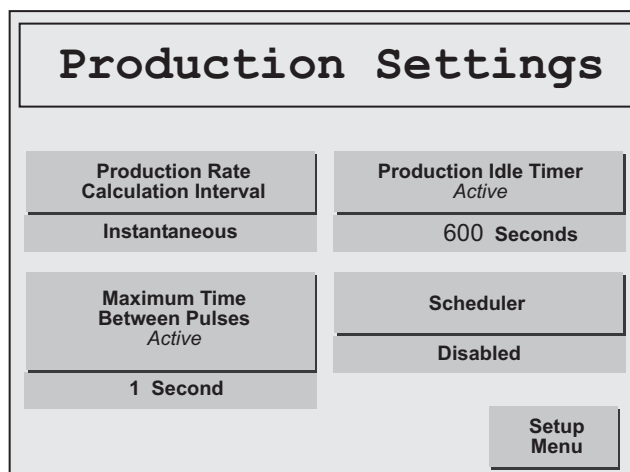


Figure 3-17. Production Settings Screen with “Instantaneous” Setting

When the Production Rate Calculation Interval is set to “Instantaneous,” the LMI measures the time between cycles, or pulses, and calculates a production rate based on the Production Rate Units and Pulses per Unit settings on the Rate Calculation screen.

EXAMPLE

If the time between pulses is 4 seconds and Production Rate Units is set to “Feet/Minute” and Pulses per Unit to “3,” the production rate would be 5 feet/minute (i.e., $60 \text{ seconds}/4 \text{ seconds}=15 \text{ pulses}$; $15 \text{ pulses}/3 \text{ pulses per unit}=5 \text{ feet/minute}$).

If you select the “Instantaneous” setting, you must also specify a Maximum Time Between Pulses to enable the LMI to monitor the production rate accurately during machine interruptions. (Note that the status displayed at the bottom of the *Maximum Time Between Pulses* button changes from “Deactivated” to “Active” when the “Instantaneous” item is selected in the Production Rate Calculation Interval window.) Whenever the interval between pulses exceeds this value, LMI assumes that the machine is down and stops counting cycles and calculating production rates. After two successive pulses with an acceptable interval following an interruption, the LMI resumes counting/calculating. The Maximum Time Between Pulses default is 1 second.

EXAMPLE

If the time between pulses is 4 seconds, as in the example above, set the Maximum Time Between Pulses to 5 seconds as a starting point.

To make Production Rate Calculation Interval settings, perform the following steps:

1. Press the *Production Rate Calculation Interval* button until the setting you want displays in the Production Rate Calculation Interval window. The setting cycles from 15 to 30, 60, and 120 seconds and, then, to “Instantaneous” each time you press the button.

When you select “Instantaneous,” the status at the bottom of the *Maximum Time Between Pulses* button changes from “Deactivated” to “Active.”

2. If you selected “Instantaneous” in step 1, press the *Maximum Time Between Pulses* button until the setting you want displays in the Maximum Time Between Pulses window. The setting cycles from 1 second to 3, 5, 10, 20, 30, 60, 90, and 120 seconds.
3. Press the *Setup Menu* button to return to the Setup Menu.

Setting the Production Idle Timer

The Production Idle Timer setting allows you to set up the Cycle input so that LMI can use its +24 Vdc signal to detect when the machine is running. Normally, LMI uses the signal from the Run/Idle input to detect the machine’s “Running” state, but if you can’t or don’t want to wire a Run/Idle input, you can use the Cycle input with the Production Idle Timer setting instead.

The Production Idle Timer setting specifies an interval during which the machine can be idle without LMI reporting a change in machine state from “Running” to “Idle.” Without this setting, LMI would detect, and report to LETS, that the machine was “Running” each time the Cycle input went to +24 Vdc and that the machine was “Idle” each time the Cycle input went

to 0 Vdc. The result would be an alternating series of “Running” and “Idle” states that would not accurately reflect a period of continuous Run operation.

To remedy this problem, you set a time window after activation of the Cycle input within which LMI ignores all 0 Vdc Cycle input signals, maintaining the initial Running state. As long as LMI receives at least one additional Cycle input actuation within the idle timer window, it does not report any “Idle” time. If the idle timer window expires before LMI receives a subsequent +24 Vdc signal from the Cycle input, it reports the next 0 Vdc signal as “Idle” time.

Wintriss recommends that you start with a Production Idle Timer setting of approximately one and a half times the normal cycle rate of the machine. So, for example, if the machine produces 15 parts per minute, the normal cycle time would be 4 seconds, and the recommended Production Idle Timer setting would be 6 seconds. If this initial setting results in an excessive number of alternating, short-duration Running/Idle states in the LETS database, you should lengthen the idle timer window.

You cannot set the Production Idle Timer unless the Run/Idle input is disabled (see *Enabling the Run/Idle Input*, page 3-8). If the Run/Idle input is set to “Enabled,” the status message on the *Production Idle Timer* button will be “Deactivated.”

The Production Idle Timer default setting is 600 seconds. The maximum value you can set is 3600 seconds.

To set the Production Idle Timer, do the following:

NOTICE

The *Production Idle Timer* button must be in an “Active” state in order to set the Production Idle Timer interval. If the status message “Deactivated” is displayed, you must disable the Run/Idle input in order to make a setting (see page 3-8).

1. On the Production Settings screen, press the *Production Idle Timer* button. The Production Idle Timer screen displays (see Figure 3-18, page 3-17) with the current timer setting (default is 600 seconds) displayed above the *CLR* key, the final digit shown in flashing reverse video.
2. Press the *CLR* (Clear) key to clear the current timer setting, press the number key(s) for the idle time value you want (your entry appears in the display above the *CLR* key), and press the *ENT* (Enter) key. You are returned to the Production Settings screen with your entry displayed in the Production Idle Timer window.

NOTICE

The maximum value you can enter on the Production Idle Timer screen is 3600 seconds. When you attempt to enter a value greater than the maximum, your entry defaults to “3600.”

3. Press the *Setup Menu* button to return to the Setup Menu.

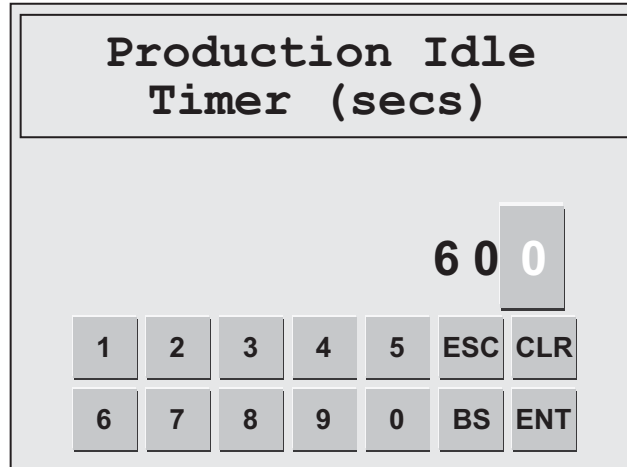


Figure 3-18. Production Idle Timer Screen with Default Setting Displayed

Enabling the Optional LETS Scheduling Module

NOTICE

If you enable the optional Scheduling module, all jobs run on the machine monitored by the LMI are scheduled in LETS. Make sure to enter and load at the LMI all tool numbers to be used on that machine so LETS can “discover” them, create tool records with associated part and job numbers, and make this information available to the Scheduler. See *Entering and Loading Tools When Scheduler Is Installed*, page 4-8 for instructions).

If your LETS installation includes the Scheduling option, you can use the *Scheduler* button on the Production Settings screen to enable it. The default setting for the *Scheduler* button is “Disabled,” the setting you should use if the Scheduling module is not part of your LETS installation.

To enable the Scheduler, do the following:

1. On the Production Settings screen, press the *Scheduler* button. The setting in the Scheduler window toggles from “Disabled” to “Enabled” (see Figure 3-19, page 3-18).
2. Press the *Setup Menu* button to return to the Setup Menu.

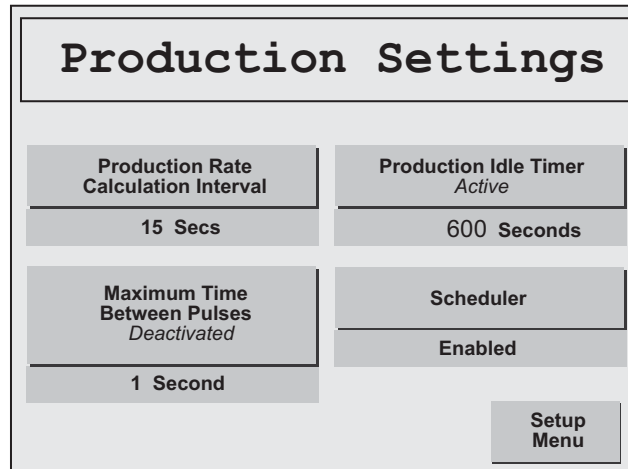


Figure 3-19. Production Settings Screen with Scheduler Enabled

Making Forced Dialog Mode Settings

The LMI is configured by default to force the operator to document each period of “Idle” time longer than 5 minutes with a downtime reason. This setting is called Forced Dialog Mode. If the machine remains idle beyond this 5-minute window, LMI activates the machine inhibit relays, preventing the operator from restarting the machine until he has selected a downtime reason for that period of Idle time.

LMI provides the Forced Dialog function to minimize the amount of Idle time reported to LETS, allowing Idle time to be documented as one of a programmable list of downtime categories (e.g., mechanical problem, electrical problem, QA inspection, etc.).

You can change the Forced Dialog defaults on the Forced Dialog Settings screen (see Figure 3-20), which you access from the Setup Menu by pressing the *Forced Dialog Settings* button. When you are finished, you can return to the Setup Menu by pressing the *Setup Menu* button.

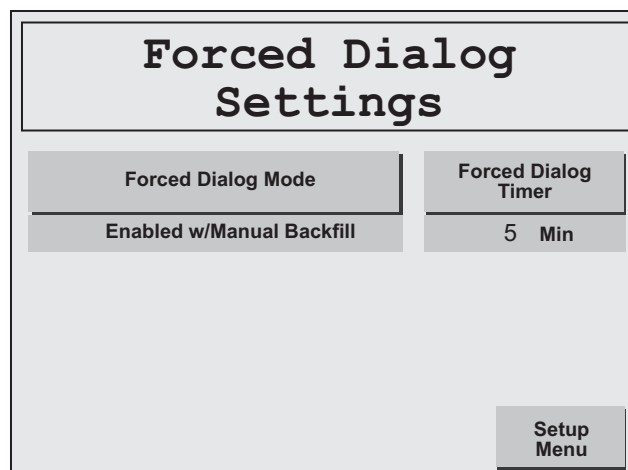


Figure 3-20. Forced Dialog Settings Screen with Default Settings Displayed

Setting Forced Dialog Mode

The Forced Dialog Mode button on the Forced Dialog Settings screen toggles between three settings:

- “Enabled w/Manual Backfill” (Default): Forced Dialog Mode is enabled, and all time occurring after the machine has stopped up to the point when the operator selects a downtime reason can be documented with that downtime reason or left as Idle time, the downtime reason being assigned to all time occurring after selection of the downtime reason and restarting of the machine. The screen on which the operator elects to “backfill” or “forward-fill” the downtime reason is shown in Figure 4-14, page 4-15.

NOTICE

Downtime should only be “forward-filled” when the operator discovers a second downtime reason immediately after selecting the first.

When Forced Dialog Mode is enabled, LMI actuates the inhibit relays whenever the machine has been stopped for longer than the interval specified in the Forced Dialog Timer window, preventing the operator from restarting the machine until he has selected a downtime reason, which LMI then reports to LETS as the “real” reason for the machine being stopped.

- “Enabled w/AutoBackfill”: Forced Dialog Mode is enabled, and all time occurring after the machine has stopped up to the point when the operator selects a downtime reason is automatically documented with that reason. As in the “Enabled w/Manual Backfill” setting, LMI actuates the inhibit relays whenever the machine has been stopped for longer than the interval specified in the Forced Dialog Timer window.
- “Disabled”: Forced Dialog Mode is disabled. When this setting is selected, LMI will not actuate the inhibit relays when the machine has been idle longer than the Forced Dialog Timer setting and will report all time during which the machine is stopped as Idle time.

To change the Forced Dialog Mode setting, do the following:

1. On the Forced Dialog Settings screen, press the Forced Dialog Mode button until the setting you want (i.e., “Disabled,” “Enabled w/AutoBackfill,” or “Enabled w/Manual Backfill”) is displayed in the Forced Dialog Settings window.
2. Press the *Setup Menu* button to return to the Setup Menu.

Setting the Forced Dialog Timer

The Forced Dialog Timer setting specifies the length of time the LMI waits after the machine has stopped before actuating the inhibit relays and preventing the machine from being restarted until entry of a downtime reason. The timer is set to 5 minutes by default, but you can enter timer settings up to 60 minutes. LMI uses the Forced Dialog Timer setting only when Forced Dialog Mode is enabled.

To change the Forced Dialog Timer setting, do the following:

1. On the Forced Dialog Settings screen, press the *Forced Dialog Timer* button. The Forced Dialog Timer screen displays (see Figure 3-21) with the current timer setting (default is 5 minutes) displayed above the *CLR* key, the final digit shown in flashing reverse video.

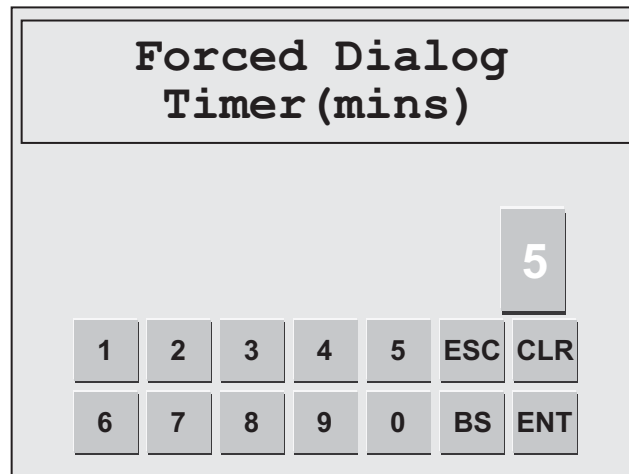


Figure 3-21. Forced Dialog Timer Screen with Default Setting Displayed

2. Press the *CLR* (Clear) key to clear the current timer setting, press the number key(s) for the timer value you want (your entry appears in the display above the *CLR* key), and press the *ENT* (Enter) key. You are returned to the Forced Dialog Settings screen with your entry displayed in the Forced Dialog Timer window.

NOTICE

The maximum value you can enter on the Forced Dialog Timer screen is 60 minutes. When you attempt to enter a value greater than the maximum, your entry defaults to "60."

3. Press the *Setup Menu* button to return to the Setup Menu.

Making Security Settings

The Security Settings screen (see Figure 3-22, page 3-21) allows you to set and change the system password, require a password for user access to the Setup Menu and to the Additional Scrap item on the Adjust Scrap Data and OP/Cycle Ratio screen, and return LMI settings to their factory defaults. You access the Security Settings screen from the Setup Menu by pressing the *Security Settings* button (see Figure 3-2).

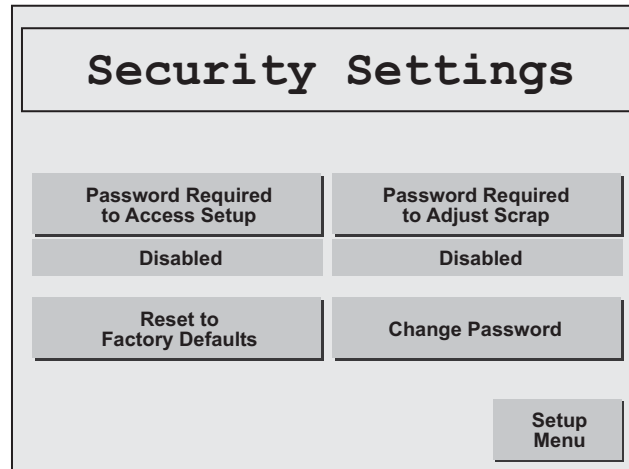


Figure 3-22. Security Settings Screen with Default Settings Displayed

Requiring a Password to Access the Setup Menu

If you wish to restrict access to the Setup Menu, you can require that users enter a password to gain entry. The required password is the system password, which is “0” by default but can be changed via the *Change Password* button (see *Changing the System Password*, page 3-22). To enable the Password Required to Access Setup function, perform the following steps:

1. On the Security Settings screen, press the *Password Required to Access Setup* button to toggle the setting from “Disabled,” the default, to “Enabled.”

When this setting is Enabled, users must enter the system password in order to access the Setup Menu.

2. Press the *Setup Menu* button to return to the Setup Menu.

Requiring a Password to Make “Additional Scrap” Entries

If you wish to restrict access to the “Additional Scrap” function on the Adjust Scrap Data and OP/Cycle Ratio screen (see page 4-7), you can require that users enter a password for entry of “Additional Scrap” items. The required password is the system password, which is “0” by default but can be changed via the *Change Password* button (see *Changing the System Password*, page 3-22). To enable the password requirement for adjusting scrap, perform the following steps:

1. On the Security Settings screen, press the *Password Required to Adjust Scrap* button to toggle the setting from “Disabled,” the default, to “Enabled.”

When this setting is Enabled, users must enter the system password in order to make “Additional Scrap” entries on the Adjust Scrap Data and OP/Cycle Ratio screen.

2. Press the *Setup Menu* button to return to the Setup Menu.

Restoring Factory Default Settings

NOTICE

You should only use the “Reset to Factory Defaults” function when you first install the LMI, reinstall the LMI on a new machine, or need to reset the LMI after certain code updates.

When you execute and confirm a reset, LMI erases all existing settings including downtime reasons.

If it is necessary to restore LMI settings to their factory defaults, perform the following steps:

1. On the Security Settings screen, press the *Reset to Factory Defaults* button. The Confirm Reset screen displays (see Figure 3-23).

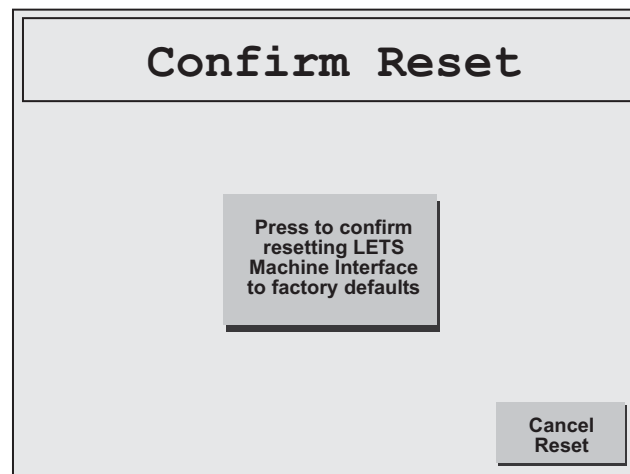


Figure 3-23. Confirm Reset Screen

2. Press the *Press to confirm . . .* button in the middle of the screen. The text block on the *Press to confirm . . .* button is displayed in reverse video while the defaults are being reset. When the process is complete, you are returned to the Main Menu.

Changing the System Password

The system password is a required entry if either the “Password Required to Access Setup” or “Password Required to Adjust Scrap” functions is enabled. The default system password set at the factory is “0” (zero), but you can change it to any numeric value between 0 and 9999.

To change the system password, do the following:

1. On the Security Settings screen, press the *Change Password* button. The Current Password screen displays (see Figure 3-24, page 3-23) with the value “0” displayed in flashing reverse video above the *CLR* key. The displayed setting is always “0” to maintain password security.

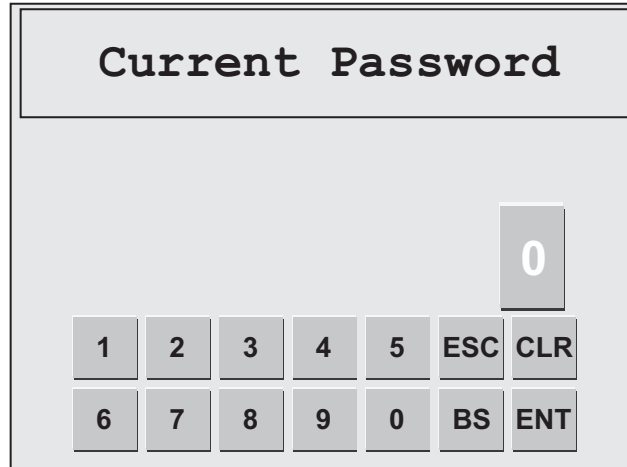


Figure 3-24. Current Password Screen

2. Press the number key(s) for the current password (your entry appears in the display above the *CLR* key), and press the *ENT* (Enter) key.

The New Password screen, which looks identical to the Current Password screen except for its title, displays with the value “0” shown to maintain password security.

NOTICE

If your password entry is incorrect, you are returned to the Security Settings screen, which displays the message “Invalid password entered” beneath the screen title.

NOTICE

If you forget the password, contact Wintriss Tech. Support and provide the password code displayed in the lower left corner of the Adjust Scrap Data and OP/Cycle Ratio screen (see Figure 4-3, page 4-3).

3. Press the number key(s) for the new password value you want (your entry appears in the display above the *CLR* key), and press the *ENT* (Enter) key.

NOTICE

The maximum value you can enter on the New Password and Confirm Password screens is “9999.” When you attempt to enter a value greater than the maximum, you are returned to the Security Settings screen, which displays the message “Password out of range (0-9999)” beneath the screen title.

The Confirm New Password screen, which looks identical to the New Password screen except for its title, displays with the value “0” shown to maintain password security.

4. Press the number key(s) to confirm the password value you entered in step 3 (your entry appears in the display above the *CLR* key), and press the *ENT* (Enter) key.

You are returned to the Security Settings screen. The new password you created must now be entered by each user who attempts to access the Setup Menu or make “Additional Scrap” entries on the Adjust Scrap Data and OP/Cycle Ratio screen if either of these functions has been enabled.

5. Press the *Setup Menu* button to return to the Security Menu.

Viewing Technical Support Contact Information

To display the Wintriss Tech. Support phone number and information you may need when contacting Wintriss, press the *About LMI* button on the Setup Menu (see Figure 3-2). The About LMI screen displays (see Figure 3-25). To return to the Setup Menu, press the *Setup* button.

In addition to the Wintriss Tech. Support phone number, the About LMI screen displays the PLC and HMI code version numbers, which you may be asked to provide when requesting technical support, and the password code, which you will need if you are contacting Tech. Support because you have forgotten the LMI system password. The PLC code version number and password code are also displayed on the Adjust Scrap Data and OP/Cycle Ratio screen (see page 4-3) to provide access to this information when the user is denied entry to Setup Menu.



Figure 3-25. About LMI Screen

Chapter 4. Operation

This chapter shows you how to operate the LMI, using the buttons available on the LMI Main Menu (see Figure 4-1).

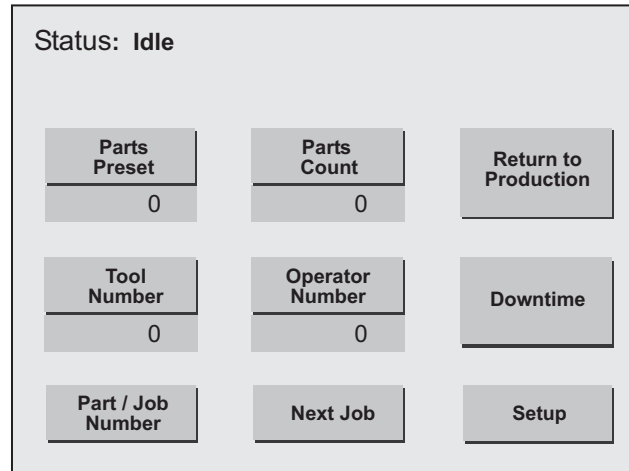


Figure 4-1. LMI Main Menu

The chapter is organized in the following sections:

- *Setting the Parts Preset* (page 4-2)
- *Making Parts and Scrap Count Settings* (page 4-3)
- *Entering and Loading Tool Numbers* (page 4-8)
- *Viewing Tool Numbers When the Machine Is Running* (page 4-12)
- *Loading the Next Job* (page 4-12)
- *Entering the Operator Number* (page 4-13)
- *Selecting Downtime Reasons* (page 4-14)
- *Using the Return to Production Button* (page 4-17)

NOTICE

For help with any LMI screen, touch the screen in its upper left-hand corner.

Setting the Parts Preset

NOTICE

If your LETS installation includes the Scheduling option and you have enabled the Scheduler in LMI (see page 3-17), the Parts Preset is programmed in LETS and downloaded with each new job.

The Parts Preset value, which is displayed in the Parts Preset window on the LMI Main Menu (see Figure 4-1), controls the number of parts that are made on a particular job. When the value in the Parts Count window reaches the Parts Preset setting, LMI stops the machine and displays a “Parts Preset Reached” message on the Status line. To set the Parts Preset, do the following:

1. On the Main Menu, press the *Parts Preset* button. The Parts Preset screen displays (see Figure 4-2) with the current Parts Preset value (default is “0”) displayed above the *CLR* key, the final digit shown in flashing reverse video.

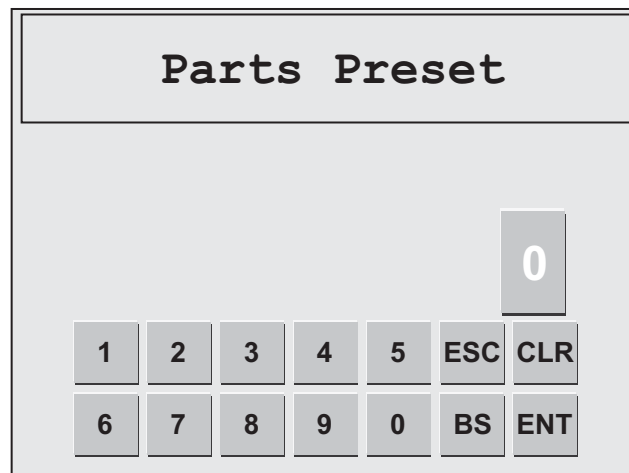


Figure 4-2. Parts Preset Screen with Default Setting Displayed

2. Press the *CLR* (Clear) key to clear the current Parts Preset, press the number key(s) for the Parts Preset value you want (your entry appears in the display above the *CLR* key), and press the *ENT* (Enter) key.

NOTICE

The maximum value you can enter on the Parts Preset screen is “9999999.” When you attempt to enter a value greater than the maximum, your entry defaults to “9999999.”

You are returned to the Main Menu with your entry displayed in the Parts Preset window. When the value in the Parts Count window reaches the Parts Preset you entered, the “Parts Preset Reached” message displays on the Status line.

Making Parts and Scrap Count Settings

You can configure the way the LMI counts parts, allowing you to maintain parts and scrap counts on machines that produce more than one part on each cycle, perform more than one cycle to produce a part, or operate on other parts/cycle ratios. By default, the Cycle input increments the parts counter once for each machine cycle; the Scrap input increments the scrap counter once per cycle. If you want the parts or scrap counter to increment more than once on each cycle, increment once on multiple cycles, or increment more than once on multiple cycles, you make the appropriate settings on the Adjust Scrap Data and OP/Cycle Ratio screen (see Figure 4-3), which you access by pressing the *Parts Count* button on the LMI Main Menu.

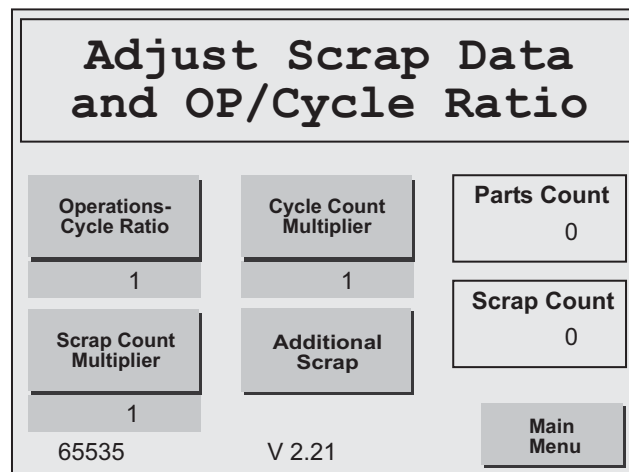


Figure 4-3. Adjust Scrap Data and OP/Cycle Ratio Screen with Default Settings Displayed

You control the number of times the parts counter increments for each 24 Vdc signal from the Cycle input by setting the Cycle Count Multiplier. You specify how many times the scrap counter increments for each Scrap input pulse by setting the Scrap Count Multiplier. To configure the number of machine cycles required to produce a part, you set the Operations-Cycle Ratio. The default value for these settings is “1.”

EXAMPLE 1

The LMI is installed on a press brake that requires four bends to make a part. You would set the Cycle Count and Scrap Count multipliers to “1” and the Operations-Cycle Ratio to “4.”

EXAMPLE 2

The LMI is installed on a metal stamping press using a die that produces four parts on each stroke. You would set the Cycle Count and Scrap Count multipliers to “4” and the Operations-Cycle Ratio to “1.”

EXAMPLE 3

The LMI is installed on a staking machine that produces two parts assemblies for every three machine cycles. You would set the Cycle Count and Scrap Count multipliers to “2” and the Operations-Cycle Ratio to “3.”

If the LMI is installed on a machine that requires multiple cycles to make a part, you should wire a Reset switch to the Cycle Sensor to prevent actuation of the input following

interruption of a multi-operation cycle. The Reset switch synchronizes the Cycle Sensor with the parts counter, assuring that a part is counted only on the final operation of a multi-operation cycle, not on an intermediary operation before the part has been completed.

The Adjust Scrap Data and OP/Cycle Ratio screen also enables you to enter scrap items manually, using the *Additional Scrap* button. In addition, the screen displays the current parts and scrap counts. The password code is shown at the bottom left and PLC version number at the bottom center of the screen (see *Viewing Technical Support Contact Information*, page 3-24 for further details).

The following sections show you how to configure the parts and scrap counters and enter additional scrap.

Configuring the Parts Counter

To set the number of times the parts counter increments for each Cycle input pulse and/or the number of machine cycles required to produce a part, do the following:

1. Press the *Cycle Count Multiplier* button on the Adjust Scrap Data and OP/Cycle Ratio screen. The Cycle Count Multiplier screen displays (see Figure 4-4) with the current Cycle Count Multiplier (default is “1”) displayed above the *CLR* key, the final digit shown in flashing reverse video.

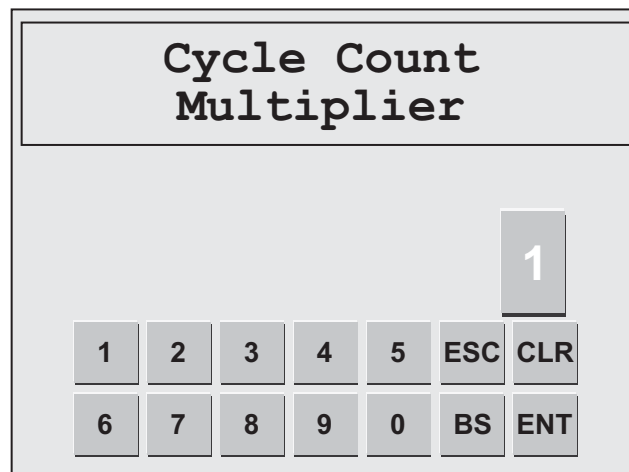


Figure 4-4. Cycle Count Multiplier Screen with Default Multiplier Displayed

2. Press the *CLR* (Clear) key to clear the current multiplier setting, press the number key(s) for the value you want (your entry appears in the display above the *CLR* key), and press the *ENT* (Enter) key. You are returned to the Adjust Scrap Data and OP/Cycle Ratio screen with your entry displayed in the Cycle Count Multiplier window.

NOTICE

The maximum value you can enter on the Cycle Count Multiplier screen is “999.” When you attempt to enter a value greater than the maximum, your entry defaults to “999.”

3. Press the *Operations-Cycle Ratio* button. The Operations Per Cycle screen displays (see Figure 4-5) with the current Operations-Cycle Ratio (default is “1”) displayed above the *CLR* key, the final digit shown in flashing reverse video.

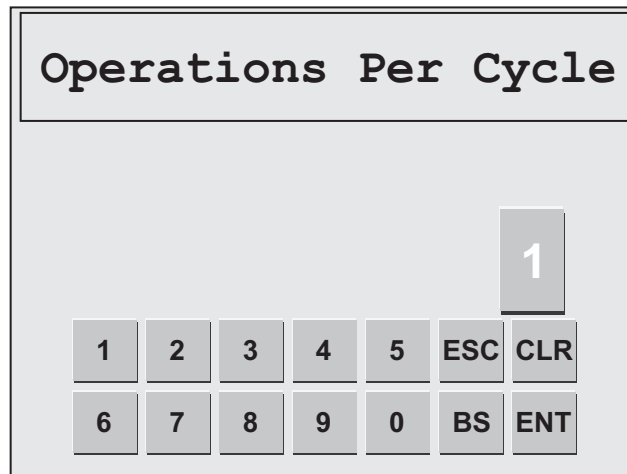


Figure 4-5. Operations Per Cycle Screen with Default Setting Displayed

4. Press the *CLR* (Clear) key to clear the current setting, press the number key(s) for the value you want (your entry appears in the display above the *CLR* key), and press the *ENT* (Enter) key. You are returned to the Adjust Scrap Data and OP/Cycle Ratio screen with your entry displayed in the Operations-Cycle Ratio window.

NOTICE

The maximum value you can enter on the Operations Per Cycle screen is “1024.” When you attempt to enter a value greater than the maximum, your entry defaults to “1024.”

5. Press the *Main Menu* button to return to the Main Menu. If you entered an Operations Per Cycle setting in step 4, that value is displayed at the upper right of the *Parts Count* button. You will also notice that a “0” (zero) displays at the upper left of the *Parts Count* button. This value is a counter that LMI maintains to track the cycles in a multi-cycle operation. During production the counter increments on each cycle, resetting to “0” when the operation has been completed.

NOTICE

If the LMI is installed on a press brake, an N/O push-button momentary switch should be wired to the Scrap input so that multi-cycle operations that are interrupted due to a bad part can be reset to zero. See page 2-14 for wiring instructions.

Configuring the Scrap Counter

To set the number of times the scrap counter increments for each Scrap input pulse, do the following:

1. Press the *Scrap Count Multiplier* button on the Adjust Scrap Data and OP/Cycle Ratio screen. The Scrap Count Multiplier screen displays (see Figure 4-6) with the current Scrap Count Multiplier (default is “1”) displayed above the *CLR* key, the final digit shown in flashing reverse video.

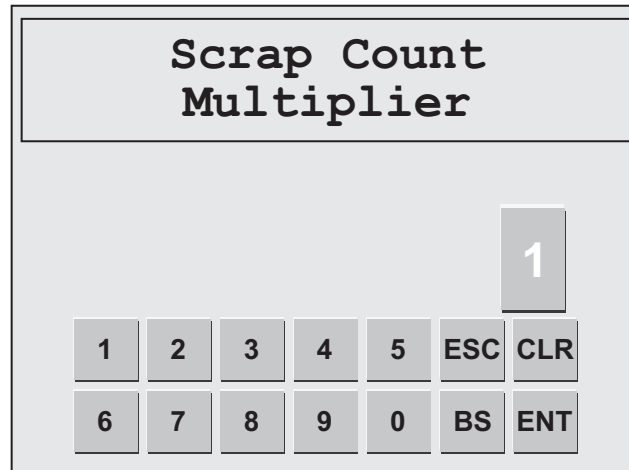


Figure 4-6. Scrap Count Multiplier Screen with Default Multiplier Displayed

2. Press the *CLR* (Clear) key to clear the current multiplier setting, press the number key(s) for the value you want (your entry appears in the display above the *CLR* key), and press the *ENT* (Enter) key. You are returned to the Adjust Scrap Data and OP/Cycle Ratio screen with your entry displayed in the Scrap Count Multiplier window.

NOTICE

The maximum value you can enter on the Scrap Count Multiplier screen is “999.” When you attempt to enter a value greater than the maximum, your entry defaults to “999.”

NOTICE

The setting displayed in the Operations-Cycle Ratio window specifies the number of machine cycles required to produce the number of items set in the Parts Count Multiplier and Scrap Count Multiplier windows. You should already have set this item when you configured the parts counter. If you haven’t, perform step 4 of the *Configuring the Parts Counter* procedure, page 4-5.

3. Press the *Main Menu* button to return to the Main Menu.

Entering Additional Scrap

If you have not wired a Scrap input or need to add scrap items to the automated scrap count, LMI allows you to enter scrap items manually on the Adjust Scrap Data and OP/Cycle Ratio screen. You can also view the current scrap count and compare it to the current parts count. To enter “additional scrap” items, perform the following steps:

1. Press the *Additional Scrap* button on the Adjust Scrap Data and OP/Cycle Ratio screen. The Additional Scrap screen displays (see Figure 4-7) with the value “0” displayed in flashing reverse video above the *CLR* key. The displayed setting is always “0.”

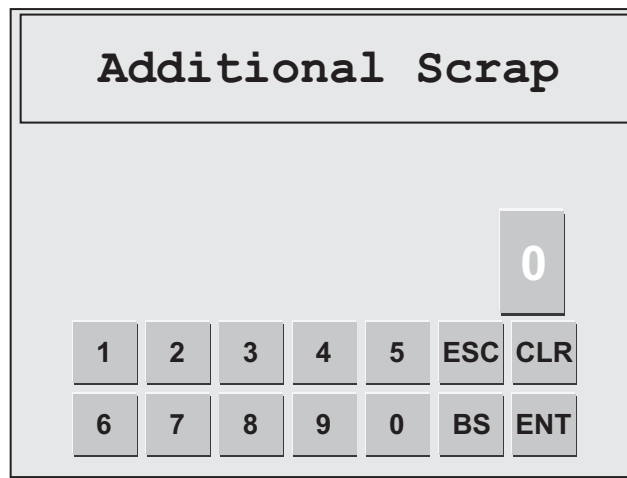


Figure 4-7. Additional Scrap Screen

NOTICE

Access to the “Additional Scrap” function may require entry of the system password (see page 3-21). If the Password screen displays when you press the *Additional Scrap* button, press the number key(s) for the current password, and press *ENT* (Enter).

2. Press the number key(s) for the scrap value you want (your entry appears in the display above the *CLR* key), and press the *ENT* (Enter) key. You are returned to the Adjust Scrap Data and OP/Cycle Ratio screen with your entry added to the current value in the Scrap Count window. The current Parts Count is displayed in the Parts Count window.

NOTICE

The maximum value you can enter on the Additional Scrap screen is “65535.” When you attempt to enter a value greater than the maximum, your entry defaults to “65535.”

NOTICE

The value you enter on the Additional Scrap screen is added to the current value in the Scrap Count window. If, for example, you make an Additional Scrap entry of "5" and the current scrap count is "10," the Scrap Count window would display a value of "15."
Scrap you enter manually is not adjusted by the Scrap Count Multiplier.

3. Press the *Main Menu* button to return to the Main Menu.

Entering and Loading Tool Numbers

The *Tool Number* button on the Main Menu allows you enter tool, part, and job information and load tools.

The *Tool Number* button can only be used when the machine is stopped. If you want to view tool, part, and job number information while the machine is running, use the *Part/Job Number* button (see page 4-12).

The following sections show you how to enter and load tools when the LETS Scheduler is installed and when it is not installed.

Entering and Loading Tools When Scheduler Is Installed

NOTICE

You can only use the *Tool Number* button when the machine is stopped. If you press the button while the machine is running, the message "Function disabled while running" displays beneath the Status line and the Tool/Part/Job Number screen does not appear.

When the LETS Scheduling module is installed and enabled, you use the Tool/Part/Job Number screen to enter tool numbers only. Associations between tools and part and job numbers are created in LETS. You can enter tools individually as you set up and load each job, or you can enter all tools at once when you first set up the LMI. The following procedure shows you how to enter all tools in one session.

1. Verify that the LETS Scheduling module is enabled (see page 3-17).
2. On the Main Menu, press the *Tool Number* button. The Tool/Part/Job Number screen displays with the settings for the last tool, part, and job number displayed (see Figure 4-8, page 4-9). If this is the first time you are accessing this screen, the Tool Number displayed is "0," the default, and no settings are shown for the part and job numbers.

Tool/Part/Job Number	
Tool Number 35	Edit
Part Number J77	Edit
Job Number 354D	Edit
Cancel Changes	Load Job

Figure 4-8. Tool/Part/Job Number Screen

- To enter a new tool number, press the *Edit* button at the right of the Tool Number window. The Tool Number screen displays (see Figure 4-9) with the current tool number displayed above the *CLR* key, the last digit shown in flashing reverse video.

Tool Number						
						3 5
1	2	3	4	5	ESC	CLR
6	7	8	9	0	BS	ENT

Figure 4-9. Tool Number Screen

- Press the *CLR* (Clear) key to clear the current tool number (the default is “0”), press the number key(s) for the value you want (your entry appears in the display above the *CLR* key), and press the *ENT* (Enter) key. You are returned to the Tool/Part/Job Number screen with your entry displayed in the Tool Number window.

NOTICE

The maximum value you can enter on the Tool Number screen is “9999999.” When you attempt to enter a value greater than the maximum, your entry defaults to “9999999.”

5. Press the *Load Job* button at the bottom right of the screen to load the tool number you have created. You are returned to the Main Menu with the message “Control Setup Transition” displayed on the Status line. After a few seconds this message disappears, and the status “Changeover” displays.
6. Press the *Return to Production* button. The Status message changes to “Idle.”
7. Repeat steps 2 through 6 for each tool number you plan to use at the LMI.

Entering and Loading Tools When Scheduler Is Not Installed

If your LETS installation does not have the Scheduling option, association of part and job numbers with tools is performed on the Tool/Part/Job Number screen at the LMI. Only one tool, part, and job number association can be entered at a time. Once tool, part, and job number information has been entered, the tool can be loaded.

To enter and load tools when you do not have the LETS Scheduling option, perform the following steps:

1. On the Main Menu, press the *Tool Number* button. The Tool/Part/Job Number screen displays with the settings for the last tool, part, and job number displayed (see Figure 4-8). If this is the first time you are accessing this screen, the Tool Number displayed is “0,” the default, and no settings are shown for the part and job numbers.
2. To enter a new tool number, press the *Edit* button at the right of the Tool Number window. The Tool Number screen displays (see Figure 4-9) with the current tool number shown above the *CLR* key, the last digit shown in flashing reverse video.
3. Press the *CLR* (Clear) key to clear the current tool number, press the number key(s) for the tool number value you want (your entry appears in the display above the *CLR* key), and press the *ENT* (Enter) key. You are returned to the Tool/Part/Job Number screen with your entry displayed in the Tool Number window.

NOTICE

The maximum value you can enter on the Tool Number screen is “9999999.” When you attempt to enter a value greater than the maximum, your entry defaults to “9999999.”

4. If you want to enter a part number to associate with the tool, press the *Edit* button in the Part Number window. The Part Number screen displays (see Figure 4-10, page 4-11) with the current part number shown at the bottom right of the screen, the last character shown in flashing reverse video.

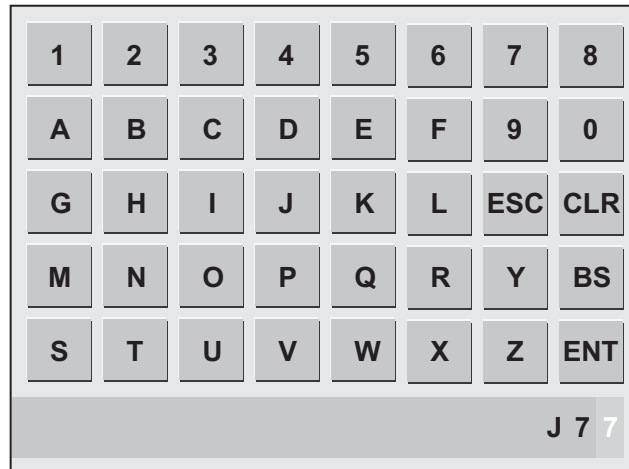


Figure 4-10. Part Number Screen

5. Press the *CLR* (Clear) key to clear the current part number, press the alphabetic and/or numeric key(s) for the part number you want (your entry appears at the bottom right of the screen), and press the *ENT* (Enter) key. You are returned to the Tool/Part/Job Number screen with your entry displayed in the Part Number window.

NOTICE

The maximum length of your part number entry is 20 characters. When you attempt to enter a value greater than the maximum, your entry defaults to the maximum length.

6. If you want to enter a job number to associate with the tool, press the *Edit* button in the Job Number window. The Job Number screen displays with the current job number shown at the bottom right of the screen, the last character shown in flashing reverse video. The Job Number screen is identical to the Part Number screen (see Figure 4-10).
7. Press the *CLR* (Clear) key to clear the current job number, press the alphabetic and/or numeric key(s) for the job number you want (your entry appears at the bottom right of the screen), and press the *ENT* (Enter) key. You are returned to the Tool/Part/Job Number screen with your entry displayed in the Job Number window.

NOTICE

The maximum length of your job number entry is 14 characters. When you attempt to enter a value greater than the maximum, your entry defaults to the maximum length.

8. When you have finished entering tool, part, and job number information, press the *Load Job* button at the bottom right of the screen to load the new job. You are returned to the Main Menu with the message “Control Setup Transition” displayed on the Status line. After a few seconds this message disappears, and the status “Changeover” displays.

Viewing Tool Numbers When the Machine Is Running

The *Part/Job Number* button on the Main Menu allows you to view the Tool/Part/Job Number screen (see Figure 4-8) when the press is running. The *Tool Number* button is not functional during machine operation. Use of the *Part/Job Number* button enables you to view current tool, part, and job number information when the *Tool Number* button is unavailable.

Loading the Next Job

The *Next Job* button on the Main Menu is only functional when the LETS Scheduling option has been enabled (see page 3-17). When you press this button with the Scheduler disabled, a “Function disabled” message appears briefly at the top of the screen beneath the Status line.

When the LETS Scheduling is enabled, the *Next Job* button is used to load the next job scheduled by LETS. To load the next job, do the following:

NOTICE

The *Next Job* button is only functional when LETS Scheduling has been enabled (see page 3-17). Pressing the button when Scheduling is disabled causes a “Function disabled” message to display briefly at the top of the screen beneath the Status line.

1. On the Main Menu, press the *Next Job* button. The Load Next Job screen displays (see Figure 4-11). The tool number, parts preset value, job number, and part number for the next job scheduled by LETS are identified at the left of the screen just beneath the screen title.

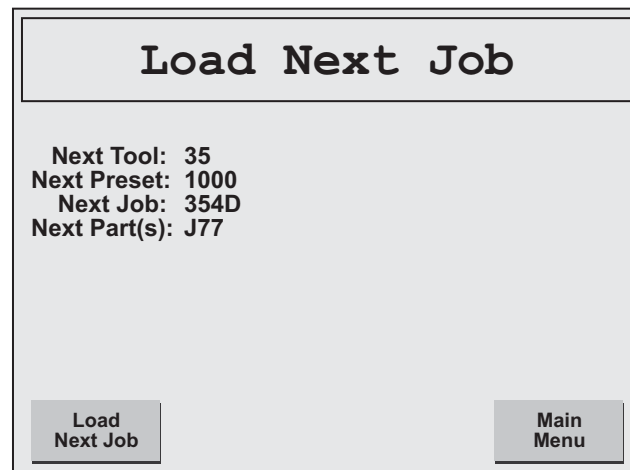


Figure 4-11. Load Next Job Screen

- If tool number, parts preset, job number, and part number information is correct, press the *Load Next Job* button. You are returned to the Main Menu with the message “Control Setup Transition” displayed on the Status line. After a few seconds this message disappears, and the status “Changeover” displays.

NOTICE

Press the *Main Menu* button to return to the Main Menu if the displayed job information is incorrect.

Entering the Operator Number

The *Operator Number* button on the Main Menu is used to document the operator of a machine during a defined data collection period such as a shift. To enter the operator number, do the following:

- On the Main Menu, press the *Operator Number* button. The Operator Number screen displays (see Figure 4-12) with the number identifying the current machine operator displayed above the *CLR* key, the last digit shown in flashing reverse video. If this is the first time an operator number is being entered, a default value of “0” displays.

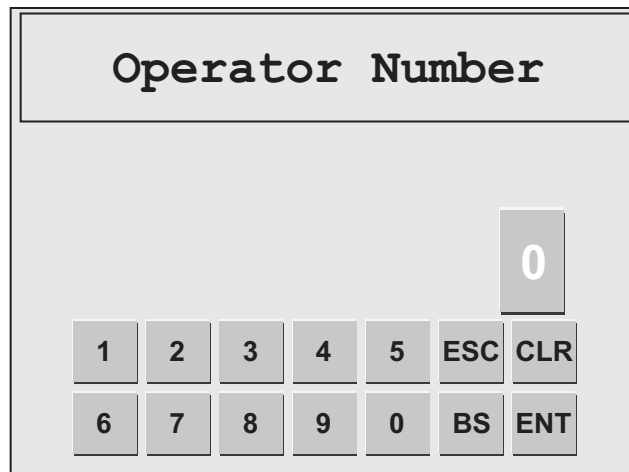


Figure 4-12. Operator Number Screen

- Press the *CLR* (Clear) key to clear the current operator number, press the number key(s) for the value you want (your entry appears in the display above the *CLR* key), and press the *ENT* (Enter) key. You are returned to the Main Menu with your entry displayed in the Operator Number window.

NOTICE

The maximum value you can enter on the Operator Number screen is “9999999.” When you attempt to enter a value greater than the maximum, your entry defaults to “9999999.”

Selecting Downtime Reasons

The following sections show you how to select downtime reasons in response to Forced Dialog and at other times to correct or augment previous downtime selections.

Entering Downtime in Response to Forced Dialog

NOTICE

Forced Dialog Mode must be enabled (see page 3-19) in order for the Forced Downtime Selection screen to display, prompting the operator to select a downtime reason.

Whenever the machine being monitored by the LMI has been Idle for the length of time specified by the Forced Dialog Timer (see page 3-19), the Forced Downtime Selection screen displays (see Figure 4-13, page 4-14).

Forced Downtime Selection Page 1 Previous Page Next Page	Changeover	Select
	Planned Downtime	Select
	Mechanical Problem	Select
	Electrical Problem	Select
	QA Inspection	Select
	Waiting for Operator	Select

Figure 4-13. Forced Downtime Selection Screen

The Forced Downtime Selection screen provides a menu of downtime reasons from which you can select to document machine Idle time. The first two items, “Changeover” and “Planned Downtime,” are actually machine states rather than downtime reasons and appear on all downtime menus. The other downtime menu entries are created in LETS by the user and downloaded to the LMI (see Appendix A for further details). The screen may be several pages long since up to 32 different user-defined downtime reasons may be displayed. To select a downtime reason to document a period of machine Idle time, do the following:

1. On the Forced Downtime Selection screen, look for the downtime reason you want, using the *Next Page* and *Previous Page* buttons to move to additional pages of the screen.

2. When you have found the downtime reason you want, press the *Select* button next to it.
 - If Forced Dialog Mode is set to “Enabled w/AutoBackfill,” machine Idle time up to the time you document it with a downtime reason is assigned to the downtime reason you selected, and you are returned to the Main Menu. Your downtime reason appears on the Status line.
 - If Forced Dialog Mode is set to “Enabled w/Manual Backfill,” the Dialog History screen displays (see Figure 4-14).

To document all Idle time up to the present with the selected downtime reason, press the *Change Previous Downtime Reason to Selected Reason* button.

To document all Idle time from this point forward with the selected downtime reason and leave the Idle period or previous downtime reason intact, press the *Use Selected Reason From This Time On* button.

NOTICE

Downtime should only be “forward-filled” when the operator discovers a second downtime reason immediately after selecting the first.

You are returned to the Main Menu. The entry “Changeover” or “Planned Downtime” is displayed on the Status line if you selected one of these machine states in step 2. If you selected another downtime reason in step 2, the status “Unplanned Downtime” displays. To verify the specific reason you selected, press the *Downtime* button to access the Select Downtime screen (see next section). Your selection is highlighted and displayed in reverse video.

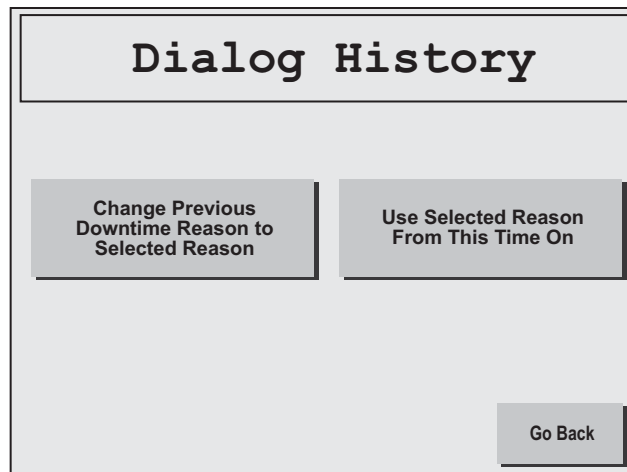


Figure 4-14. Dialog History Screen

Entering Downtime To Correct or Augment a Previous Entry

You can correct or augment a downtime reason selection you have made on the Forced Downtime Selection screen using the *Downtime* button on the Main Menu. To do so, perform the following steps:

1. On the Main Menu, press the *Downtime* button. The Select Downtime screen displays (see Figure 4-15). This screen is identical to the Forced Downtime Selection screen (see Figure 4-13) except for its title and the inclusion of a *Main Menu* button so users can return to the Main Menu without making a selection. Both screens display the same menu of downtime reasons.

Select Downtime	Changeover	Select
Page 1	Planned Downtime	Select
	Mechanical Problem	Select
Previous Page	Electrical Problem	Select
Next Page	QA Inspection	Select
Main Menu	Waiting for Operator	Select

Figure 4-15. Select Downtime Screen

2. Look for the downtime reason you want, using the *Next Page* and *Previous Page* buttons to move to additional pages of the screen.
3. When you have found the downtime reason you want, press the *Select* button next to it.
 - If Forced Dialog Mode is set to “Enabled w/AutoBackfill,” machine Idle time up to the time you document it with a downtime reason is assigned to the downtime reason you selected, and you are returned to the Main Menu. Your downtime reason appears on the Status line.
 - If Forced Dialog Mode is set to “Enabled w/Manual Backfill,” the Dialog History screen displays (see Figure 4-14).

To document all Idle time up to the present with the selected downtime reason, press the *Change Previous Downtime Reason to Selected Reason* button.

To document all Idle time from this point forward with the selected downtime reason and leave the Idle period or previous downtime reason intact, press the *Use Selected Reason From This Time On* button.

NOTICE

Downtime should only be “forward-filled” when the operator discovers a second downtime reason immediately after selecting the first.

You are returned to the Main Menu. The entry “Changeover” or “Planned Downtime” is displayed on the Status line if you selected one of these machine states in step 3. If you selected another downtime reason in step 3, the status “Unplanned Downtime” displays. To verify the specific reason you selected, press the *Downtime* button. Your selection is highlighted and displayed in reverse video on the Select Downtime screen.

NOTICE

Press the *Main Menu* button to return to the Main Menu if you choose not to select a downtime reason.

Using the *Return to Production* Button

The *Return to Production* button is used in the following circumstances:

- To end a period of downtime so the machine can be restarted
- To clear the “Parts Preset Reached” message
- To allow operation of the machine after the LMI has been powered up

When the *Return to Production* button is pressed, the message displayed beneath the Status line is cleared, the status of the machine displayed on the Status line changes to “Idle,” and the machine inhibit relays are closed, enabling the machine to be restarted.

Ending a Period of Downtime

To use the *Return to Production* button to end a period of downtime, do the following:

NOTICE

The *Return to Production* button is functional only when the machine is not running. If you press the button when the machine is running, the message “Function disabled while running” displays beneath the Status line.

1. With a downtime reason displayed on the Status line, press the *Return to Production* button. The machine status displayed on the Status line changes from a downtime reason to “Idle.”

NOTICE

When you press *Return to Production*, the machine inhibit relays, which opened when the Forced Dialog Timer expired and the Forced Downtime Selection screen displayed, are closed to enable the machine to be restarted.

2. Restart the machine. The status displayed on the Status line changes to “Running...”

Clearing the “Parts Preset Reached” Message

To use the *Return to Production* button to clear the “Parts Preset Reached” message, do the following:

1. With the “Parts Preset Reached” message displayed on the Status line and the “Push Return to Production when ready to run” prompt displayed beneath it, press *Return to Production*.

The message on the Status line changes to “Idle,” and the prompt is cleared.

NOTICE

When you press *Return to Production*, the machine inhibit relays, which opened when the Parts Preset was reached, are closed to enable the machine to be restarted.

2. To return the value in the Parts Count window to “0” and initiate a new job, proceed as follows:
 - If the LETS Scheduling option is not installed, load a new tool (see page 4-8) and make a new parts preset setting (see page 4-2).
 - If the LETS Scheduling option is installed, load the next job (see page 4-12).

Enabling Machine Operation After LMI Power-up

To use the *Return to Production* button to enable machine operation following power-up of the LMI, do the following:

1. With the “Push Return to Production when ready to run” prompt displayed beneath the Status line following power-up of the LMI, press *Return to Production*.

The message on the Status line changes to “Idle,” and the prompt is cleared.

NOTICE

When you press *Return to Production*, the machine inhibit relays, which opened when the LMI was powered up, are closed to enable the machine to be started.

Chapter 5. System Messages

This chapter documents LMI system messages. Most messages appear on the Status line of the LMI Main Menu and on the line beneath it; two messages display beneath the screen title on the Security Settings screen. Documentation for each message includes an explanation of what the message means and instructions for how to respond to the message when a response is necessary. The chapter is organized in the following sections:

- *Messages on the Status Line of the Main Menu* (below)
- *Messages on the Security Settings Screen* (page 5-2)

Messages on the Status Line of the Main Menu

Changeover

Displays following the “Control Setup Transition” message (see below) after you load a new job. Also displays whenever you select the “Changeover” item on the Forced Downtime Selection or Select Downtime screen. Indicates that the machine is in the “Changeover” state.

Control Setup Transition

Displays for a few seconds after you load a new job, being followed by the “Changeover” message (see above). Indicates that the machine is in transition to the “Changeover” state.

Idle

Displays whenever the press is not in one of the other machine states and you have selected no reason for unplanned downtime on the Forced Downtime Selection or Select Downtime screen. Also displays whenever you press the *Return to Production* button following LMI power-up, a period of planned or unplanned downtime, or a tool change. Indicates that the machine is in the “Idle” state.

Offline Time

Displays whenever there is no power to the machine or the network is down.

Parts Preset Reached

Displays whenever the value in the Parts Count window reaches the Parts Preset value, the “Press Return to Production when ready to run” message displaying beneath it (see *Messages Beneath the Status Line of the Main Menu*, below). Press the *Return to Production* button to clear the message.

Planned Downtime

Displays whenever you select the “Planned Downtime” item on the Forced Downtime Selection or Select Downtime screen. Indicates that the machine is in the “Planned Downtime” state.

Running at (cycles per min)

Displays whenever the machine is in the “Running” state. The speed of the machine in cycles per minute is displayed to the right of the message, being refreshed based on the timing set for the Production Rate Calculation Interval (see page 3-14).

Unplanned Downtime

Displays whenever you select a reason documenting unplanned downtime on the Forced Downtime Selection or Select Downtime screen. Indicates that the machine is in the “Unplanned Downtime” state.

Messages Beneath the Status Line of the Main Menu

Function disabled

Displays for a few seconds when you press the *Next Job* button with the LETS Scheduling option disabled (see page 3-17). The Next Job function is available only when the Scheduler is enabled.

Function disabled while running

Displays for a few seconds whenever you press a button during machine operation that is not functional when the press is running (e.g., *Tool Number*, *Return to Production*).

Parts count preset has been exceeded

Displays when the *Return to Production* button has been pressed in response to the “Parts Preset Reached” message (see *Messages on the Status Line of the Main Menu*, above) and the machine continues to make parts. To respond to the message, stop the machine immediately.

Push Return to Production when ready to run

Displays following LMI power-up and whenever the “Parts Count Reached” message displays (see *Messages on the Status Line of the Main Menu*, above). Press the *Return to Production* button to clear the message.

Messages on the Security Settings Screen

Invalid password entered

Displays whenever the entry on the Current Password screen is incorrect or the entry on the Confirm Password screen is not identical to the New Password screen entry. Re-enter the current password or new password.

Password out of range (0-9999)

Displays whenever the entry on the New Password screen exceeds “9999,” the screen’s maximum value. Re-enter a new password, using a value in the valid range.

Appendix A. Creating the Downtime Menu

The downtime reasons displayed on the LMI Forced Downtime Selection and Select Downtime screens are created in LETS and downloaded or copied to the LMI. (The “Changeover” and “Planned Downtime” items are machine states, not downtime reasons, and are hard-coded into LMI downtime menus, occupying the first two positions on the first page.) This appendix shows you how to create and download downtime menu entries. The appendix is organized in the following sections:

- *Planning Downtime Menu Entries* (below)
- *Creating the Downtime Menu in LETS* (page A-2)
- *Editing the Downtime Menu* (page A-4)
- *Downloading the Downtime Menu to the LMI* (page A-5)
- *Copying the Downtime Menu to Multiple LMIs* (page A-6)

Planning Downtime Menu Entries

The downtime reasons that you wish to appear on the LMI downtime menus are entered in a numbered sequence of up to 32 fields on the Configuration Detail page in LETS (see Figure A-3, page A-3). Before making downtime reason entries, study the following recommendations:

- Do not create downtime reasons for “Changeover” or “Planned Downtime.” These entries, which are machine states tracked separately from unplanned downtime, are already programmed into the LMI downtime menus.
- Do not create downtime reasons for lunch or planned breaks. Operators document these “idle” periods with the “Planned Downtime” machine state.
- Sequence your downtime reasons in the order of their frequency of use. Place the reasons that operators will select most often in the first four fields on the Configuration Detail page (i.e., Special Reasons #1 through Special Reason #4) so that they will appear on the first page of the Forced Downtime Selection and Select Downtime screens, following “Changeover” and “Planned Downtime.” LMI downtime menus display six entries per page. Enter the next most frequently used downtime reasons in the next six slots, the next most frequently used in the next six slots, and so forth. Downtime reasons display on LMI downtime menus in the order in which the “Special Reasons” are sequenced in LETS, Special Reason #1 appearing first (after “Changeover” and “Planned Downtime”), Special Reason #2 second, and so forth.
- Limit the number of downtime reasons you program in LETS the first time you create the downtime menu to the ones you anticipate being used most frequently. You can add more entries at a later time (see *Editing the Downtime Menu*, page A-4).
- LMI can display only 20 of the 50 characters available to create downtime reasons in LETS. This limitation is due to the size of the LMI screen. LETS allows downtime reasons of up to 50 characters to provide Factory Viewer Event Log entries and report fields that are as descriptive as possible. Design your downtime reason entries with this limitation in mind.

EXAMPLE

You are considering inclusion of the three downtime reasons “Inspect, Clean, and Repair – Electrode 1,” “Inspect, Clean, and Repair – Electrode 2,” and “Inspect, Clean, and Repair – Electrode 3” on LMI downtime menus. Each of these entries is 40 characters in length, making it too long to be displayed in its entirety on LMI downtime menus, where it would appear as “Inspect, Clean, and .” You could create a more effective downtime reason for the LMI without losing the specificity of the LETS entry by moving “Electrode 1,” etc. from the end to the beginning of the reason. The resulting entry “Electrode 1 – Inspect, Clean, and Repair” would be displayed on the LMI as “Electrode 1 – Inspect.”

- You can add items to and remove items from the LETS downtime menu and download the changes. You can also make changes to existing downtime reasons that have not had downtime logged against them, but you should not revise downtime reasons with accumulated downtime. If you replace one downtime reason with another (e.g., “Electrical Problem” with “Mechanical Problem”), all time logged against the original reason will be documented as having occurred because of the replacement reason. This change will occur throughout the LETS database even for archived events.

Creating the Downtime Menu in LETS

To create the downtime reason entries in LETS that will appear on downtime menus at the LMI, perform the following steps:

1. Make sure the LMI is powered up, connected to the network, and communicating with LETS. Also verify that the LMI is not in the “Running” state.
2. Sign on to LETS as a member of either the Administrator or Factory Viewer Editor security group.
3. Access the main Equipment Summary page in the Factory Viewer, select the appropriate tab/area to display the LMI you want, and click on the grey *Config* link at the bottom left of the page (see Figure A-1).

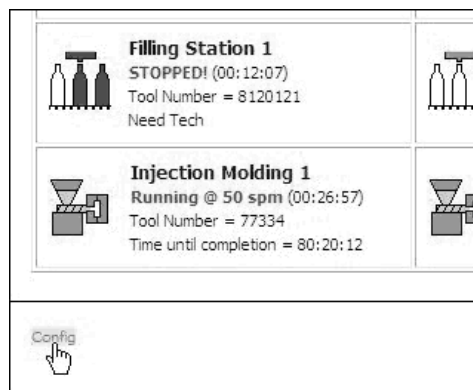


Figure A-1. LETS Equipment Summary Page (Detail) Showing Config Link

The Configuration Summary for the site/tab you selected displays (see Figure A-2, page A-3).

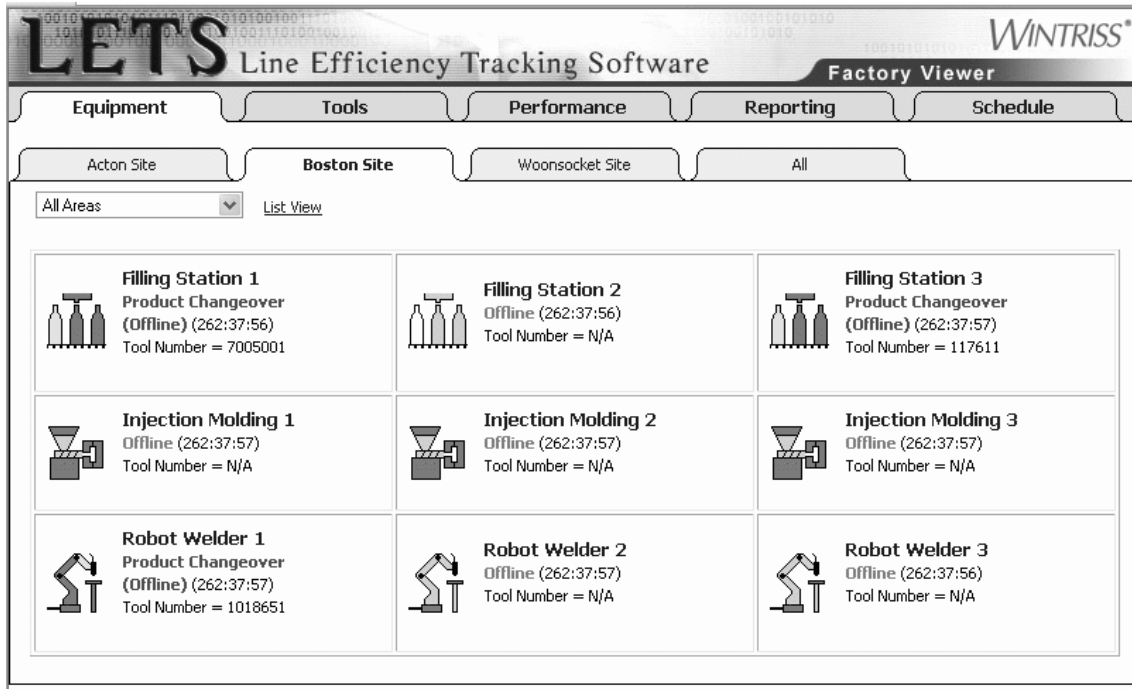


Figure A-2. LETS Configuration Summary Page

- Click on the machine name of the LMI you want. The Configuration Detail page for that machine displays (see Figure A-3 where the machine “Injection Moulding 1” is used as an example.)

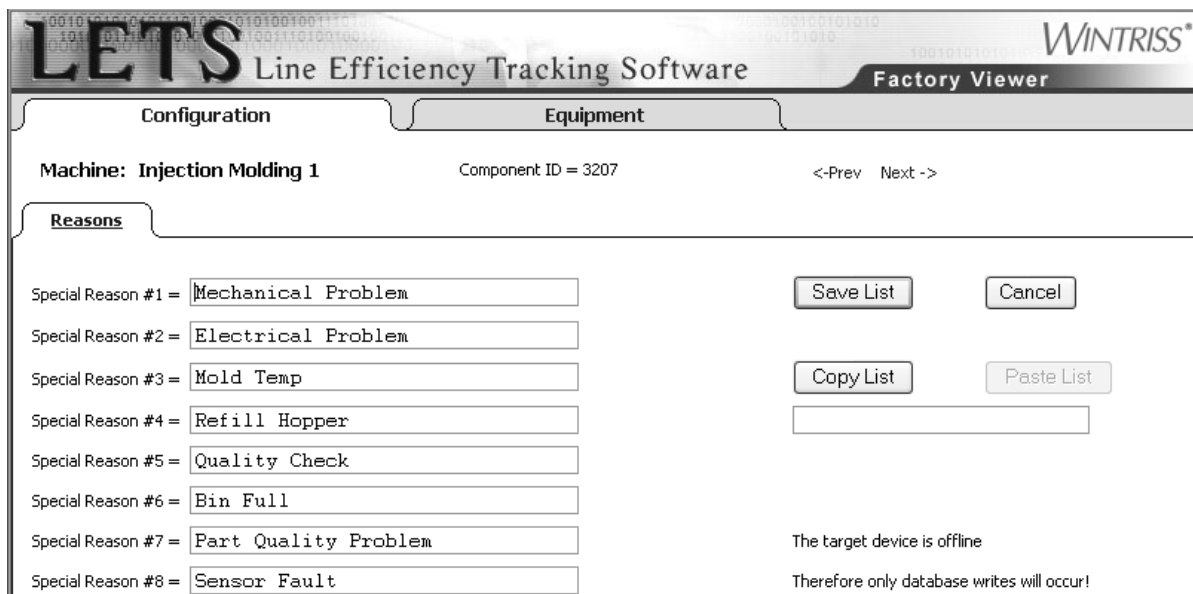


Figure A-3. LETS Configuration Detail Page

Displayed on the left side of the Configuration Detail page is a column of fields in which you can enter up to 32 downtime reasons. Each field is labelled “Special Reason #n,”

where n is the number of the special reason in the sequence of reasons (i.e., “Special Reason #1,” “Special Reason #2,” etc.). When you first access the Configuration Detail page, all “Special Reason” fields are filled with the entry “User Defined Reason # n .”

5. Click in the **Special Reason #1** field, delete the “User Defined Reason # n ” entry, and type a downtime reason description as you want it to appear on the Forced Downtime Selection and Select Downtime screens at the LMI.

NOTICE

The LETS Configuration Detail page allows you to enter downtime reasons of up to 50 characters, but the LMI, because of limitations in screen size, is able to display only 20 characters. Keep this in mind as you create your downtime reasons. Refer to the fifth bulleted item in the *Planning Downtime Menu Entries* section, page A-1.

6. Repeat step 5 for each downtime reason you want to include in your LMI downtime menus.
7. Download the completed downtime menu to the LMI, following the instructions in the *Downloading the Downtime Menu to the LMI* section, page A-5.

Editing the Downtime Menu

NOTICE

Wintriss recommends that you do not delete items from the downtime menu.

You can add items to the downtime menu you create in LETS after you have downloaded it to an LMI, and you can disable downtime menu items so they do not appear on LMI downtime screens. You can also make changes to existing downtime reasons as long as no downtime has been logged against them. You should not revise downtime reasons with accrued downtime (see the Notice before step 4, below). To edit the downtime menu, do the following:

1. Perform steps 1 through 4 in the *Creating the Downtime Menu in LETS* procedure (see previous section).
2. To add a downtime reason to the list, click in the field to the right of the desired Special Reason sequence number (i.e., “Special Reason #1,” “Special Reason #2,” etc.), delete the default “User Defined Reason # n ” entry, and type the downtime reason description.

NOTICE

When you disable an item on the downtime menu, all time logged against that downtime reason remains in the LETS database.

3. To disable a downtime reason on the list, click in the desired field, and type an asterisk (*) in front of that downtime reason entry. When you download the revised downtime menu, items preceded by an asterisk are greyed out on the LETS Configuration Detail page and prevented from being displayed on LMI downtime screens.

You can reinstate a disabled downtime reason at a later time by simply removing the asterisk from that entry on the LETS downtime menu and downloading the menu again.

NOTICE

You should only make changes to existing downtime reasons that have not had downtime logged against them. You should edit reasons with logged downtime only to clarify meaning or correct spelling; you should not change the reason itself. If you replace one downtime reason with another (e.g., “Electrical Problem” with “Mechanical Problem”), all time logged against the original reason will be documented as having occurred because of the replacement reason. This change will occur throughout the LETS database even for archived events.

4. To change a downtime reason already appearing in the list, click in that field, and edit the entry.
5. When you are finished, download the revised downtime menu to the LMI, following the instructions in the next section.

Downloading the Downtime Menu to the LMI

To download the downtime menu entries created in LETS to the LMI, perform the following steps:

NOTICE

In order to download the downtime menu,

- The LMI must be powered up, connected to the network, and communicating with LETS
- The machine the LMI is monitoring must not be in the “Running” state

1. Verify that the LMI is powered up, connected to the network, and communicating with LETS and that the machine the LMI is monitoring is in an “Idle” state.
2. Press the *Save List* button on the LETS Configuration Detail page (see Figure A-3).

The status message “Please Wait, Saving...” displays on the Configuration Detail page while LETS is downloading the list of downtime reasons to the LMI. The download may take several minutes. The status messages “Reasons written to device successfully” and “Reasons written to database successfully” display when the download is complete.

If you have edited the downtime menu, any items preceded by an asterisk will be displayed with a grey background on the Configuration Detail Page as the download is proceeding, indicating that they will be removed from the downtime menus at the LMI.

Copying the Downtime Menu to Multiple LMIs

If you have more than one LMI and are using similar or identical downtime menus for each machine, you can copy the downtime menu from one LMI to all the other LMIs in your network. To do so, perform the following steps:

1. Download the downtime menu from LETS to one LMI, following the instructions in *Creating the Downtime Menu in LETS*, page A-2 and *Downloading the Downtime Menu to the LMI* (previous section).
2. Click on the *Copy List* button on the Configuration Detail page. The name of the LMI to which you downloaded the downtime menu displays in the window beneath the button.
3. Click on the *Configuration* tab at the top of the page to display the Configuration Summary page.
4. Click on the machine to whose LMI you want to copy the downtime menu. The Configuration Detail page for that machine displays.
5. Click on the *Paste List* button on that Configuration Detail page. The entries in the downtime menu for the machine you are copying from are pasted into the “Special Reason” fields on the machine you are copying to.
6. Edit the list of pasted reasons, if necessary, following the instructions in *Editing the Downtime Menu*, page A-4.

NOTICE

In order to download the downtime menu,

- The LMI must be powered up, connected to the network, and communicating with LETS
- The machine the LMI is monitoring must be in an “Idle” state

7. Verify that the target LMI (i.e., the LMI you have copied to) is powered up, connected to the network, and communicating with LETS and that the machine that LMI is monitoring is in an “Idle” state.
8. Click on the *Save List* button to save the pasted list to the target LMI.
The status message “Please Wait, Saving...” displays on the Configuration Detail page while LETS is downloading the list of downtime reasons to the LMI. The download may take several minutes. The status messages “Reasons written to device successfully” and “Reasons written to database successfully” display when the download is complete.
9. Repeat steps 2 through 8 for each LMI to which you wish to copy the downtime menu.

Appendix B. LETS Tool Discovery Process

If your LETS installation has the Scheduling module, setup of tools and scheduling of jobs at the LMI are performed in LETS. The LMI operator, however, is responsible for entering and loading tool numbers so that LETS can “discover” them and make them available for setup and scheduling.

In order for LETS to “discover” tools at the LMI, the following conditions must be met:

- The LMI must be powered up, connected to the network, and communicating with LETS
- The Scheduling module must be enabled at the LMI (see page 3-17)
- All tool numbers to be used at the LMI must be entered and loaded once (see page 4-8)

LETS creates a record for each tool it “discovers.” If the tool has been run previously at another LMI, LETS adds the new LMI to the list of machines that run that tool. If the tool has not been run previously, LETS creates a record for it and associates it with that machine.

Once records have been created for tools at the LMI, the LETS user can access the Tool Detail page and associate Standard and Tool Ideal rates with each tool. If part numbers have not previously been associated with the tool, these can be entered as well.

Once it has been entered on the Tool Detail page, tool information will be available to the LETS Scheduler. When job numbers and parts presets have been established, the LMI operator can load jobs as they occur in the job sequence (see page 4-12).

Glossary

NOTICE

Cross-references to other glossary entries are shown in *italics*.

backfill	One of two options provided by the LMI for assigning downtime once a <i>downtime reason</i> has been selected on a downtime menu. A downtime reason is “backfilled” when it is assigned to the previous period of time up to the present whether that interval was documented as Idle time (see <i>machine state</i>) or with another downtime reason. The other option assigns the selected downtime reason to the period of time from the present forward. An LMI setting allows you to automate the backfill option (see page 3-19).
downtime reason	A reason used to document a period of Unplanned Downtime (see <i>machine state</i>). Downtime reasons provide a way of explaining why a machine is “Idle” during periods when it is not in a Changeover, Planned Downtime, or Offline state.
forced dialog	A setting that forces the operator to select a <i>downtime reason</i> from an menu that displays whenever the machine enters an “Idle” state (see <i>machine state</i>). The machine cannot be restarted until a downtime reason is selected.
LETS	Stands for Line Efficiency Tracking Software, the data-collection software to which the LMI reports downtime reasons, parts and scrap counts, and other production information.
machine state	One of six categories used by LETS to document production time in order to generate OEE and other production reports. The six machine states are: Running, Idle, Planned Downtime, Unplanned Downtime, Changeover, and Offline. When the machine is in an “Unplanned Downtime” state, that period of time is further documented with one or more downtime reasons.
multiplier	A factor applied to the parts and scrap counters that maintains accurate parts and scrap counts when more than one part or scrap item is produced during a single machine cycle. If, for example, the machine makes two parts per machine cycle, the multiplier for that part is “2.”

operations-cycle ratio	A factor used together with the parts and scrap count <i>multipliers</i> to maintain accurate parts/scrap count statistics when more than one machine cycle is required to produce a part. For example, if four cycles are required to make a part, the operations-cycle ratio for that machine is “4.”
production rate	The number of parts produced or distance covered by a machine in a specified period of time. LMI calculates the production rate using three user-supplied settings: the units per time period in which production is measured (e.g., parts/minute, feet/hour, etc.), the number of Cycle input pulses required to produce a unit, and the interval during which the LMI collects production rate samples.
Scheduler	An optional LETS module that, when installed in LETS and enabled at the LMI, manages the scheduling of jobs on that machine.

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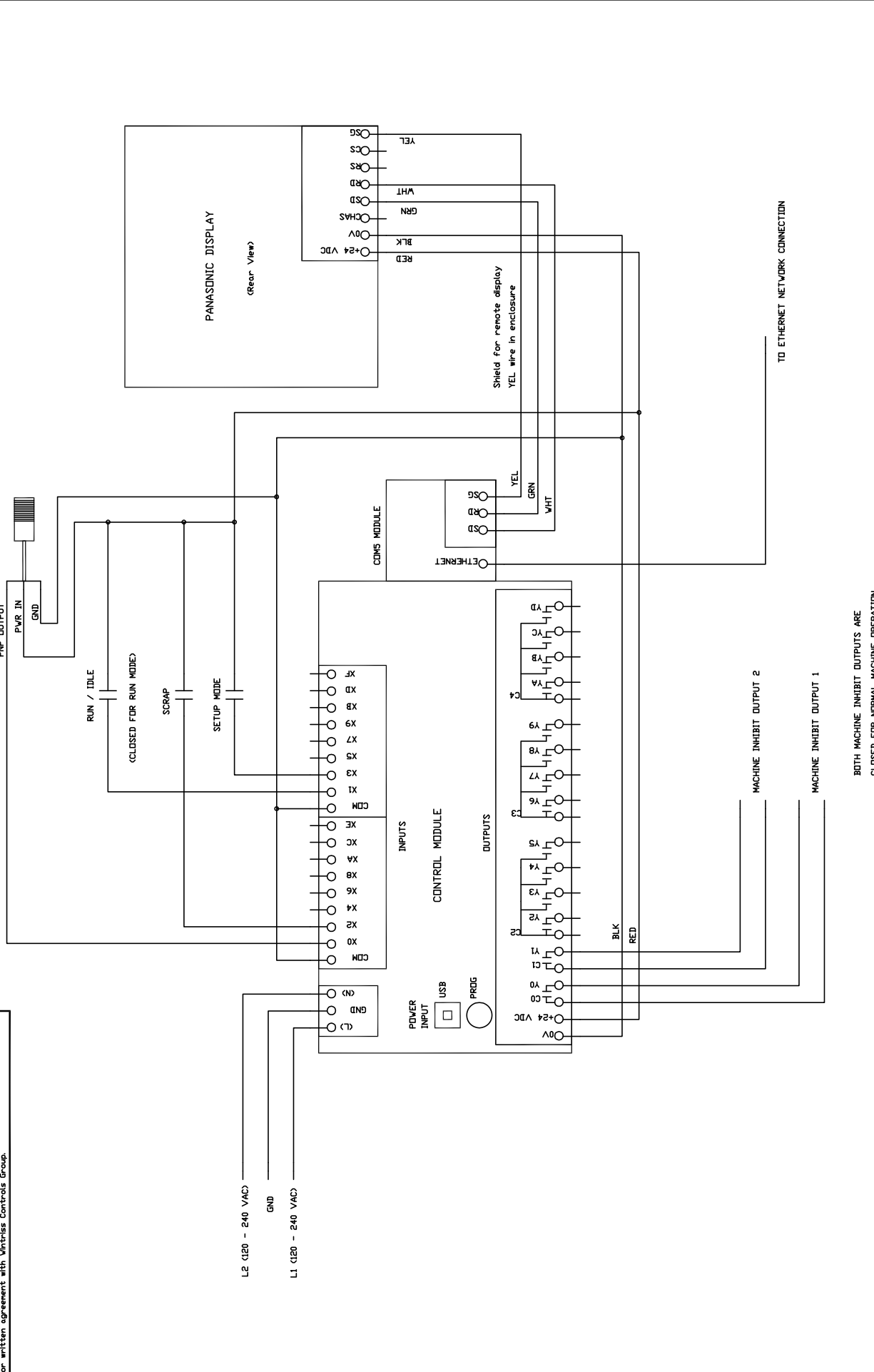
Wintriss Manuals

Wintriss Product	Installation Manual Doc. No.	User Manual/CD Doc. No.
AutoSet (1500, 1500 Plus, 1504, 1504 Plus)	DA71747	DA71447
AutoSetPAC (Tonnage Monitor)	DA71413	DA71443
Die Protection Handbook	N.A. *	1130300 *
DiPro 1500	DA71428	DA71447
DSI 2 Sensor Interface	N.A. *	DA66970 *
LETS Machine Interface (LMI)	N.A. *	DA71974 *
MultiPAC Types 1 and 2	DA71409	DA71443
MultiPAC Types 4 and 5	DA71410	DA71443
ProCam 1500	DA71430	DA71447
ProPAC (Process Monitor – In-die Measurement)	DA71411	DA71443
RamPAC (Shut Height, Counterbalance & Cushion Control)	DA71412	DA71443
Servofeed Interface – Coe/Wintriss	DA71415	DA71443
Servofeed Interface - CWP/Wintriss	DA71416	DA71443
Servofeed Interface - DiPro	DA71429	DA71447
Servofeed Interface - Electrocraft/Wintriss	DA71417	DA71443
Servofeed Interface - Indramat/Wintriss	DA71418	DA71443
Servofeed Interface - ProCam	DA71431	DA71447
Servofeed Interface - SmartPAC	DA71420	DA71443
Servofeed Interface - Waddington/Wintriss	DA71419	DA71443
Shadow V Safety Light Curtain	DA71433	DA71449
Shadow VI Safety Light Curtain	DA71422	DA71445
Shadow VII Safety Light Curtain	N. A. *	1129400 *
Shadow 8 Safety Light Curtain	N. A. *	1139300 *
SmartPAC (w/ DiProPAC & ProCamPAC)	DA71439	DA71454
SmartPAC Hydraulic	DA71435	DA71451
SmartPAC Run Mode (Spanish)	N. A. *	DA71443 *
SmartPAC w/ WPC II Integration	DA71440	DA71455
SmartPAC 2 (w/ DiProPAC & ProCamPAC)	DA71406	DA71441
SmartPAC 2 Hydraulic	DA71436	DA71451
SmartPAC 2 Servo	DA71437	DA71452
SmartPAC 2 w/ WPC 2000 Integration	DA71407	DA71442
SmartPAC 2 w/WPC 2000 Run Mode (Spanish)	N. A. *	DA71443
WaveFormPAC (Advanced Load Analyzer)	DA71414	DA71443
Wintriss Brake Monitor	DA71432	DA71448
Wintriss Clock Display	N. A. *	DA67206 *
WPC II Wintriss Press Control	DA71438	DA71453
WPC 1000 Wintriss Press Control	DA71423	DA71446
WPC 2000 Wintriss Press Control	DA71421	DA71444
WPC 2000 Option 2	DA71408	DA71442

* Installation Manual not available; User Manual available in hard copy only. Die Protection Handbook available in hard copy (1102400) and on CD (1130300).

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BOTH OUTPUTS OPEN WHEN THE MACHINE
OPERATION IS TO BE INHIBITED.

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REL	DRAWING NUMBER	FIGURE 1
SCALE	NONE	SHEET 1 OF 1