WINTRISS®

User Manual

ShopFloorConnect™ Machine Interface (SMI 2)

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Tech Support Hotline 800-586-8324 8-5 Eastern Time

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Thank you for purchasing a Wintriss ShopFloorConnect Product. We appreciate your business and want to do whatever we can to ensure your satisfaction. Wintriss products are built to stay on the job day after day, and are backed by an ironclad guarantee, international standards approvals, and unbeatable support. Whenever you need assistance or service, we back all our products with excellent spare parts inventories, training programs, and prompt repair service. We would like to share with you a list of service options– probably the largest number of service options offered in the industry.

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  We offer a toll-free line for technical assistance. Call our ShopFloorConnect Technical Support at 800-586-8324 and select option 3 should you have any questions about your equipment. Our technical staff is ready to assist you Monday through Friday, 8 a.m. to 5 p.m. ET. In many cases our experienced technical staff can resolve your inquiry right over the phone. You can download Wintriss product manuals at www.wintriss.com/wcg/general/downloads.html
- **Return Authorization**

  Please call our "800" number for a return authorization (RMA) number to return a product for repair. Returned goods must arrive freight prepaid. In order to process your return quickly, we ask that you provide us with the following pertinent information when you call: purchase order number, shipping address, contact name and telephone number, and product type. The assigned RMA number should appear on all packages returned to Wintriss Controls Group to ensure prompt service.

  At the time of requesting an RMA, you will be quoted a flat-rate repair price for the product you are returning. We ask that you either fax us a PO for that amount or enclose the PO with the returned item. This will enable us to ship the item back to you as soon as the repair has been completed. If the item cannot be repaired or there are additional charges, you will be contacted for approval.

  Please be sure to carefully pack all returned items and ship to our Acton, MA location.
- **Expedited Repair Program**

  Rush service providing 48 hour turnaround is available for most products upon request. An Expedite Fee will be applied to our standard repair rate.
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  If your needs are urgent, you can take advantage of our Board Exchange (EX) program. Call our "800" number between 8 a.m. and 5 p.m. EST and we will send a replacement to you overnight. A fee does apply to this service. Contact Wintriss ShopFloorConnect Technical Support at 800-586-8324 for details.
- **Service Center**

  Our Service Center for product service is located at our headquarters in Acton, MA. If your equipment requires repair, please contact us at 800-586-8324 to obtain a return authorization number.

  Nationwide field service is also available. Contact the Wintriss ShopFloorConnect Technical Support at 800-586-8324.
- **Product Training**

  We also offer both product training and maintenance/troubleshooting courses at our Acton, MA and Chicago-area facilities. On-site training is available from the factory or through your local Wintriss representative.
- **Restocking Charge**

  Returned goods are subject to a 20% restocking charge if returned for credit. The minimum charge is $50, not to exceed $250 per item.

Whatever the product, we are committed to satisfying you with innovative engineering, quality construction, reliable performance, and ongoing, helpful support. Call us whenever you need assistance.

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How to Use This Manual

This manual shows how to install, set up, and operate the ShopFloorConnect (SFC) Machine Interface (SMI 2).

Chapter 1 provides an overview of SMI 2 components and operation.

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

Chapter 3 shows how to set up the SMI 2, providing instructions for configuring inputs and making production, forced dialog, and security settings.

Chapter 4 shows how to operate the SMI 2. The chapter shows you how to set the parts count preset, cycle and scrap count multipliers, operations-cycle ratio, and operator number; program Primary items and Job Aliases, load jobs; and select downtime reasons for machine idletime.

Chapter 5 documents the system messages that appear at the top of the Main Menu screen.

Appendix A explains how SFC “discovers” Primary items at the SMI 2.

Appendix B shows how to set up the optional barcode scanner.

Appendix C shows how to set up the optional wireless connection.

Appendix D gives instructions for updating SMI 2 firmware.

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

Wiring diagrams are provided at the end 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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Wintriss Controls warrants that Wintriss electronic controls are free from defects in material and workmanship under normal use and service for a period of one year (two years for Shadow light curtains) from date of shipment. All software products electro-mechanical assemblies, and sensors are warranted to be free from defects in material and workmanship under normal use and service for a period of 90 days from date of shipment. Wintriss's obligations under this warranty are limited to repairing or replacing, at its discretion and at its factory or facility, any products which shall, within the applicable period after shipment, be returned to Wintriss Controls freight prepaid and which are, after examination, disclosed to the satisfaction of Wintriss to be defective. This warranty shall not apply to any equipment which has been subjected to improper installation, misuse, misapplication, negligence, accident, or unauthorized modification. The provisions of this warranty do not extend the original warranty of any product which has either been repaired or replaced by Wintriss Controls. No other warranty is expressed or implied. Wintriss accepts no liability for damages, including any anticipated or lost profits, incidental damages, consequential damages, costs, time charges, or other losses incurred in connection with the purchase, installation, repair or operation of our products, or any part thereof.

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It is solely the user's responsibility to properly install and maintain Wintriss controls and equipment. Wintriss Controls manufactures its products to meet stringent specifications and cannot assume responsibility for consequences arising from their misuse.

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SFC MACHINE INTERFACE (SMI 2)
USER MANUAL
1142300

Chapter 1 – Introduction

Figure 1-1. SMI 2 ShopFloorConnect Machine Interface

This chapter introduces the ShopFloorConnect Machine Interface (SMI 2), which collects machine data and reports it to ShopFloorConnect (SFC). SMI 2 makes available information such as machine status, downtime reasons, production rate, and parts count.

SMI 2 Components

SMI 2 is available in an enclosure or as a panel mount for installation in a customer console or enclosure. The SMI 2, Figure 1-2, consists of a control board, a power supply, and a touch screen display.

Figure 1-2. SMI 2 Components

SMI 2 control board, Figure 1-3, includes indicator LEDs to show the state of inputs and other details.

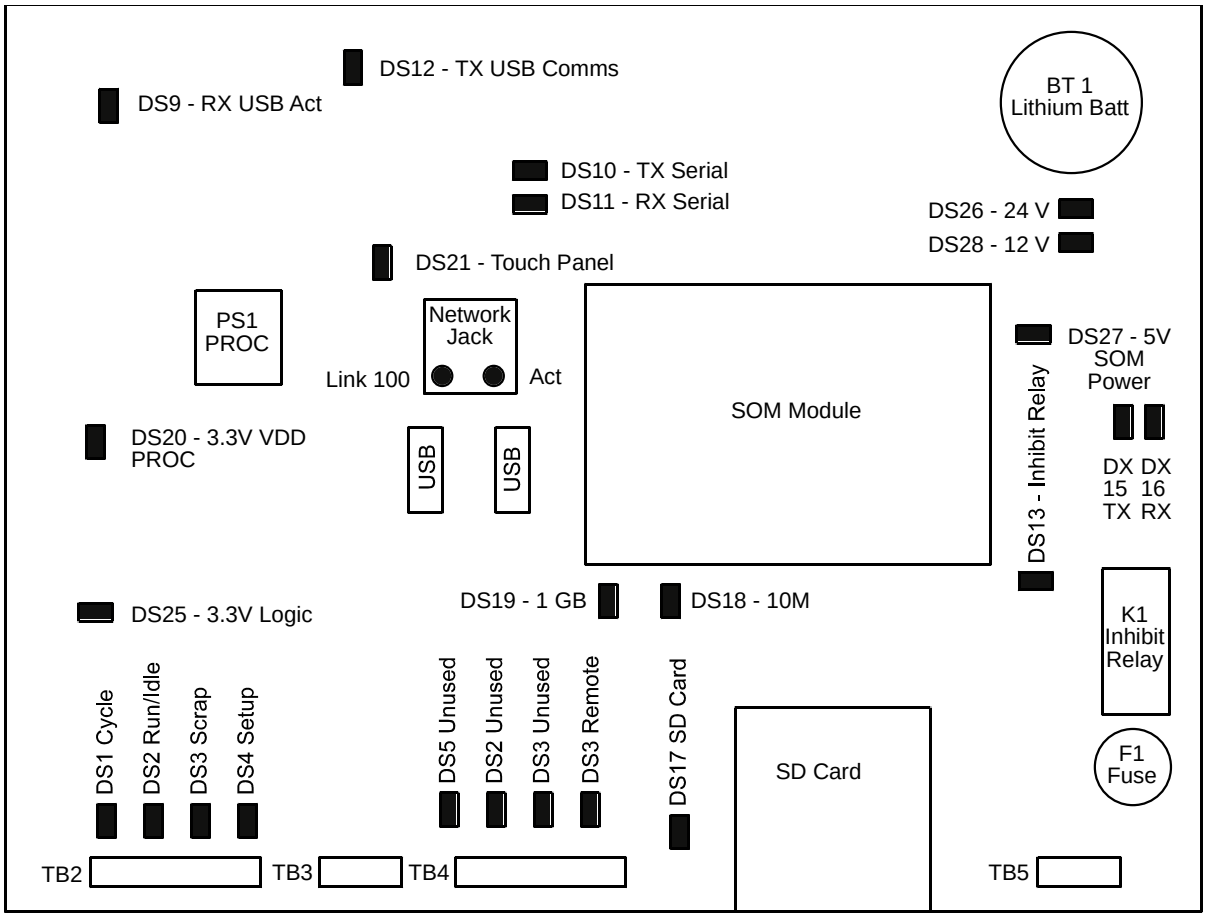


Figure 1-3. SMI 2 Control Board

The touch screen provides labelled buttons that you press to set up and operate the unit. Figure 1-4 shows the Main Menu, the screen that displays when you first power up the SMI 2.

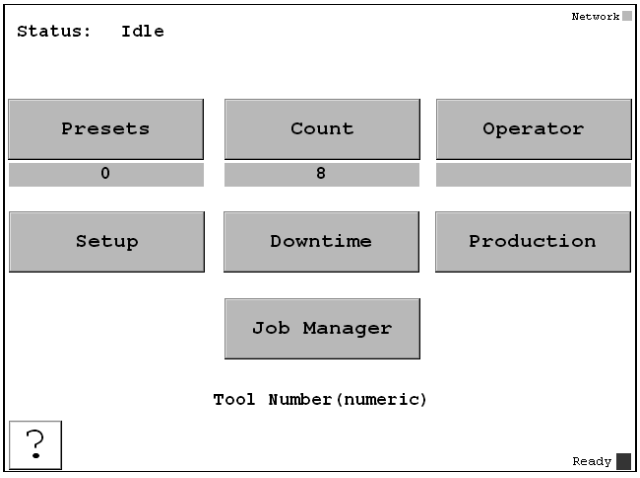


Figure 1-4. SMI 2 Main Menu

SMI 2 Inputs

The SMI 2 includes four inputs on its control board that provide the unit with machine state, production rate, and parts count information:

- Cycle input–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 input is also normally programmed to indicate when the machine is running and when it is idle. See *Wiring a Cycle Input*, page 32.
- Run/Idle input–Can be used in place of the Cycle sensor to indicate when the machine is running and when it is idle. See *Wiring a Run/Idle Input*, page 34.
- Scrap input–Indicates when a part should be counted as scrap. *Wiring a Scrap Input Switch*, page 34.
- Setup Mode input–Indicates when the machine is in a non-production mode so the SMI 2 does not collect machine state, production rate, or parts count information. *Wiring a Setup Mode Input*, page 34.

For details about each of these inputs, including wiring instructions, see *Connecting Input Wiring*, page 32.

SMI 2 Machine Inhibit Output

The machine inhibit output prevents the machine from running when the operator fails to enter a downtime reason and SMI 2 is programmed to require a downtime reason during machine idle time. For additional information about this output, as well as wiring instructions, see *Connecting Machine Inhibit Output Wiring*, page 36.

Configuring Inputs

The SMI 2 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 or to ignore multiple strokes on machines like a turret press where the cycles/part relationship is unpredictable. 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 SMI 2 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 input. For more details, see *Configuring the Cycle Input*, page 43.
- Run/Idle Contact–You must enable the Run/Idle input if you want the SMI 2 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 SMI 2 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 SMI 2 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 49.

- Scrap Input–You must enable the Scrap input in order for the SMI 2 to automatically collect and report scrap counts. See *Configuring the Scrap Input*, page 52, for additional information.

Machine States

SFC 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.). SFC selects the machine state for which to log machine time based on downtime reporting and other information it receives from the SMI 2. 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 SMI 2
- Unplanned Downtime–Machine is stopped, and the reason has been documented at the SMI 2 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 SMI 2 as Planned Downtime

> **NOTICE**
>
> Planned Downtime should be associated only with dialog reason codes such as lunch 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 SMI 2 as Changeover
- Offline–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 SFC to "Idle Time" unless a downtime reason or a "Planned Downtime" or "Changeover" machine state is reported from the SMI 2. Since Overall Equipment Effectiveness (OEE) and other efficiency metrics assign high ratings to machines with low Idle Time values, SMI 2 has been designed to allow very precise reporting of downtime to SFC 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 SMI 2 settings enable you to require operator entry of a downtime reason whenever the machine has been idle for longer than a specified period of time. To make these settings, see *Making Forced Dialog Mode Settings*, page 63. Operator instructions for selecting downtime reasons are in *Selecting Downtime Reasons*, page 87.

Downtime reasons are created in SFC and downloaded to the SMI 2.

SMI 2 provides four inputs that enable automatic logging of downtime reasons. See the next section.

Programming Automatic Downtime Reason Inputs

Four inputs on SMI 2 (TB4 inputs 1-4) are associated with four downtime reasons, 29 – 32, respectively. When one of these inputs is ON and the monitored machine transitions from Running to Idle, the associated downtime reason is automatically logged and sent to SFC. Create these downtime reasons in SFC the same way as you create the others.

For more information about Automatic Downtime Inputs, see *Wiring Automatic Downtime Inputs*, page 35.

Configuring Parts and Scrap Counts

You can configure how parts are counted, enabling the SMI 2 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 SMI 2 so that multiple scrap items are counted for each machine cycle. See *Maintaining Part and Scrap Count Settings*, page 75 for further information.

Programming Primary Items and Jobs

Entering Primary item, job, and part preset information at the SMI 2 is handled differently depending on whether you are using the SFC Schedule Interface.

Programming Jobs with the SFC Schedule Interface

If you are using the Schedule Interface, setup and scheduling of jobs at the SMI 2 is performed in SFC. The SMI 2 operator, however, may be responsible for entering and loading Primary items so that SFC can "discover" them (see page 82 for instructions on how to enter and load Primary items and Appendix A for a description of the Primary item discovery process). The operator must also load each job when its position in the schedule is reached (see page 85).

Programming Jobs without the SFC Schedule Interface

If you are not using the Schedule Interface, setup information must be entered and Primary items loaded at the SMI 2 at the beginning of each job. See *Setting the Parts Preset*, page 73, and *Loading Jobs*, page 84, for further details.

Getting Help

You can get help for any SMI 2 screen by touching the *Help* button (**?**) at the lower left corner of the screen. Figure 1-5 shows the help screen that appears when you touch the help button in the Main menu. Press *Exit* to return to the previous screen.

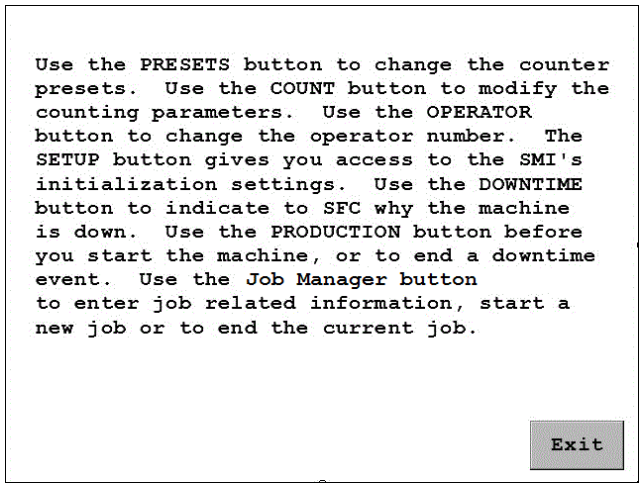


Figure 1-5. Help Screen for SMI 2 Main Menu

When Help screens are insufficient to answer your questions or you have trouble installing, setting up, or operating the SMI 2, you can contact Wintriss directly. The Wintriss ShopFloorConnect Technical Support contact number (800-586-8324) is displayed on the About SMI 2 screen (see Figure 3-37, page 72), which also shows the RTM 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 is also shown at the bottom of the Adjust Scrap Data and OP/Cycle Ratio screen (see page 75), which you access by pressing *Count* on the SMI 2 Main Menu.

Specifications

Table 1-1. SMI 2 Specifications

Installation Category	II
Dimensions	Enclosure: 8.00 x 10.08 x 4.00 in. (101.6 x 203.2 x 256.0 mm) NEMA 12 Panel mount: 9.2 x 7.7 x 4.25 in. (234 x 196 x 108 mm)
Electrical (System Power)	Input: 100-240 Vac, 40 W, 50-60 Hz or 24 Vdc +/- 15%, 30 W When installed, this equipment shall have, in close proximity and easily accessible, a switch or circuit breaker marked as the disconnect switch.
Operating Environment	Indoor use only Temperature: 32° to 122° F (0° to 50° C) Relative Humidity: Indoor factory conditions Altitude: 6562 ft (2000 m)
Parts Counter	Total preset for maximum count. Set to 9 digits. Batch Preset for maximum count. Set to 7 digits.
Inputs	All SMI 2 inputs (sink or source): 9mA ± 2 mA @ 24 Vdc TB2 Inputs 1-4 (Factory Wired for PNP) 1. Cycle Count 2. Run/Idle 3. Scrap 4. Setup TB4 Automatic Downtime Inputs 1-4 (Factory Wired for PNP) 1. Downtime Reason 32 2. Downtime Reason 31 3. Downtime Reason 30 4. Downtime Reason 29
Outputs	1 stop circuit (dry contacts): Contact rating 4 A, max, @240 Vac or 30 Vdc
Scanner (optional)	USB barcode scanner capable of adding a carriage return as a suffix
Wireless Connection (optional)	Factory installed IEEE 802.11 b/g/n

Chapter 2 – Installation

This chapter shows you how to install both enclosure and panel mount versions of the ShopFloorConnect Machine Interface (SMI 2). The document is organized in the following sections:

If you encounter problems when installing SMI 2, call Wintriss ShopFloorConnect Technical 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.

NOTICE

If you encounter problems installing SMI 2 call Wintriss ShopFloorConnect Technical Support.

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 right of the SMI 2 enclosure or to the appropriate location on your console if you have an SMI 2 panel mount.
- Run a conduit for low voltage lines (i.e., 24 VDC inputs and machine inhibit outputs) through one of the rear knockouts at the bottom left of the SMI 2 enclosure or to the appropriate location on your console.
- Run a conduit for the Ethernet cable through the center knockout at the bottom of the SMI 2 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 SMI 2 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 SMI 2 are important. Make sure that the SMI 2 is properly grounded.
- The ground wire from SMI 2 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 SMI 2 will be connected to the machine's inhibit circuit. Do not forget to mark on your electrical prints where you wire in SMI 2.

Mounting the SMI 2

The SMI 2 is provided in an enclosure or as a panel mount. Mounting instructions for both SMI 2 configurations are given in the following sections.

Before you begin, determine a convenient place to mount your SMI 2. 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 SMI 2 Enclosure

The SMI 2 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 27, for mounting dimensions.

NOTICE

PLACE ENCLOSURE AT A CONVENIENT HEIGHT

The SMI 2 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 the SMI 2*, page 29). Also, make sure all cables will reach the enclosure.

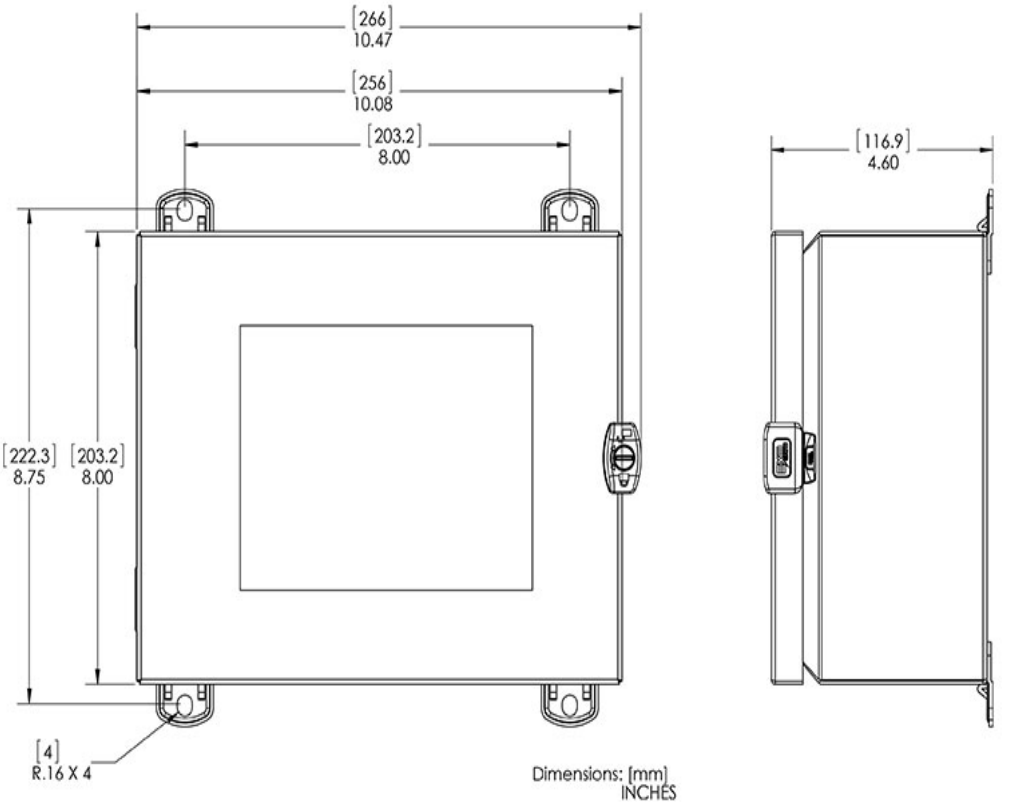


Figure 2-1. SMI 2 Enclosure: Mounting Dimensions

Mounting the SMI 2 Panel Mount

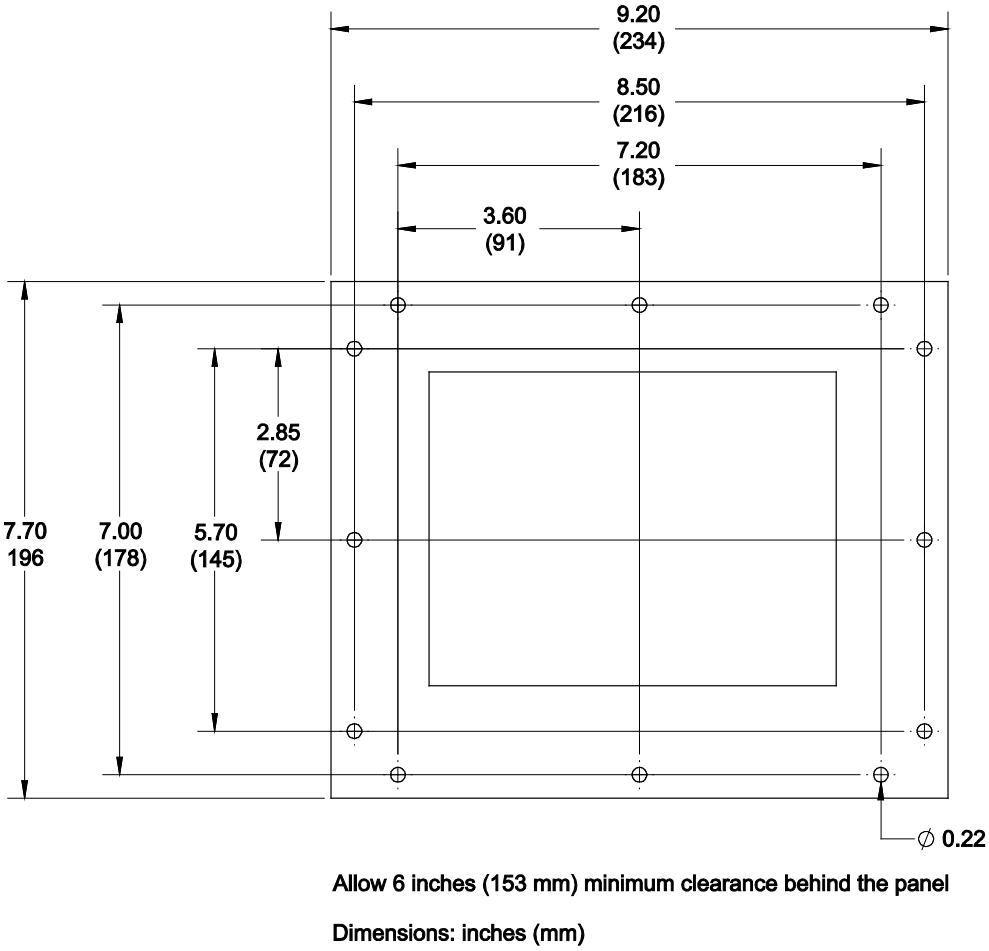


Figure 2-2. SMI 2 Panel Mount: Mounting Dimensions

To install the SMI 2 Panel Mount in your enclosure or console, perform the following steps:

1. Cut a 7.9” wide by 6.4” high mounting hole.
2. Insert the SMI 2 panel mount into the cutout ensuring that it is centered and square. Using the holes in the SMI 2 panel mount as a guide, mark the locations of the mounting holes. Remove the SMI 2 panel mount and drill the mounting holes in your enclosure.

   Note: The holes in the SMI 2 panel mount are sized for #10 screws.

Wiring the SMI 2

Inserting Wires into SMI 2 Terminals

To insert a wire into a terminal on the SMI 2 control board, follow these steps, referring to Figure 2-2:

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.

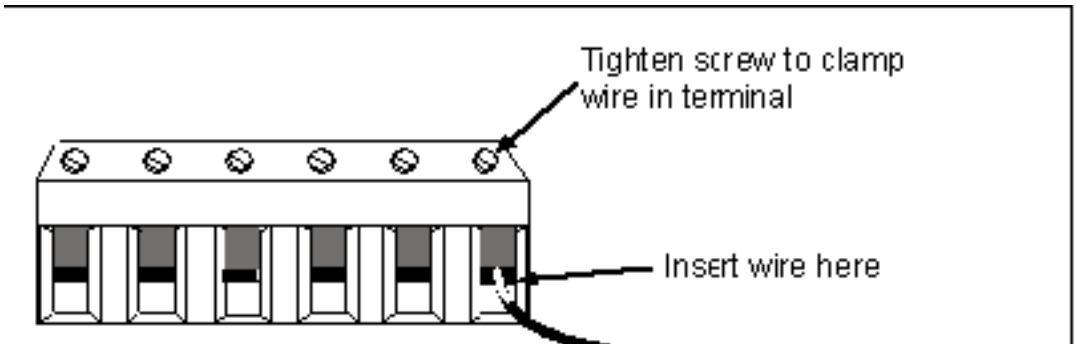


Figure 2-3. Correct Way to Connect Wire to Terminal

Connecting AC Wiring to the SMI 2 Enclosure

> **⚠ 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.**

To make AC input connections to the SMI 2, do the following, referring to Figure 2-4 on page 30 and Figure 1 or 2 wiring diagrams at the end of the manual. 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. Turn the screw on the enclosure door's latch 1/4 turn clockwise to release the latch, and swing open the enclosure door.

3. Run the AC power wires to SMI 2 through flexible liquid tight conduit to the knockout in the lower right corner of the enclosure. Because SMI 2 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 bottom of the enclosure near the right side (see Figure 2-4)

   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 down the screw.

5. Connect power wires to the input connectors on the SMI 2 control board labelled "Line" and "Neut," as shown in Figure 2-4 and Figure 1, SFC Machine Monitor 2 Wiring Diagram at the end of this manual.

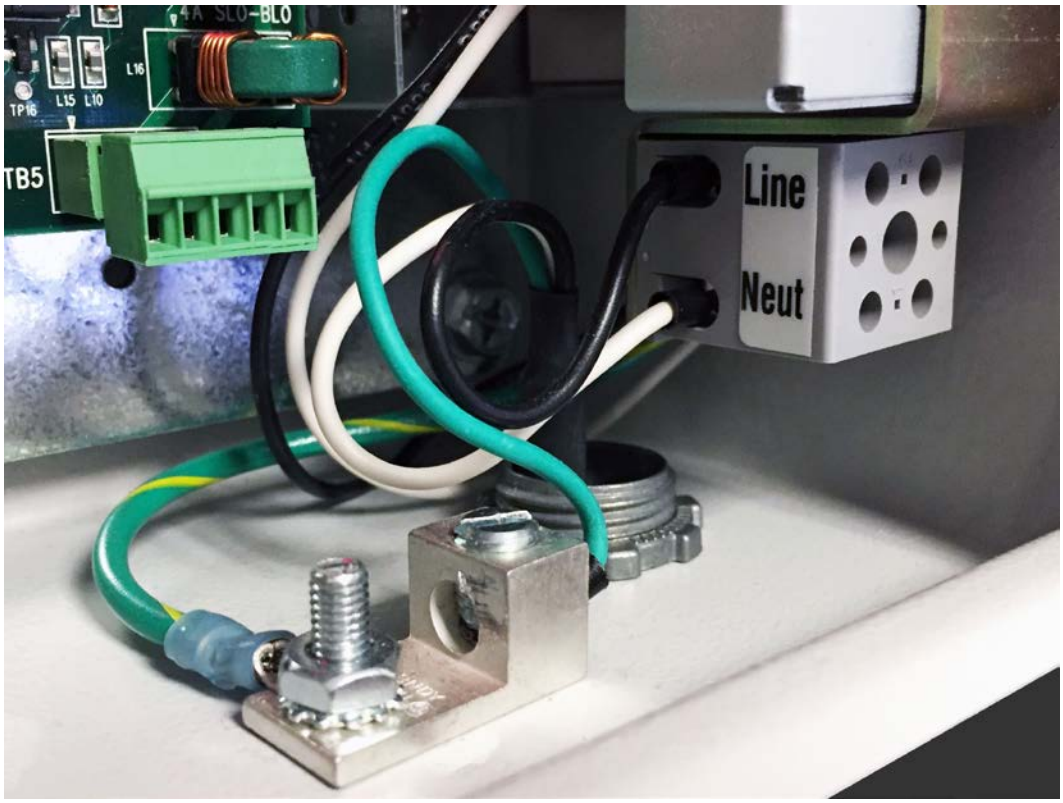


Figure 2-4. AC Wiring Connections, SMI 2 Enclosure

Wiring the SMI 2 Panel Mount

Connecting AC Wiring to the Panel Mount

> **⚠ 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.**

To make AC input connections to the SMI 2 panel mount, do the following, referring to Figure 2-5, Figure 2-6, below, and Figure 1, SFC Machine Monitor 2 Wiring Diagram, at the end of this manual. 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, red, and green or green/yellow for ground.

2. Connect the ground (green or green/yellow) wire to a ground stud on your panel mount, Figure 2-5. enclosure or panel mount console.

3. Connect power wires to the input connectors on the SMI 2 control board labelled “Line” and “Neut,” as shown in Figure 2-6, and Figure 1, SFC Machine Monitor 2 Wiring Diagram, at the end of this manual.

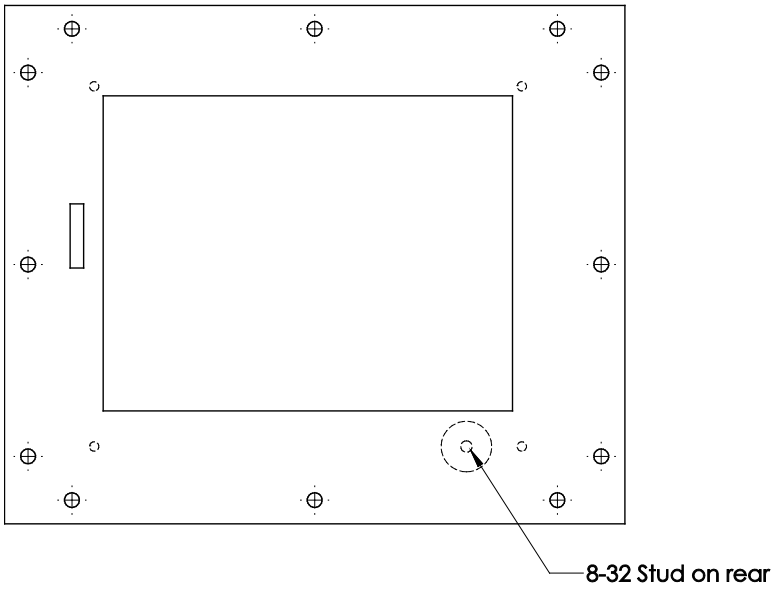


Figure 2-5. Grounding Stud on SMI 2 Panel Mount

Figure 2-6. AC Wiring on SMI 2 Panel Mount

Connecting Input Wiring

You can make up to four input connections to the SMI 2:

- Machine cycle input
- Run/idle input
- Scrap input
- Setup mode input

These wiring connections are made on the series of terminal blocks (connectors) labelled TB2, TB3, and TB4 located along the bottom edge of the left side of the SMI 2control board (see Figure 2-7, page 33).

You must wire either a Cycle or a Run/Idle input in order for SMI 2 to detect that the machine is running. If you want SMI 2 to also count parts, you must wire the Cycle input. The Scrap input should be wired if you want SMI 2 (or the machine operator) to be able to increment the scrap part counter. Wire the Setup mode input if you want SMI 2 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 one of the left-side knockouts in the bottom of the 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

These inputs on TB2 are factory set as PNP.
To change all of them to NPN, move the jumper on TB3 pin 1 to +24VDC.

Wiring a Cycle Input

The Cycle input allows the SMI 2 to receive a signal whenever the machine cycles, incrementing the Good Parts Counter each time the input transitions from low (approximately 0 VDC) to high (+24 VDC).

The Cycle input signal can come directly from the machine controller if it transitions from 0 to +24VDC. If a control signal at a different voltage level is available, you can add a user-supplied relay to operate the Cycle input. Connect the relay so that its coil is actuated by your control signal, and then wire the relay's normally open contacts as follows:

1. Connect one wire to input Pin 1 on connector TB2 (see Figure 2-7, page 33).
2. Connect the other wire to Pin 5 on connector TB2 (+24 VDC).

If no appropriate control signal is available, you can use a separate user-supplied electronic sensor such as a proximity or photoelectric sensor to provide the Cycle input signal. The sensor should be installed in a location where it can sense the completion of a machine cycle and/or 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:

1. Connect the PNP Output wire to input Pin 1 on connector TB2.
2. Connect the Ground wire to the input Pin 2 on connector TB3.
3. Connect the Power In wire to Pin 5 on connector TB2 (+24 VDC).

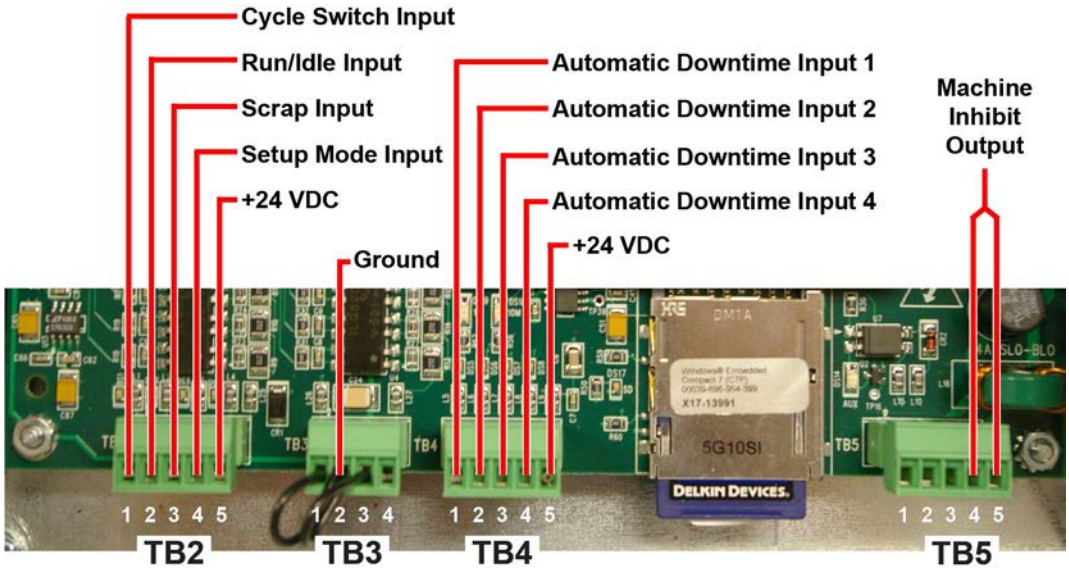


Figure 2-7. SMI 2 Input/Output Wiring

No settings are required for the Cycle input, but there are three optional settings. See *Configuring the Cycle Input*, page 43, for instructions in how to make these 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 input pulses that produce each unit.

- If you wire and enable a Run/Idle contact, SMI 2 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 SMI 2 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 SMI 2 to use the Cycle input to determine when the machine is running by setting the Production Idle Timer.

Wiring a Run/Idle Input

The Run/Idle input enables the SMI 2 to detect when the machine is running and when it is stopped. Whenever this input is high (i.e., +24 VDC), the SMI 2 detects that the machine is running (i.e., in the Running state) and reports that status to SFC. Whenever the input is low (i.e., 0 VDC), the SMI 2 detects that the machine is stopped (i.e., in the Idle state) and reports an Idle status to SFC unless a downtime reason is selected.

To wire a Run/Idle contact input using a dry contact, connect one wire to input Pin 2 on connector TB2 and the other wire to input Pin 5 on TB2 (see Figure 2-7, page 33).

You must enable the Run/Idle input in order for the SMI 2 to use it to detect changes in machine state. When the input is enabled, you can stipulate that the Cycle input must actuate after the Run/Idle input actuates in order for the SMI 2 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 49.

Wiring a Scrap Input Switch

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

Wire the Scrap input using a dry contact, normally open momentary switch. Connect one wire to input Pin 3 on connector TB2 and the other wire to Pin 5 on connector TB2 (24 VDC) (see Figure 2-7, page 33).

You must enable the Scrap input in order for the SMI 2 to maintain a count of scrap (see, *Configuring the Scrap Input*, page 52, for instructions). If the part being made requires multiple operations, then actuating the scrap input resets the stroke count to zero, as well as incrementing the scrap count.

NOTICE

You can also wire your scrap handler to the scrap input. Contact Wintriss ShopFloorConnect Technical Support for more information.

Wiring a Setup Mode Input

The Setup Mode input instructs the SMI 2 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 SMI 2 is monitoring to be run in a non-production mode, such as during setup or troubleshooting, without the SMI 2 responding to changes in the running state or to machine cycles. During these non-

production periods, the SMI 2 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 4 on connector TB2 and the other wire to Pin 5 on connector TB2 (see Figure 2-7, page 33).

Wiring Automatic Downtime Inputs

NOTICE

These automatic downtime inputs on TB4 are factory set as PNP.
To change all of them to NPN, move the jumper on TB3 pin 3 to +24VDC.

Four inputs on SMI 2 provide automatic downtime logging. When the monitored machine transitions from Running to Idle and one of these inputs is ON, SMI 2 automatically uses the assigned downtime reason. You can use these inputs to monitor ancillary equipment that could stop your production line.

The automatic downtime inputs (TB4 inputs 1-4) are associated with four downtime reasons, 29 – 32, respectively. Create these downtime reasons in SFC the same way as you create the others.

Table 2-1. Automatic Downtime Inputs Priority

Input number	Wire to TB4 pin	Priority Order	Automatic Downtime Reason #
4	4	1 - highest	32
3	3	2	31
2	2	3	30
1	1	4 - lowest	29

Automatic downtime inputs have a set priority. Input 4 has the highest priority, Input 1 the lowest.

When the machine transitions from Running to Idle, SMI 2 detects only the highest priority input that is ON. SMI 2 ignores any lower-priority inputs.

Example:

If automatic downtime Input 4 is ON and all the other automatic downtime inputs are also ON, SMI 2 responds only to Input 4. If Input 4 then goes OFF while all the others are still on, SMI 2 responds to Input 3.

Wire input 4 to the equipment that would stop the line first. Wire input 3 to the equipment that would stop the line next, and so on.

If you use only one of the automatic downtime inputs, use the highest priority input, Input 4. If you use two of these inputs, use Inputs 4 and 3, and so on.

You can record the wiring connections and downtime reasons in the table below.

Table 2-2. Automatic Downtime Inputs and Reasons

Automatic Downtime Input	TB4 Pin Number	Wired to	Automatic Downtime Reason Number	Automatic Downtime Reason (Programmed on SFC)
4	4		32	
3	3		31	
2	2		30	
1	1		29	

Connecting Machine Inhibit Output Wiring

To make wiring connections for the machine inhibit output circuit, do the following, referring to Figure 2-7, page 33, and Figure 1, SFC Machine Interface 2 Wiring Diagram, at the end of this 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 SMI 2 control board outputs. Refer to your machine control manual or other electrical prints. You need two wires for the machine inhibit circuit.

2. Run the machine inhibit circuit wires to SMI 2 through flexible liquid tight conduit to the knockout at the bottom center of the SMI 2 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.

3. Connect the wires for the machine inhibit circuit to pins 4 and 5 on connector TB5 (see Figure 2-7, page 33), and Figure 1, SFC Machine Monitor 2 Wiring Diagram, at the end of this manual.). This output is a dry-contact (4A Max @ 240 VAC or 30 VDC).

Connecting SMI 2 to Your Ethernet

> **NOTICE**
>
> To use the optional wireless connection, see – *Using the Optional Wireless Connection*, page 103.

To wire the SMI 2 to your Ethernet, do the following:

1. Run an Ethernet cable through flexible liquid tight conduit into the knockout at the center bottom of the SMI 2 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 ("network jack") near the center of the SMI 2 control board.

Checking Wiring Connections

Before using SMI 2, perform the following checks to make sure that you have wired the unit correctly.

Checking Power Connections

To check SMI 2 power connections, do the following:

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

2. Turn on power to SMI 2. The SMI 2 Main Menu, shown in Figure 2-8, should display.

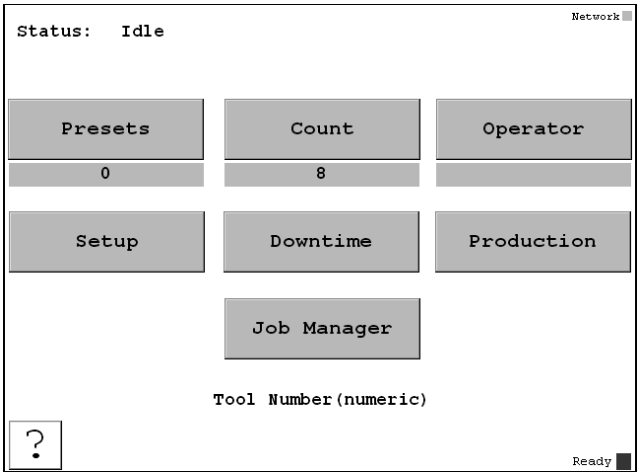


Figure 2-8. SMI 2 Main Menu

3. If the Main Menu does not display, turn off power to SMI 2 and recheck all power connections.

4. If the power connections check out and you still cannot get the Main Menu to display, call Wintriss ShopFloorConnect Technical Support.

Checking Input Wiring

Each SMI 2 input has a corresponding LED indicator on the control board above its input pin on the terminal block. The LED lights up when 24 volts is applied to the input. Simply actuate each of the relays/sensors/signals connected to the inputs, and verify that each LED lights up.

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 Forced Downtime Menu screen (Figure 2-10, page 39) has displayed. To check the wiring connections for this circuit, do the following:

1. On the SMI 2 Main Menu, press *Setup*. The Setup Menu appears.
2. Press *Forced Dialog*. The Forced Dialog Settings screen, shown in Figure 2-9, displays.

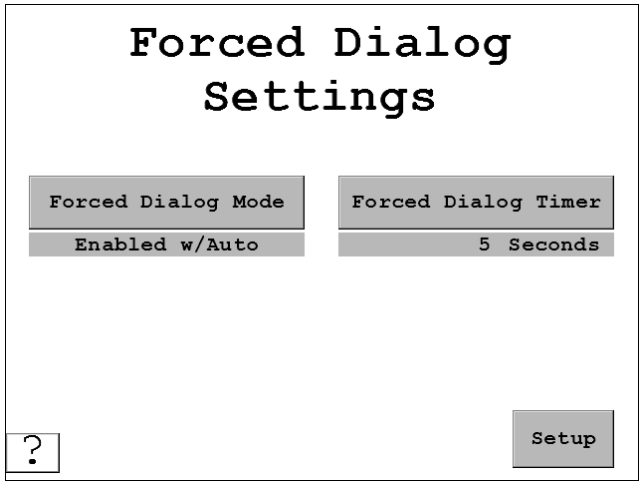


Figure 2-9. Forced Dialog Settings Screen

3. On the Forced Dialog Settings screen, make sure the status message below the *Forced Dialog Mode* button is "Enabled w/Auto," the default backfill setting. If the status is "Disabled" or "Enabled w/ Auto," press *Forced Dialog Mode* to change the message to "Enabled w/Manual."
4. The time interval displayed below the *Forced Dialog Timer* button should be "180 Sec," the default setting. You can set it to a different interval (e.g., 60 seconds, 600 seconds, etc. up to a maximum of 3600 seconds) by pressing *Forced Dialog Timer*, which displays the Forced Dialog Timer screen. The current timer setting is displayed at upper right.
5. To test the output wiring, decrease the Forced Dialog Timer setting to 30 seconds by pressing the *3* key and the *0* key(the number at upper right changes to "30"), then press *Enter*.
6. You are returned to the Forced Dialog Settings screen with the setting "30 Sec" displayed below the *Forced Dialog Timer* button.
    - If your machine inhibit output wiring is correct, you should be unable to restart the machine after 30 seconds have elapsed and the Forced Downtime Menu screen, Figure 2-10 has displayed.

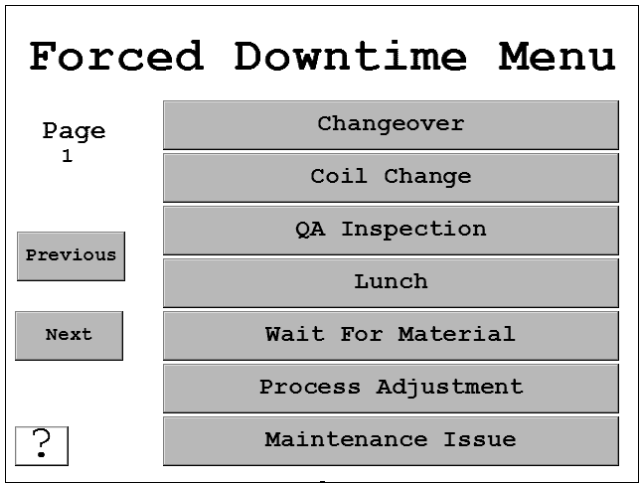


Figure 2-10. Forced Downtime Menu Screen

- If you can restart the machine after 30 seconds have elapsed, check the machine inhibit output wiring.
- 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 ShopFloorConnect Technical Support.

7. When you are finished, reset the Forced Dialog Mode to Enable w/Auto and the Forced Dialog Timer to 180 seconds, the default setting, or to a different setting of your choice.

Checking Ethernet Connectivity

To check that SMI 2 is properly connected to your Ethernet, do the following:

1. Verify that the green link LED is lit solid and the amber LED is rapidly flashing. These LEDs are located on either side of the Ethernet (RJ45) connecter, with the green on the left side and the amber on the right side.
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 cable is properly connected, but one or both of the LEDs still do not come on, call Wintriss ShopFloorConnect Technical Support.

Setting the IP Address, Subnet, and Default Gateway

You must set the SMI 2's IP address, subnet, and default gateway for the unit to communicate with SFC.

1. On the Main screen, press *Setup*. The Setup screen appears.
2. Press *Additional Settings*. The Additional Settings screen appears.
3. Press *Network Settings*. The Network Settings screen appears.
4. Press *Network IP Settings*. The Network Menu screen appears.

The factory default IP address (192.168.100.225), subnet, and default gateway must be changed to the static IP address programmed into ShopFloorConnect for the machine (refer to your *ShopFloorConnect Workbook* for the proper IP address for each machine).

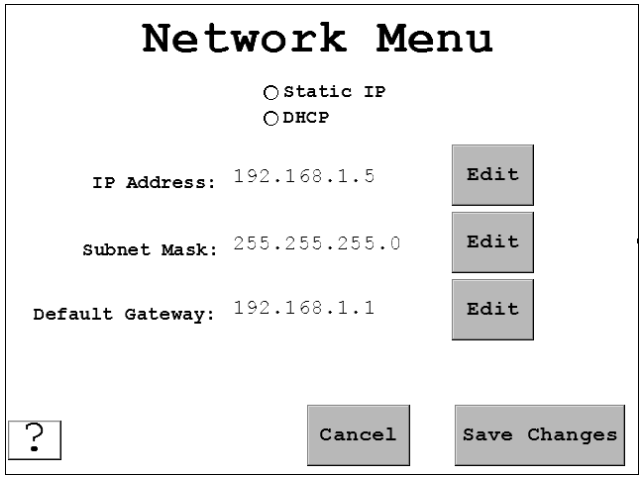


Figure 2-11. Network Menu Screen

5. Press *Edit* next to IP Address to change the IP address (see Figure 2-12). Enter the digits for the first octet, then press the period [.] to go on to the next. Press *Enter* to accept the IP address.

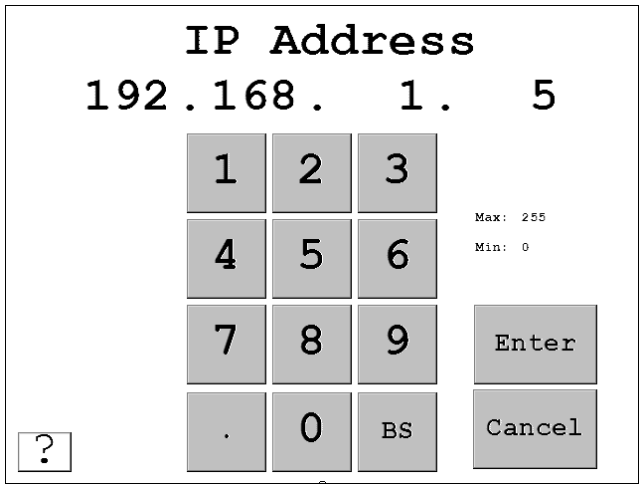


Figure 2-12. Setting the IP Address

6. Set the subnet and default gateway in similar fashion.

Maintaining the SMI 2

Cleaning the Touch Screen

Clean the SMI 2 touch screen with a mild detergent and a soft cloth.

Chapter 3 – Setup

This chapter shows you how to set up the SMI 2 inputs and make production, forced dialog, and security settings.

NOTICE

For help with any SMI 2 screen, press the help button (**?**).

Accessing the Setup Menu

When you power up the SMI 2, the Main Menu displays with the prompt "Press PRODUCTION to continue" shown below the Status message. The status of the machine the SMI 2 is monitoring will be "Changeover," "Planned Downtime," or "Unplanned Downtime" if this was the machine state when the SMI 2 was powered down; otherwise, the status of the machine will be "Idle." Press *Production* to clear the prompt. The Main Menu should look similar to the example shown in Figure 3-1.

Note that the Status message is "Idle."

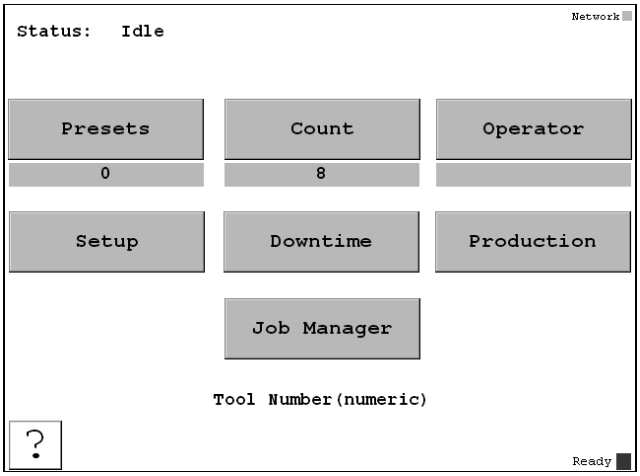


Figure 3-1 SMI 2 Main Menu

In the Main Menu, press Setup. The Setup screen appears.

NOTICE

To access the Setup Menu you may need to enter the system password (see *Requiring a Password to Access the Setup Menu, page 69*).

If the Password screen displays when you press *Setup*, press the key(s) for the current password, and press *ENTER*.

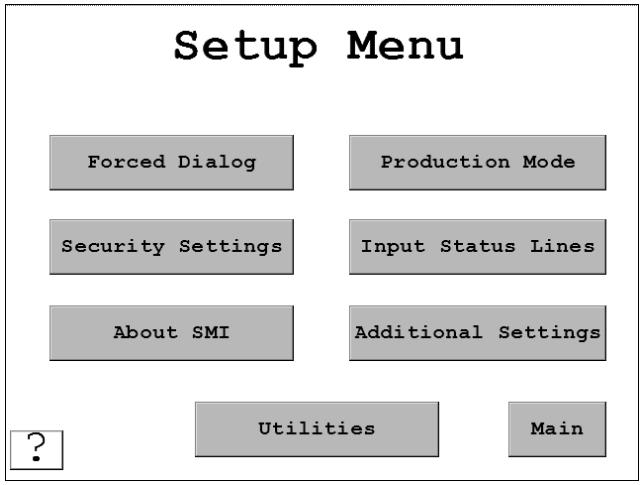


Figure 3-2 Setup Menu

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

- *Forced Dialog Settings* – enable Forced Dialog Mode and the set the Forced Dialog Timer (see *Making Forced Dialog Mode Settings*, page 63).
- *Production Mode Settings* – set the Production Rate Calculation Interval, Maximum Time Between Pulses, and Production Idle Timer (see *Making Production Settings*, page 53).
- *Security Settings* – change the SMI 2 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 SMI 2 settings to their factory defaults (see *Making Security Settings*, page 68).
- *Input Status Lines* – configure and view the state (Off/On) of SMI 2 inputs (see *Configuring Inputs*, page 43).

• *About SMI 2* – view the Wintriss ShopFloorConnect Technical Support phone number as well as the current SMI 2 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 *Maintaining Part and Scrap Count Settings*, page 75), which you access by pressing *Count* on the Main Menu.

- *Additional Settings* – go to a menu that allows you to set and change various settings and defaults, including
    - entering the default field captions for the Job Manager screen (see *Setting Screen Defaults: Primary Item Name and Job Alias*, page 57),
    - setting up a barcode scanner (see *Appendix B* – Using the Optional Barcode Scanner, page 99)
    - entering network parameters (see Setting the IP Address, Subnet, and Default Gateway, page 39 and Initializing the Wireless Module, page 104)
    - setting SMI 2 to download production parameters for new jobs (see *Setting Automatic Download* of *Production Parameters*, page 62)
    - enabling Hold State (see Activating Hold State, page 66)

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.

Configuring the Cycle Input

If you have wired a PNP-type cycle sensor to the SMI 2 (see *Connecting Input Wiring*, page 32), the Input Lines menu provides access to optional settings you can make to configure the input. You can monitor the state of the input (off/on) by viewing the corresponding LED on the control board, Figure 1-3, page 19.

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 (e.g., a turret press), you can add a "delay time" to the cycle input to prevent subsequent cycles within that time window from being recorded as good parts.

1. In the Main Menu, press *Setup*. The Setup menu appears, Figure 3-2.
2. Press *Input Status Lines.* The Input Lines screen appears.

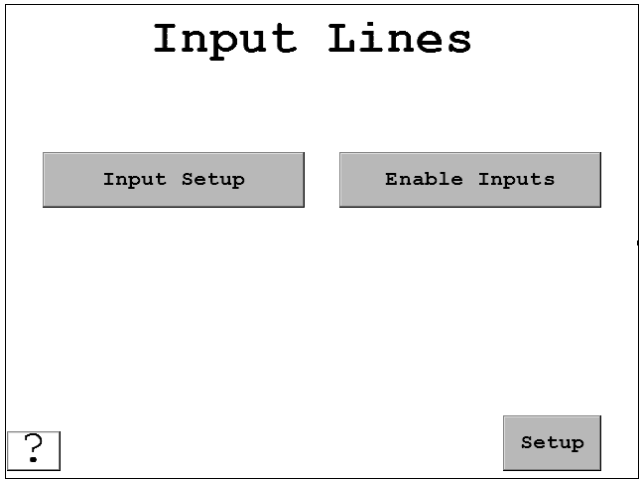


Figure 3-3. Input Lines Screen

3. Press *Input Setup*. The Input Setup screen appears.

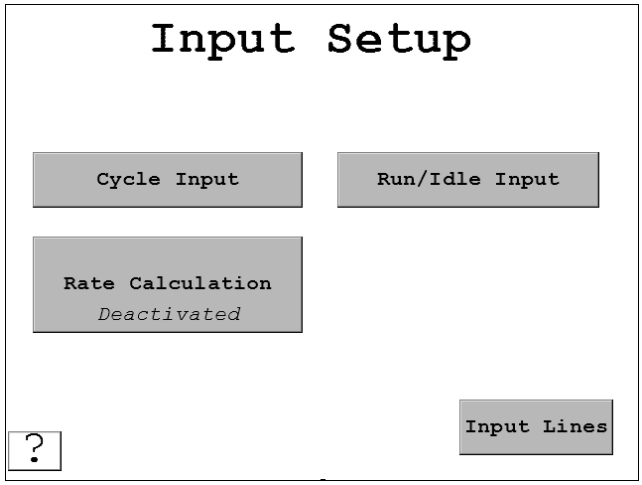


Figure 3-4. Input Setup Screen

4. Press *Cycle Input*. The Cycle Input Setup screen appears.

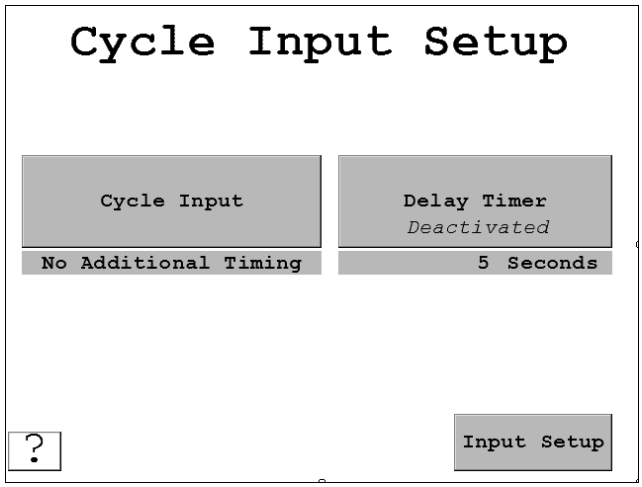


Figure 3-5. Cycle Input Setup Screen

NOTICE

The default value for Cycle Input is "No Additional Timing." When this setting is selected, the SMI 2 counts each machine cycle as a good part.

5. Press *Cycle Input* to toggle the Cycle Input setting to "Off Delay." The Status message beneath the *Delay Timer* button changes from "Deactivated" to "Off Delay."

6. Press *Delay Timer*. The Cycle Input Time screen appears, showing the current delay time at upper right.

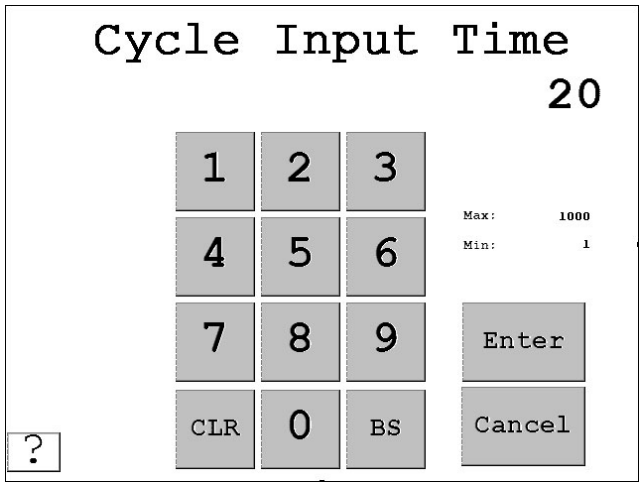


Figure 3-6. Cycle Input Time

7. Press *CLR* to clear the current delay time setting. Press the number key(s) for the delay time in seconds you want (delay time appears at upper right), and press *ENTER*. The Cycle Input Setup screen appears, showing your entry displayed beneath the *Delay Timer* button.

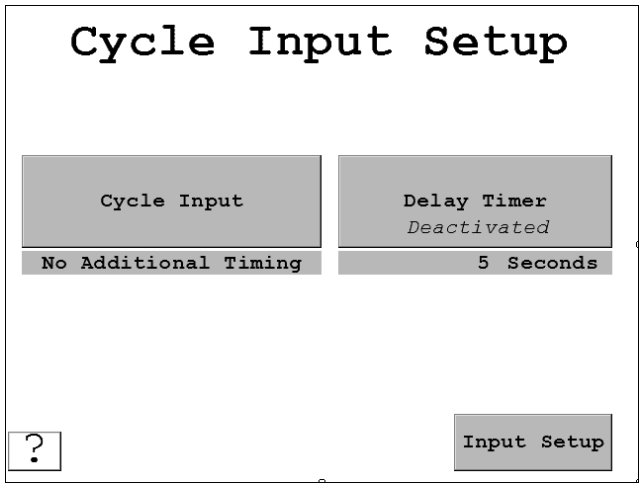


Figure 3-7. Cycle Input Setup with Off Delay

NOTICE

The minimum value for Cycle Input Time is 1 second. The maximum is 1000 seconds. The default is 5 seconds.

Configuring the Cycle Input for a Production Rate

Configure the Cycle Input so the SMI 2 calculates the production rate in the units and time interval appropriate the machine you are monitoring. For Cycle Input, specify on the Rate Calculation screen the unit/time period (e.g., items/minute, feet/hour, etc.) and the number of cycles, or pulses, required to produce each unit.

EXAMPLE 1

The SMI 2 is installed on a CNC machine that produces a part every few minutes. The Cycle input pulses once for each part produced. On the Rate Calculation screen, set the Production Rate Units to "Items/Hour" and the Pulses per Unit to "1."

EXAMPLE 2

The SMI 2 is installed on a continuous plating line. The Cycle Input pulses 16 times for each foot of travel. 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. In the Main Menu, press *Setup*. The Setup screen appears.
2. Press *Production Mode*. The Production Settings screen appears.
3. Press *Calculation Interval* repeatedly until "Instantaneous" appears below the button.
4. Press *Setup*. The Setup screen appears.
5. Press *Input Status Lines*. The Input Status Lines screen appears.
6. Press *Input Setup*. The Input Setup screen appears (Figure 3-4, page 44), showing "Activated" on the *Rate Calculation* button.

7. Press Rate Calculation. The Rate Calculation screen should appear (Figure 3-8, below).

NOTICE

If nothing happens when you press *Rate Calculation*, you must set the calculation interval to "Instantaneous" in the Production Settings screen. See *Setting the Production Rate Calculation Interval,* page 54.

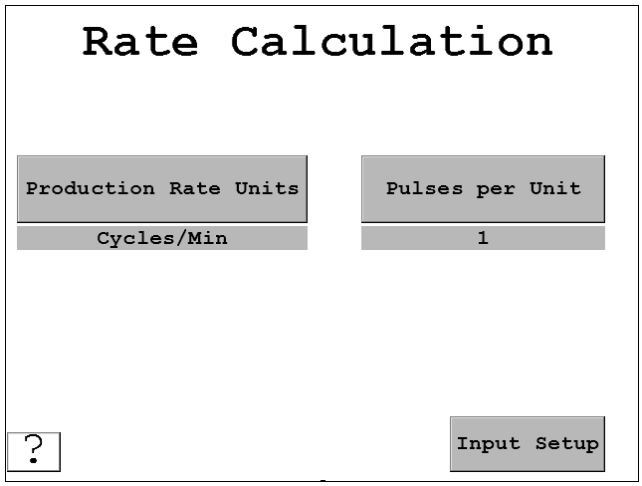


Figure 3-8. Rate Calculation Screen

8. Press *Production Rate Units* repeatedly until the units/time period setting you want displays below the button. Available settings are: Cycles/Minute, Cycles/Hour, Feet/Minute, Feet/Hour, Meters/Minute, Meters/Hour, Items/Minute, and Items/Hour.

9. Press *Pulses per Unit*. The Pulses per Unit screen appears, Figure 3-9, showing the current pulses/unit setting at upper right, which indicates the pulses per foot, meter or item, according to the Production Rate Units you selected.

10. Press *CLR* to clear the current pulses/unit setting, press the number key(s) for the number of pulses you want (your entry appears at upper right), and press *ENTER*. The Rate Calculation screen appears, showing your entry beneath the *Pulses per Unit* button.

NOTICE

The minimum value for pulses/unit is 1, the maximum is 100, and the default is 1.

If you enter a value outside the permitted range, this message appears: "Value out of range." Press CLR and enter a new value.

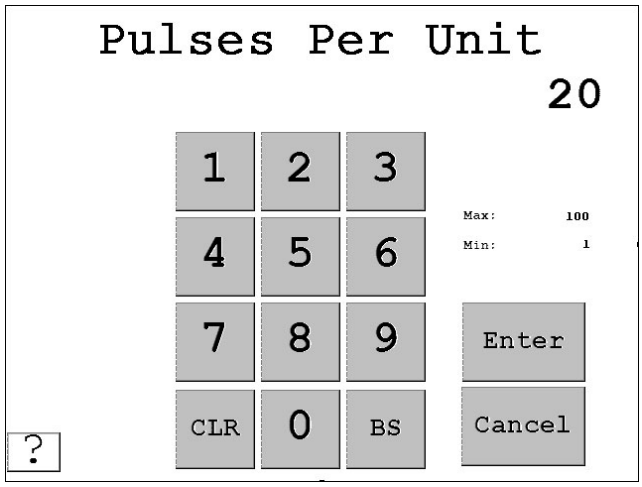


Figure 3-9. Pulses per Unit Screen

NOTICE

After you configure the Cycle Input for production units, the time interval, and pulses per unit, you must select a Production Rate Calculation Interval on the Production Settings screen (see *Setting the Production Rate Calculation Interval*, page 54). This setting specifies the method SMI 2 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 SMI 2 to indicate that the machine is running. To do so, you set the Production Idle Timer (see *Setting the Production Idle Timer*, page 56). 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 SMI 2 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 52).

Viewing the State of the Cycle Input

You can view the state (OFF or ON) of the Cycle input as indicated by an LED on the control board, Figure 1-3, page 19.

Configuring the Run/Idle Input

If you have wired a Run/Idle contact to the SMI 2, the Enable Inputs screen provides access to settings you can make to configure the input. To monitor the state of the input (OFF or ON) view the corresponding LED on the control board, Figure 1-3, page 19.

Enabling the Run/Idle Input

If you want the SMI 2 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. In the Main Menu, press *Setup*.
2. In the Setup Menu, press *Input Status Lines.*
3. On the Input Lines menu, press *Enable Inputs*. The Enable Inputs screen appears (Figure 3-10).

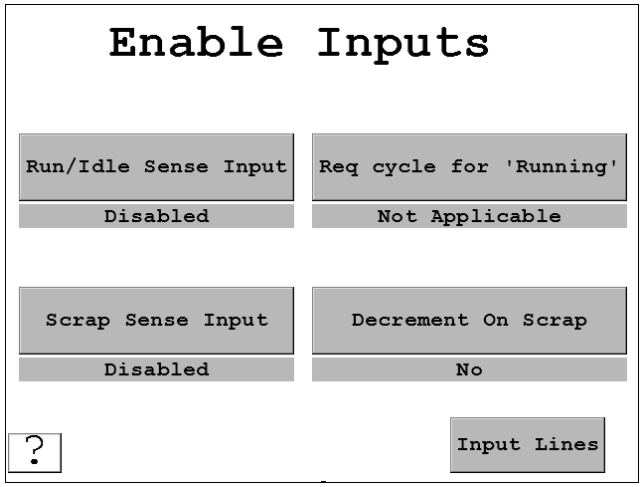


Figure 3-10. Enable Inputs Screen

4. Press *Run/Idle Sense Input* to toggle the setting below the button between "Disabled" (the default) and "Enabled."
5. Press *Req cycle for 'Running'* to make a setting of "Yes" or "No" to control whether a cycle input is required in order for the machine state to change from "Idle" to "Running":

   - **No** – *Req cycle for 'Running'* (default). If the Run/Idle input goes high (24V), the SMI 2 machine state changes from "Idle" to "Running." If the Cycle input goes high while the Run/Idle input is high, the counter increments.
   - **Yes** – *Req cycle for 'Running:* When the Run/Idle input goes high, no change of state is recorded unless and until the Cycle input also goes high. Then, the SMI 2 machine state change from "Idle" to "Running."

     Note: If you wish to configure the SMI 2 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 52).

6. Press *Input Lines Menu* 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 SMI 2 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 49).
2. On the Input Lines menu, press *Input Setup*. The Input Setup screen appears, Figure 3-4, page 44.
3. Press *Run/Idle Input* to display the Run/Idle Input Setup screen, Figure 3-11, below.

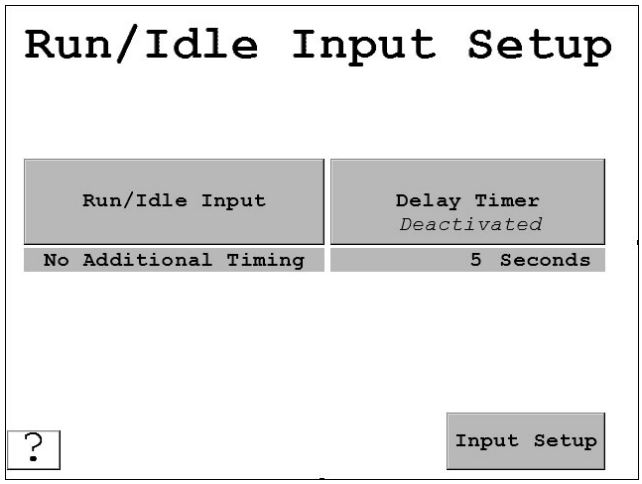


Figure 3-11. Run/Idle Input Setup Screen

The default setting for the Run/Idle input is "No additional timing," as shown in Figure 3-11. When this setting is selected, the SMI 2 records each 24 VDC signal from the Run/Idle input as a machine state change from "Idle" to "Running."

4. Press *Run/Idle Input* 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."

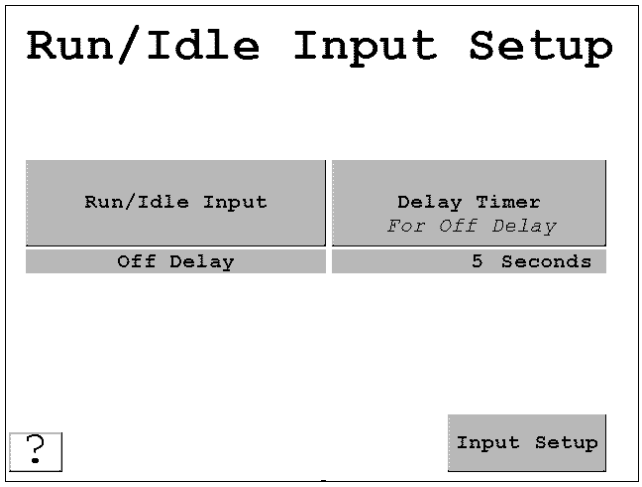


Figure 3-12. Run/Idle Input Setup Screen with "Off Delay" Setting

5. Press *Delay Timer*. The Run Idle Time Delay screen (Figure 3-13) appears with the current delay time displayed at upper right.

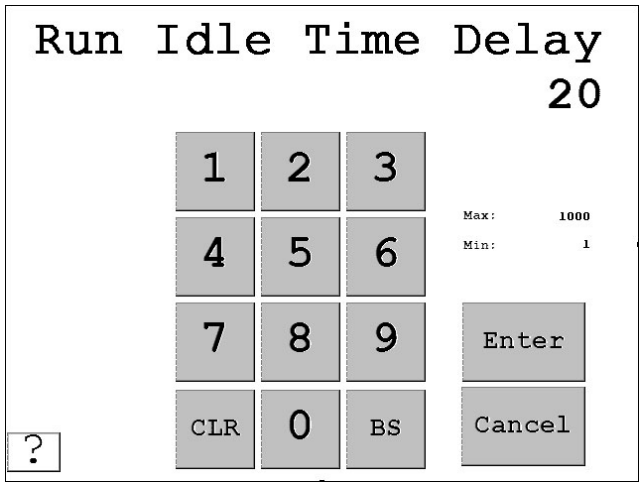


Figure 3-13. Run Idle Time Delay

6. Press *CLR* 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 *ENTER*. You are returned to the Run/Idle Input Setup screen with your entry displayed beneath the *Delay Timer* button.

NOTICE

The maximum value you can enter on the Time Delay screen is 1000 seconds. When you attempt to enter a value greater than the maximum, your entry defaults to "1000." The minimum is 1 second. The default value is 5 seconds.

7. Press *Input Setup Menu* to return to the Input Setup menu.

8. Press *Input Lines Menu* 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 *Enabling the Run/Idle Input*, page 49), the SMI 2 is set by default to record an "Idle"-to-"Running" machine state change only when the Cycle input turns on after the Run/Idle input turns on. If you wish to configure the SMI 2 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 screen, press *Enable Inputs*. If you have enabled the Run/Idle input, the Enable Inputs screen should look like Figure 3-14, below.

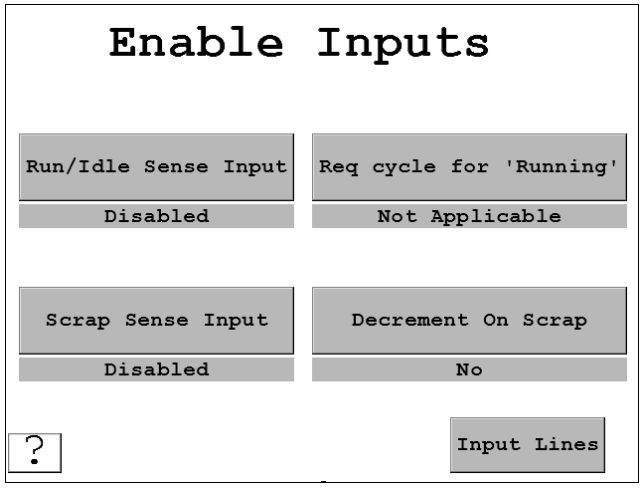


Figure 3-14. Enable Inputs Screen

2. Verify that the Run/Idle input is enabled. If it isn't, enable it, following the instructions in *Enabling the Run/Idle Input*, page 49.

3. Press *Require cycle input for 'Running' state* 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 SMI 2 will now record a machine state change to "Running" only when the Run/Idle input is high (i.e., 24 VDC) or to "Idle" only when the Run/Idle input is low (i.e., 0 VDC).

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

Viewing the State of the Run/Idle Input

You can monitor the state (OFF or ON) of the Run/Idle input by viewing the corresponding LED on the control board, Figure 1-3, page 19.

Configuring the Scrap Input

If you have wired a Scrap input to the SMI 2, the Input Lines menu (Figure 3-3, page 44) allows you to enable the Scrap input. To monitor the state of the input, view the corresponding LED on the control board, Figure 1-3, page 19.

Enabling the Scrap Input

If you have wired a Scrap input to the SMI 2 and you want the SMI 2 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 *Enable Inputs*. The Enable Inputs screen displays (Figure 3-10, page 49).
2. Press *Scrap Sense Input* to toggle the setting in the Scrap Sense Input window from "Disabled," the default, to "Enabled."
3. Press *Input Lines Menu* to return to the Input Lines menu.

Configuring Decrement on Scrap

If you want the good parts count to decrement when the scrap input is pulsed, in the Enable Inputs screen, press *Decrement on Scrap* so the setting below the button is Yes.

Making Production Settings

The following sections show you how to set the interval SMI 2 uses to calculate the production rate and specify the period of time SMI 2 waits after activation of the Cycle input before changing the machine state from "Running" to "Idle." You make these settings on the Production Settings screen (Figure 3-15).

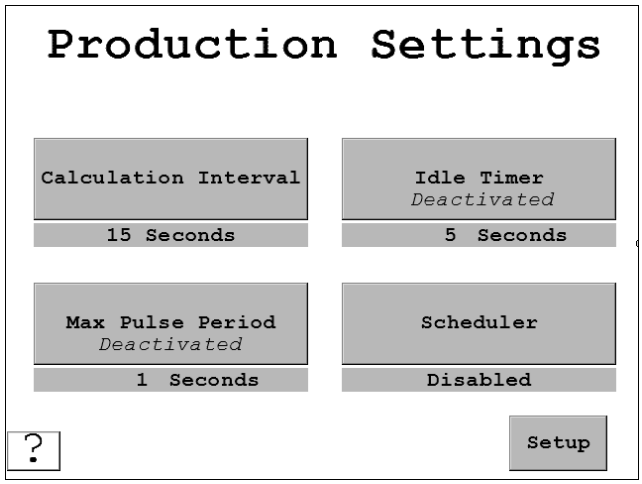


Figure 3-15. Production Settings Screen

Access the Production Settings screen as follows:

1. In the Main Menu, press *Setup*. The Setup screen appears
2. Press *Production Mode*. The Production Settings screen (Figure 3-15) appears.

Setting the Production Rate Calculation Interval

Set the Calculation Interval to specify how the SMI 2 calculates the production rate of the monitored machine. The method SMI 2 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 *Configuring the Cycle Input for a Production Rate*, page 46):

Table 3-1. Production Measurement and Production Rate Units

Production measurement	Production Rate units
Items or cycles/time (stamping press, CNC machine, etc.)	Items/Minute Items/Hour Cycles/Minute Cycles/Hour You also select a numeric setting: (15, 30, 60, or 120 seconds)
Distance/time (ft/min, m/s, etc.) (paint line,	Instantaneous

- If the machine's production rate is measured in parts or cycles per unit of time (e.g., stamping press or CNC machine) and you have set Production Rate Units to "Items/Minute," "Items/Hour," "Cycles/Minute," or "Cycles/Hour" (see *Configuring the Cycle Input for a Production Rate*, page 46), select one of the numeric settings (15, 30, 60, or 120 seconds). The SMI 2 counts the number of cycles that occur within the time interval you choose and converts that number to the items or cycles per minute or per hour. The default setting is 15 seconds. Wintriss recommends setting the calculation interval based on the number of cycles or parts, the machine makes in a minute, as shown in Table 3-2.

Table 3-2. Production Rate Calculation Interval Settings

Machine's Production Rate (parts/minute)	Select Calculation Interval (seconds)
More than 10	15
4-10	30
2-3	60
One (1) or less	120

- If the machine's production rate is 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" (see *Configuring the Cycle Input for a Production Rate*, page 46), select the "Instantaneous" setting in the Production Settings screen (see Figure 3-16).

When the Production Rate Calculation Interval is set to "Instantaneous," the SMI 2 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 (60 seconds/4 seconds = 15 pulses; 15 pulses/3 pulses per unit = 5 feet/minute).

If you select the "Instantaneous" setting, you must also specify a Maximum Pulse Period (maximum time between pulses) to enable the SMI 2 to monitor the production rate accurately during machine interruptions. (When you select Instantaneous, the status shown below *Maximum Pulse Period* status changes to Active. When you select a Calculation interval, *Maximum Pulse Period* status is "Deactivated.")

Whenever the interval between pulses exceeds this value, SMI 2 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 SMI 2 resumes counting/calculating.

Table 3-3. Calculation Interval and Max Pulse Period Status

Calculation Interval	Max Pulse Period Status
15, 30, 60, or 120 seconds	Active
Instantaneous	Deactivated

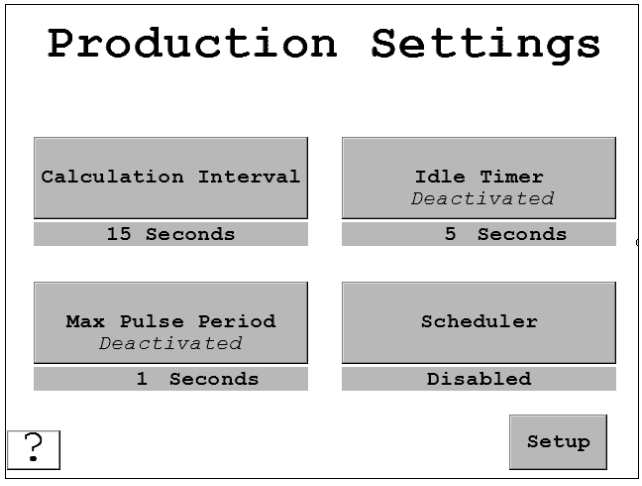


Figure 3-16. Production Settings Screen

NOTICE

The Maximum Pulse Period default is 1 second. You can select 1, 3, 5, 10, 20, 30, 60, 90, or 120 seconds

Example

If the normal time between pulses is 4 seconds for this machine, 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. In the Main Menu, press *Setup*. The Setup screen appears.
2. Press *Production Mode*. The Production Settings screen appears.
3. Press *Calculation Interval* repeatedly until the setting you want displays below the *Calculation Interval* button. The interval cycles through the available settings: 15 seconds,30 seconds, 60 seconds, 120 seconds, Instantaneous.

   If you select "Instantaneous," the status on the *Max Pulse Period* button changes from "Deactivated" to "Active." Press *Max Pulse Period* repeatedly until the setting you want displays below the *Max Pulse Period* button:1 3, 5, 10, 20, 30, 60, 90, or 120 seconds.
4. Press *Setup* 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 SMI 2 can use its +24 VDC signal to detect when the machine is running. Normally, SMI 2 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 SMI 2 reporting a change in machine state from "Running" to "Idle." Without this setting, SMI 2 would detect and report to SFC, 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 SMI 2 ignores all 0 VDC Cycle input signals, maintaining the initial Running state. As long as SMI 2 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 SMI 2 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 one-half times the normal cycle time of the machine. For example, if the machine normally 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 state changes in the SFC database, 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 49). 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 5 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 for you 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 *Enabling the Run/Idle Input,* page 49).

1. On the Production Settings screen, press *Production Idle Timer*. The Production Idle Timer screen displays (Figure 3-17, page 57) with the current timer setting (default is 5 seconds) displayed above the *CLR* key, the final digit shown in flashing reverse video.

2. Press *CLR* 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 *ENTER*. 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 *Setup* to return to the Setup Menu.

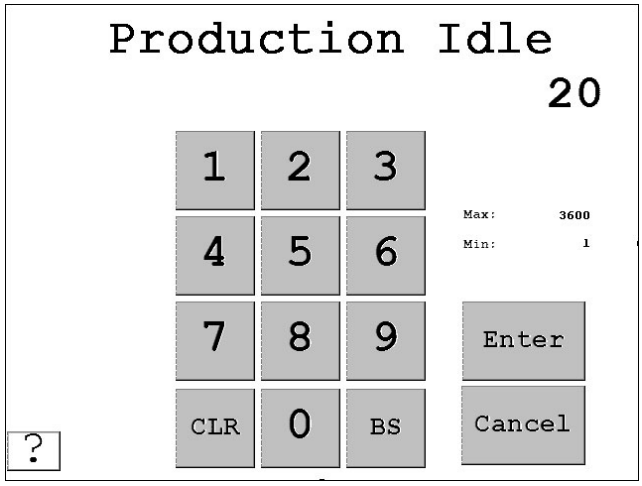


Figure 3-17. Production Idle Timer Screen

Setting Screen Defaults: Primary Item Name and Job Alias

SFC evaluates machine performance using a variable called the primary item, which is the aspect of machine operation on a particular job that primarily determines the machine's efficiency. Primary items can be the tool, mold, or fixture that shapes the material to create the part, or it may be the material itself, or the specific part being made. SMI 2 sets the Primary item name to "Tool Number" by default, but you can change it to one of the other options (e.g., Part Number, Mold Number, Fixture Number, SKU Number, Material Number, or Item Number), depending on the Primary item setting you've made in SFC.

SFC tracks individual jobs that run on a machine using one of four job names, or "job aliases": Job Number, Work Order, MO (manufacturing order), and Production Order. SMI 2 sets the job "alias" to Job Number by default, but you can change it to one of the other options.

Follow the instructions below to specify the primary item name and job alias that show on the SMI 2 Job Manager screen.

1. In the Main menu, press *Setup*.
2. In the Setup menu, press *Additional Settings*. The Additional Settings screen appears.

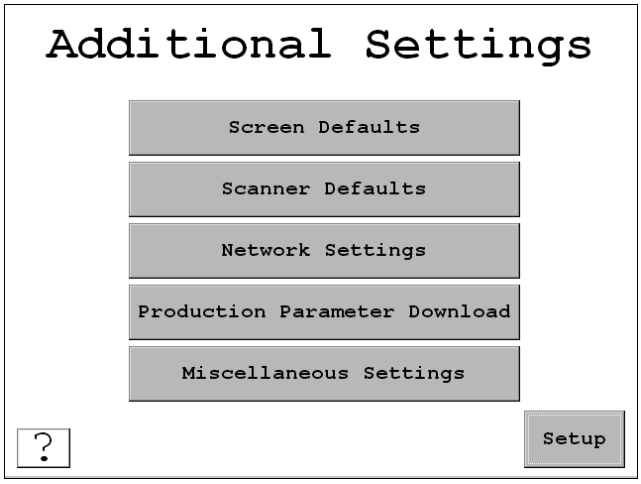


Figure 3-18. Additional Settings Screen

3. Press *Screen Defaults*. The Screen Defaults screen appears, Figure 3-19.

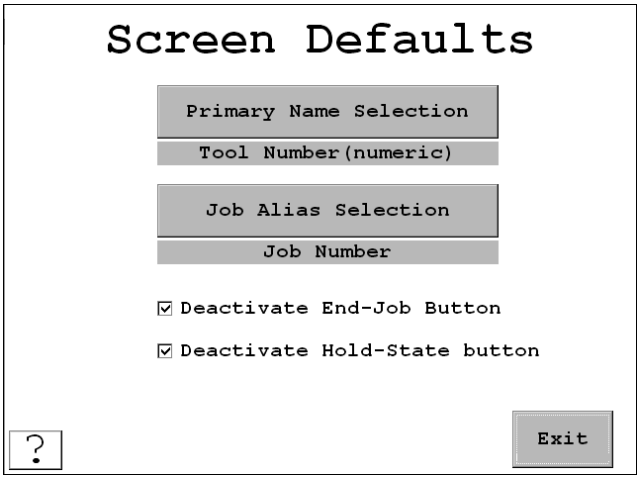


Figure 3-19. Screen Defaults Menu, Primary Item Name/Job Alias Selection

4. Press *Primary Name Selection* repeatedly to show the available names for the primary item and select the name you want. SMI 2 comes from the factory with these names:
   - Tool Number (numeric) (default)
   - Part Number

- Mold Number
- Fixture Number
- SKU Number
- Material Number
- Item Number
- Tool Number (alpha numeric)

5. Press *Job Alias Selection* repeatedly to show the available aliases and select the one you want. SMI 2 comes from the factory with these aliases:

- Job Number (default)
- Work Order
- MO
- Production Order

6. Press Setup to return to the Setup menu.

Activating the End Job Button

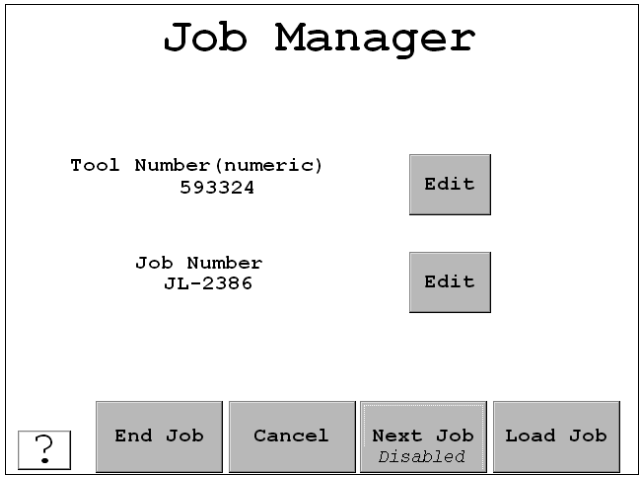


Figure 3-20. Job Manager Screen with End Job Button

You can use the *End Job* button to close out the current job when there are no more jobs to follow. The *End Job* button appears on the Job Manager screen only when it is activated. The factory setting for the *End Job* button is deactivated.

To activate the *End Job* button, follow these instructions:

1. In the Main menu, press *Setup*.
2. In the Setup menu, press *Additional Settings*. The Additional Settings screen appears.

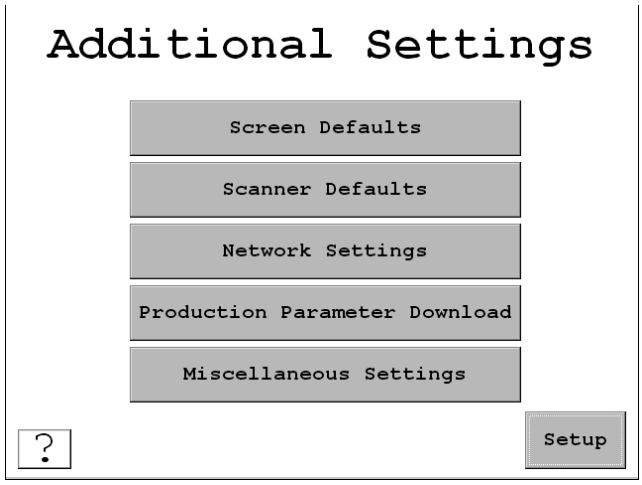


Figure 3-21. Additional Settings Screen

3. Press *Screen Defaults*. The Screen Defaults screen appears, Figure 3-19.

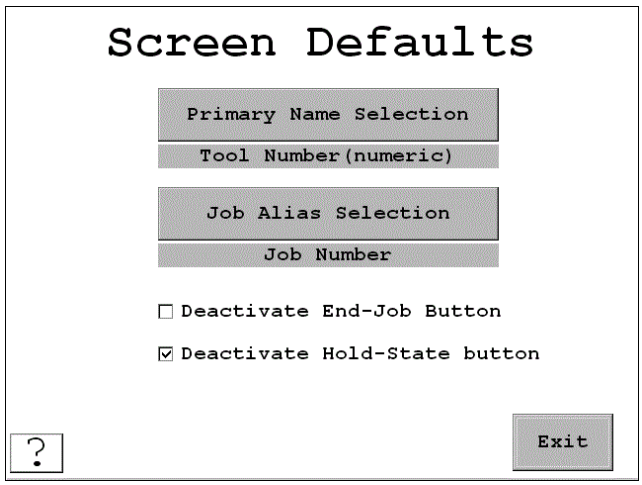


Figure 3-22. Screen Defaults Menu, Primary Item Name/Job Alias Selection

4. Press *Deactivate End-Job Button* so no checkmark shows in the box next to it. This activates the *End Job* button.

For information about ending jobs, see *Ending a Job*, page 86.

Disabling Stop on Preset Reached

By default, SMI 2 opens its machine inhibit output relay whenever the number of parts programmed for a job on the Parts Preset screen (see *Setting the Parts Preset*, page 73) has been reached. In some applications, such as injection molding, the machine may need to continue running after the preset has been reached. The settings on the Presets Menu, Figure 3-23, control whether the SMI 2's machine inhibit output relay opens or remains closed after a preset is reached.

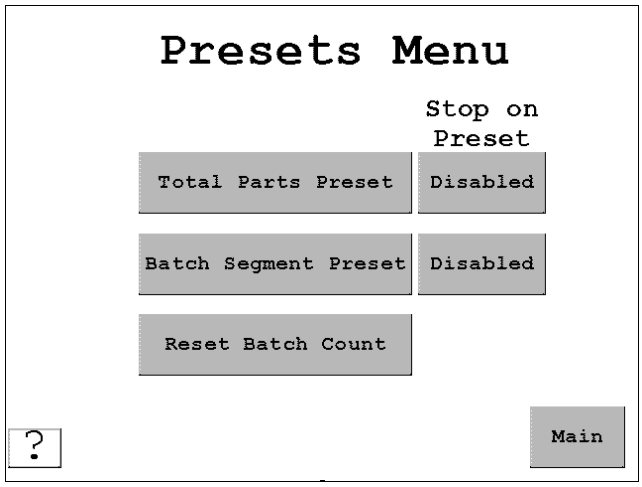


Figure 3-23. Presets Menu: Disabling Stop on Preset

To disable Stop on Preset Reached both total parts and/or batch, perform the following steps:

1. In the Main menu, press *Presets*. The Presets Menu appears.
2. For *Total Parts Preset* and *Batch Segment Preset*, press the button beside "Stop on Preset" so it toggles to *Disabled*.

NOTICE

The "Enabled" setting causes the machine inhibit relays to open when a preset is reached, stopping the machine and prevent it from being restarted.

The "Disabled" setting allows the machine to continue running when a preset is reached; the machine inhibit relays remain closed, allowing the machine to continue running.

3. Press *Main* to return to the Main menu.

If Stop on Preset Reached is disabled, SMI 2 displays the Preset Reached Continuing Operation screen (see Figure 3-24) when the machine has produced the preset number of parts. To exit that screen, press *Press to Clear Screen*. SMI 2 displays the Main Menu with the message "Parts count reached" in the Status line.

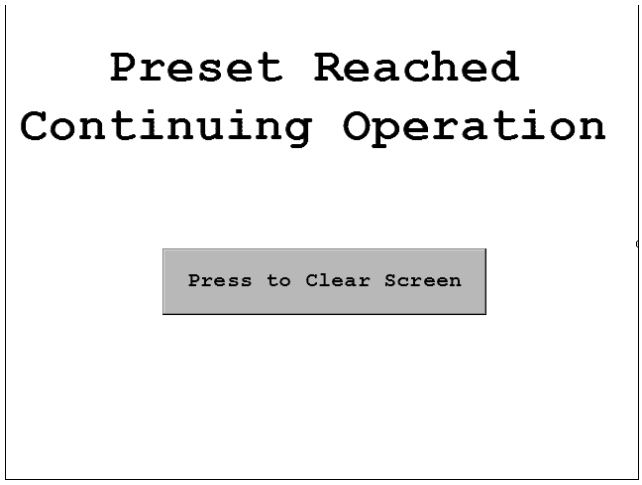


Figure 3-24. Preset Reached Continuing Operation Screen

Setting Automatic Download of Production Parameters

You can set SMI 2 to automatically download production parameters from SFC when you load a job. Production parameters include operations per cycle and quantity per cycle.

1. In the Main menu, press *Setup*.
2. In the Setup menu, press *Additional Settings*. The Additional Settings screen appears,

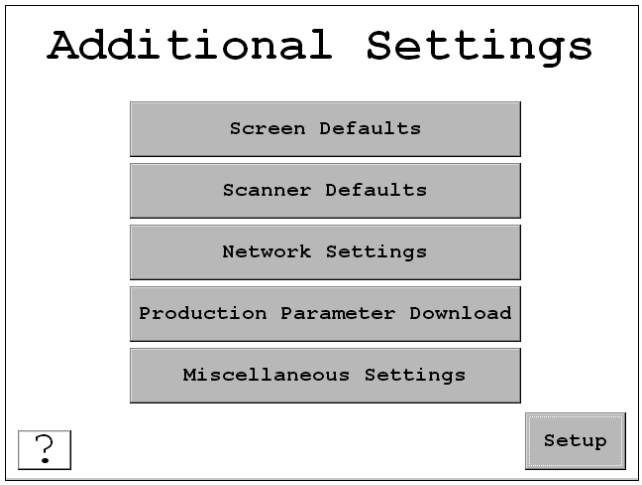


Figure 3-25. Additional Settings Screen

3. Press *Production Parameter Download*. The Production Parameter Download screen appears, Figure 3-26.

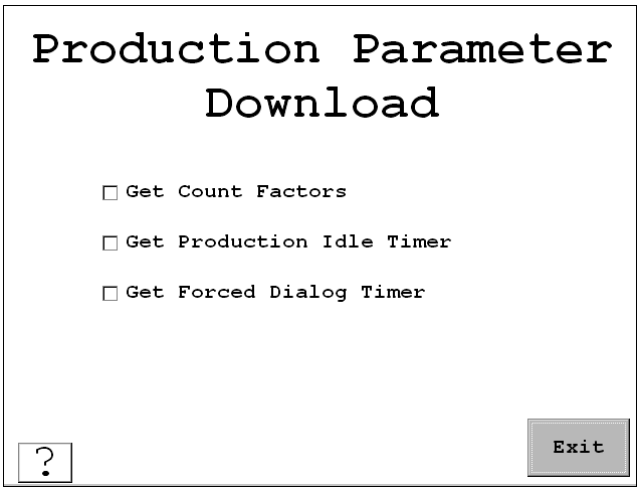


Figure 3-26. Production Parameter Download Screen

4. Press to check or uncheck the parameters you want downloaded for each job you load:
   - Get Count Factors
   - Get Production Idle Timer
   - Get Forced Dialog Timer
5. A checkmark appears in the check box. After you do this, the settings will be automatically downloaded whenever you load a job.

NOTICE

After you set production parameters to download automatically, when you press *Load Job*, the Waiting for Data screen appears while the parameters are being downloaded.

When you change job parameters on SFC, the new parameters will automatically take effect on SMI 2 when they are downloaded.

Making Forced Dialog Mode Settings

The SMI 2 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, SMI 2 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.

SMI 2 provides the Forced Dialog function to minimize the amount of Idle time reported to SFC, 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 (Figure 3-27), which you access from the Setup Menu by pressing *Forced Dialog Settings*. When you are finished, you can return to the Setup Menu by pressing *Setup*.

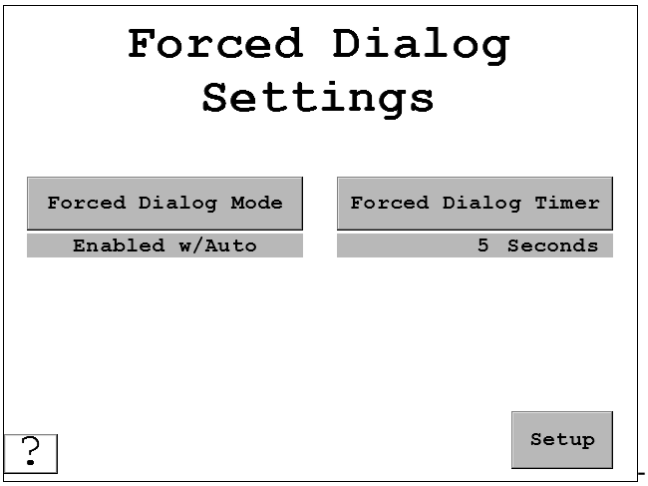


Figure 3-27. Forced Dialog Settings Screen

Setting Forced Dialog Mode

When Forced Dialog, Mode is enabled, SMI 2 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 or she has selected a downtime reason, which SMI 2 then reports to SFC as the "real" reason for the machine being stopped.

The *Forced Dialog Mode* button on the Forced Dialog Settings screen toggles among 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 either documented with that downtime reason or left as Idle time, the downtime reason in the latter case '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" (change) or "forward-fill" (keep) the downtime reason is shown in the Dialog History screen, Figure 4-15, page 89.

NOTICE

Downtime should be "forward-filled" (Keep) only when the operator discovers a second downtime reason immediately after selecting the first.

- "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, SMI 2 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, SMI 2 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 *Forced Dialog Mode* 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 *Setup* to return to the Setup Menu.

Setting the Forced Dialog Timer

The Forced Dialog Timer setting specifies the length of time the SMI 2 waits after the machine has stopped before actuating the inhibit relays and preventing the machine from being restarted without entry of a downtime reason. The timer is set to 180 seconds (3 minutes) by default, but you can enter timer settings from 1 to 3600 seconds. SMI 2 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 *Forced Dialog Timer*. The Forced Dialog Timer screen displays (Figure 3-28) with the current timer setting (default is 180 seconds) displayed above the *CLR* key, the final digit shown in flashing reverse video.

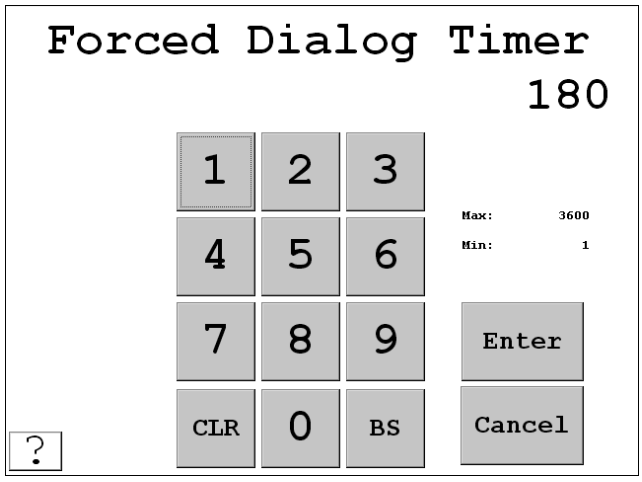


Figure 3-28. Forced Dialog Timer Screen

2. Press *CLR* 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 *ENTER*. The Forced Dialog Timer screen appears showing your entry displayed in the Forced Dialog Timer screen.

NOTICE

The minimum value you can enter on the Forced Dialog Timer screen is 1 second. The maximum value is 3600 seconds (60 minutes). If you attempt to enter a value greater than the maximum, your entry defaults to "3600."

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

Activating Hold State

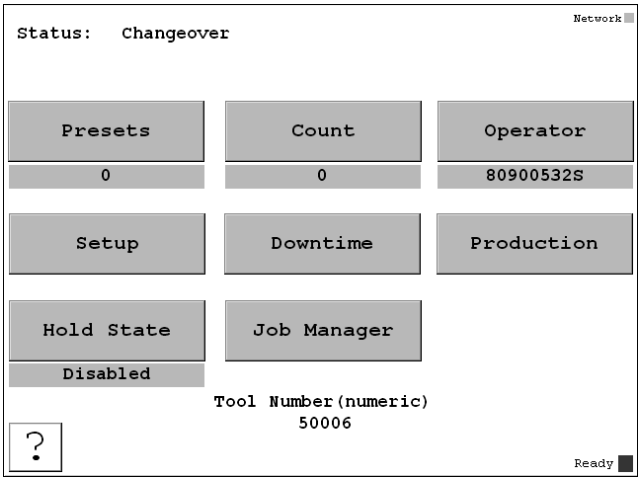


Figure 3-29. Main Menu Screen, Hold State Disabled

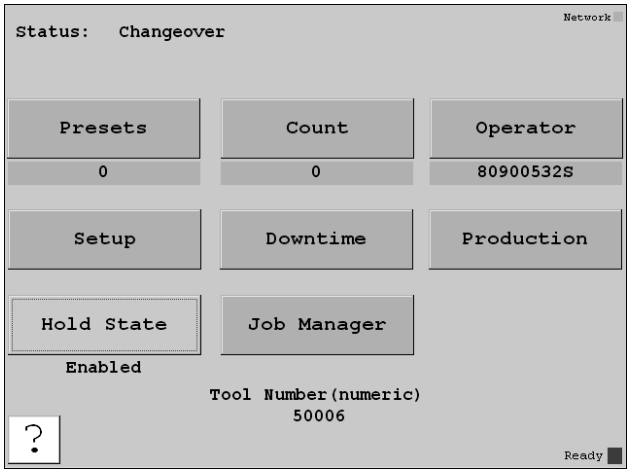


Figure 3-30. Main Menu Screen, Hold State Enabled, Screen Flashing Yellow

Use Hold State when you need to exercise the machine after you load a new job but before you start production. Hold State keeps SMI 2 in Changeover as long as you need, without going into Idle state and requiring a downtime reason. While Hold State is enabled, the Main Menu screen flashes yellow. The factory default setting is Hold State deactivated.

You can set Hold State to operate manually when you wish to use it or automatically every time you load a job. The instructions below activate hold state in its manual mode. To set automatic Hold State, see *Activating Automatic Hold State on New Job*, page 67.

1. In the Main Menu, press *Setup*. The Setup screen appears.
2. Press *Additional Settings*. The Additional Settings screen appears, Figure 3-31

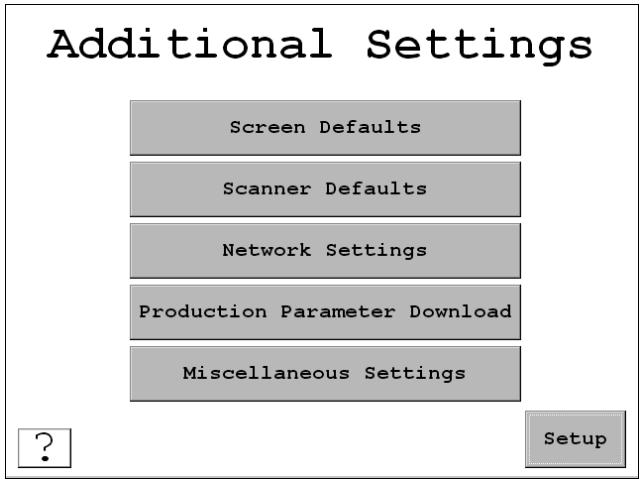


Figure 3-31. Additional Settings Screen

3. Press *Screen Defaults*. The Screen Defaults screen appears.

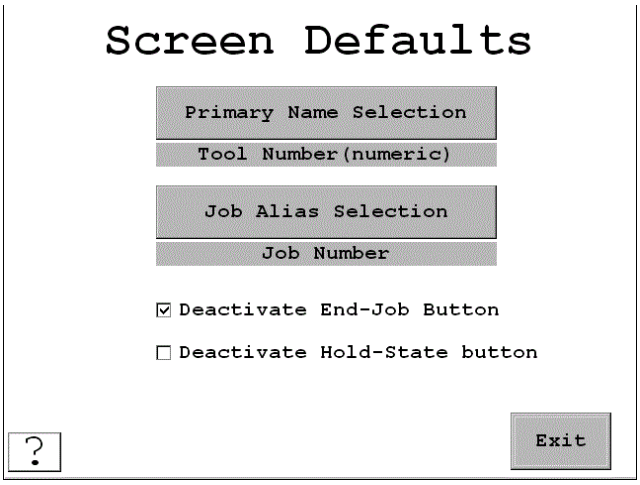


Figure 3-32. Screen Defaults Unchecked Deactivate Hold State

4. Press *Deactivate Hold-State Button* so no checkmark shows in the box next to it. This activates Hold State.

Now, when you load a job, the Hold State button appears on the Main Menu screen, with a Disabled label beneath. To enable Hold State, press *Hold State*. The label changes to Enabled and the screen flashes yellow. To disable Hold State, press *Hold State* again.

The next section gives instructions to set Hold State to automatically enable when you load a job.

Activating Automatic Hold State on New Job

To enable hold state automatically whenever you load a job, follow these instructions.

1. Activate hold state as described in the previous section, *Activating Hold State*.
2. In the Main Menu, press *Setup*. The Setup screen appears.
3. Press *Additional Settings*. The Additional Settings screen appears, Figure 3-31.
4. Press *Miscellaneous Settings.* The Miscellaneous Settings screen appears.

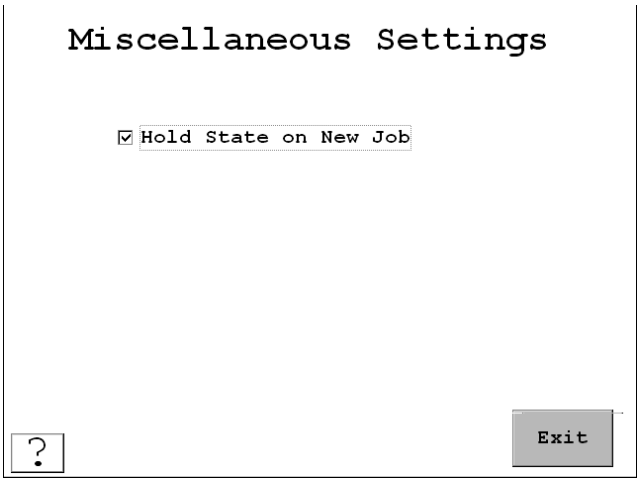


Figure 3-33. Miscellaneous Settings Hold State on New Job Checked

5. Press *Hold State on New Job* so there is a checkmark in the box.

Now, when you load a job, the *Hold State* button appears on the Main Menu screen, with a Disabled label beneath. As the job is loading, the status line says "Control Setup Transition." When the job is done loading, Hold State changes to Enabled and the screen flashes yellow to indicate Hold State is in effect. To disable Hold State, press the *Hold State* button.

Making Security Settings

The Security Settings screen (Figure 3-34) 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 SMI 2 settings to their factory defaults. You access the Security Settings screen (Figure 3-34) from the Setup Menu by pressing *Security Settings*.

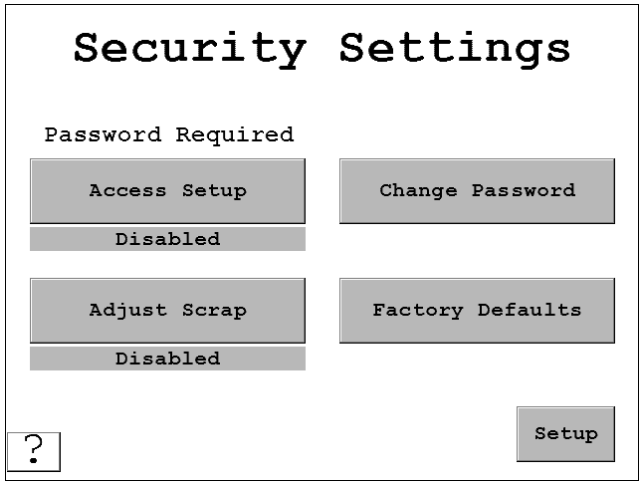


Figure 3-34. Security Settings Screen

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 using the *Change Password* button (see Changing the System Password). To enable the Password Required to Access Setup function, perform the following steps:

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

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

2. Press *Setup* 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 (Figure 4-3, page 75), 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 (see *Changing the System Password*, page 70). To enable the password requirement for adjusting scrap, perform the following steps:

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

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

2. Press *Setup* 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 SMI 2, reinstall the SMI 2 on a new machine, or need to reset the SMI 2 after certain code updates.

When you execute and confirm a reset, SMI 2 erases all existing settings including downtime reasons.

If it is necessary to restore SMI 2 settings to their factory defaults, perform the following steps:

1. On the Security Settings screen, press *Reset to Factory Defaults*. The Confirm Reset screen displays (Figure 3-35).

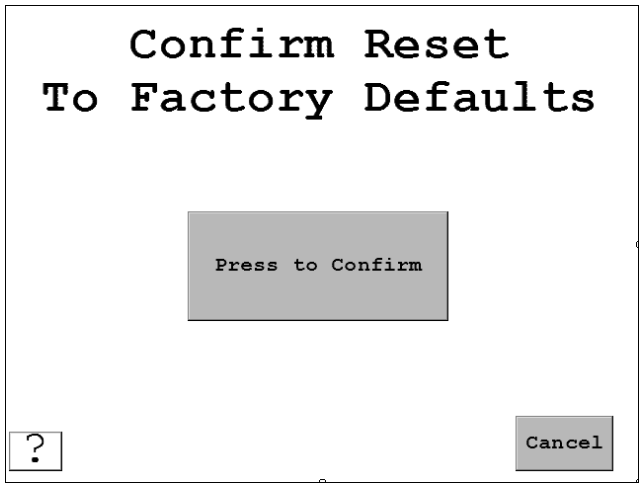


Figure 3-35. Confirm Reset Screen

2. Press *Press to Confirm* in the middle of the screen. When the process is complete, you are returned to the Security Settings screen.

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 *Change Password*. The Current Password screen displays (Figure 3-36) with the value "0" displayed in flashing reverse video above the *CLR* key. The displayed setting is always "0" to maintain password security.

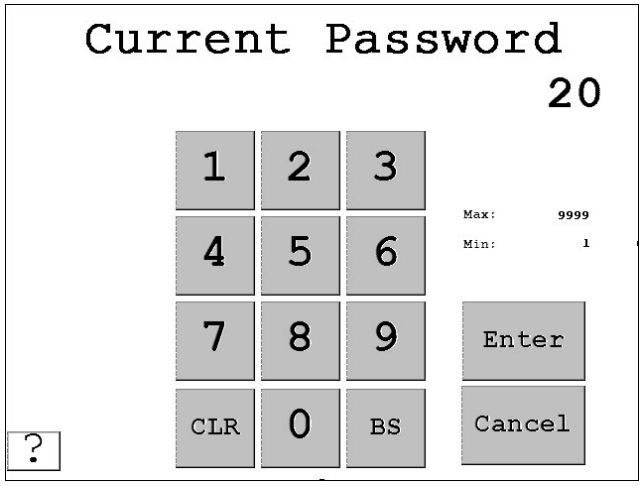


Figure 3-36. Current Password Screen

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

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 ShopFloorConnect Technical Support and provide the password code displayed on the About SMI screen.

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

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 the previous step (your entry appears in the display above the *CLR* key), and press *ENTER*.

   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 *Setup* to return to the Security Menu.

Viewing Technical Support Contact Information

To display the Wintriss ShopFloorConnect Technical Support phone number and information you may need when contacting Wintriss, press *About SMI 2* on the Setup Menu (see *Accessing the Setup Menu*, page 42). The About SMI 2 screen appears (Figure 3-37).

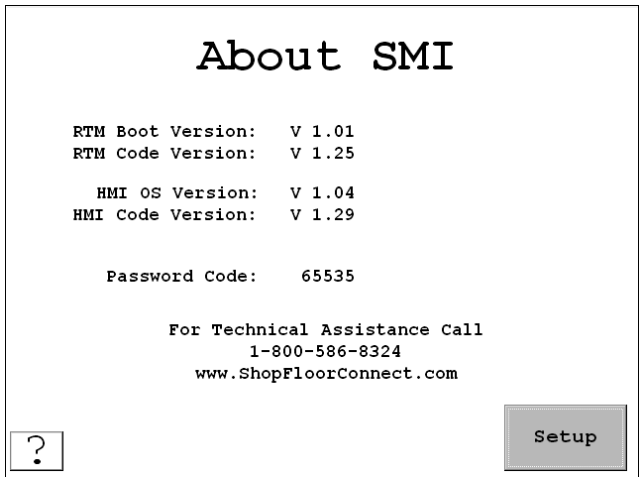


Figure 3-37. About SMI 2 Screen

In addition to the Wintriss ShopFloorConnect Technical Support phone number, the About SMI 2 screen displays the RTM 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 SMI 2 system password.

The password code is also displayed on the Adjust Scrap Data and OP/Cycle Ratio screen (see page 75) to provide access to this information when the user is denied entry to Setup Menu.

To return to the Setup Menu, press *Setup*.

Chapter 4 – Operation

This chapter shows you how to operate the SMI 2, including setting the parts preset, loading jobs, and entering downtime reasons when the machine stops. The chapter is organized in the following sections:

NOTICE

For help, press the question mark button **?** in the lower left-hand corner of the screen.

Setting the Parts Preset

NOTICE

If you are using the SFC Schedule Interface, the Parts Preset is programmed in SFC and downloaded with each new job.

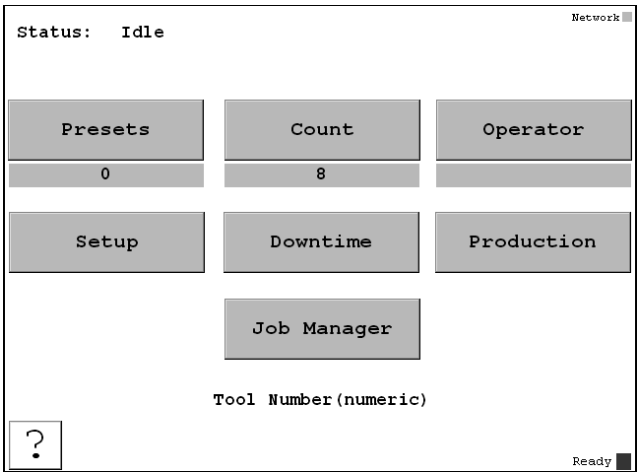


Figure 4-1. Main Menu

The Parts Preset value, which appears below the Presets button on the SMI 2 Main Menu controls the number of parts to be made on a particular job. When the Count value reaches the Parts Preset setting, SMI 2 performs one of two actions, depending on the setting on the Presets Menu screen, Figure 3-23, page 61.

- If the + and/or the Batch Segment Preset is Enabled, SMI 2 stops the machine and displays "Parts Preset Reached" on the Status line and "Press PRODUCTION to continue" below. (For the batch preset, it displays "Batch Preset Reached" and "Press PRODUCTION to continue")
- If the Total Parts Preset and/or the Batch Segment Preset is Disabled, SMI 2 allows the machine to keep running when the preset is reached and displays the Preset Reached Continuing Operation screen (see Figure 3-24, page 62). Press *Press to Clear Screen* to exit this screen.

To set the Parts Preset, do the following:

1. On the Main Menu, press *Presets*. The Presets Menu appears.
2. Press *Total Parts Preset*. The Total Parts Preset screen appears showing the current value at upper right.

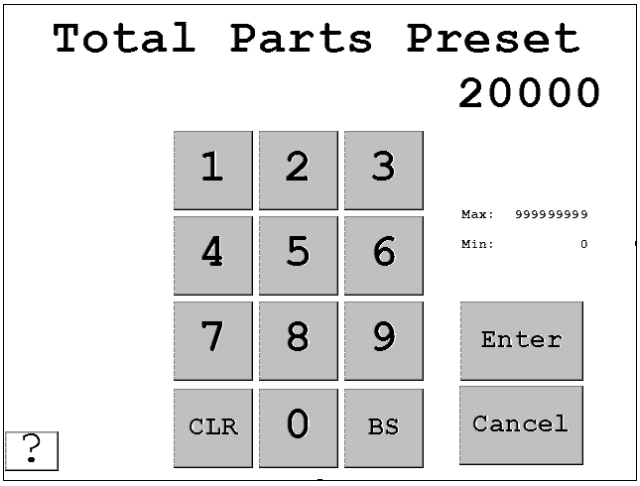


Figure 4-2. Parts Preset Screen

3. Press *CLR* 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 *ENTER*.

NOTICE

The maximum value you can enter on the Parts Preset screen is "999999999." When you attempt to enter a value greater than the maximum. When you attempt to enter a value greater than the maximum, an error message appears: "Value out of range."

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

Maintaining Part and Scrap Count Settings

You can configure how the SMI 2 counts parts, allowing you to maintain part 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).

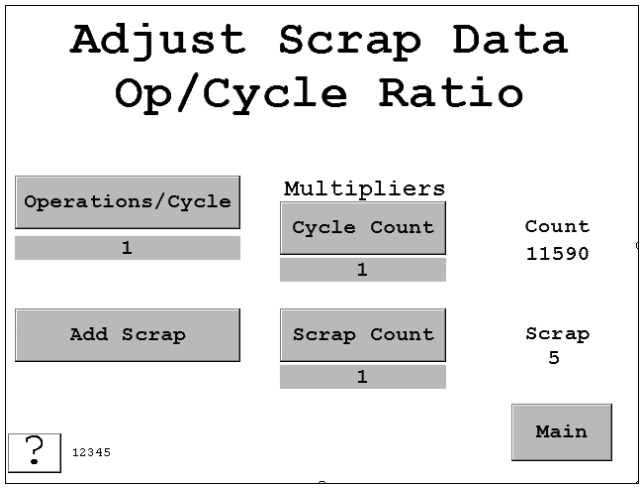


Figure 4-3. Adjust Scrap Data and Op/Cycle Ratio Screen

- To control the number of times the parts counter increments for each 24 VDC signal from the Cycle input, set the Cycle Count Multiplier.
- To specify how many times the scrap counter increments for each Scrap input pulse, set the Scrap Count Multiplier.
- To configure the number of machine cycles required to produce a part, set the Operations-Cycle Ratio.

The default value for these settings is "1."

NOTICE

The Scrap Count Multiplier setting is functional only when the Scrap Input is wired to an automated scrap handling system. Contact Wintriss ShopFloorConnect Technical Support for more information.

Example 1

The SMI 2 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 SMI 2 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 SMI 2 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 SMI 2 is installed on a machine that requires multiple cycles to make a part, wire a scrap switch to the scrap input, *Wiring a Scrap Input Switch*, page 34. For more information, see *Using the Scrap Switch*, in the next section.

The Adjust Scrap Data and Op/Cycle Ratio screen also enables you to enter scrap items manually, using the *Additional Scrap* button. Also, the screen displays the current parts and scrap counts. The password code is shown at the bottom left of the screen (see *Viewing Technical Support Contact Information*, page 71, for further details).

These sections show you how to configure the parts and scrap counters and enter additional scrap:

- *Configuring the Parts Counter*, below
- *Configuring the Scrap Counter*, page 79
- *Entering Additional Scrap*, page 80

Using the Scrap Switch

If the SMI 2 is installed on a machine, such as a press brake, that performs multiple cycles to make a part, when a part is scrapped while in progress SMI 2 needs to reset the operations/cycle count to zero and increment the scrap count.

In this situation, wire a scrap switch to the scrap input (see *Wiring a Scrap Input Switch*, page 34) and enable the scrap input (see *Enabling the Scrap Input*, page 53). If you set decrement on scrap, SMI 2 will also decrement the parts count.

The scrap 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 intermediate operation before the part has been completed.

Example

A part made on a press brake requires five operations for completion. If after only three bends you need to scrap the part, press the scrap switch. SMI 2 adds one to the scrap count and resets the operation count to zero, ready to begin a new part.

If the machine SMI 2 monitors makes multiple parts per operation, such as a stamping press making two parts per hit, the scrap switch adds that many to the scrap count.

If the SMI 2 is installed on a machine, such as a stamping press, that produces multiple parts from one operation (one hit), when you press the scrap switch SMI 2 adds the number of parts/operation to the scrap count.

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. In the Main Menu, press *Count*. The Adjust Scrap Data Op/Cycle Ratio screen appears.

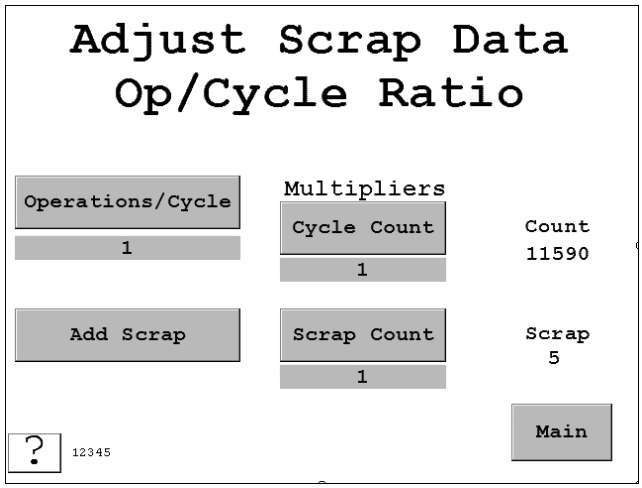


Figure 4-4. Adjust Scrap Data and Op/Cycle Ratio Screen

2. Press *Cycle Count Multiplier*. The Cycle Count Multiplier screen appears (Figure 4-5) with the current Cycle Count Multiplier (default is “1”) displayed at upper right.

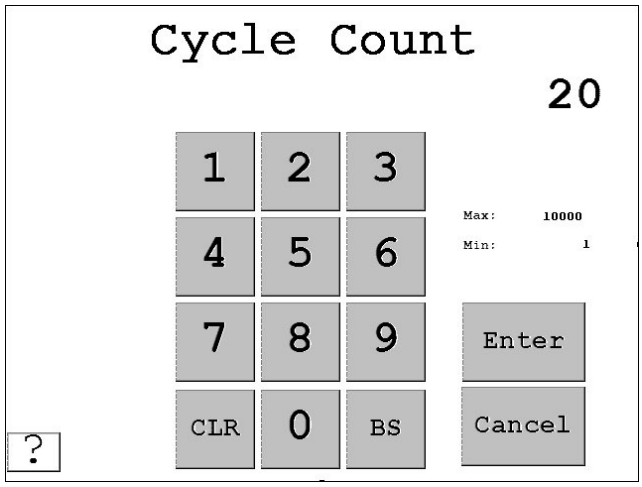


Figure 4-5. Cycle Count Screen (Cycle Count Multiplier)

3. Press *CLR* to clear the current multiplier setting. Press the number key(s) for the value you want (your entry appears in the display at upper right). Press *ENTER*. The Adjust Scrap Data and OP/Cycle Ratio screen appears with your entry displayed below the *Cycle Count* button.

NOTICE

The maximum value you can enter on the Cycle Count screen is 10,000. When you attempt to enter a value greater than the maximum, an error message appears: "Value out of range."

4. Press *Operations/Cycle*. The Operations/Cycle screen displays (see Figure 4-6) with the current Operations/Cycle (default is "1") displayed at upper right.

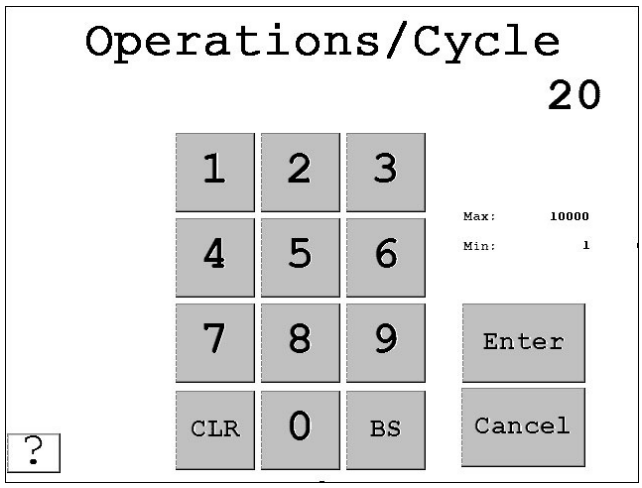


Figure 4-6. Operations/Cycle Screen

5. Press *CLR* (Clear) to clear the current setting. Press the number key(s) for the value you want (your entry appears on the screen at upper right). Press *ENTER*. The Adjust Scrap Data and Op/Cycle Ratio screen appears with your entry displayed beneath the *Operations/Cycle* button.

NOTICE

The maximum value you can enter on the Operations Per Cycle screen is “100.” When you attempt to enter a value greater than the maximum, an error message appears: “Value out of range.”

6. Press *Main* to return to the Main Menu where “0” (zero) displays beneath the Count button. This counter tracks 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 SMI 2 is installed on a press brake or other equipment that takes multiple operations to complete a part, wire a normally open push-button momentary switch to the Scrap input to set the operation count to zero when a multi-cycle operation is interrupted due to a bad part. See *Wiring a Scrap Input Switch,* page 34, for wiring instructions.

Configuring the Scrap Counter

NOTICE

The Scrap Count Multiplier setting is functional only when the Scrap Input is wired to an automated scrap handling system.

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

1. On the Main Menu, press *Count*. The Adjust Scrap Data and OP/Cycle Ratio screen appears.
2. Press *Scrap Count.* The Scrap Count screen appears, showing the current scrap count multiplier at upper right. The default value is “1.”

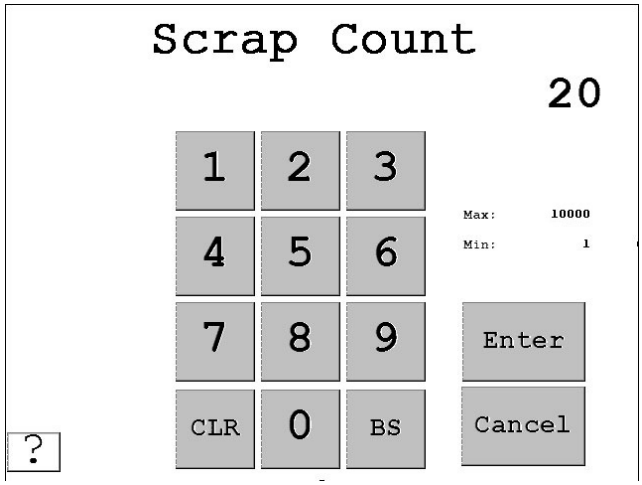


Figure 4-7. Scrap Count Multiplier Screen

3. Press *CLR* to clear the current multiplier setting. Press the number key(s) for the value you want (your entry appears at upper right). Press *ENTER*. The Adjust Scrap Data and OP/Cycle Ratio screen appears, showing your entry beneath the *Scrap Count* button.

NOTICE

The maximum value you can enter on the Scrap Count Multiplier screen is 10,000. If you attempt to enter a value greater than the maximum, an error message appears: “Value out of range.”

NOTICE

The setting displayed in the Operations-Cycle Ratio window specifies the number of machine cycles required to produce the number of items for Parts Count Multiplier and Scrap Count Multiplier. You should already have set this item when you configured the parts counter. If you haven’t, perform step 4 of *Configuring the Parts Counter*, page 76.

4. Press *Main* 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, SMI 2 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 *Additional Scrap* on the Adjust Scrap Data and OP/Cycle Ratio screen. The Additional Scrap screen displays (see Figure 4-8) with the value “0” displayed at upper right. The displayed setting is always “0.”

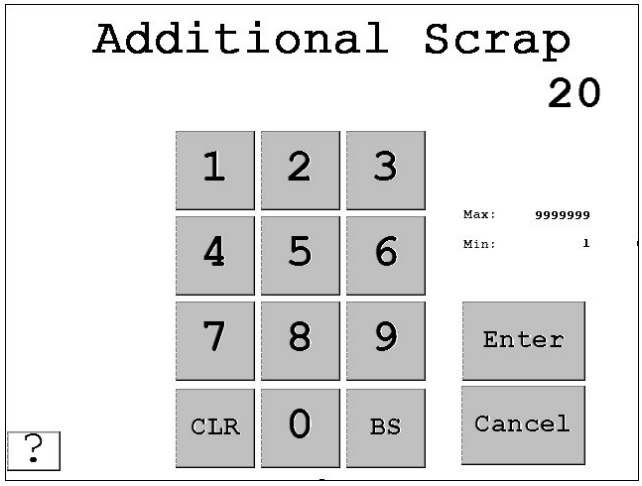


Figure 4-8. Additional Scrap Screen

NOTICE

Access to the “Additional Scrap” function may require entry of the system password (see *Requiring a Password to Make “Additional Scrap” Entries,* page 69). If the Password screen displays when you press *Additional Scrap*, press the number key(s) for the current password, and press *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 *ENTER*. You are returned to the Adjust Scrap Data and OP/Cycle Ratio screen with your entry added to the current scrap count below the *Scrap Count* button.

NOTICE

The maximum value you can enter on the Additional Scrap screen is "9999999." When you attempt to enter a value greater than the maximum, an error message appears: "Value out of range."

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 *Main* to return to the Main Menu.

Setting Up and Loading Jobs

To set up and load a job using SMI 2 follow these instructions:

NOTICE

If you use the SFC Schedule Interface, you can use it to load the next scheduled job.

1. On the Main Menu press *Job Manager*. The Job Manager screen appears.

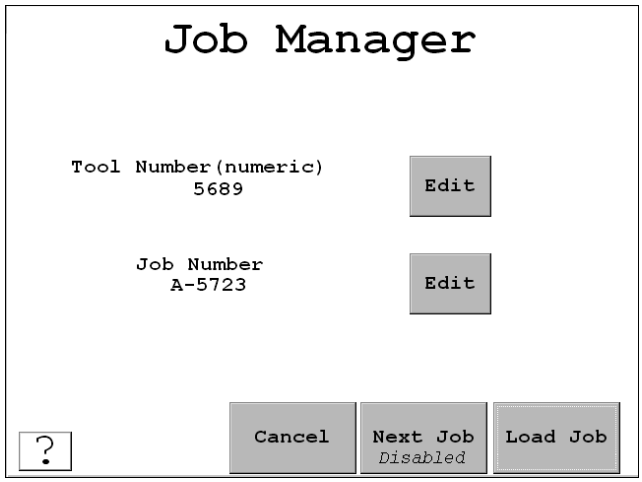


Figure 4-9. Job Manager Screen

The Job Manager screen enables you to enter the Primary Item Name and Job Alias for the job, load the job, and, if necessary, end the job. If you are using the SFC Schedule Interface, you can also load the next scheduled job.

NOTICE

On the Job Manager screen, the default job identifiers are Tool Number (numeric) and Job Number. You can set different job identifiers. See *Setting Screen Defaults: Primary Item Name and Job Alias,* page 57

SMI 2 uses "Tool Number" as the Primary Item Name and "Job Number" as the Job Alias by default, and these are the captions that are displayed on the Job Manager screen. You can change the items SMI 2 uses for Primary Item Name and Job Alias on the Primary/Job Alias Selection screen (Figure 4-10, page 83).

The identifier for each Primary Item Name must be made available to SFC so that SFC can "discover" it (see – *SFC Primary Item Discovery*, page 97). There are several ways of doing this. One is to enter Primary Item Name identifiers on the Job Manager screen the first time you run the machine.

The following sections show you how to:

- Load Primary items for the first time
- Load jobs
- Load the next scheduled job
- End jobs

Loading Primary Items for the First Time

NOTICE

You can enter a new item in the fields used for the Primary Item Name and Job Alias only when the machine is stopped. If you press *Edit* for either field while the machine is running, the message "Function disabled while running" displays beneath the Status line and the Primary/Job Alias Selection screen (Figure 4-10, below) does not appear.

You can enter Primary items individually as you set up and load each job, or you can enter all Primary items at once when you first set up the SMI 2. The following procedure shows you how to enter all Primary items in one session so SFC can "discover" them.

1. On the Main Menu, press *Job Manager*. The Job Manager screen displays with the settings for the last Primary Item Name and Job Alias identifiers displayed (Figure 4-9). If this is the first time you are accessing this screen, both fields display "0" (zero), the default. In the example shown in Figure 4-9, the Primary Item Name is "Tool Number," the Job Alias "Job Number."

2. To enter a new Primary Item Name identifier, press *Primary Name Selection*. The Primary Name/Job Alias Selection screen displays (Figure 4-10) with the current Primary Item Name identifier displayed beneath the *ENT* key, the last digit shown in flashing reverse video.

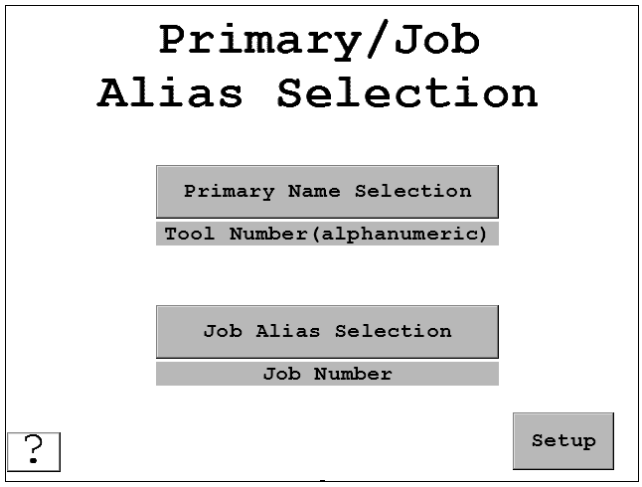


Figure 4-10. Primary Item Name/Job Alias Entry Screen

3. Press *CLR* to clear the current Primary Item Name identifier (the default is "0"), press the number key(s) for the value you want (your entry appears in the display beneath the *ENT* key), and press *ENTER*. You are returned to the Job Manager screen with your entry displayed below Primary *Name Selection*.

NOTICE

The maximum length of your entry on the Primary Item Name/Job Alias Selection screen is 20 characters. When you attempt to enter more characters, your entry defaults to 20 characters.

4. Press *Load Job* at the bottom right of the screen to load the Primary Item Name identifier you have entered. 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. The Primary Item Name identifier you entered appears beneath *Job Manager*.

NOTICE

If you chose to have production parameters downloaded automatically, *Setting Automatic Download of Production Parameters*, page 62, when you press *Load Job*, the Waiting for Data screen appears while the information is being downloaded.

When you change job parameters on SFC, the new parameters will automatically take effect on SMI 2 when they are downloaded.

5. Press *Production*. The Status message changes to "Idle."

6. Repeat steps 1 through 5 for each Primary Item Name item you plan to use on the SMI 2.

Loading Jobs

If you are using the SFC Schedule Interface, you do not have to manually load jobs on the Job Manager screen. The Schedule Interface does this for you. Instead, you use the *Next Job* as instructed in the next section (see Loading the Next Scheduled Job, below).

NOTICE

If you have chosen to have production parameters downloaded automatically, when you press *Load Job*, the Waiting for Data screen appears while the information is being downloaded.

When you change job parameters on SFC, the new parameters will automatically take effect on SMI 2 when they are downloaded.

For more information about downloading production parameters, see *Setting Automatic Download of Production Parameters*, page 62.

If you are not using the SFC Schedule Interface, jobs must be loaded manually on the Job Manager screen, using the *Load Job* button. To load a job, perform the following steps:

1. On the Main Menu, press *Job Manager*. The Job Manager screen displays with the settings for the last Primary Item and Job Alias identifier displayed (Figure 4-9, page 81). If this is the first time you are accessing this screen, both fields display a "0," the default. In the example shown in Figure 4-9, the Primary Item Name is "Tool Number," the Job Alias "Job Number."

NOTICE

To choose a different Primary Item name type and/or Job Alias type see *Setting Screen Defaults: Primary Item Name and Job Alias*, page 57.

NOTICE

You can use the optional bar code scanner to enter operator, primary, and job. Instead of editing the item, scan the bar code. For scanner setup and other information, see *– Using the Optional Barcode Scanner,* page 99.

2. If you wish to enter a new primary item identifier, press Edit at the right of the primary item. An entry screen appears, showing the current primary item identifier.

3. Press CLR to clear the current Primary Item identifier (the default is "0"), press the key(s) to enter the Primary Item identifier., and press ENTER. You are returned to the Job Manager screen with your entry displayed below the Primary Item Name.

NOTICE

The maximum length of your entry on the Primary Item Name/Job Alias Selection screen is 20 characters. When you attempt to enter a value greater than the maximum, your entry defaults to 20 characters.

4. If you wish to enter a new Job Alias identifier, press *Edit* at the right of *Job Alias*. An entry screen appears, showing the current Job Alias identifier.

5. Press *CLR* to clear the current Job Alias identifier (the default is "0"), press the key(s) to enter the Job Alias identifier., and press *ENTER*. You are returned to the Job Manager screen with your entry displayed below the Job Alias.

6. Press *Load Job* at the bottom right of the screen to load the job you have specified. 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. The Primary Item Name identifier you entered appears in a window beneath *Job Manager*.

7. Press *Production*. The Status message changes to "Idle."

Loading the Next Scheduled Job

If you are using the SFC Schedule Interface, you do not have to enter Primary Item Name and Job Alias identifiers on the Job Manager screen each time you load a job. You simply press *Next Job*, and SFC loads the next job, supplying Primary Item Name, Job Alias, and Parts Preset information for you.

To load the next job scheduled by SFC, do the following:

1. On the Main Menu, press *Job Manager*. The Job Manager screen (Figure 4-9, page 81) displays.

NOTICE

If you press *Next Job* when no jobs have been scheduled in SFC, the Load Next Job screen does not display.

2. Press *Next Job*. The Load Next Job screen displays (Figure 4-11) with the Primary Item Name and Job Alias identifiers and Parts Preset value for that job shown. This information is provided by SFC.

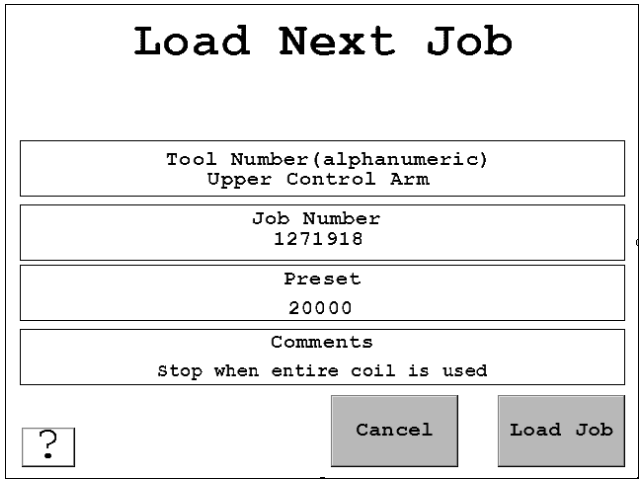


Figure 4-11. Load Next Job Screen

3. If the displayed identifiers and preset value are correct, press *Load Next 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. The Primary Item Name identifier for the job appears in a window beneath *Job Manager.*

NOTICE

Press *Cancel* if the displayed job information is incorrect.

Ending a Job

NOTICE

To use the *End Job* button, activate it. See *Activating the End Job* Button 59

SMI 2 provides two ways of "closing out" a job when it has finished running. You can load a new job by pressing *Load Job* on the Job Manager screen (if you are not using the Schedule Interface) or *Next Job* (if you are using the Schedule Interface), or you can end the job by pressing *End Job*. The End Job function indicates to SFC that the currently running job is finished and that no more time should be logged against it. It also forces the SMI 2 into the machine state and downtime reason specified by the default setting in SFC and resets the Primary Item Name and Job Alias identifiers to zero (0). The "End Job" condition persists until a new job is loaded.

To end a currently running job, perform the following steps:

1. On the Main Menu, press *Job Manager*. The Job Manager screen (Figure 4-9, page 81) displays with the Primary Item Name and Job Alias identifiers for the currently running job displayed.
2. Press *End Job* to end the currently running job. The Confirm End Job screen displays (Figure 4-12, page 86).

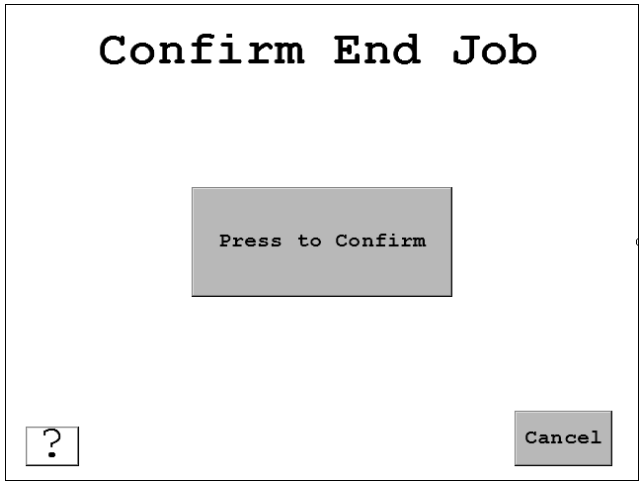


Figure 4-12. Confirm End Job Screen

3. Press *Press to confirm*. You are returned to the Main Menu with the machine state which has been set as the "End Job" default displayed on the Status line.

NOTICE

Press *Cancel* to cancel the “End Job” command.

Entering the Operator Identifier

NOTICE

If you use the optional scanner to enter the operator identifier, see Scanning Operator Identifier, page 101.

The *Operator* 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 identifier, do the following:

1. On the Main Menu, press *Operator*. The Operator screen appears (Figure 4-13) showing the identifier for the current machine operator.

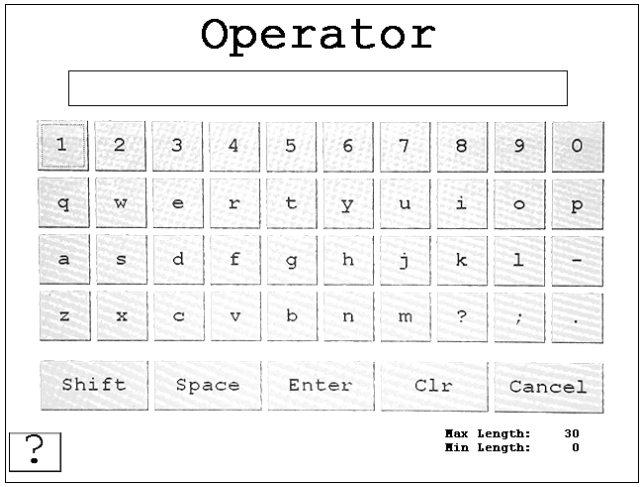


Figure 4-13. Operator Screen

2. Press *CLR* to clear the current operator, if any.
3. Press the keys to enter the desired operator identifier. You can enter up to 30 characters.
4. Press *Enter*. The Main Menu appears, showing the new operator identifier below the *Operator* button.

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 64) for the Forced Downtime Menu screen to display and prompt the operator to select a downtime reason.

Whenever the machine being monitored by the SMI 2 has been idle for the length of time specified by the Forced Dialog Timer (Figure 3-28, page 65), the Forced Downtime Selection screen appears (Figure 4-14).

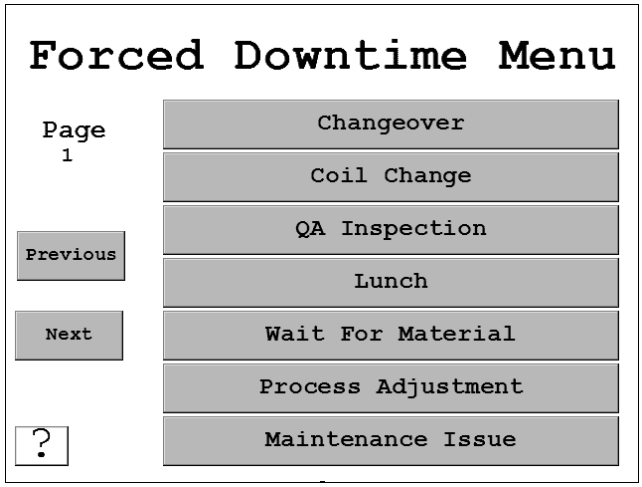


Figure 4-14 Forced Downtime Menu

The Forced Downtime Menu screen provides a menu of downtime reasons from which you can select to document machine Idle time. The first item, "Changeover," is a machine state, rather than a downtime reason and appears on all downtime menus. The other downtime menu entries are created in SFC by the user and downloaded to the SMI 2. The menu may be several pages long since up to 32 different user-defined downtime reasons may be displayed.

NOTICE

Downtime reasons 29 - 32 are associated with Automatic Downtime Inputs (see *Wiring Automatic Downtime Inputs*, page 35) and can also be used the same way as the other downtime reasons.

To select a downtime reason to document a period of machine Idle time, do the following:

1. On the Forced Downtime Menu screen, look for the downtime reason you want, pressing *Next Page* and *Previous Page* to see additional pages of the menu.
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 (Figure 4-15, page 89).

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

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 *Keep and Use Selected Reason From This Time On*.

NOTICE

Downtime should be "forward-filled" (Keep) only when the operator discovers a second downtime reason immediately after selecting the first.

You are returned to the Main Menu. The entry "Changeover" is displayed on the Status line if you selected this machine state in step 2. If you selected another downtime reason, the entry "Planned Downtime" or "Unplanned Downtime" displays depending on the machine state with which that reason is "associated" in SFC. To verify the specific reason you selected, press *Downtime* to access the Select Downtime screen (see next section). Your selection is highlighted.

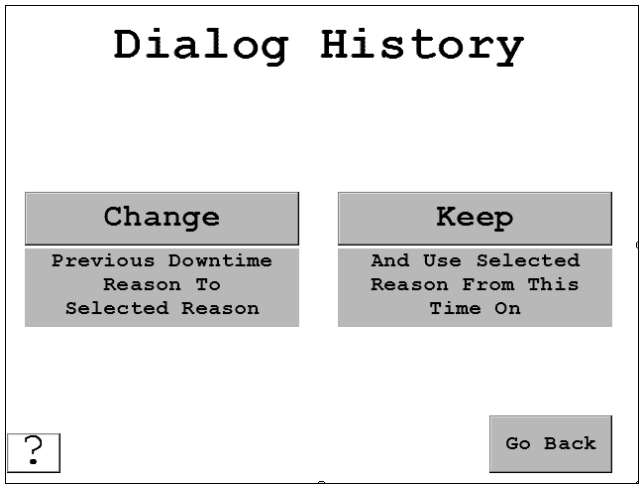


Figure 4-15. Dialog History Screen

NOTICE

To return to the Forced Downtime Menu Screen without assigning the downtime reason, press *Go Back*.

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 Menu screen using the *Downtime* button on the Main Menu. To do so, perform the following steps:

1. On the Main Menu, press *Downtime*. The Downtime Menu screen displays (Figure 4-16, page 90). This screen is identical to the Forced Downtime Menu screen (Figure 4-14, page 88) except

for its title and the inclusion of a *Cancel* button so users can return to the Main Menu without making a selection. Both screens display the same menu of downtime reasons.

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 4-15, above).

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

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

NOTICE

Downtime should be "forward-filled" (Keep) only when the operator discovers a second downtime reason immediately after selecting the first.

You are returned to the Main Menu. The entry "Changeover" is displayed on the Status line if you selected this machine state in step 3. If you selected another downtime reason, the entry "Planned Downtime" or "Unplanned Downtime" displays depending on the machine state with which that reason is "associated" in SFC. To verify the specific reason you selected, press *Downtime*. Your selection is highlighted and displayed in reverse video on the Select Downtime screen.

NOTICE

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

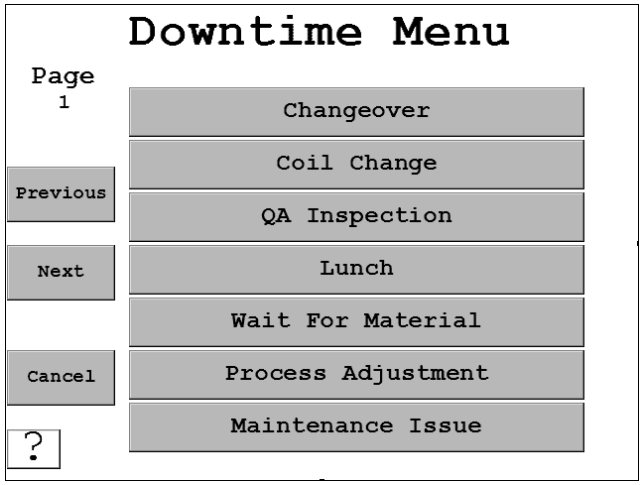


Figure 4-16. Downtime Menu Screen

Using the Production Button

The *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 SMI 2 has been powered up

When you press the *Production* button, 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 *Production* button to end a period of downtime, do the following:

> **NOTICE**
>
> The *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 *Production*. The machine status displayed on the Status line changes from a downtime reason to "Idle."

> **NOTICE**
>
> When you press *Production*, the machine inhibit relays, which opened when the Forced Dialog Timer expired and the Forced Downtime Menu 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

By default, the machine is stopped and the "Parts Preset Reached" message displays on the SMI 2 Main Menu whenever the number of parts programmed for a job on the Parts Preset screen (see Setting the Parts Preset) has been reached. To clear the message and enable the machine to be restarted, you must press *Production*. Perform the following steps:

> **NOTICE**
>
> If the Stop On Preset Reached setting on the Preset Reached screen (see *Disabling Stop on Preset Reached*, page 60) has been changed from "Enabled," the default, to "Disabled," the machine continues to run and the "Parts Preset Reached" message does not display. Instead, the Preset Reached screen appears (see Figure 4-17, page 93). To clear the screen and return to the Main Menu, press *Preset Reached* as instructed in *Using the Preset Reached Button*, page 92.

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

   The message on the Status line changes to "Idle," and the prompt is cleared, replaced by the message "Parts count preset has been exceeded."

NOTICE

When you press *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 Count window to "0" and initiate a new job, proceed as follows:

NOTICE

You can also continue to make parts on the current job before loading a new job.

- If you are not using the SFC Schedule Interface, program a new Parts Preset value (see *Setting the Parts Preset*, page 73), and press *Load Job* to load a new job (see *Loading Jobs*, page 84).
- If you are using the SFC Schedule Interface, press *Load Next Job* to load the next job (see *Loading the Next Scheduled Job*, page 85).

Enabling Machine Operation after SMI 2 Power-up

To use the *Production* button to enable machine operation following power-up of the SMI 2, do the following:

With the "Push Production when ready to run" prompt displayed beneath the Status line following power-up of the SMI 2, press *Production*.

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

NOTICE

When you press *Production*, the machine inhibit relays, which opened when the SMI 2 was powered up, are closed to enable the machine to be started.

Using the *Preset Reached* Button

When the Stop On Preset Reached item on the Preset Reached screen is set to "Disabled," the machine continues to run and the screen shown in Figure 4-17 displays whenever the parts preset programmed for a job has been reached. To clear the screen and return to the SMI 2 Main Menu, press *Preset Reached*. Perform the following steps:

NOTICE

If the Stop On Preset Reached item on the Preset Reached screen (see Figure 3-24, page 62) is set to "Enabled," the default, the machine is stopped and the "Parts Preset Reached" message displays on the Main Menu. Follow the instructions in Clearing the "Parts Preset Reached" Message to clear the message and enable the machine to be restarted.

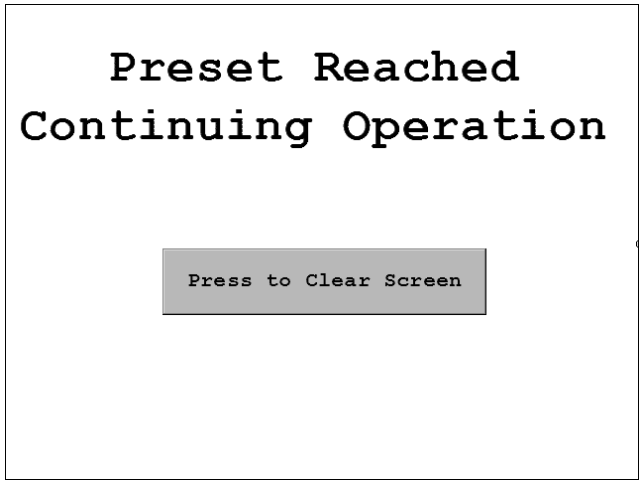


Figure 4-17. Preset Reached Screen

1. Press *Preset Reached* as instructed on the Preset Reached screen.
   The SMI 2 Main Menu displays with the message "Parts Count Preset has been exceeded" shown beneath the status line.

2. To return the value in the Count window to "0" and initiate a new job, proceed as follows:

NOTICE

You can also continue to make parts on the current job before loading a new job.

- If you are not using the SFC Schedule Interface, program a new Parts Preset value (see *Setting the Parts Preset*), and press *Load Job* to load a new job (see *Loading Jobs,* page *84*).
- If you are using the SFC Schedule Interface, press *Load Next Job* to load the next job (see *Loading the Next Scheduled Job*).

Chapter 5 – System Messages

This chapter documents SMI 2 system messages. Most messages appear on the Status line of the SMI 2 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 if necessary. The chapter is organized in the following sections:

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 Menu 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 planned or unplanned downtime on the Forced Downtime Menu or Select Downtime screen. Also displays whenever you press *Production* following SMI 2 power-up, a period of planned or unplanned downtime, or a tool change. Indicates that the machine is in the “Idle” state.

Offline

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 Production when ready to run" message displaying beneath it (see *Messages Below the Status Line of the Main Menu*, below). Press *Production* to clear the message.

Planned

Displays whenever you select a downtime reason on the Forced Downtime Menu or Select Downtime screen that is "associated" in SFC with the "Planned Downtime" machine state. 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 *Setting the Production Rate Calculation Interval*, page 54).

Unplanned

Displays whenever you select a downtime reason on the Forced Downtime Menu or Select Downtime screen that is "associated" in SFC with the "Unplanned Downtime" machine state. Indicates that the machine is in the "Unplanned Downtime" state.

Messages Below the Status Line of the Main Menu

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., *Production*).

Parts count preset has been exceeded

Displays when the *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.

Also displays when the *Preset Reached* button has been pressed in response to the appearance of the Preset Reached screen (see Using the *Preset Reached Button*, page 92).

Push Production when ready to run

Displays following SMI 2 power-up and whenever the "Parts Count Reached" message displays (see *Messages on the Status Line of the Main Menu*, above). Press *Production* 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 – SFC Primary Item Discovery

The Primary item identifiers to be used at the machine the SMI 2 is monitoring are made available to SFC in one of three ways:

- Primary items can be imported into SFC in a CSV file
- Primary items can be entered manually into SFC
- Primary items can be automatically "discovered" by SFC the first time they are entered at an SMI 2

In order for SFC to "auto-discover" Primary items at the SMI 2, the SMI 2 must be powered up, connected to the network, and communicating with SFC, and all Primary items to be used at the SMI 2 must be entered and loaded once (see *Loading Primary Items for the First Time*, page 82).

SFC creates a record for each new Primary item it "discovers." If the primary item has been run previously at another SMI 2, SFC adds the new SMI 2 to the list of machines that run that Primary item. If the Primary item has not been run previously, SFC creates a record for it and "associates" it with that machine.

After records have been created for Primary items at the SMI 2, an SFC user with administrative privileges can access the SFC Administrator and configure the Primary items for description, status, rates and affiliations.

Once auto-discovered, the new Primary item will be available to the SFC Schedule Interface.

Appendix B – Using the Optional Barcode Scanner

You can use a barcode scanner to enter Operator and/or Primary and/or Job data. Use a compatible scanner as shown in *Specifications*, page 24.

Setting Up the Barcode Scanner

1. Connect your compatible scanner to one of the USB connectors in SMI 2. (see Figure 1-3, page 19.)

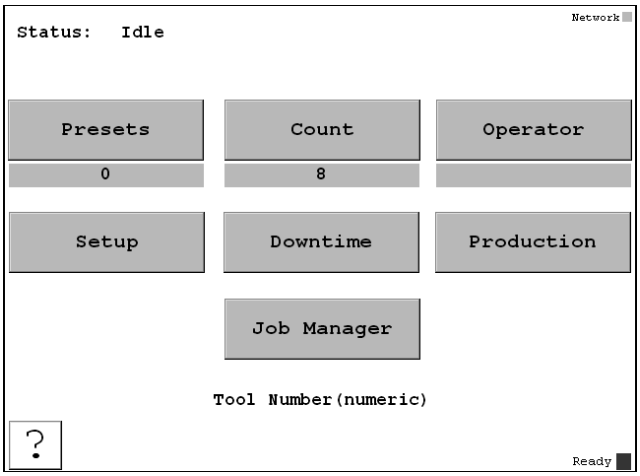


Figure B-1. Main Menu

2. In the Main Menu, press *Setup*. The Setup Menu appears.

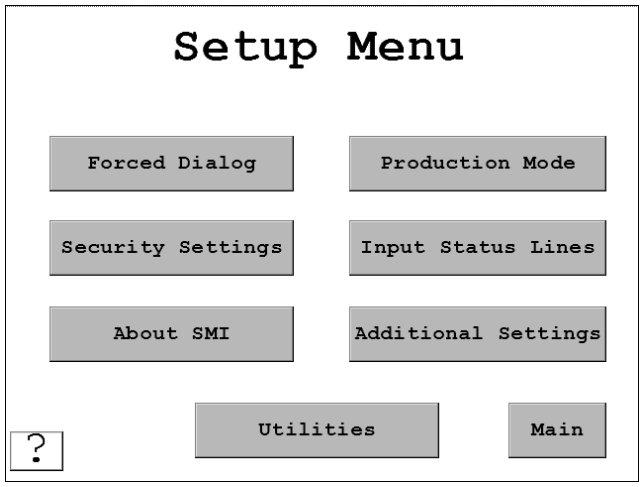


Figure B-2. Setup Menu Screen

3. Press *Additional Settings*. The Additional Settings screen appears.

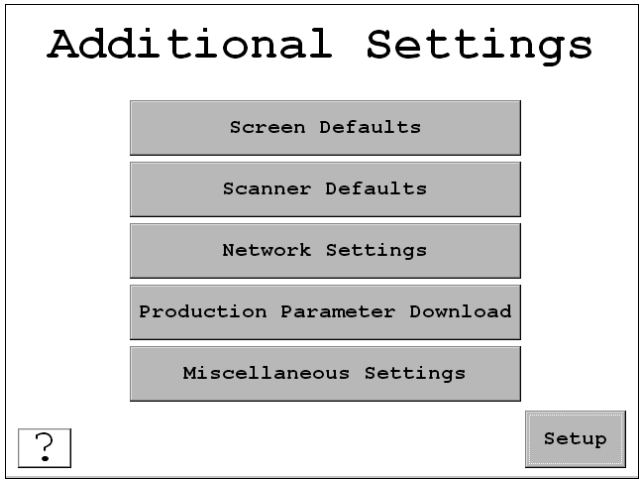


Figure B-3. Additional Settings Screen

4. Press *Scanner Defaults*. The Scanner Defaults screen appears, showing the following options:
   - Scan Operator
   - Scan Primary (Primary Item Name)
   - Scan Job (Job Alias)

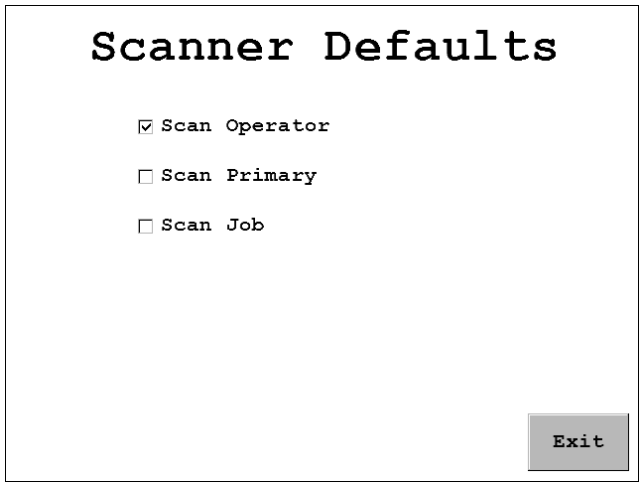


Figure B-4. Scanner Defaults Screen

5. Press the text of the options you want so the boxes show checkmarks. Press text again to uncheck a box.

Entering Items with the Barcode Scanner

When loading a job, you can scan the bar code for Tool and Job Number instead of entering from the on-screen keyboard. Set the scanner defaults as described in the previous section.

Scanning Operator Identifier

1. On the Main screen, press *Operator*. A Scan screen opens showing the Operator entry box.
2. Aim the scanner at the operator's barcode.
3. Press and hold the scanner trigger. Move the scanner until the red scan line aligns with the bar code and the scanner beeps. The Main Menu screen appears showing the scanned operator identifier below *Operator*.

Scanning Primary Item Name

1. On the Main screen, press *Job Manager*. The Job Manager screen appears
2. Press Edit next to the primary item name (tool number, etc. See *Setting Screen Defaults: Primary Item Name and Job Alias*, page 57.) A Scan screen opens showing an entry box.
3. Aim the scanner at the primary item name barcode.
4. Press and hold the scanner trigger. Move the scanner until the red scan line aligns with the bar code and the scanner beeps. The Main Menu screen appears showing the scanned operator identifier below *Operator*.

Scanning Job Alias

1. On the Main screen, press *Job Manager*. The Job Manager screen appears
2. Press *Edit* next to Job Alias (job number, etc. See *Setting Screen Defaults: Primary Item Name and Job Alias,* page 57.) A Scan screen opens showing an entry box.
3. Aim the scanner at the job alias barcode.
4. Press and hold the scanner trigger. Move the scanner until the red scan line aligns with the bar code and the scanner beeps. The Main Menu screen appears showing the scanned operator identifier below *Operator*.

Appendix C – Using the Optional Wireless Connection

Figure C-1. Wireless Antenna (optional)

NOTICE

Work with your information technology (IT) specialist to ensure the wireless network on your shop floor is robust and reliable so SMI 2 can always connect properly.

If your SMI 2 has the optional wireless capability, you can use wireless communication to connect to the network in your facility.

To activate wireless communication, follow the instructions below.

Preparing to Initialize the Wireless Module

Obtain the SSID wireless network ID, pass key, authentication, and encryption types from your IT specialist. Record this information on the SMI 2 Wireless Instructions Sheet at the end of this manual.

Initializing the Wireless Module

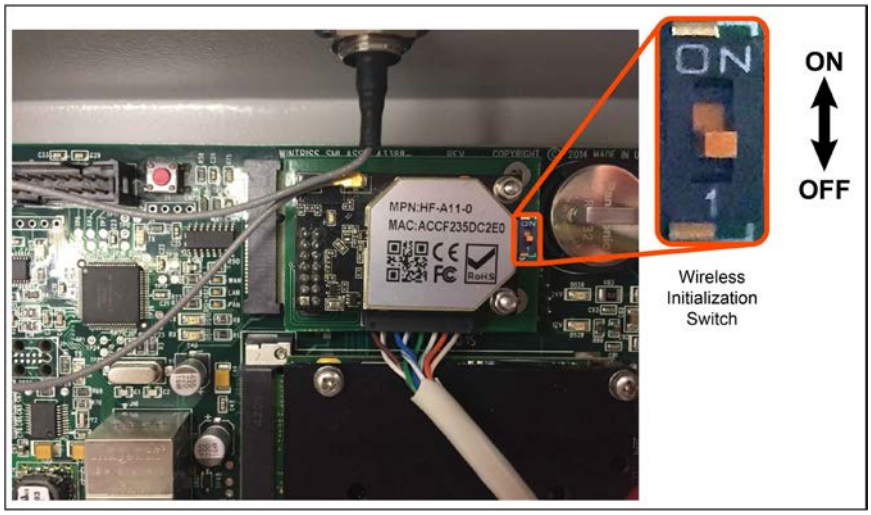


Figure C-2. Wireless Initialization Switch

1. Open the SMI 2 enclosure.
2. Locate the wireless initialization switch, Figure C-2.
3. Move the switch to the ON position (up).
4. In the Main Menu, press *Setup*. The Setup Menu appears.

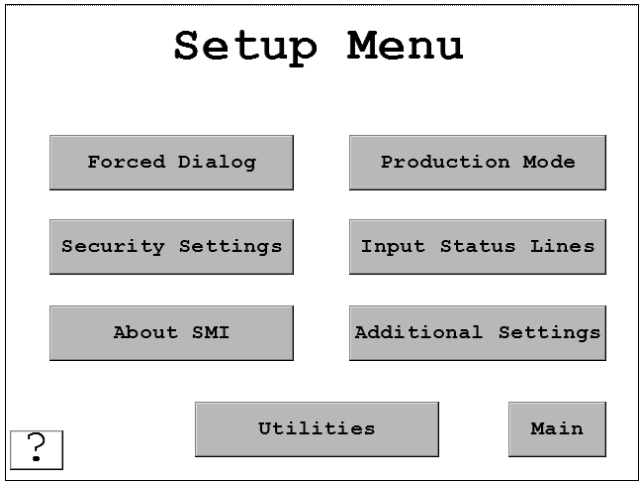


Figure C-3. Setup Menu

5. Press *Additional Settings*. The Additional Settings screen appears.

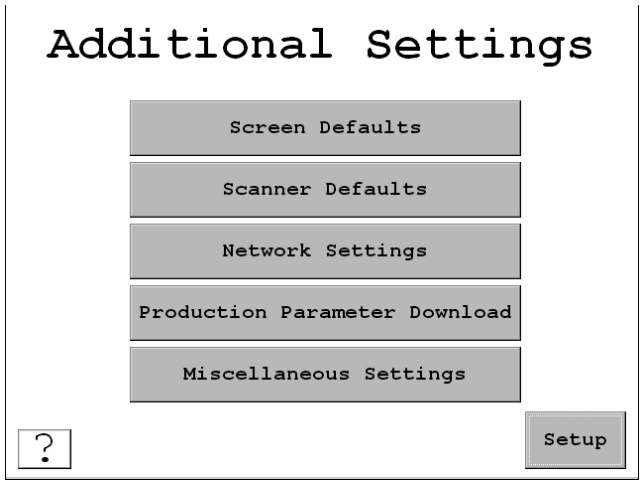


Figure C-4. Additional Settings Screen

6. Press *Network Settings*. The Wireless Settings screen appears, Figure C-5, below.

NOTICE

- Press *Keyb* to open or close the entry keyboard.
- Use a stylus to press the small keyboard keys.

7. On the Wireless Settings screen, below, enter the SSID wireless network ID, pass key, authentication, and encryption types.

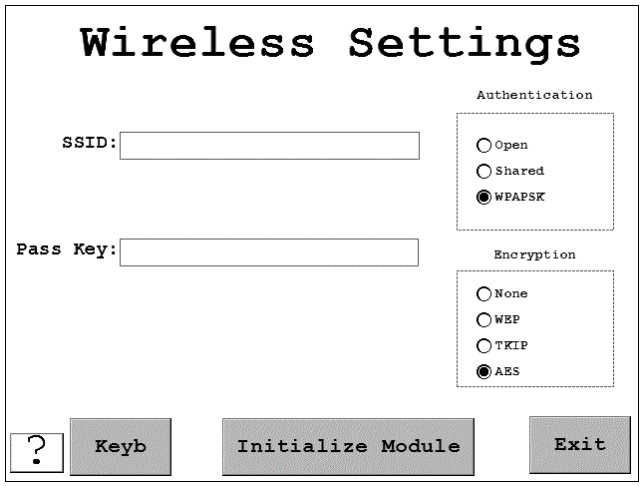


Figure C-5. Wireless Settings Screen

8. Press *Initialize Module*. The SMI 2 completes an initialization procedure, indicating the steps on the display. Finally, SMI 2 reboots.

9. When the SMI 2 has rebooted, move the wireless initialization switch to OFF (down).

Finishing the SMI 2 Installation

Go to *Checking Wiring Connections*, page 37, and follow the steps to complete installation, including checking the network connection and setting the IP address, subnet, and default gateway.

Appendix D – Updating SMI 2 Firmware

Updating SMI 2 HMI Code

Recording the Existing HMI Code Version

1. In the Main Menu, press *Setup*. The Setup screen appears.
2. Press *About SMI*. The About SMI screen appears.

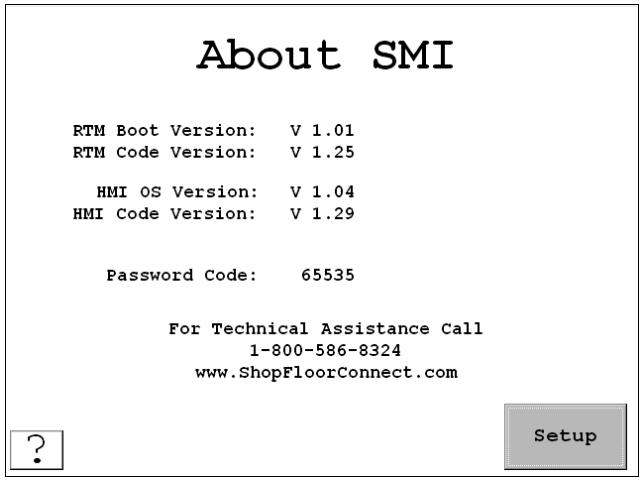


Figure D-1. About SMI 2 Screen

3. Record the HMI Code Version (1.00 in the screen above.)

Obtaining the HMI Code Upgrade File

Contact Wintriss ShopFloorConnect Technical Support to obtain the HMI code upgrade file by email.

When you receive the Upgrade email from tech support, click on the link provided.

Insert an empty USB drive into your computer.

When prompted, save the .zip file in a convenient location on your computer.

Extracting the Upgrade File

1. Navigate to the .zip file on your computer.
2. Double-click the zip file.
3. Extract the contents of the .zip file to the root directory on the USB drive.

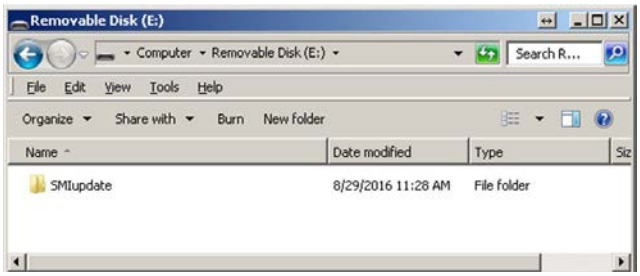


Figure D-2. SMIupdate Folder in USB Drive Root Directory

Preparing to Upgrade

Place SMI 2 in a Planned Downtime Mode

1. On the Main menu, press *Downtime*.
2. Scroll to Planned Downtime and press *Planned Downtime*. The Dialog History screen appears.
3. Press *Change Previous Downtime Reason to Selected Reason.*
4. Return to the Main menu.

Preparing to Insert USB Drive

1. Power down SMI 2.
2. Open latch and open front of unit.
3. Locate the USB connectors and select one to use. See Figure 1-3, page19.
4. Hold USB drive in your hand, oriented properly for insertion into the USB connector.

NOTICE

You will have a limited time to insert the USB drive into the connector during the update procedure.

Installing the Upgrade

1. Power up the SMI 2.
2. Watch the display for the SMI 2 screen to appear. Then you will have 20 seconds to insert the USB drive.
3. Insert the USB drive into one of the connectors.

4. Watch the display until the System Booting screen appears.
5. Press *Install SMI App Update*. SMI 2 completes booting and then restarts
6. When SMI 2 completes its restart, remove the USB drive.

Verifying the HMI Code Update

1. In the Main Menu press *Setup.* The Setup screen appears.
2. Press *About SMI.*
3. On the About SMI screen, check the HMI code version. It should match the code version in the filename of the .zip file. (e.g., *SMIupdateV129.zip* is version 1.29)

Glossary

NOTICE

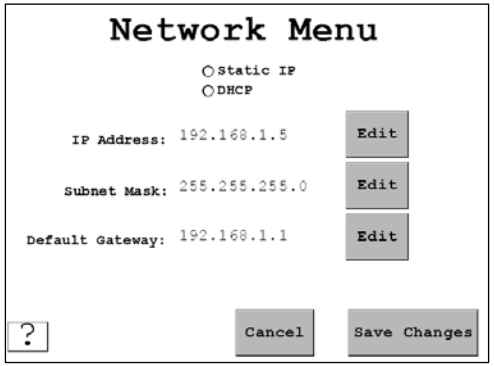
Cross-references to other glossary entries and sections of the manual are shown in *italics.*

backfill	One of two options provided by the SMI 2 for assigning downtime once a *downtime reason* 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 *machine state*) or with another downtime reason. The other option assigns the selected downtime reason to the period of time from the present forward. An SMI 2 setting allows you to automate the backfill option (see *Making Forced Dialog Mode Settings*, page 63).
downtime reason	A reason used to document a period of Unplanned Downtime (see *machine state*). 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 *downtime reason* from a menu that displays whenever the machine enters an "Idle" state (see *machine state*). The machine cannot be restarted until a downtime reason is selected.
machine state	One of six categories used by SFC 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 *multiplier*s 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. SMI 2 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 SMI 2 collects production rate samples.
Schedule Interface	An SFC module that manages the scheduling of jobs on a machine. The Schedule Interface is set up by the user in SFC.
SFC	Stands for ShopFloorConnect, the data-collection software to which the SMI 2 reports downtime reasons, parts and scrap counts, and other production information.

Index

ShopfloorConnect
Connect your machines to improve productivity

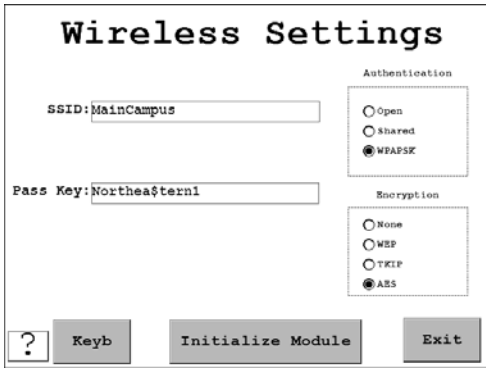


Setup/Additional Settings/Network Settings/Network IP Settings

Static IP ADDRESS: _____

Subnet: _____

Gateway: _____



Setup/Additional Settings/Network Settings/Wireless Settings

SSID: _____

Pass Key: _____

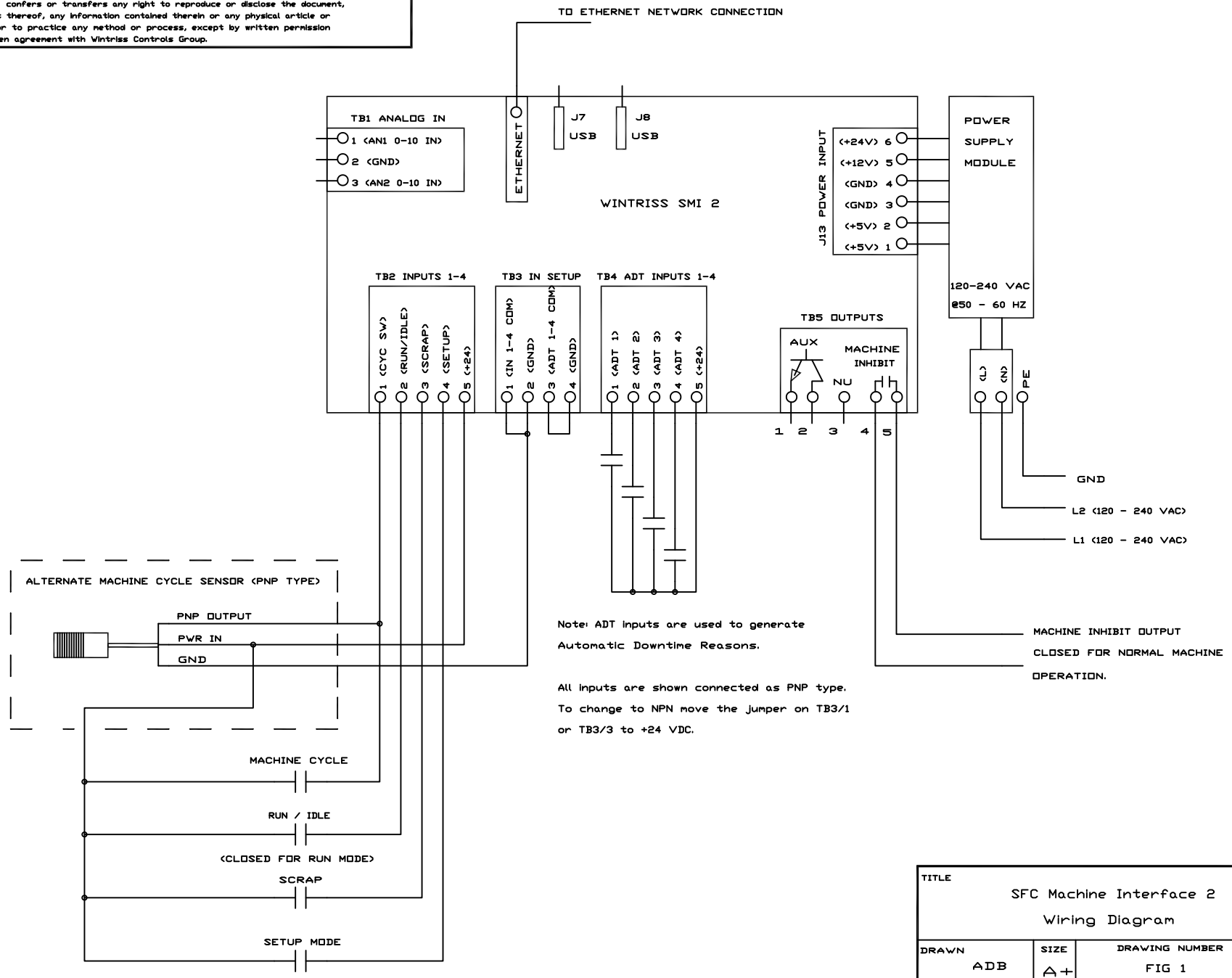
Authentication type: _____

Encryption type: _____

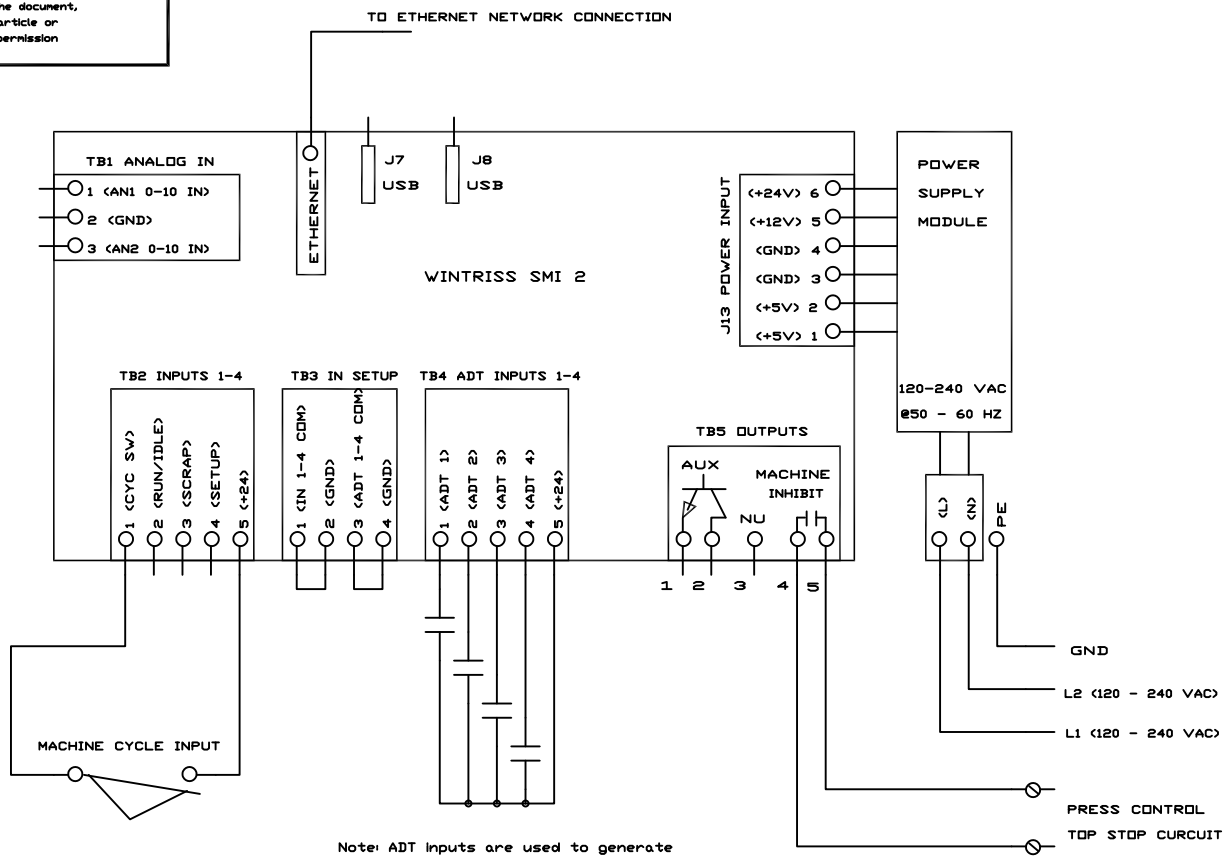
<u>Troubleshooting items to consider:</u>

- UPPER/lower case sensitive
- MAC address filtering?
  - MAC address of device is located on wireless module inside box
    - Locate number and add 1 to the last number
      - Example: ACCF235DC2E0 will become ACCF235DC2E1

Example



TITLE: SFC Machine Interface 2 Wiring Diagram			
DRAWN: ADB	SIZE: A+	DRAWING NUMBER: FIG 1	REV
DATE: 1/20/17		SHEET OF	



MACHINE CYCLE INPUT

This input must go on at aprox. 90 degrees and off at aprox. 270 degrees each rotation of the press. The SMI uses this input to count press strokes and determine when the press is running.

To turn this input on you must apply +24 VDC. This voltage can come from internal SMI 24 VDC supply or an external voltage source as long as the the Com (Grounds) are connected together to provide a current return path.

The machine cycle input is shown connected to a cam switch and using the internal +24 VDC supply.

Note: ADT inputs are used to generate Automatic Downtime Reasons.

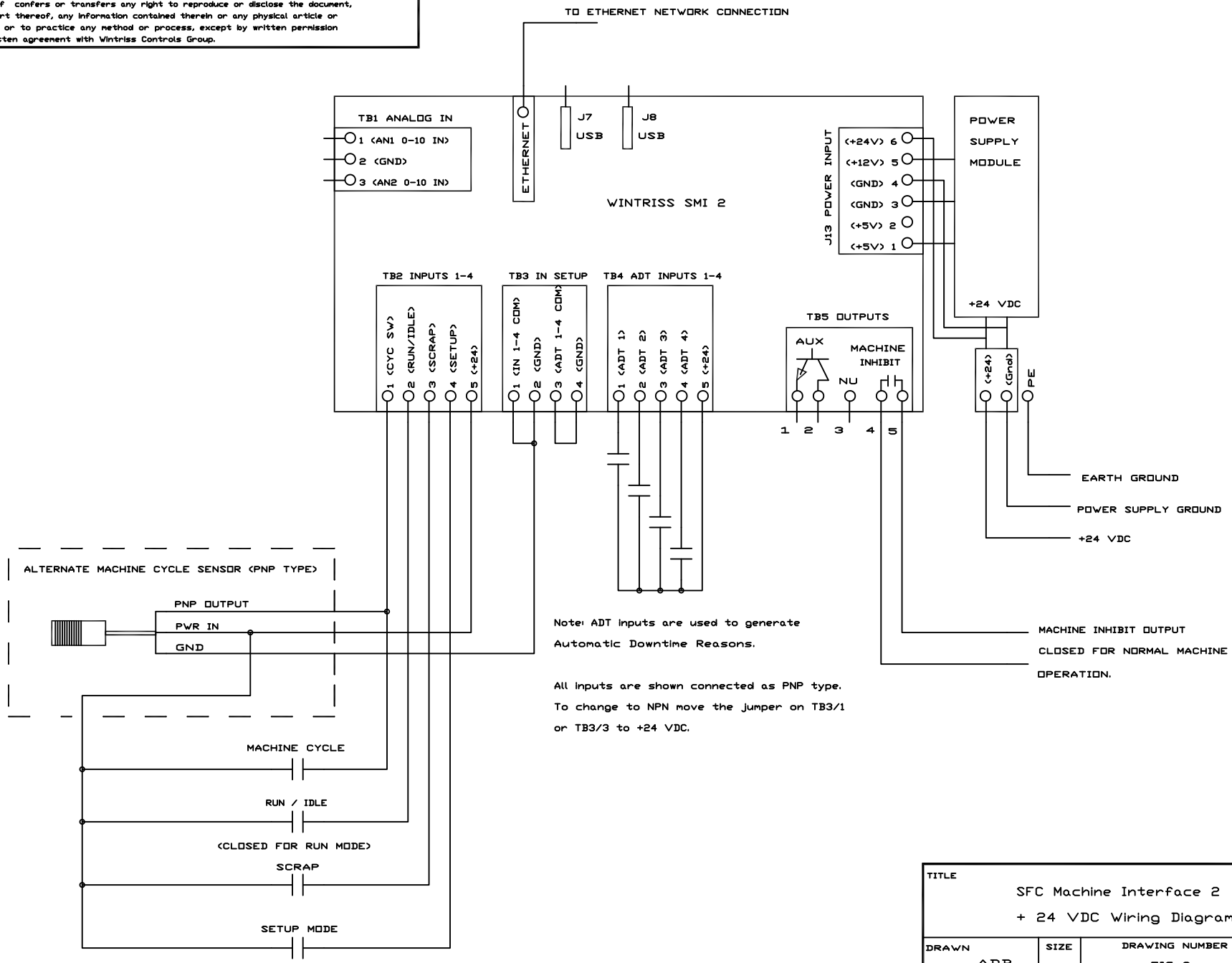
All inputs are shown connected as PNP type. To change to NPN move the jumper on TB3/1 or TB3/3 to +24 VDC.

MACHINE INHIBIT OUTPUT

The machine inhibit output is closed for normal press operation. It opens when the machine operation needs to be inhibited to force the operator to enter downtime reasons.

This output is a dry contact relay rated at 2 amps. This is normally connected to the top stop circuit of the press control.

TITLE: SFC Machine Interface 2 Press Wiring Diagram			
DRAWN: ADB	SIZE: A+	DRAWING NUMBER: FIG 2	REV
DATE: 1/20/17		SHEET OF	



TITLE: SFC Machine Interface 2 + 24 VDC Wiring Diagram			
DRAWN: ADB	SIZE: A+	DRAWING NUMBER: FIG 3	REV:
DATE: 1/24/17		SHEET: OF	