# 3015

## Setpoint Controller

Technical Manual

B90062400A
10/99.00

# Declaration of conformity
Konformitätserklärung
Déclaration de conformité
Declaración de Conformidad
Conformiteitsverklaring
Dichiarazione di conformitá

**We**/Wir/Nous/Wij/Noi: **Mettler-Toledo, Inc.**
**1150 Dearborn Drive**
**Worthington, Ohio 43085**
**USA**

**declare under our sole responsibility that the product,**
erklären, in alleiniger Verantwortung, daß dieses Produkt,
déclarons sous notre seule responsabilité que le produit,
declaramos, bajo nuestra sola responsabilidad, que el producto,
verklaren onder onze verantwoordelijkheid, dat het product,
dichiariamo sotto nostra unica responsabilitá, che il prodotto,

**Model/Type:** **3015 controller-1001, 3015 controller-1002, 3015 controller-1011 and 3015 controller-1012** as supplied by Mettler-Toledo, Inc.

**3015 controller-1021** when installed in a metal enclosure or housing

**to which this declaration relates is in conformity with the following standard(s) or other normative document(s).**
auf das sich diese Erklärung bezieht, mitder/den folgenden Norm(en) oder Richtlinie(n) übereinstimmt.
Auquel se réfère cette déclaration est conforme à la (aux) norme(s) ou au(x) document(s) normatif(s).
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**CE Conformity** / CE-Konformität / Conformité CE
89/336/EU EMC Directive / EMU-Richtlinie / Directive concernant la CEM
- EN55022, A 01.04.87 — Emissions / Funkstörungen
- EN50081-1 — Immunity

73/23/EU Low Voltage / Niederspannung / basse tension
- EN60950 — el. Safety / el. Sicherheit / sécurité el.

**Other Directives and Standards** / Andere Richtlinien und Normen / Autres documents
**corresponding to local requirements** / entsprechend lokalen Anforderungen / correspondant aux exigences locales
- UL1950 — el. Safety / el. Sicherheit / sécurité el. (if UL mark is applied)
- C22.2 No. 950-M89 — el. Safety / el. Sicherheit / sécurité el. (If CUL mark is applied)
- FCC, Part 15, class A — Emissions / Funkstörungen

Darrell Flocken, Manager - Weights & Measures
Office of Weights and Measures
Worthington, Ohio USA
**September, 1995**
**Revised October 1996** (added compliance to Low Voltage Directive)
**Revised October 1999** (corrected RAM number errors)

according to EN45014

# INTRODUCTION

This publication is provided solely as a guide for individuals who have received Technical Training in servicing the METTLER TOLEDO product.

Information regarding METTLER TOLEDO Technical Training may be obtained by contacting:

**METTLER TOLEDO**
1900 Polaris Parkway
Columbus, Ohio 43240
(614) 438-4511
www.mt.com

# FCC Notice

This device complies with Part 15 of the FCC Rules and the Radio Interference Requirements of the Canadian Department of Communications. Operation is subject to the following conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

# CUSTOMER FEEDBACK

If you have a problem with this product, or just a suggestion on how we can serve you better, please fill out this form and send it to us. Your feedback will help us to improve product performance, quality and service. Mail to the address on the reverse, or fax to (614) 438-4355.

| | |
|---|---|
| Your Name: | Date: |
| Organization Name: | Mettler Toledo Order Number |
| Address: | Part / Product Name: |
| | Part / Model Number: |
| | Serial Number: |
| Phone Number: ( ) Fax Number: ( ) | Company Name of Installation: |
| E-mail Address: | Contact Name: |
| | Phone Number: |

| How well did this product meet your expectations in its intended use? | | Comments: |
|---|---|---|
| | Met and exceeded my needs | |
| | Met all needs | |
| | Met most needs | |
| | Met some needs | |
| | Did not meet my needs | |

**PROBLEM:**

**UNACCEPTABLE DELIVERY:**

- ☐ Shipped late
- ☐ Shipped early
- ☐ Shipped to incorrect location
- ☐ Other (Please Specify)

**OUT OF BOX ERROR:**

- ☐ Wrong item
- ☐ Wrong part
- ☐ Missing equipment
- ☐ Equipment failure
- ☐ Wrong documentation
- ☐ Missing documentation
- ☐ Incorrectly calibrated
- ☐ Other (Please specify)

Comments:

***DO NOT WRITE IN SPACE BELOW; FOR METTLER TOLEDO USE ONLY***

☐ Retail ☐ Light Industrial ☐ Heavy Industrial ☐ Systems

**RESPONSE**: Include Root Cause Analysis and Corrective Action Taken.

FOLD THIS FLAP FIRST

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FIRST CLASS PERMIT NO. 414 COLUMBUS, OH

***POSTAGE WILL BE PAID BY ADDRESSEE***

Mettler-Toledo, Inc.
Quality Manager - MTWI
1900 Polaris Parkway
Columbus, Ohio 43240
USA

*Please seal with tape.*

# Precautions

READ this manual BEFORE operating or servicing this equipment.

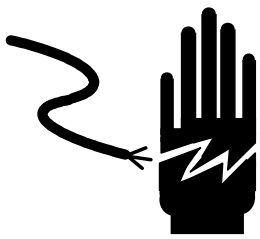
FOLLOW these instructions carefully.

SAVE this manual for future reference.

DO NOT allow untrained personnel to operate, clean, inspect, maintain, service, or tamper with this equipment.

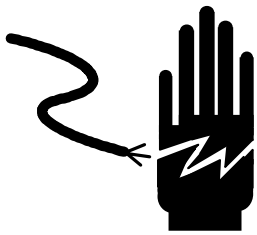
ALWAYS DISCONNECT this equipment from the power source before cleaning or performing maintenance.

CALL METTLER TOLEDO for parts, information, and service.



**WARNING**

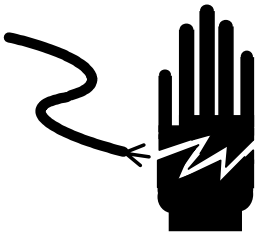
ONLY PERMIT QUALIFIED PERSONNEL TO SERVICE THIS EQUIPMENT. EXERCISE CARE WHEN MAKING CHECKS, TESTS AND ADJUSTMENTS THAT MUST BE MADE WITH POWER ON. FAILING TO OBSERVE THESE PRECAUTIONS CAN RESULT IN BODILY HARM.



**WARNING**

FOR CONTINUED PROTECTION AGAINST SHOCK HAZARD CONNECT TO PROPERLY GROUNDED OUTLET ONLY.

DO NOT REMOVE THE GROUND PRONG.



**WARNING**

DISCONNECT ALL POWER TO THIS UNIT BEFORE REMOVING THE FUSE OR SERVICING.

**CAUTION**

BEFORE CONNECTING/DISCONNECTING ANY INTERNAL ELECTRONIC COMPONENTS OR INTERCONNECTING WIRING BETWEEN ELECTRONIC EQUIPMENT ALWAYS REMOVE POWER AND WAIT AT LEAST THIRTY (30) SECONDS BEFORE ANY CONNECTIONS OR DISCONNECTIONS ARE MADE. FAILURE TO OBSERVE THESE PRECAUTIONS COULD RESULT IN DAMAGE TO OR DESTRUCTION OF THE EQUIPMENT OR BODILY HARM.

**CAUTION**

OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.

# CONTENTS

# 1

# Introduction

The 3015 setpoint controller is designed for weighing applications which require control of an external device, such as a gate or valve, to allow filling of a single material. The setpoint controller is used together with a METTLER TOLEDO scale base and scale instrument which has setpoint capability.

Up to 8 inputs or outputs can be installed in the 3015 controller setpoint controller, selectable as either AC or DC voltage. When operating in the coincidence mode and receiving Toledo continuous format, the 3015 controller may be used to send single character ASCII clear, tare, print, and zero (C, T, P, & Z) commands to the instrument.

The 3015 controller can be connected to scale instruments through the serial port, selectable as either RS-232 or passive 20mA CL, or via fiber optics when equipped with an internal fiber optics board. The internal fiber optics board installed in the 3015 controller allows direct connectivity to a METTLER TOLEDO intrinsic safe terminal (such as the PUMA terminal, the M8141, or an 8525 equipped with internal fiber optics kits) without the use of a METTLER TOLEDO dual channel fiber optics converter

NOTE: All controller models listed on the right are supplied without I/O modules. The I/O modules are available as separate items.

| Controller Description | Model Number |
|---|---|
| 3015 Controller, Mild Steel, Wall Mount Enclosure without Operators. | 3015 controller-1001 |
| 3015 Controller, Mild Steel, Wall Mount Enclosure with START, STOP, and DISCHARGE (or Jog) Pushbuttons. | 3015 controller-1002 |
| 3015 Controller, Mild Steel, Wall Mount Enclosure without Operators with Internal Fiber Optics PCB. | 3015 controller-1101 |
| 3015 Controller, Mild Steel, Wall Mount Enclosure with Start, Stop, Discharge, (or Jog) with Internal Fiber Optics PCB. | 3015 controller-1102 |
| 3015 Controller, Stainless Steel, Wall Mount Enclosure without operators. | 3015 controller-1011 |
| 3015 Controller, Stainless Steel, Wall Mount Enclosure with START, STOP and DISCHARGE (or Jog) Pushbuttons. | 3015 controller-1012 |
| 3015 Controller, Panel/Chassis Mount | 3015 controller-1021 |
| 3015 Controller, Stainless Steel , Wall Mount Enclosure without Operators, with Internal Fiber Optics PCB. | 3015 controller-1111 |
| 3015 Controller, Stainless Steel , Wall Mount Enclosure with START, STOP, and DISCHARGE (or Jog) Pushbuttons with Internal Fiber Optics PCB. | 3015 controller-1112 |

# Overview

## Physical Layout

| | |
|---|---|
| Panel / Chassis Mount: | 7.5 in x 8.25 in x 3.25 in<br>(191 mm x 210 mm x 82.5 mm) |
| Mild Steel enclosure: | 10 in x 12 in x 5 in<br>(254 mm x 305 mm x 127 mm) |
| Stainless Steel enclosure: | 10 in x 12 in x 6 in<br>(254 mm x 305 mm x 152 mm) |

## Environment

| | |
|---|---|
| Operating Temperature: | 32° F to 104° F (0° C to 40° C) |
| Humidity: | 20 to 90% relative humidity, non-condensing |

## Electrical

| | |
|---|---|
| Operating Voltage: | 97 - 240 VAC |
| Power: | 15 watts |
| Frequency: | 47 - 63 Hz |

## Serial Data I/O

| | |
|---|---|
| Interface: | 20mA current loop, RS232, or<br>Fiber Optics (optional KOP). |
| Baud Rate: | 300, 1200, 4800 jumper selectable. |
| Masstron Data Format: | 1 start bit, 8 data bits, 1 stop bit, no parity. |
| Toledo Continuous Data Format: | 1 start bit, 7 data bits, 1 stop bit, even parity with checksum. |

## Control I/O

| | |
|---|---|
| Hardware: | Solid state plug-in modules AC/DC. |
| Number of I/O: | 1 to 8 (maximum). |
| Overload protection: | Each output fused by a 5 Amp pico fuse. |

# I/O Module Specifications

## AC Output Module 115/230V (Model 0962-0028)

| | |
|---|---|
| Minimum load voltage: | 24 V rms |
| Maximum load voltage: | 240 V rms |
| Minimum load current: | 20 mA |
| Maximum load current: | 2 A rms |
| Frequency range: | 47 to 63 Hz |
| On state voltage: | 1.5V peak |
| Off state leakage: | 5 mA rms |

## DC Output Module 24V (Model 0962-0031)

| | |
|---|---|
| Minimum load voltage: | 3 VDC |
| Maximum load voltage: | 60 VDC |
| Minimum load current: | 20 mA |
| Maximum load current: | 2 A |
| On state voltage: | 1.5 V @ 2 A |
| Off state leakage: | 1 mA |

## AC Input Module 115V (Model 0962-0025)

| | |
|---|---|
| Minimum input on voltage: | 90 V rms |
| Maximum in/out on voltage: | 140 V rms |
| Minimum in/out off voltage: | 0 V rms |
| Maximum input off voltage: | 30 V rms |
| Maximum allowable current for off state: | 2 mA rms |
| Input current @ 120 VAC: | 6 mA rms |
| Frequency range: | 47 to 420 Hz |

## AC Input Module 230V (Model 0962-0027)

| | |
|---|---|
| Minimum input on voltage: | 180 V rms |
| Maximum input on voltage: | 280 V rms |
| Minimum input off voltage: | 0 V rms |
| Maximum input off voltage: | 60 V rms |
| Maximum allowable current for off state: | 1.5 mA rms |
| Input current @ 240 VAC: | 6 mA rms |
| Frequency range: | 47 to 420 Hz |

## DC Input Module (Model 0962-0030)

| | |
|---|---|
| Minimum input on voltage: | 10 VDC |
| Maximum input on voltage: | 32 VDC |
| Minimum input off voltage: | -32 VDC |
| Maximum input off voltage: | 3 VDC |
| Maximum allowable current for off state: | 2 mA rms |
| Input current @ 12 VDC: | 9 mA rms |
| Input current @ 32 VDC: | 32 mA rms |
| Frequency range: | 47 to 420 Hz |

## Dry Contact Output Module (Model 0962-0024)

| | |
|---|---|
| Contact rating: | 10 VA |
| Switching volts: | 100 VDC / 130 VAC Maximum |
| Switching current: | .5 A Maximum |
| Carry current: | 1.5 A Maximum |
| Contact on-resistance: | 200 MilliOhms |
| On-time: | 500 Microseconds |
| Off-time: | 500 Microseconds |
| Contact bounce: | 250 Microseconds |

# 2 Installation

## Environment

Identify the best location for the equipment based on its environmental specifications as listed in Chapter 1 of this manual. The proper environment enhances the operation and longevity of the 3015 controller Setpoint Controller.

## Unpacking

Please inspect the package upon delivery. If the shipping container is damaged, check for internal damage and file a freight claim with the carrier if necessary.

If the package is to be disposed of, please recycle the materials.

If the container is undamaged, unpack the 3015 controller Setpoint Controller from its protective package, noting how it was packed, and inspect each component for damage. If it is necessary to ship the controller, use the original shipping container if possible. The 3015 controller Setpoint Controller must be packed correctly to ensure its safe transportation.

Package contents for all 3015 controller Setpoint controllers include:

- 3015 controller Setpoint Controller
- Mounting Tabs
- 3015 controller Setpoint Controller Manual

## Mounting

Mount the 3015 controller Setpoint Controller using the mounting tabs provided.

## Power Connection

The 3015 controller may be powered by 115 VAC or 230 VAC. Connect the AC power to the terminal strip labeled " L1, L2, GND" as shown in drawing # 902491R. The terminal strip will accommodate wire sizes ranging from 16 to 12 AWG. The wires sizes must meet all local and national electrical codes.

The 3015 controller requires a true earth ground for reliable operation. To test the quality of the earth ground, measure the AC voltage between neutral and ground at the AC outlet. If the neutral ground voltage is greater then 0.2 VAC, then the ground connection is inadequate and must be corrected before connecting to the 3015 controller.

## Instrument Interface

The 3015 controller must be connected to the continuous data output port of the terminal. It will communicate by 20 mA current loop, RS232, or Fiber Optic (with optional kit.) It is passive transmit, passive receive with current loop.

The baud rate is selectable at 300, 1200 or 4800 baud. Serial interface is made to terminal strip TB1. Terminal designations are shown below. Refer to the external wiring diagrams in the back of this manual for connections between the 3015 controller and the various terminals. The serial data format for METTLER TOLEDO terminals must be set up for 1 start bit, 7 data bits, even parity, 1 stop bit. The 3015 controller requires that the checksum be transmitted by the terminal

| TB1 | Communications Connection |
|---|---|
| 1 | +5 VDC Input |
| 2 | Logic Ground / RS232 Signal Ground |
| 3 | TCL+ / RS232 TxD |
| 4 | TCL- |
| 5 | RCL+ / RS232 RxD |
| 6 | RCL- |

## Baud Rate Selection

The baud rate is jumper selectable at 300, 1200 or 4800 baud. Place jumper JU2 in the position to match the baud rate of the data being sent by the terminal.

## 20 mA / RS232 Interface Select

The 3015 controller can communicate either 20 mA current loop or RS232. Place jumper JU1 in the proper position for the interface being used. The JU11 and JU12 jumpers must be installed for RS232 and removed for 20 mA current loop.

| | |
|---|---|
| JU1 - | Receive select 20 mA / RS232 |
| JU2 - | Baud rate select |
| JU3 to JU10 - | TTL module select jumper. Install if using dry contact module part number 0962-0024-00. Remove for all others. |
| JU11 - | RS232 enable, install for RS232, remove for 20 mA. |
| JU12 - | RS232 receive enable, install for RS232, remove for 20 mA. |

## Fiber Optic Interface

Install the optional Fiber Optic Kit of Parts, Model 0961-0077. Remove jumpers JU1, JU11, and JU12. The wiring harness plugs into J2 on the Setpoint PCB. J3 on the Fiber Optic PCB is receive, and J2 is transmit.

## Control I/O Interface

The I/O assignments vary depending on the configuration of the 3015 controller. Refer to the external wiring diagrams in the back of this manual for I/O designations and placement of I/O modules for the different operating modes. Because of the noise generated when switching inductive loads, the control power for driving the I/Os must be supplied from a separate power source than the one supplying the logic supply. Be sure to observe polarities when connecting devices to the I/Os. Also make sure to install quencharcs across all outputs as shown on the wiring diagrams. The quencharc should be installed as close to the load as possible.

## Dip Switch Setup

Dip switches SW1 and SW2 are used to select several options to configure the 3015 controller for a specific application. The functions of the dip switches are determined by the type of data being received from the terminal. The 3015 controller will automatically detect the data format as either Masstron continuous or Toledo continuous format. If the terminal is sending data in the Masstron format, refer to the sections for "Masstron Format Only". If the terminal is sending data in the Toledo continuous format, refer to the sections for "Toledo Continuous Format Only."

Setting SW2 positions 1-8 all ON selects the test mode. Refer to the Troubleshooting Section 5 for details of the test mode.

NOTES

# 3 Sequence of Operation

## Initialization

- Before power-up make sure all switch settings (SW1, SW2) are in the correct positions for the desired sequence of operation.
- Upon power-up, the control outputs will be turned off.
- The processor will read the dip switches to see if the self test mode is selected. If so, the self-test diagnostic routine will be performed. (See Troubleshooting Section 5.0)
- The controller will look at the serial data received. The controller will automatically recognize the Toledo continuous format with checksum, or the Masstron continuous format.
- While the controller is performing its auto recognition, LED D32 will flash on and off indicating that data has not been received that conforms to the proper format. Once valid data has been received, LED D32 will be turned off, this process should take approximately 2 seconds.
- The dip switch functions or assignments are determined by the type of data being received, Masstron format or Toledo format.
- The controller will then resume normal operation. If the controller fails to receive data within 2 seconds or if an instrument error (over capacity, etc.) occurs, LED D32 will flash and all control outputs will be turned off. The LED will continue to flash until the error is cleared. Sequence operation will resume upon receipt of a new start or discharge command, provided the data error has cleared.

# Coincidence Operation Setup- Toledo Continuous Format Only

**SW1 Settings** (Other switch combinations are undefined)

| 1-1 | 1-2 | 1-3 | Information |
|---|---|---|---|
| OFF | OFF | OFF | Select coincidence mode |
| ON | OFF | OFF | Select weigh in sequence |
| OFF | ON | OFF | Select weigh out sequence |

**NOTE** - In the coincidence mode, SW2 is not used.

### SW 1-4 Output Polarity Select

**OFF:** The outputs are turned off below setpoint, and turned on above setpoint.
**ON:** The outputs are turned on below setpoint, and are turned off above setpoint.

### SW 1-5 Negative Trip Select

**OFF:** The outputs will trip in both the positive and negative direction (absolute values).
**ON:** The outputs will only trip in the positive direction. The outputs will remain in the below setpoint state whenever the weight is negative.

### SW 1-6 Trip During Motion

**OFF:** The outputs will always reflect the current setpoint status.
**ON:** The outputs will only be updated to the current setpoint status when no motion is detected.

### SW 1-7 Number of Setpoint Outputs Select

**OFF:** Six coincidence setpoint outputs are enabled, and two inputs for clear and tare are enabled.
**ON:** Four coincidence setpoint outputs are enabled, and four inputs for clear, tare, print and zero are enabled.

### SW 1-8 C, T, P, Z Format Select

**OFF:** No carriage return is sent after the single ASCII character C, T, P, Z command.
**ON:** A carriage return will be sent after the single character C, T, P Z command. This switch must be on when interfaced to an 8582 counting scale.

# Coincidence Operation Toledo Continuous Format Only

1. When coincidence operation is selected (SW1-1, 2, 3 off), the outputs will reflect the state of the setpoint status bits received from the terminal. The polarity of the outputs are determined by the setting of SW1-4. If SW1-4 is off, the outputs will be turned off when the weight is below setpoint and will be turned on when the weight is greater than or equal to setpoint. If SW1-4 is on, the output will be turned on when the weight is below setpoint and turned off when the weight is greater than or equal to setpoint.

   For indicators that have tolerance outputs, and coincidence mode in the 3015 controller is selected tolerance 1 is output 5, tolerance 2 is output 6. Tolerance outputs operate at greater than, (not greater than or equal to) the entered value.

   Polarity is selected by user. Polarity selected must provide for a fail safe installation. Outputs will trip if a data error occurs. Outputs must be configured and installed to go to their safe non-active condition if a data error occurs and/or power to the 3015 controller is interrupted.

2. Outputs I/O 1 - 6 will reflect the status of setpoints 1 through 4 as well as the two tolerance setpoints of the terminal. If SW1-7 is on, then the unit is configured to provide four coincidence outputs and four inputs for clear, tare, print and zero. Outputs I/O 1 - 4 will reflect the status of setpoints 1 - 4 of the terminal. No outputs are available for the tolerance setpoints. Whenever an input is turned on, the respective single character ASCII command is sent to the terminal, clear is I/O 8, tare is I/O 7, print is I/O 6, zero is I/O 5.

3. An overcapacity error or communications error will force the outputs to the above setpoint (tripped) state.

# Weigh-In Sequence Toledo Continuous Format Only

When using the 3015 controller with the 8582, feed sequences with discharge are not possible. Either two speed feed with no discharge, or single speed feed with no discharge is possible. When using the 3015 controller with the PANTHER, two speed feed with discharge is possible. The tolerance setpoint is used as the discharge cutoff. However, this value is only accessible in setup, and has limited selections. If single speed is selected, then setpoint 2 is used as the discharge setpoint.

| SW1-1 | SW1-2 | SW1-3 | |
|---|---|---|---|
| ON | OFF | OFF | Select Weigh In Sequence |

**SW1-4 SETPOINT DATA FORMAT SELECT**

**OFF:** The data format is the standard Toledo continuous output format with setpoint status for two 2 speed setpoints or 4 coincidence setpoints.

**ON:** The data format is the standard Toledo continuous output format with setpoint status for two coincidence setpoints. This switch must be on when interfacing to a PANTHER terminal or an 8582 terminal.

**SW1-5 TWO-SPEED FEED SELECT**

**OFF:** Single-speed feed is selected.

**ON:** Two-speed feed is selected.

**SW1-6 TWO-SPEED FEED CONFIGURATION**

**OFF:** Alternate feed is selected. Only the respective output, fast or slow, will be on at the appropriate time.

**ON:** Simultaneous feed is selected. Both feed outputs, fast and slow, will turn on for fast feed operation with only the slow feed output remaining on for slow feed.

**SW1-7 NET WEIGHT BATCHING SELECT**

**OFF:** The system will fill in the gross mode. The 3015 controller will tare the terminal before feeding. The 3015 controller will automatically tare before discharging if a discharge cycle is included in the weigh sequence.

**SW1-8 MOTION DETECTION**

**OFF:** A no motion condition does not need to exist after the feed or discharge cycle is complete before proceeding with the sequence.

**ON:** A no motion condition must occur after the feed or discharge cycle is complete before the sequence will continue.

### SW2-1 PRINT

**OFF** No printing is required after feeding.

**ON** The 3015 controller will command the terminal to print after the feed cycle is complete. The 3015 controller will always wait for a no motion condition before commanding the terminal to print regardless of the setting of the SW1-8.

### SW2-2,3 TOLERANCE CHECK

Zero tolerance and weight tolerances are available separately only. They cannot be used together in the same sequence.

Selection of weight or zero tolerance in scale terminal must agree with 3015 controller setup.

| SW2-2 | SW2-3 | Function |
|---|---|---|
| Off | Off | No tolerance checking is enabled. |
| On | Off | Weight tolerance check after feed cycle complete |
| Off | On | Zero tolerance check before feed cycle starts |
| On | On | Not defined |

### SW2-4 HOLD AFTER FEED CYCLE

**OFF** No hold at the end of the feed cycle is required. The 3015 controller will proceed to the discharge cycle.

**ON** The 3015 controller will hold at the end of the feed cycle until receipt of a start discharge command.

### SW2-5 DISCHARGE

NOTE:
Discharge is not for use with the 8582 counting scale.

**OFF** No discharge cycle is required.

**ON** The discharge cycle is enabled.

### SW2-6 HOLD AFTER DISCHARGE CYCLE

**OFF** No hold at the end of the discharge cycle is required. The 3015 controller will proceed to the feed cycle.

**ON** The 3015 controller will hold at the end of the discharge cycle until receipt of a start command.

### SW2-7 NOT USED

### SW2-8 NOT USED

# Weigh-Out Sequence Toledo Continuous Format Only

NOTE:
Weigh-Out is not for use with the 8582.

When using the 3015 controller with the PANTHER, single speed feed with two speed discharge is not possible since the PANTHER terminal has only two setpoints. Either two speed discharge with no feed, or single speed discharge with single speed feed is possible.

**SW1-1 SW1-2 SW1-3**

**OFF ON OFF** Select Weigh Out Sequence

**SW1-4 SETPOINT DATA FORMAT SELECT**

**OFF:** The data format is the standard Toledo continuous output format with setpoint status for two 2 speed setpoints or 4 coincidence setpoints.

**ON:** The data format is the standard Toledo continuous output format with setpoint status for two coincidence setpoints. This switch must be on when interfacing to a PANTHER terminal.

**SW1-5 TWO SPEED DISCHARGE SELECT**

**OFF:** Single speed discharge is selected.

**ON:** Two speed discharge is selected.

**SW1-6 TWO SPEED DISCHARGE CONFIGURATION**

**OFF:** Alternate discharge is selected. Only the respective output, fast or slow, will be on at the appropriate time.

**ON:** Simultaneous discharge is selected. Both discharge outputs, fast and slow, will turn on for fast discharge operation with only the slow discharge output remaining on for slow discharge.

**SW1-7 NOT USED**

**SW1-8 MOTION DETECTION**

**OFF:** A no motion condition does not need to exist after the feed or discharge cycle is complete before proceeding with the sequence.

**ON:** A no motion condition must occur after the feed or discharge cycle is complete before the sequence will continue.

Zero tolerance and weight tolerances are available separately only. They cannot be used together in the same sequence.

Selection of weight or zero tolerance in scale terminal must agree with 3015 controller setup.

**SW2-1 PRINT**

**OFF:** No printing is required after discharging.

**ON:** The 3015 controller will command the terminal to print after the discharge cycle is complete. The 3015 controller will always wait for a no motion condition before commanding the terminal to print regardless of the setting of SW1-8.

**SW2-2, 3 TOLERANCE CHECK**

| SW2-2 | SW2-3 | Function |
|---|---|---|
| OFF | OFF | Tolerance checking is disabled. |
| ON | OFF | Weight tolerance check after discharge cycle complete |
| OFF | ON | Zero tolerance check before feed cycle starts |
| ON | ON | Not defined |

**SW2-4 HOLD AFTER FEED CYCLE ENABLE**

**OFF:** No hold at the end of the feed cycle is required. The 3015 controller will proceed to the discharge cycle.

**ON:** The 3015 controller will hold at the end of the feed cycle until receipt of a start discharge command.

**SW2-5 NOT USED**

**SW2-6 HOLD AFTER DISCHARGE CYCLE ENABLE**

**OFF:** No hold at the end of the discharge cycle is required. The 3015 controller will proceed to the feed cycle.

**ON:** The 3015 controller will hold at the end of the discharge cycle until receipt of a start command.

**SW2-7 NOT USED**

**SW2-8 NOT USED**

# Sequence Operation Toledo Continuous Format

This detailed sequence of operation for a single- and two-speed feed explains the operation when all selectable options are enabled via dip switch selection. The paragraphs defined may not apply if the option has not been selected.

**The Following Conditions Apply to All Modes of Operation:**

1) Anytime a communication error occurs or the terminal is over capacity, the control outputs will be turned off. The error LED (D32) will flash. Operation will not resume until a new start or discharge command (whichever applies) is received and valid data received. Operation will resume where it stopped.

2) Whenever a stop command is received or if an error occurs, all control outputs will be turned off and the sequence will be stopped. Operation will resume where it stopped upon receipt of a new start or discharge command, whichever applies.

   When WEIGH-IN sequence is selected, the fill cycle may be stopped and a discharge may then be initiated. However, a discharge cycle must be completed before a fill cycle may be started. When the WEIGH-OUT sequence is used, the discharge cycle may be stopped and a fill initiated. A fill cycle must be completed before a discharge cycle may be started.

3) When WEIGH-IN sequencing is used, and the 3015 controller is interfaced to an terminal that has only <u>two</u> coincidence setpoints such as the PANTHER or the 8582, setpoint 1 is the target setpoint and setpoint 2 is the dribble feed setpoint. If both feed and discharge cycles are included in the weigh sequence, two speed feed is only available if the terminal has a zero tolerance setpoint to be used as the discharge cutoff. Setpoint 1 is then the target setpoint, and setpoint 2 is the dribble feed setpoint. The 8582 is not for use with a discharge cycle.

4) When WEIGH-IN sequencing is used, and the 3015 controller is interfaced to an terminal that has coincidence setpoints only, such as the 8530, setpoint 1 is the target setpoint and setpoint 3 is the dribble feed setpoint. Setpoint 2 is the discharge setpoint. If the terminal has only two setpoints see paragraph 3 above.

5) When WEIGH-IN sequencing is used and the 3015 controller is interfaced to an terminal that has two setpoints with dribble and preact such as the PUMA or M8141, setpoint 1 is the target setpoint and setpoint 2 is the discharge setpoint. The fast feed cutoff value is equal to setpoint 1 minus the dribble value entered for setpoint 1. The slow feed cutoff value is equal to setpoint 1 minus the preact value entered for setpoint 1. The discharge cutoff value is equal to setpoint 2 minus the preact value entered for setpoint 2. The scale weight must go below this point to cutoff the discharge.

6) When WEIGH-OUT sequencing is used, and the 3015 controller is interfaced to an terminal that has only two coincidence setpoints such as the PANTHER, setpoint 1 is the target setpoint and setpoint 2 is the dribble discharge setpoint. If both feed and discharge cycles are included in the weigh sequence, two speed discharge is not available. Setpoint 1 is then the discharge setpoint, and setpoint 2 is the feed setpoint.

7) When WEIGHT-OUT sequencing is used, the terminal must have tare capability. The 3015 controller will wait until the terminal is tared before starting a discharge cycle.

8) When WEIGH-OUT sequencing is used, and the 3015 controller is interfaced to an terminal that has coincidence setpoints only, such as the 8530, setpoint 1 is the target setpoint and setpoint 3 is the dribble discharge setpoint. Setpoint 2 is the feed setpoint. If the terminal has only two setpoints see paragraph above.

9) When WEIGH-OUT sequencing is used, and the 3015 controller is interfaced to an terminal that has two setpoints with dribble and preact such as the PUMA or the 8141, setpoint 1 is the discharge setpoint and setpoint 2 is the feed setpoint. The fast discharge setpoint value is equal to setpoint 1 minus the dribble value entered for setpoint 1. The slow discharge setpoint value is equal to setpoint 1 minus the preact value entered for setpoint 1. The feed setpoint value is equal to setpoint 2 minus the preact value entered for setpoint 2.

10) Zero and weight tolerance checking is only available if the terminal has the capability of entering tolerance values for these functions.

11) Printing is only possible if the terminal has the capability of transmitting continuous data and printer data simultaneously via two separate serial ports. The terminal must also have remote print command capability.

12) Weigh-Out is not for use with the 8582 counting scale.

**⚠ WARNING**

WHEN SEQUENCE OPERATION IS USED WHERE CLEAR AND TARE FUNCTIONS PERFORMED BY THE 3015 controller, TARE OR CLEAR MUST NOT BE ENTERED THROUGH THE INDICATOR KEYBOARD.

# Weigh-In Sequence Operation
## Single-Speed Feed
## Toledo Continuous Format

1) Upon power -up, the cycle complete output will be turned on. The controller will wait until a start command or a discharge command is received. If a discharge command is detected, the sequence will proceed to the beginning of the discharge cycle.
2) The controller will check to make sure the terminal is in the gross mode. If not, it will send a clear command to the terminal, then wait for the terminal to switch to the gross mode. If the PANTHER/8582 setpoint format is selected (SW1-4), this step will be skipped.
3) The controller will check to see if the weight is within the zero tolerance band (if enabled). If out of tolerance, the sequence will be stopped and the error output will be turned on. Operation will resume when a new start command is received.
4) The controller will send a tare command (if enabled) to the terminal, then wait until the terminal switches to the net mode or until the displayed weight equals zero.
5) The controller will turn on the feed output. The feed output will remain on until the feed setpoint is reached. The output will then be turned off.
6) The controller will wait for the scale to settle if motion detection is enabled.
7) The controller will wait for no motion, then send a print command to the terminal (if enabled).
8) The controller will check to see if the weight is within tolerance (if enabled). If out of tolerance, the sequence will be stopped and the error output will be turned on. Operation will resume when a new start command or discharge command is received.
9) If hold after feed is enabled, the sequence will be stopped. If the discharge cycle is enabled, operation will resume when a discharge command is received. Otherwise, the cycle complete output will be turned on and the sequence will wait for a start command.
10) The controller will send a clear command to the terminal.
11) The controller will turn on the discharge output. The discharge output will remain on until the weight drops below the discharge setpoint. The discharge output will then be turned off.
12) The controller will wait for the scale to settle if motion detection is enabled.
13) The cycle complete output will be turned on. If hold after discharge is enabled, the sequence will be stopped. The sequence will be repeated when a new start command is received. If hold after discharge is not enabled, the sequence will automatically re-start at the beginning of the sequence.

# Weigh-In Sequence Operation Two-Speed Alt. Feed Toledo Continuous Format

If the PANTHER/8582 setpoint format is selected (SW1-4 on), this step will be skipped.

1) Upon power up, the cycle complete output will be turned on. The controller will wait until a start command or a discharge command is received. If a discharge command is received, the sequence will proceed to the beginning of the discharge cycle.

2) The controller will check to make sure the terminal is in the gross mode. If not, it will send a clear command to the terminal, then wait for the terminal to switch to the gross mode.

3) The controller will check to see if the weight is within the zero tolerance band (if enabled). If out of tolerance, the sequence will be stopped and the error output will be turned on. Operation will resume when a new start command is received.

4) The controller will send a tare command (if enabled) to the terminal, then wait until the terminal switches to the net mode or until the displayed weight equals zero.

5) The controller will turn on fast feed output. Fast feed output remains on until the fast feed setpoint is reached. The output will then be turned off.

6) The controller will turn on slow feed output. Slow feed output remains on until the slow feed setpoint is reached. The output will then be turned off.

7) The controller will wait for the scale to settle if motion detect is enabled.

8) The controller will wait for no motion, then send a print command to the terminal (if enabled).

9) The controller will check to see if the weight is within tolerance (if enabled). If out of tolerance, the sequence will be stopped and the error output will be turned on. Operation will resume when a new start command or discharge command is received.

10) If hold after feed is enabled, the sequence will be stopped. If the discharge cycle is enabled, operation will resume when a discharge command is received. Otherwise, the cycle complete output will be turned on and the sequence will wait for a start command.

11) The controller will send a clear command to the terminal.

12) The controller will turn on the discharge output. The discharge output will remain on until the weight drops below the discharge setpoint. The discharge output will then be turned off.

13) Controller will wait for the scale to settle if motion detection is enabled.

14) The cycle complete output turns on. If hold after discharge is enabled, the sequence will be stopped. The sequence will be repeated when a new start command is received. If hold after discharge is not enabled, the sequence will automatically restart at the beginning of the sequence.

# Weigh-In Sequence Two-Speed Simultaneous Feed Toledo Continuous Format

If the PANTHER /8582 setpoint format is selected (SW1-4), this step will be skipped.

1) Upon power up, the cycle complete output will be turned on. The controller will wait until a start command or a discharge command is received. If a discharge command is received, the sequence will proceed to the beginning of the discharge cycle.

2) The controller will check to make sure the terminal is in the gross mode. If not, it will send a clear command to the terminal, then wait for the terminal to switch to the gross mode.

3) The controller will check to see if the weight is within the zero tolerance band (if enabled). If out of tolerance, the sequence will be stopped and the error output will be turned on. Operation will resume when a new start command is received.

4) The controller sends a tare command (if enabled) to the terminal, then waits until the terminal switches to net mode, or until the displayed weight equals zero.

5) The controller will turn on the fast and slow feed outputs. The fast feed output will remain on until the fast feed setpoint is reached. The fast feed output will then be turned off and the slow feed output will remain on.

6) The slow feed output will remain on until the slow feed setpoint is reached. The output will then be turned off.

7) The controller waits for the scale to settle if motion detection is enabled.

8) The controller waits for no motion, then sends a print command to the terminal (if enabled).

9) The controller will check to see if the weight is within tolerance (if enabled). If out of tolerance, the sequence will be stopped and the error output will be turned on. Operation will resume when a new start command or discharge command is received.

10) If hold after feed is enabled, the sequence will be stopped. If the discharge cycle is enabled, operation will resume when a discharge command is received. Otherwise, the cycle complete output will be turned on and the sequence will wait for a start command.

11) The controller will send a clear command to the terminal.

12) The controller will turn on the discharge output. The discharge output remains on until the weight drops below the discharge setpoint.

13) The controller waits for the scale to settle (motion detection enabled.)

14) The cycle complete output will be turned on. If hold after discharge is enabled, the sequence will be stopped. The sequence will be repeated when a new start command is received. If hold after discharge is not enabled, the sequence automatically re-starts at the beginning of the sequence.

# Weigh-Out Sequence Operation
# Single-Speed Discharge
# Toledo Continuous Format

1) Upon power up, the cycle complete output will be turned on. The controller will wait until a start command or a discharge command is received. if a discharge command is received, the sequence will proceed to the beginning of the discharge cycle.

2) The controller will check to make sure the terminal is in the gross mode. If not, it will send a clear command to the terminal, then wait for the terminal to switch to the gross mode.

3) The controller will check to see if the weight is within the zero tolerance band (if enabled). If out of tolerance, the sequence will be stopped and the error output will be turned on. Operation will resume when a new start command is received.

4) The controller will turn on the feed output. The feed output will remain on until the feed setpoint is reached. The output will then be turned off.

5) The controller will wait for the scale to settle if motion detection is enabled.

6) If hold after feed is enabled, the sequence will be stopped. Operation will resume when a discharge command is received.

7) The controller will send a clear command to the terminal.

8) The controller will send a tare command to the terminal, then wait until the terminal switches to the net mode or until the displayed weight equals zero.

9) The controller will turn on the discharge output. The discharge output will remain on until the weight drops below the discharge setpoint. The discharge output will then be turned off.

10) The controller will wait for the scale to settle if motion detection is enabled.

11) The controller will wait for no motion, then send a print command to the terminal (if enabled).

12) The controller will check to see if the weight is within tolerance (if enabled). If out of tolerance, the sequence will be stopped and the error output will be turned on. Operation will resume when a new start command or discharge command is received.

13) The cycle complete output will be turned on. If hold after discharge is enabled, the sequence will be stopped. The sequence will be repeated when a new start command or discharge command is received. If hold after discharge is not enabled, the sequence will automatically re-start at the beginning of the sequence.

14) Weigh-out operation is not intended for use with the 8582 counting scale.

# Weigh-Out Sequence Operation Two-Speed Alternate Discharge Toledo Continuous Format

1) Upon power up, the cycle complete output will be turned on. The controller will wait until a start command or a discharge command is received. If a discharge command is received, the sequence will proceed to the beginning of the discharge cycle.
2) The controller will check to make sure the terminal is in the gross mode. If not, it will send a clear command to the terminal, then wait for the terminal to switch to the gross mode.
3) The controller will check to see if the weight is within the zero tolerance band (if enabled). If out of tolerance, the sequence will be stopped and the error output will be turned on. Operation will resume when a new start command is received.
4) The controller will turn on the feed output. The feed output remains on until the feed setpoint is reached. The output is turned off.
5) The 3015 controller waits for the scale to settle if motion detection is enabled.
6) If hold after feed is enabled, the sequence will be stopped. Operation will resume when a discharge command is received.
7) The 3015 controller will send a clear command to the terminal.
8) The 3015 controller sends a tare command to the terminal, then waits until the terminal switches to the net or until the displayed weight equals zero.
9) The controller will turn on the fast discharge output. The fast discharge output will remain on until the weight drops below the slow discharge setpoint. The fast discharge output will then be turned off.
10) The controller will turn on the slow discharge output. The slow discharge will remain on until the weight drops below the slow discharge setpoint. The slow discharge output will then be turned off.
11) The 3015 controller waits for the scale to settle if motion detection is enabled.
12) The controller will wait for no motion, then send a print command to the terminal (if enabled).
13) The controller will check to see if the weight is within tolerance (if enabled). If out of tolerance, the sequence will be stopped and the error output will be turned on. Operation will resume when a new start command or discharge command is received.
14) The cycle complete output will be turned on. If hold after discharge is enabled, the sequence will be stopped. The sequence will be repeated when a new start command or discharge command is received. If hold after discharge is not enabled, the sequence will automatically re-start at the beginning of the sequence.
15) Weigh-out operation is not intended for use with the 8582 counting scale.

# Weigh-Out Sequence Two-Speed Simultaneous Discharge Toledo Continuous Format

1) Upon power up, the cycle complete output will be turned on. The controller will wait until a start command or a discharge command is received. If a discharge command is received, the sequence will proceed to the beginning of the discharge cycle.
2) The controller checks to make sure the terminal is in the gross mode. If not, it will send a clear command to the terminal, then wait for the terminal to switch to the gross mode.
3) The controller checks to see if the weight is within the zero tolerance band (if enabled). If out of tolerance, the sequence will be stopped and the error output will be turned on. Operation will resume when a new start command is received.
4) The controller will turn on the feed output. The feed output will remain on until the feed setpoint is reached. The output will then be turned off.
5) The controller waits for the scale to settle if motion detection is enabled.
6) If hold after feed is enabled, the sequence will be stopped. Operation will resume when a discharge command is received.
7) The controller sends a clear command to the terminal.
8) The controller sends a tare command to the terminal, then waits until the terminal switches to the net or until the displayed weight equals zero.
9) The controller turns on the fast and slow discharge outputs. The fast and slow discharge outputs will remain on until the weight drops below the fast discharge setpoint. The fast discharge output will then be turned off and the slow discharge output will remain on.
10) The slow discharge output remains on until the weight drops below the slow discharge setpoint. Slow discharge output will then be turned off.
11) The controller waits for the scale to settle if motion detection is enabled.
12) The controller will wait for no motion, then send a print command to the terminal (if enabled).
13) The controller will check to see if the weight is within tolerance (if enabled). If out of tolerance, the sequence will be stopped and the error output will be turned on. Operation will resume when a new start command or discharge command is received.
14) The cycle complete output will be turned on. If hold after discharge is enabled, the sequence stops. The sequence will be repeated when a new start command or discharge command is received. If not enabled, the sequence automatically re-starts at the beginning of the sequence.
15) Weighout operation is not intended for use with the 8582 counting scale.

# Interfacing with METTLER TOLEDO Equipment

## 8582 Counting Scale

The METTLER TOLEDO 8582 counting scale setpoint continuous output data is fixed at 4800 baud. The ASCII receive input for remote commands is via the Host port. Since the 3015 controller does not have a split baud rate, both I/O 1 and I/O 2 of the 8582 must have the same baud rate, which mandates that the host port be set to 4800 baud.

The printer port is a dedicated I/O and does not have remote print command capability. If the printer port is used all printing must be initiated by the operator via the 8582 keyboard or via the autoprint feature of the 8582, the 3015 controller cannot command the printer. The host port can be used to output data via a remote command but is intended to interface to a computer, not to a printer.

The average piece weight and/or the number of samples must already be entered and the 8582 showing the piece count prompt before the 8582 will output count data. Setup of the 8582 for average piece weight and number of samples must be accomplished by the operator. To prevent having to reenter the average piece weight and/or number of samples before each fill operation, the 3015 controller does not send a clear command at the start of a sequence -- the 3015 controller reads SW1-4 to determine if an 8582 is being used. A manual clear is required when changing to a different sample.

3015 controller/8582 applications are not intended to include weigh and discharge in the same operation. Status Word B, bit "0" is the Gross/Net flag in METTLER TOLEDO type indicators and is used by the 3015 controller to read the terminal's status. However, Status Word B, Bit "0" is already in gross mode. Since Status Word B, bit "0" is always a zero the 3015 controller reads the scale as if in gross mode and does not send a clear. In short, if the 3015 controller/8582 is setup to include both fill and discharge cycles the system will not work because the scale will accumulate heel. For this same reason the 3015 controller is not intended for use with 8582 in a Weigh-out application.

*NOTE:
The 8582 host is either standard or TLAN (Toledo Local Area Network). TLAN setup will not accept the ASCII type inputs, therefore if the 8582 has a TLAN host the 3015 controller commands (tare, print) to the 8582 won't work.

Sample parameter setup for 8582 option ports connected to the 3015 controller.

| | | |
|---|---|---|
| F7.1 | Multidrop | N |
| F7.2 | Function I/O 1 | Host *See Note |
| F7.3 | Function I/O 2 | Remote |
| F7.6 | Setpoint enable | Y |
| F8.1 | Host Port Parity | Even |
| F8.2 | Checksum Enable | N (this is for commands, not continuous data) |
| F8.3 | Stop Bits | 1 |
| F8.4 | Baud Rate | 4800 |

The above parameters consider I/O port 1 as Host and I/O 2 as continuous setpoint data output.

## 8141 Terminal

The 8141 has two different continuous output formats available: Masstron and Toledo continuous format.

When the Masstron format is used, the 3015 controller will consider the 8141 as if it were an M5000. Parameter 35 can be set either to a 1 (displayed weight setpoint) or a 2 (gross weight setpoint). Parameter 41 must be set to "0" for Coincidence mode, or "1" for Dribble/Preact mode. When in Masstron mode the 3015 controller will not send ASCII commands to the terminal.

When the Toledo continuous format is used, the 8141 can be set for either Coincidence mode or Dribble/Preact, depending on parameter 41. Parameter 35 has the same function for both Masstron and Toledo format. Toledo continuous format uses ASCII receive commands for print and tare commands. Use of the ASCII commands is more straight-forward, requires less hardware, and is faster. When Toledo continuous format is used the baud rate is adjustable in the 8141. 4800 is the fastest available baud rate for interface to the 3015 controller.

When weigh-out mode is selected and a printer is used, be sure to set the 8141 parameter 17 to "0" to enable printing below gross zero.

## 8510 Panel Mount Terminal

The METTLER TOLEDO 8510 terminal has a single I/O channel for data communications. This channel is used to interface to the 3015 controller. Since there are no other I/O channels it is not possible to connect a printer to an 8510 when a 3015 controller is used.

NOTE(S):
This information is relevant to the 8510 panel mount scale terminal only (Ram 2001 and 2011). The 8510SS (Ram 1001, 1011) is different.

Since the 8510 has only two setpoints, the zero tolerance setpoint is used as the discharge cutoff when weighing sequences using two speed feed with discharge are selected. This limits the discharge cutoff value to the selections available via parameter F11.1. The zero tolerance is not accessible by the operator.

Upgrade kit part number 136043 is available to bring old 8510 panel mount up to current revision level.

8510 revision level. The 3015 controller will not work with any 8510 that has a pre "E*" revision 129124 Main PCB. Any old 8510 must be updated to the current revision, which at this writing is "E", before being used with the 3015 controller.

Setup parameters in the 8510 pertinent to 3015 controller interfacing.

| | | |
|---|---|---|
| F9 | Tare Active | Set to "1" if tare used |
| F11 | Options | Set to "1" for setpoint enable |
| F11.1 | Zero Tolerance Range | Adjustable; "5" is a good start point. |
| F11.3 | Setpoint Entry | Set to "0" for setpoint entry while 8510 is in weight mode. |
| F12.1 | Serial Data Out | Set to "0" for continuous data |
| F12.2 | Baud Rate | Set to "4800" for 3015 controller capability. |
| F12.3 | Parity | Set to "2" for even parity |
| F12.4 | Checksum | Set to "1" to enable checksum |
| F13. | Remote Commands | Set to "1" to enable remote inputs. |

## 8525 Terminal

The METTLER TOLEDO 8525 terminal has a single I/O channel for data communications. This channel is used to interface to the 3015 controller. Since there are no other I/O channels it is not possible to connect a printer to the 8525 when used with a 3015 controller.

When interfacing between the 8525 and the 3015 controller, the 8525 must be set to the following:

| | | |
|---|---|---|
| Setup | 41 | 0 - Continuous |
| | 42 | 4800 Baud Preferred, 1200 possible |
| | 43 | 2 - Even Parity |
| | 44 | 1 - Checksum Enabled |

Connection may be made in two (2) ways between the 3015 controller and the 8525.

1. With optional fiber optic boards used in both units, direct fiber connections can be made (max 100 feet).
2. With optional fiber optic boards in the 8525, the 8525 can be connected by fiber to the Dual Channel Fiber Optic Converter (max. 100 feet), from the converter you have a choice between RS232 or 20mA current loop.

Group 70 must be setup according to the application. Setup 71 must be "1" to enable the setpoint features.

## PANTHER Terminal

The METTLER TOLEDO PANTHER terminal has a single I/O channel for data communications. This channel is used to interface to the 3015 controller. Since there are no other I/O channels it is not possible to connect a printer to the PANTHER when a 3015 controller is used.

Since the PANTHER has only two setpoints, the zero tolerance setpoint is used as the discharge cutoff when weigh in sequences using two speed feed with discharge are selected.

Setup parameters in the PANTHER pertinent to 3015 controller interfacing.

| | | |
|---|---|---|
| F2.3 | Tare Active | Set to "1" if tare used |
| F3.2 | Demand Output | Set to "1" for continuous data |
| F3.1 | Baud Rate | Set to "4800" for 3015 controller capability. |
| F3.1.4 | Parity | Set to "2" for even parity |
| F3.1.5 | Checksum | Set to "0" to enable checksum STX |

## PUMA Terminal

The METTLER TOLEOD PUMA terminal has dual I/O channel capability for data communication. One channel is used to interface to the 3015 controller. The other channel may be used to interface to a printer.

When a printer is desired the channel's parameters are set to the printer requirements. The following setups are required:

| Setup | COM1 | COM2 | |
|---|---|---|---|
| | 31 | 51 | 2 - Demand Output |
| | 32 | 52 | 1 - ASCII Remote Input Enabled |

The channel interfacing with the 3015 controller must be set to the following:

| Setup | COM1 | COM2 | |
|---|---|---|---|
| | 31 | 51 | 1 - Continuous Output |
| | 32 | 52 | 1 - ASCII Remote Input Enabled |
| | 33 | 53 | 4800 Baud Preferred, 300 & 1200 Possible |
| | 34 | 54 | 2 - Even Parity |
| | 35 | 55 | 0 - 7 data Bits |
| | 36 | 56 | 1 - Checksum Enabled |

Connection may be made in two (2) ways between the 3015 controller and the PUMA.

1. With optional fiber optics boards used in both units, direct fiber connections can be made (max. 1000 feet).
2. With optional fiber optic board, the PUMA terminal can be connected by fiber optics to the Dual Channel Fiber Optic Converter (max. 1000 feet), from the converter you have a choice between RS232 or 20mA current loop.

Connection between the PUMA and a printer can be with an optional fiber optic board in the PUMA, the PUMA can be connected by fiber optics to the Dual Channel Fiber Optic Converter (max. 1000 feet), RS232 from the converter to the printer.

Group 80 must be setup according to the application. Setup 81 must be "1" to enable the setpoint features.

# 4 Coincidence Mode - Masstron Format

## Switch Setup

In the coincidence mode, SW2 is not used. Switch assignments for SW1 are:

**SW1-1 OUTPUT POLARITY SELECT**

**OFF:** The outputs are turned off below setpoint, and turned on above setpoint.

**ON:** The outputs are turned on below setpoint, and are turned off above setpoint.

**SW1-2 NEGATIVE TRIP SELECT**

**OFF:** The outputs will trip in both the positive and negative direction (absolute values).

**ON:** The outputs will only trip in the positive direction. The outputs will remain in the below setpoint state whenever the weight is negative.

**SW1-3 TRIP DURING MOTION**

**OFF:** The outputs will always reflect the current setpoint status.

**ON:** The outputs will only be updated to the current setpoint status when no motion is detected.

**SW1-4 NOT USED**

**SW1-5 NOT USED**

**SW1-6 NOT USED**

**SW1-7 START/STOP/ENABLE**

**OFF:** Start/stop inputs disabled

**ON:** The outputs are only active after a start command has been received. They remain active until a stop command is received. If the sealing feature is enabled (SW1-8 on), then the outputs will remain tripped once the setpoint has been exceeded until a stop command or another start command is received.

**SW1-8 SEALING FEATURE ENABLE**

**OFF:** Outputs are updated normally as determined by the other switch settings.

**ON:** The outputs will remain tripped once the setpoint has been exceeded as long as the seal input (I/O 8) is turned on even if the weight drops below setpoint. If the start/stop inputs are enabled (SW1-7 on), then the outputs will remain tripped until a stop command or another start command is received.

## Coincidence Operation

1) When coincidence operation is selected (SW2 all off), outputs I/O 1 - 8 will reflect the state of the setpoint status bits received from the terminal or as compared against the rotary switch settings if used. The polarity of the outputs are determined by the setting of SW1-1. If SW1-1 is off, the outputs will be turned off when the weight is below setpoint and will be turned on when the weight is above. If SW1-1 is on, the outputs will be turned on when the weight is below setpoint and turned off when the weight is above.
2) The setting of SW1-2 determines whether the setpoints will trip in the positive direction only, or in both the positive and negative direction (absolute values). If SW1-2 is off, the setpoints will trip on absolute values. If SW1-2 is on, setpoints will only trip when the weight is positive and above setpoint.
3) The setting of SW1-3 determines whether the outputs will be updated continuously or only when no motion exists. If SW1-3 is off, the outputs will be updated to reflect the current setpoint status each time data is received from the terminal. If SW1-3 is on, the outputs will only be updated to reflect current setup status when no motion exists.
4) The setting of SW1-7 determines whether the start/stop inputs will be used to control when the outputs will be active. If SW1-7 is off, the outputs will be active all of the time. If SW1-7 is off, the outputs are only active until a stop command is received. If the sealing feature is enabled (SW1-8 on), then the outputs will remain tripped once the setpoint has been exceeded until a stop command or another start command is received.
5) The setting of SW1-8 determines whether the sealing feature is enabled or disabled. If SW1-8 is off, the outputs are updated normally as determined by the other switch settings. If SW1-8 is on, the outputs will remain tripped once the setpoint has been exceeded as long as the seal input (I/O 8) is turned on even if the weight drops below setpoint. If the start/stop inputs are enabled (SW1-7 on), then the outputs will remain tripped until a stop command or another start command is received.

## Selectable Weigh Sequences

Several single material batching sequences are dip switch selectable. Dip switch SW2 is used to configure the special sequencing. When special sequencing is selected, via SW2 ONLY the following dip switches on SW1 are used:

SW1-2 NEGATIVE TRIP SELECT

OFF: Selects that the outputs will trip in both the positive and negative direction (absolute values).

ON: The outputs will only trip in the positive direction. The outputs will remain in the below setpoint state whenever the weight is negative.

SW1-5 NOT USED

MUST BE OFF

SW1-6 NOT USED

MUST BE OFF

Dip switch SW2 is used to select the different weigh sequences. The following table lists the available sequences. A detailed description of each sequence follows:

| SEQUENCE DESCRIPTION | SW2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|
| WEIGH HOLD (1 SPEED) | | c | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| WEIGH HOLD (2 SPEED-ALTERNATE) | | 0 | c | 0 | 0 | 0 | 0 | 0 | 0 |
| WEIGH HOLD (2 SPEED-SIMULTANEOUS) | | c | c | 0 | 0 | 0 | 0 | 0 | 0 |
| TARE WEIGH HOLD (1 SPEED) | | 0 | 0 | c | 0 | 0 | 0 | 0 | 0 |
| TARE WEIGH HOLD (2 SPEED-ALTERNATE) | | c | 0 | c | 0 | 0 | 0 | 0 | 0 |
| TARE WEIGH HOLD (2 SPEED-SIMULTANEOUS) | | 0 | c | c | 0 | 0 | 0 | 0 | 0 |
| WEIGH PRINT HOLD (1 SPEED) | | c | c | c | 0 | 0 | 0 | 0 | 0 |
| WEIGH PRINT HOLD (2 SPEED-ALTERNATE) | | 0 | 0 | 0 | c | 0 | 0 | 0 | 0 |
| WEIGH PRINT HOLD (2 SPEED-SIMULTANEOUS) | | c | 0 | 0 | c | 0 | 0 | 0 | 0 |
| TARE WEIGH PRINT HOLD (1 SPEED) | | 0 | c | 0 | c | 0 | 0 | 0 | 0 |
| TARE WEIGH PRINT HOLD (2 SPEED - ALTERNATE) | | c | c | 0 | c | 0 | 0 | 0 | 0 |
| TARE WEIGH PRINT HOLD (2 SPEED - SIMULTANEOUS) | | 0 | 0 | c | c | 0 | 0 | 0 | 0 |
| WEIGH HOLD DISCHARGE HOLD (1 SPEED) | | c | 0 | c | c | 0 | 0 | * | * |
| WEIGH HOLD DISCHARGE HOLD (2 SPEED-ALTERNATE) | | 0 | c | c | c | 0 | 0 | * | * |
| TARE WEIGH HOLD DISCHARGE HOLD (1 SPEED) | | 0 | 0 | 0 | 0 | c | 0 | * | * |
| TARE WEIGH HOLD DISCHARGE HOLD (2 SPEED-ALT.) | | c | 0 | 0 | 0 | c | 0 | * | * |
| WEIGH PRINT HOLD DISCHARGE HOLD (1 SPEED) | | c | c | 0 | 0 | 0 | 0 | * | * |
| WEIGH PRINT HOLD DISCHARGE HOLD (2 SPEED-ALT) | | 0 | 0 | c | 0 | c | 0 | * | * |
| TARE WEIGH PRINT HOLD DISCHARGE HOLD (1 SPEED) | | 0 | c | c | 0 | c | 0 | * | * |
| TARE WEIGH PRINT HOLD DISCHARGE HOLD (2 SPEED ALT) | | c | c | c | 0 | c | 0 | * | * |
| WEIGH HOLD TARE DISCHARGE PRINT HOLD (1 SPEED) | | 0 | 0 | 0 | c | c | 0 | * | * |
| WEIGH HOLD TARE DISCHARGE PRINT HOLD (2-SPEED ALT.) | | c | 0 | 0 | c | c | 0 | * | * |
| O = OPEN (OFF) | | | | | | | | | |
| C = CLOSED (ON) | | | | | | | | | |
| * = SEE INFORMATION REGARDING CONTINUOUS RUN FEATURE | | | | | | | | | |

**Table 6-1 Available Weigh Sequences**

## Negative Trip Select

When SW1-2 is off, the outputs will trip in both the positive and negative direction (absolute values). This will allow you to use any of the WEIGH-IN sequences for WEIGH-OUT operation when manual filling of the scale is provided. Simply connect the feed outputs to the discharge valve or gate. When SW1-2 is on, the outputs will only trip in the positive direction. The outputs will remain in the below setpoint state whenever the weight is negative. This will allow you to start filling from a negative weight whose absolute value is greater than the cutoff setpoint.

## Continuous Run Feature

**SW2-7**

**OFF:** Normal operation - Hold after discharge cycle is complete.

**ON:** Bypass hold after discharge cycle.

For example: If a weigh-hold-discharge-hold sequence is selected, and SW2-7 is on and SW2-8 is off, the 3015 controller will weigh-discharge-hold bypassing the hold after the feed cycle. Using the same sequence, only setting SW2-7 off

and SW2-8 on, the 3015 controller will weigh-hold. Now a discharge command must be received to start the discharge cycle. The 3015 controller will then discharge-weigh-hold bypassing the hold after discharge.

If both SW1-7 and SW2-8 are both on, the 3015 controller will weigh-discharge, then repeat the sequence until receipt of a stop command. The sequence is re-started where it was stopped by receipt of another start command, even if it was stopped during a discharge cycle. If the 3015 controller is continuously weighing and discharging, and the operator wants to finish discharging a batch without starting a new one, he can stop the sequence, then issue a discharge command to finish the discharge cycle. The 3015 controller will not automatically start another feed cycle since a new start command hasn't been received yet.

## Weigh Hold (Single-Speed Feed)

Upon receipt of a start command, I/O 1 will turn on until Setpoint 1 is reached. Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it stopped. Once completed, the sequence is restarted upon receipt of another start command. The sequence may be reset by interrupting power to the 3015 controller.

**SW2 SETTING**: 1 2 3 4 5 6 7 8

C O O O O O O O

C = CLOSED (ON)
O = OPEN (OFF)

I/O MODULES REQUIRED:

INPUT - (2)
OUTPUT - (1)

OPERATORS REQUIRED:

(2) NORMALLY OPEN MOMENTARY PUSHBUTTONS

I/O ASSIGNMENTS:

I/O 1 - FEED OUTPUT

I/O 7 - START INPUT

I/O 8 - STOP INPUT

## Weigh Hold (Two-Speed Alternate Feed)

Upon receipt of a start command, I/O 1 will be turned on and I/O 2 will remain off. I/O 1 will remain on until Setpoint 1 is reached. At this time, I/O will be turned off and I/O 2 will turn on until Setpoint 2 is reached.

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped. Once completed, the sequence is restarted upon receipt of another start command.

The sequence may only be reset by interrupting power to the 3015 controller.

SW2 SETTING: 1 2 3 4 5 6 7 8
O C O O O O O O

C = CLOSED (ON)
O = OPEN (OFF)

I/O MODULES REQUIRED:

INPUT - (2)

OUTPUT - (2)

OPERATORS REQUIRED:

(2) NORMALLY OPEN MOMENTARY PUSHBUTTONS

I/O ASSIGNMENTS:

I/O 1 - FAST FEED OUTPUT

I/O 2 - SLOW FEED OUTPUT

I/O 7 - START INPUT

I/O 8 - STOP INPUT

## Weigh Hold (Two-Speed Simultaneous Feed)

Upon receipt of a start command, I/O 1 and I/O 2 will be turned on. I/O 1 will turn off when Setpoint 1 is reached and I/O 2 will turn off when Setpoint 2 is reached.

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped. Once completed, the sequence is restarted upon receipt of another start command.

The sequence may only be reset by interrupting power to the 3015 controller.

SW2 SETTING: 1 2 3 4 5 6 7 8
C C O O O O O O

C = CLOSED (ON)
O = OPEN (OFF)

I/O MODULES REQUIRED:

INPUT - (2)

OUTPUT -(2)

OPERATORS REQUIRED:

(2) NORMALLY OPEN MOMENTAR PUSHBUTTONS

I/O ASSIGNMENTS:

I/O 1 - FAST FEED OUTPUT

I/O 2 - SLOW FEED OUTPUT

I/O 7 - START INPUT

I/O 8 - STOP INPUT

## Tare Weigh Hold (Single-Speed Feed)

Upon receipt of a start command, the 3015 controller will wait for no motion, then turn on I/O 4 for 200 milliseconds (tare command). I/O 1 will then be turned on until Setpoint 1 is reached.

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped. Once completed, the sequence is restarted upon receipt of another start command.

The terminal must not be below zero for the sequence to tare.

The sequence may only be reset by interrupting power to the 3015 controller.

SW2 SETTING: 1 2 3 4 5 6 7 8
O O C O O O O O

C = CLOSED (ON)
O = OPEN (OFF)

I/O MODULES REQUIRED:

INPUT - (2)

OUTPUT - (1)

DRY CONTACT OUTPUT - (1) (For Tare)

OPERATORS REQUIRED:

(2) NORMALLY OPEN MOMENTARY PUSHBUTTONS

I/O ASSIGNMENTS:

I/O 1 - FEED OUTPUT

I/O 4 - TARE OUTPUT

I/O 7 - START INPUT

I/O 8 - STOP INPUT

## Tare Weigh Hold (Two-Speed Alternate Feed)

Upon receipt of a start command, the 3015 controller will wait for a no motion, then turn on I/O 4 for 200 milliseconds (tare command). I/O 1 will then be turned on and I/O 2 will remain off. I/O 1 will remain on until Setpoint 1 is reached. At this time, I/O 1 will be turned off and I/O 2 will be turned on until Setpoint 2 is reached.

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped. Once completed, the sequence is restarted upon receipt of another start command.

The terminal must not be below zero for sequence to tare.

The sequence may only be reset by interrupting power to the 3015 controller.

SW2 SETTING: 1 2 3 4 5 6 7 8
C O C O O O O O

C = CLOSED (ON)
O = OPEN (OFF)

I/O MODULES REQUIRED:

INPUT - (2)

OUTPUT - (2)

DRY CONTACT OUTPUT - (1) (For Tare)

OPERATORS REQUIRED:

(2) NORMALLY OPEN MOMENTARY PUSHBUTTONS

I/O ASSIGNMENTS:

I/O 1 - FAST FEED OUTPUT

I/O 2 - SLOW FEED OUTPUT

I/O 4 - TARE OUTPUT

I/O 7 - START INPUT

I/O 8 - STOP INPUT

## Tare Weigh Hold (Two-Speed Simultaneous Feed)

Upon receipt of a start command, the 3015 controller will wait for no motion, then turn on I/O 4 for 200 milliseconds (tare command). Both I/O 1 and I/O 2 will be turned on. I/O 1 will turn off when Setpoint 1 is reached and I/O 2 will turn off when Setpoint 2 is reached.

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped. Once completed, the sequence is restarted upon receipt of another start command.

The terminal must not be below zero for sequence to tare.

The sequence may only be reset by interrupting power to the 3015 controller.

SW2 SETTING: 1 2 3 4 5 6 7 8
O C C O O O O O

C = CLOSED (ON)
O = OPEN (OFF)

I/O MODULES REQUIRED:

INPUT - (2)

OUTPUT - (2)

DRY CONTACT OUTPUT - (1) (For Tare)

OPERATORS REQUIRED:

(2) NORMALLY OPEN MOMENTARY PUSHBUTTONS

I/O ASSIGNMENTS:

I/O 1 - FAST FEED OUTPUT

I/O 2 - SLOW FEED OUTPUT

I/O 4 - TARE OUTPUT

I/O 7 - START INPUT

I/O 8 - STOP INPUT

## Weigh Print Hold (Single-Speed Feed)

Upon receipt of a start command, I/O 1 will be turned on until Setpoint 1 is reached. The 3015 controller will wait for no motion, then turn on I/O 5 for 200 milliseconds (print command).

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped. Once completed, the sequence is restarted upon receipt of another start command.

The sequence may only be reset by interrupting power to the 3015 controller.

SW2 SETTING: 1 2 3 4 5 6 7 8
C C C O O O O O

C = CLOSED (ON)
O = OPEN (OFF)

I/O MODULES REQUIRED:

INPUT - (2)

OUTPUT - (1)

DRY CONTACT OUTPUT - (1) (For Print)

OPERATORS REQUIRED:

(2) NORMALLY OPEN MOMENTARY PUSHBUTTONS

I/O ASSIGNMENTS:

I/O 1 - FEED OUTPUT

I/O 5 - PRINT OUTPUT

I/O 7 - START INPUT

I/O 8 - STOP INPUT

## Weigh Print Hold (Two-Speed Alternate Feed)

Upon receipt of a start command, I/O 1 will turn on and I/O 2 will remain off. I/O 1 will remain on until Setpoint 1 is reached. I/O 1 will turn off and I/O 2 will turn on until Setpoint 2 is reached. The 3015 controller will wait for no motion, then turn on I/O 5 for 200 milliseconds (print command). Receipt of a stop command stops the sequence; a start command starts the sequence where it was stopped. Once completed, the sequence is restarted upon receipt of another start command. The sequence may be reset by interrupting power to the 3015 controller.

SW2 SETTING: 1 2 3 4 5 6 7 8
O O O C O O O O

C = CLOSED (ON)
O = OPEN (OFF)

I/O MODULES REQUIRED:

INPUT - (2)

OUTPUT - (2)

DRY CONTACT OUTPUT - (1) (For Print)

OPERATORS REQUIRED:

(2) NORMALLY OPEN MOMENTARY PUSHBUTTONS

I/O ASSIGNMENTS:

I/O 1 - FAST FEED OUTPUT

I/O 2 - SLOW FEED OUTPUT

I/O 5 - PRINT OUTPUT

I/O 7 - START INPUT

I/O 8 - STOP INPUT

## Weigh Print Hold (Two-Speed Simultaneous Feed)

Upon receipt of a start command, I/O 1 and I/O 2 will be turned on. I/O 1 will turn off when Setpoint 1 is reached and I/O 2 will turn off when Setpoint 2 is reached. The 3015 controller will wait for no motion, then turn on I/O 5 for 200 milliseconds (print command).

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped. Once completed, the sequence is restarted upon receipt of another start command.

The sequence may only be reset by interrupting power to the 3015 controller.

SW2 SETTING:

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| C | O | O | C | O | O | O | O |

C = CLOSED (ON)
O = OPEN (OFF)

I/O MODULES REQUIRED:

INPUT - (2)

OUTPUT - (2)

DRY CONTACT OUTPUT - (1) (For Print)

OPERATORS REQUIRED:

(2) NORMALLY OPEN MOMENTARY PUSHBUTTONS

I/O ASSIGNMENTS:

I/O 1 - FAST FEED OUTPUT

I/O 2 - SLOW FEED OUTPUT

I/O 5 - PRINT OUTPUT

I/O 7 - START INPUT

I/O 8 - STOP INPUT

## Tare Weigh Print Hold (Single-Speed Feed)

Upon receipt of a start command, the 3015 controller will wait for no motion, then turn on I/O 4 for 200 milliseconds (tare command). I/O 1 will then be turned on until setpoint 1 is reached. The 3015 controller will wait for no motion, then turn on I/O 5 for 200 milliseconds (print command).

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped. Once completed, the sequence is restarted upon receipt of another start command.

The terminal must not be below zero for the sequence to tare. The sequence may only be reset by interrupting power to the 3015 controller.

SW2 SETTING: 1 2 3 4 5 6 7 8
O C O C O O O O

C = CLOSED (ON)
O = OPEN (OFF)

I/O MODULES REQUIRED:

INPUT - (2)

OUTPUT - (1)

DRY CONTACT OUTPUT - (2) (For Tare and Print)

OPERATORS REQUIRED:

(2) NORMALLY OPEN MOMENTARY PUSHBUTTONS

I/O ASSIGNMENTS:

I/O 1 - FEED OUTPUT

I/O 4 - TARE OUTPUT

I/O 5 - PRINT OUTPUT

I/O 7 - START INPUT

I/O 8 - STOP INPUT

## Tare Weigh Print Hold (Two-Speed Alternate Feed)

Upon receipt of a start command, the 3015 controller will wait for no motion, then turn on I/O 4 for 200 milliseconds (tare command). I/O 1 will then be turned on and I/O 2 will remain off. I/O 1 will remain on until Setpoint 1 is reached. At this time, I/O 1 will be turned off and I/O 2 will be turned on until Setpoint 2 is reached. The 3015 controller will wait for no motion, then turn on I/O 5 for 200 milliseconds (print command).

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped. Once completed, the sequence is restarted upon receipt of another start command.

The terminal must not be below zero for the sequence to tare.

The sequence may only be reset by interrupting power to the 3015 controller.

SW2 SETTING: 1 2 3 4 5 6 7 8
C C O C O O O O

C = CLOSED (ON)
O = OPEN (OFF)

I/O MODULES REQUIRED:

INPUT - (2)

OUTPUT - (2)

DRY CONTACT OUTPUT - (2) (For Tare and Print)

OPERATORS REQUIRED:

(2) NORMALLY OPEN MOMENTARY PUSHBUTTONS

I/O ASSIGNMENTS:

I/O 1 - FAST FEED OUTPUT

I/O 2 - SLOW FEED OUTPUT

I/O 4 - TARE OUTPUT

I/O 5 - PRINT OUTPUT

I/O 7 - START INPUT

I/O 8 - STOP INPUT

## Tare Weigh Print Hold (Two-Speed Simultaneous Feed)

Upon receipt of a start command, the 3015 controller will wait for no motion, then turn on I/O 4 for 200 milliseconds (tare command). Both I/O 1 and I/O 2 will be turned on. I/O 1 will turn off when Setpoint 1 is reached and I/O 2 will turn off when Setpoint 2 is reached. The 3015 controller will wait for no motion, then turn on I/O 5 for 200 milliseconds (print command).

The terminal must not be below zero for the sequence to tare.

The sequence may only be reset by interrupting power to the 3015 controller.

SW2 SETTING:

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| O | O | C | C | O | O | O | O |

C = CLOSED (ON)
O = OPEN (OFF)

I/O MODULES REQUIRED:

INPUT - (2)

OUTPUT - (2)

DRY CONTACT OUTPUT - (2) (For Tare and Print)

OPERATORS REQUIRED:

(2) NORMALLY OPEN MOMENTARY PUSHBUTTONS

I/O ASSIGNMENTS:

I/O 1 - FAST FEED OUTPUT

I/O 2 - SLOW FEED OUTPUT

I/O 4 - TARE OUTPUT

I/O 5 - PRINT OUTPUT

I/O 7 - START INPUT

I/O 8 - STOP INPUT

## Weigh Hold Discharge Hold (Single-Speed Feed)

Upon receipt of a start command, I/O 1 will be turned on until Setpoint 1 is reached. Upon receipt of a discharge command, I/O 3 will be turned on until the weight drops <u>below</u> Setpoint 3.

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped unless the sequence is in the discharge cycle, if so, receipt of a discharge command restarts the sequence. If the sequence is stopped before the feed cycle is completed, then receipt of a discharge command will start the discharge cycle. The sequence is considered completed only after the discharge cycle is finished. The sequence is not started by receipt of another start command until the discharge cycle is completed. Once completed, the sequence is restarted upon receipt of another start command.

SW2 SETTING: 1 2 3 4 5 6 7 8
C O C C O O * *

C = CLOSED (ON)
O = OPEN (OFF)

* = CONTINUOUS RUN OPTION

IF 7 = C, BYPASS HOLD AFTER THE FEED CYCLE

IF 8 = C, BYPASS HOLD AFTER DISCHARGE CYCLE

I/O MODULES REQUIRED:

INPUT - (3)

OUTPUT - (2)

OPERATORS REQUIRED:

(3) NORMALLY OPEN MOMENTARY PUSHBUTTONS

I/O ASSIGNMENTS:

I/O 1 - FEED OUTPUT

I/O 3 - DISCHARGE OUTPUT

I/O 6 - DISCHARGE INPUT

I/O 7 - START INPUT

I/O 8 - STOP INPUT

## Weigh Hold Discharge Hold (Two-Speed Alternate Feed)

Upon receipt of a start command, I/O 1 will be turned on and I/O 2 will remain off. I/O 1 will remain on until Setpoint 1 is reached. At this time, I/O 1 will be turned off and I/O 2 will turn on until Setpoint 2 is reached. Upon receipt of a discharge command, I/O 3 will turn on until the weight drops below setpoint 3.

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped unless the sequence is in the discharge cycle. If so, receipt of a discharge command restarts the sequence. If the sequence is stopped before the feed cycle is completed, then receipt of a discharge command will start the discharge cycle. The sequence is considered completed only after the discharge cycle is finished. The sequence is not started by receipt of another start command until the discharge cycle is completed. Once completed, the sequence is restarted upon receipt of another start command.

The sequence may only be reset by interrupting power to the 3015 controller.

SW2 SETTING: 1 2 3 4 5 6 7 8
O C C C O O * *

C = CLOSED (ON)

O = OPEN (OFF)

* = CONTINUOUS RUN OPTION

IF 7 = C, BYPASS HOLD AFTER THE FEED CYCLE

IF 8 = C, BYPASS HOLD AFTER DISCHARGE CYCLE

I/O MODULES REQUIRED:

INPUT - (3)

OUTPUT - (3)

OPERATORS REQUIRED:

(3) NORMALLY OPEN MOMENTARY PUSHBUTTONS

I/O ASSIGNMENTS:

I/O 1 - FAST FEED OUTPUT

I/O 2 - SLOW FEED OUTPUT

I/O 3 - DISCHARGE OUTPUT

I/O 6 - DISCHARGE INPUT

I/O 7 - START INPUT

I/O 8 - STOP INPUT

## Tare Weigh Hold Discharge Hold (Single-Speed Feed)

Upon receipt of a start command, the 3015 controller will wait for no motion, then turn on I/O 4 for 200 milliseconds (tare command). I/O 1 will be turned on until setpoint 1 is reached. Upon receipt of a discharge command, I/O 3 will be turned on until the weight drops below Setpoint 3.

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped unless the sequence is in the discharge cycle. If so, receipt of a discharge command restarts the sequence. If the sequence is stopped before the feed cycle is completed, then receipt of a discharge command will start the discharge cycle. The sequence is considered completed only after the discharge cycle is finished. The sequence is not started by receipt of another start command until the discharge cycle is completed. Once completed, the sequence is restarted upon receipt of another start command.

The terminal must not be below zero for the sequence to tare. The sequence may only be reset by interrupting power to the 3015 controller.

SW2 SETTING:

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| O | O | O | O | C | O | * | * |

C = CLOSED (ON)
O = OPEN (OFF)

* = CONTINUOUS RUN OPTION

IF 7 = C, BYPASS HOLD AFTER THE FEED CYCLE

IF 8 = C, BYPASS HOLD AFTER DISCHARGE CYCLE

I/O MODULES REQUIRED:

INPUT - (3)

OUTPUT - (2)

DRY CONTACT OUTPUT - (1) (For Tare)

OPERATORS REQUIRED:

(3) NORMALLY OPEN MOMENTARY PUSHBUTTONS

I/O ASSIGNMENTS:

I/O 1 - FEED OUTPUT
I/O 3 - DISCHARGE OUTPUT
I/O 4 - TARE OUTPUT
I/O 6 - DISCHARGE INPUT
I/O 7 - START INPUT
I/O 8 - STOP INPUT

## Tare Weigh Hold Discharge Hold (Two-Speed Alternate Feed)

Upon receipt of a start command, the 3015 controller will wait for no motion, then turn on I/O 4 for 200 milliseconds (tare command). I/O 1 will be turned on and I/O 2 will remain off. I/O 1 will remain on until Setpoint 1 is reached. At this time, I/O 1 will be turned off and I/O 2 will turn on until Setpoint 2 is reached. Upon receipt of a discharge command, I/O 3 will turn on until the weight drops below setpoint 3.

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped unless the sequence is in the discharge cycle. If so, receipt of a discharge command restarts the sequence. If the sequence is stopped before the feed cycle is completed, then receipt of a discharge command will start the discharge cycle. The sequence is considered completed only after the discharge cycle is finished. The sequence is not started by receipt of another start command until the discharge cycle is completed. Once completed, the sequence is restarted upon receipt of another start command.

The terminal must not be below zero for the sequence to tare. The sequence may only be reset by interrupting power to the 3015 controller.

SW2 SETTING: 1 2 3 4 5 6 7 8
C O O O C O * *

C = CLOSED (ON)
O = OPEN (OFF)

* = CONTINUOUS RUN OPTION
IF 7 = C, BYPASS HOLD AFTER THE FEED CYCLE
IF 8 = C, BYPASS HOLD AFTER DISCHARGE CYCLE

I/O MODULES REQUIRED:

INPUT - (3)

OUTPUT - (3)

DRY CONTACT OUTPUT - (1) (For Tare)

OPERATORS REQUIRED:

(3) NORMALLY OPEN MOMENTARY PUSHBUTTONS

I/O ASSIGNMENTS:

I/O 1 - FAST FEED OUTPUT
I/O 2 - SLOW FEED OUTPUT
I/O 3 - DISCHARGE OUTPUT
I/O 4 - TARE OUTPUT
I/O 6 - DISCHARGE INPUT
I/O 7 - START INPUT
I/O 8 - STOP INPUT

## Weigh Print Hold Discharge Hold (Single Speed Feed)

Upon receipt of a start command, I/O 1 will be turned on until Setpoint 1 is reached. The 3015 controller will wait for no motion, then turn on I/O 5 for 200 milliseconds (print command). Upon receipt of a discharge command, I/O 3 will be turned on until the weight drops below setpoint 3.

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped unless the sequence is in the discharge cycle. If so, receipt of a discharge command restarts the sequence. If the sequence is stopped before the feed cycle is complete, then receipt of a discharge command will start the discharge cycle. The sequence is considered complete only after the discharge cycle is finished. The sequence is not started by receipt of another start command until the discharge cycle is complete. Once completed, the sequence is restarted upon receipt of another start command.

The sequence may only be reset by interrupting power to the 3015 controller.

SW2 SETTING: 1 2 3 4 5 6 7 8
C C O O O O * *

C = CLOSED (ON)
O = OPEN (OFF)

* = CONTINUOUS RUN OPTION

IF 7 = C, BYPASS HOLD AFTER THE FEED CYCLE

IF 8 = C, BYPASS HOLD AFTER DISCHARGE CYCLE

I/O MODULES REQUIRED:

INPUT - (3)

OUTPUT - (2)

DRY CONTACT OUTPUT - (1) (For Print)

OPERATORS REQUIRED:

(3) NORMALLY OPEN MOMENTARY PUSHBUTTONS

I/O ASSIGNMENTS:

I/O 1 - FEED OUTPUT
I/O 3 - DISCHARGE OUTPUT
I/O 5 - PRINT OUTPUT
I/O 6 - DISCHARGE INPUT
I/O 7 - START INPUT
I/O 8 - STOP INPUT

## Weigh Print Hold Discharge Hold (Two-Speed Alternate Feed)

Upon receipt of a start command, I/O 1 will be turned on and I/O 2 will remain off. I/O 1 will remain on until setpoint 1 is reached. At this time, I/O 1 will be turned off and I/O 2 will turn on until Setpoint 2 is reached. The 3015 controller will wait for no motion, then turn on I/O 5 for 200 milliseconds (print command). Upon receipt of a discharge command, I/O 3 will turn on until the weight drops below setpoint 3.

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped unless the sequence is in the discharge cycle. If so, receipt of a discharge command restarts the sequence. If the sequence is stopped before the feed cycle is completed, then receipt of a discharge command will start the discharge cycle. The sequence is considered completed only after the discharge cycle is finished. The sequence is not started by receipt of another start command until the discharge cycle is completed. Once completed, the sequence is restarted upon receipt of another start command.

The sequence may only be reset by interrupting power to the 3015 controller.

SW2 SETTING: 1 2 3 4 5 6 7 8
O O C O C O * *

C = CLOSED (ON)
O = OPEN (OFF)

* = CONTINUOUS RUN OPTION

IF 7 = C, BYPASS HOLD AFTER THE FEED CYCLE

IF 8 = C, BYPASS HOLD AFTER DISCHARGE CYCLE

I/O MODULES REQUIRED:

INPUT - (3)
OUTPUT - (3)
DRY CONTACT OUTPUT - (1) (For Print)

OPERATORS REQUIRED:

(3) NORMALLY OPEN MOMENTARY PUSHBUTTONS

I/O ASSIGNMENTS:

I/O 1 - FAST FEED OUTPUT
I/O 2 - SLOW FEED OUTPUT
I/O 3 - DISCHARGE OUTPUT
I/O 5 - PRINT OUTOPUT
I/O 6 - DISCHARGE INPUT
I/O 7 - START INPUT
I/O 8 - STOP INPUT

## Tare Weigh Print Hold Discharge Hold (Single-Speed Feed)

Upon receipt of a start command, the 3015 will wait for no motion, then turn on I/O 4 for 200 milliseconds (tare command). I/O 1 will be turned on until Setpoint 1 is reached. The controller will wait for no motion, then turn on I/O 5 for 200 milliseconds (print command). Upon receipt of a discharge command, I/O 3 will be turned on until the weight drops below setpoint 3.

Receipt of a stop command stops the sequence. A start command starts the sequence where it stopped unless it is in the discharge cycle. If so, a discharge command restarts the sequence. If the sequence is stopped before the feed cycle is completed, receipt of a discharge command will start the discharge cycle. The sequence is completed only after the discharge cycle is finished. The sequence is not started by receipt of another start command until the cycle is completed. Once completed, the sequence is restarted upon receipt of another start command. The terminal must not be below zero for the sequence to tare.

The sequence may only be reset by interrupting power to the 3015 controller.

SW2 SETTING: 1 2 3 4 5 6 7 8
O C C O C O * *

C = CLOSED (ON)
O = OPEN (OFF)

* = CONTINUOUS RUN OPTION
IF 7 = C, BYPASS HOLD AFTER THE FEED CYCLE
IF 8 = C, BYPASS HOLD AFTER DISCHARGE CYCLE

I/O MODULES REQUIRED:

INPUT -(3)

OUTPUT - (2)

DRY CONTACT OUTPUT - (2) (For Tare and Print)

OPERATORS REQUIRED:

(3) NORMALLY OPEN MOMENTARY PUSHBUTTONS

I/O ASSIGNMENTS:

I/O 1 - FEED OUTPUT
I/O 3 - DISCHARGE OUTPUT
I/O 4 - TARE OUTPUT
I/O 5 - PRINT OUTPUT
I/O 6 - DISCHARGE INPUT
I/O 7 - START INPUT
I/O 8 - STOP INPUT

## Tare Weigh Print Hold Discharge Hold (Two-Speed Alt Feed)

Upon receipt of a start command, the 3015 controller waits for no motion, then turns on I/O 4 for 200 milliseconds (tare command). I/O 1 will be turned on and I/O 2 will remain off. I/O 1 will remain on until Setpoint 1 is reached. At this time, I/O 1 will be turned off and I/O 2 will turn on until Setpoint 2 is reached. The 3015 controller waits for no motion, then turns on I/O 5 for 200 milliseconds (print command). Upon receipt of a discharge command, I/O 3 will turn on until the weight drops below setpoint 3.

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped unless the sequence is in the discharge cycle. If so, receipt of a discharge command restarts the sequence. If the sequence is stopped before the feed cycle is completed, then receipt of a discharge command will start the discharge cycle. The sequence is considered completed only after the discharge cycle finishes. The sequence is not started by receipt of another start command until the discharge cycle is completed. Once completed, the sequence is restarted upon receipt of another start command.

The terminal must not be below zero for the sequence to tare. The sequence may only be reset b interrupting power to the 3015 controller.

SW2 SETTING: 1 2 3 4 5 6 7 8
C C C O C O * *

C = CLOSED (ON)
O = OPEN (OFF)

* = CONTINUOUS RUN OPTION
IF 7 = C, BYPASS HOLD AFTER THE FEED CYCLE
IF 8 = C, BYPASS HOLD AFTER DISCHARGE CYCLE

I/O MODULES REQUIRED:
INPUT - (3)
OUTPUT - (3)
DRY CONTACT OUTPUT - (2) (For Tare and Print)

OPERATORS REQUIRED:
(3) NORMALLY OPEN MOMENTARY PUSHBUTTONS

I/O ASSIGNMENTS:

I/O 1 - FAST FEED OUTPUT
I/O 2 - SLOW FEED OUTPUT
I/O 3 - DISCHARGE OUTPUT
I/O 4 - TARE OUTPUT
I/O 5 - PRINT OUTPUT
I/O 6 - DISCHARGE INPUT
I/O 7 - START INPUT
I/O 8 - STOP INPUT

## Weigh Hold Tare Discharge Print Hold (Single-Speed Discharge or Weigh-Out)

Upon receipt of a start command, I/O 1 will be turned on until Setpoint 1 is reached. Upon receipt of a discharge command, the 3015 controller will wait for no motion, then turn on I/O 4 for 200 milliseconds (tare command). I/O 3 will then be turned on until the weight reaches Setpoint 3. The 3015 controller will wait for no motion, then turn on I/O 5 for 200 milliseconds (print command).

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped unless the sequence was in the discharge cycle. If so, receipt of a discharge command starts the sequence where it was stopped. If the sequence is stopped before the feed cycle is completed, then receipt of a discharge command will start the discharge cycle and vice versa.

The sequence may only be reset by interrupting power to the 3015 controller.

SW2 SETTING: 1 2 3 4 5 6 7 8
O O O C C O * *

C = CLOSED (ON)
O = OPEN (OFF)

* = CONTINUOUS RUN OPTION
IF 7 = C, BYPASS HOLD AFTER THE FEED CYCLE
IF 8 = C, BYPASS HOLD AFTER DISCHARGE CYCLE

I/O MODULES REQUIRED:

INPUT - (3)
OUTPUT - (2)
DRY CONTACT OUTPUT - (2) (For Tare and Print)

OPERATORS REQUIRED:

(3) NORMALLY OPEN MOMENTARY PUSHBUTTONS

I/O ASSIGNMENTS:

I/O 1 - FAST FEED OUTPUT
I/O 3 - DISCHARGE OUTPUT
I/O 4 - TARE OUTPUT
I/O 5 - PRINT OUTPUT
I/O 6 - DISCHARGE INPUT
I/O 7 - START INPUT
I/O 8 - STOP INPUT

## Weigh Hold Tare Discharge Print Hold (Two-Speed Alternate Discharge or Weigh-Out)

Upon receipt of a start command, I/O 1 will be turned on until Setpoint 1 is reached. Upon receipt of a discharge command, the 3015 controller will wait for no motion, then turn on I/O 4 for 200 milliseconds (tare command). I/O 2 will then be turned on until the weight reaches Setpoint 2. I/O 2 will then be turned off and I/O 3 will be turned on until the weight reaches Setpoint 3. The 3015 controller will then wait for no motion, then turn on I/O 5 for 200 milliseconds (print command).

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped unless the sequence was in the discharge cycle. If so, receipt of a discharge command starts the sequence where it was stopped. If the sequence is stopped before the feed cycle is completed, then receipt of a discharge command will start the discharge cycle and vice versa.

The sequence may only be reset by interrupting power to the 3015 controller.

SW2 SETTING: 1 2 3 4 5 6 7 8
C O O C C O * *

C = CLOSED (ON)
O = OPEN (OFF)

* = CONTINUOUS RUN OPTION
IF 7 = C, BYPASS HOLD AFTER THE FEED CYCLE
IF 8 = C, BYPASS HOLD AFTER DISCHARGE CYCLE

I/O MODULES REQUIRED:

INPUT - (3)
OUTPUT - (3)
DRY CONTACT OUTPUT - (2) (For Tare and Print)

OPERATORS REQUIRED:

(3) NORMALLY OPEN MOMENTARY PUSHBUTTONS

I/O ASSIGNMENTS:

I/O 1 - FAST FEED OUTPUT
I/O 2 - FAST DISCHARGE OUTPUT
I/O 3 - SLOW DISCHARGE OUTPUT
I/O 4 - TARE OUTPUT
I/O 5 - PRINT OUTPUT
I/O 6 - DISCHARGE INPUT
I/O 7 - START INPUT
I/O 8 - STOP INPUT

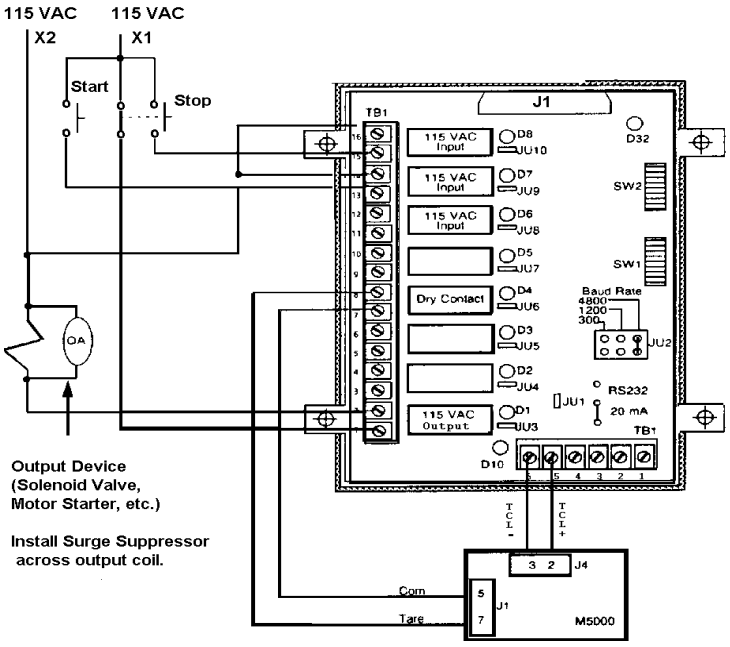
## Considerations for Interfacing an M5000

The M5000 continuous data output is fixed at 4800 baud. JU2 on the 3015 controller board must be set to the 4800 position. The M5000 continuous output data is 20 mA active only. JU1 on the 3015 controller must be set to 20 mA. The M5000 does not have an ASCII receive capability (except for the host port). TARE and PRINT operations are accomplished via dry contact modules wired to remote TARE and remote PRINT in the M5000 J1 connector.

The data output of the M5000 is J4, J5, and J6. If J5 or J6 is used to output to the 3015 controller the internal jumper between pin 2 and pin 3 of the J5 or J6 connector must be removed. J4 has a shunting resistor across pin 2 and pin 3, therefore, if J4 is used, no change to the connector need be made, do not remove the resistor.

Maximum distance between the M5000 and 3015 controller is limited to 15' if print and/or tare are used. This is because print and tare are TTL signals. Shielded cable should always be used for the tare and print remote wiring. If neither tare nor print are used, the maximum distance is determined by limitations of the 20 mA current loop, typically 1000'.

If tare and/or print are used, the M5000 must be setup to enable these features, as well as being setup to enable setpoints.




**3015 Switch Settings**

**3015 SW1-ALL OFF**
**SW2-3 ON, all others OFF**

**M5000 Parameters**

**25 = 1 Enable Tare**
**28 = 0 Disable Tare Interlock**
**35 = 1 Enable Setpoint Active on Indicated Weight**
**26 = 0 Disable Keyboard Tare**

**Enter desired cutoff weight via M5000 keyboard using Setpoint 1**

Ju1 = 20mA
Ju2 = 4800
Ju11, Ju12 are not shown and should be set in the off position

Note:
X1 = Hot
X2 = Common

# 5 Troubleshooting

## Troubleshooting Procedure

NOTE(S):
If jumpers JU3 - JU10 are installed the associated LED will not light.

1) Check the AC power supply to the unit for proper voltage and make sure that you have a good ground. Also check the line fuse.

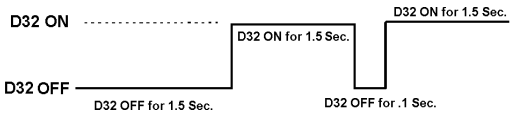
2) Check the 5 VDC supply for proper output voltage at TB1. TB1-1 is 5 VDC. TB1-2 is ground. The output voltage is 5VDC ± .1 VDC.

3) Remove power to the 3015 controller. Remove the top cover from the PC board. Select the self-test mode by setting the dip switch SW2 all positions ON (or closed). Make note of SW2 switch settings before changing SW2 switch settings to the test mode. Apply power to the controller. The outputs will be turned on sequentially starting with I/O 1. Each output will remain on for 1/2 second. The status LED corresponding to the output being turned on will light if an output module is installed at that location. If the status LED does not light, replace the output module and repeat the test. If the LED still fails to light, the controller board should be replaced. If the status LED lights, but the output fails to turn on, check the fuse on the PC board next to the I/O module. If the fuse is okay, replace the output module.

4) Remove power to the 3015 controller. Return SW2 to its proper setting. Now check the input modules for proper operation. Input modules can be tested by applying power to them and observing the status LED for that module. If the LED does not light, check the fuse for that module. If the fuse is ok, replace the input module, then repeat the test. If the test still fails, the controller board should be replaced.

5) Observe the LED marked D32. The controller will try continuously to receive data until it receives valid data in either the MASSTRON format or the TOLEDO continuous format with checksum. D32 on 3015 controller setpoint controller is the error LED. If D32 is flashing it means that the microprocessor is running and has detected an error. Close observation of D32 can aid in problem diagnosing. Upon powerup D32 will come on then go out after successful auto recognition of the data format (Masstron or Toledo). If the 3015 controller is not able to Auto recognize the data format within 2 seconds it will start flashing D32 at a specific rate:

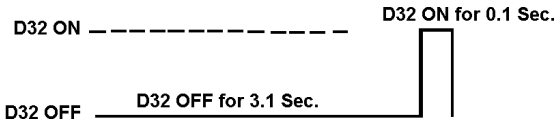
## Auto Recognition Error




If you receive an auto recognition error, check baud rate JU2 jumper and RS232/20 mA jumper JU1. Check external wiring to the terminal and make sure that the terminal is setup to transmit continuous setpoint data and that it is transmitting

If the 3015 controller auto recognizes the data format and the data is lost or becomes unreadable for more than two seconds, the controller will consider this a time-out error. The 3015 controller will flash D32 at a specific rate.

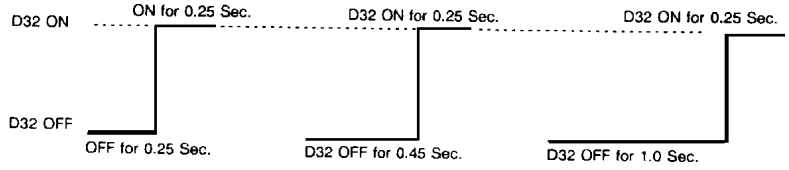
## Timeout Error




If you receive a time-out error, check for loose connections in the data wiring. The data may be bad coming from the instrument or the baud rate may have been changed since powerup.

If the 3015 controller detects an error message from the terminal, it will announce this error by flashing D32. This flash rate is baud rate dependent, see samples below.

## Data Error




Check if the terminal is blank, over capacity or (if in Masstron format) the terminal is sending an error code. All times are approximate.

If 20 mA current loop interface is being used, LED D10 should be lit and will flicker when data is received. If the LED is lit but does not flicker, then the terminal is not transmitting data or there is an interface wiring problem. If RS232 interface is used, the LED will not be lit.

# 6 Spare Parts

## 3015 Controller Parts

| Part Number | Description | Model # |
|---|---|---|
| A0139400A | Setpoint PC Board | |
| 90249900A | Power Supply | |
| 1223100A | 115 VAC Input Module | 0962-0025 |
| 12263300A | 230 VAC Input Module | 0962-0027 |
| 13310400A | 115/230 VAC Output Module | 0962-0028 |
| 90073500A | Dry Contact Module | 0962-0024 |
| 12263500A | 24 VDC Input Module | 0962-0030 |
| 12263400A | 24 VDC Output Module | 0962-0031 |
| 14862100A | 5 Amp Pico Fuse | |
| 11887400A | Quench Arc | 0962-0034 |
| 90232100A | Fiber Optics Kit | 0961-0077 |
| 90075000A | Pushbutton, Red | |
| 90086400A | Pushbutton, Black | |

TTL Output Module MA01471 has been replaced by the Dry Contact Module Part # 90073500A.

| Cables - Instrument to 3015 controller, All Versions | Spare Part # | Cable Model # |
|---|---|---|
| 8530 Desk/Rack to 3015 controller, 6 ft (4 - 20mA) | 900618 00A | 0960 0020 000 |

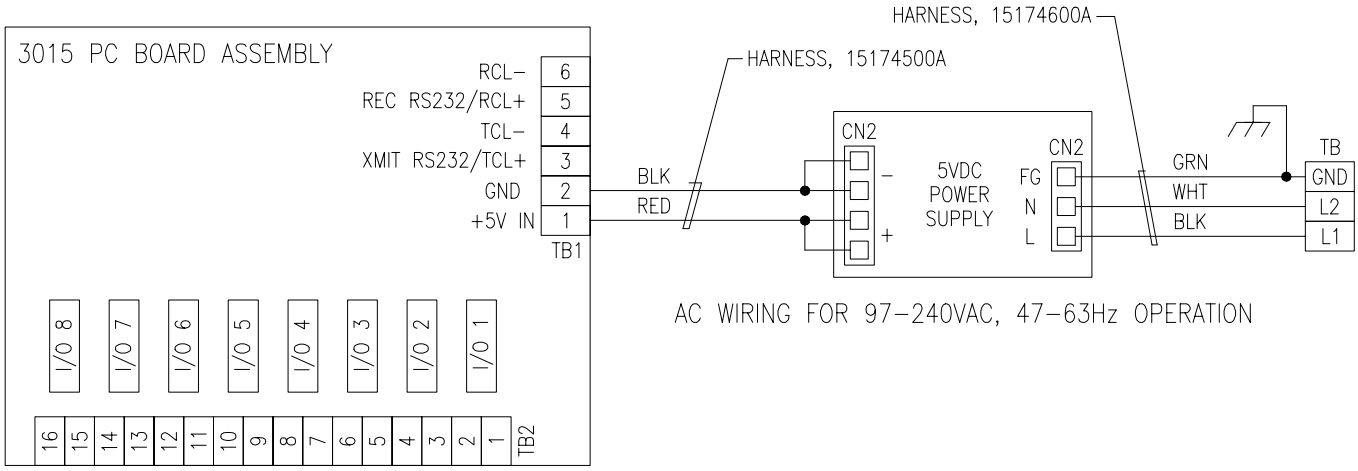
# 7 Drawings

## List of Drawings

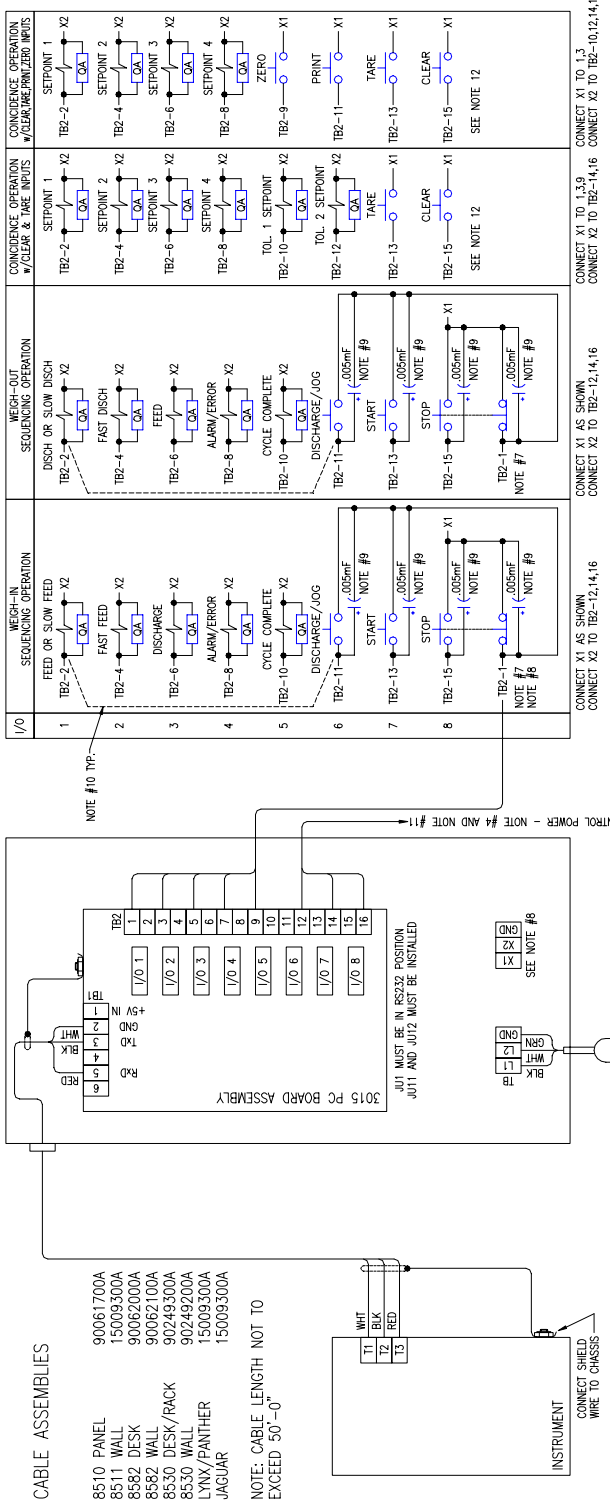
The drawings included in this manual are as follows:

- Schematic wiring diagram for 3015 controller
- External wiring diagram (RS232) for 3015 controller
- External wiring diagram (Fiber Optic) for 3015 controller
- External wiring diagram (20mA) for 3015 controller

# Schematic for 3015 controller- 1XXX



# RS232 External Wiring




NOTES:

1. ALL I/O'S EXCEPT TTL OUTPUT ARE SELECTABLE AS 24VDC, 120VAC, OR 230VAC BY INSTALLING THE APPROPRIATE I/O MODULES.
2. ALL OUTPUTS EXCEPT TTL OUTPUT RATED AT 2 AMPS.
3. QA DENOTES QUENCHARC SUPPRESSOR. ALL OUTPUTS MUST BE SUPPRESSED AS SHOWN. QUENCHARC TO BE INSTALLED AS CLOSE TO LOAD AS POSSIBLE.
4. CONTROL POWER WIRING IS SHOWN FOR SEQUENCE OF OPERATION. THESE CONNECTIONS MUST BE WIRED BY THE USER. FOR COINCIDENCE OPERATION, CONNECT X1 CONTROL POWER TO ALL ODD NUMBERED TERMINALS.
5. CUSTOMER NEED ONLY TO PROVIDE A SINGLE HOT AND COMMON TO I/O. CONTROL POWER MUST BE SEPERATE FROM INSTRUMENT POWER SOURCE.
6. CUSTOMER MUST PROVIDE COMMON FOR ALL OUTPUTS TO CONTROL POWER SOURCE EXTERNAL TO I/O MODULE. CUSTOMER MUST PROVIDE HOT FOR ALL INPUTS TO CONTROL POWER SOURCE EXTERNAL TO I/O MODULE.
7. WHEN USING SEQUENCE OPERATION, THE X1 CONTROL POWER MUST BE ROUTED THRU A MAINTAINED CONTACT OF A PUSH-PULL EMERGENCY STOP BUTTON AS SHOWN.
8. THIS TERMINAL STRIP IS PROVIDED AND WIRED AS SHOWN FOR UNITS SUPPLIED WITH START/STOP/DISCHARGE OR ZERO, PRINT, TARE, CLEAR OPERATORS ONLY. OTHERWISE ALL WIRING SHOWN IS BY OTHERS.
9. THE .005mF CAPACITORS ARE INSTALLED BY METTLER-TOLEDO ON 3015 ASSEMBLIES WITH DOOR MOUNTED OPERATORS ONLY.
10. THE "DISCHARGE" BUTTON MAY BE IDENTIFIED AS A "JOG" BUTTON. IF SO, THE WIRE GOING TO TB2-11 MUST BE REMOVED AND RECONNECTED TO TB2-2 FOR JOG OPERATION.
11. ALL EXTERNAL WIRING AND INSTALLATION PRACTICES MUST CONFORM TO NATIONAL ELECTRIC CODES (N.E.C.) FOR SINGLE CONTROL ENCLOSURES SUPPLIED BY MULTIPLE POWER SOURCES.
12. REFER TO INDICATOR MANUAL FOR NUMBER OF AVAILABLE SETPOINTS.

**⚠ WARNING**

WHEN THIS EQUIPMENT IS INCLUDED AS A COMPONENT PART OF A SYSTEM, THE RESULTING DESIGN MUST BE REVIEWED BY QUALIFIED PERSONNEL WHO ARE FAMILIAR WITH THE CONSTRUCTION AND OPERATION OF ALL COMPONENTS IN THE SYSTEM AND THE POTENTIAL HAZARDS INVOLVED. FAILURE TO OBSERVE THIS PRECAUTION COULD RESULT IN BODILY INJURY.

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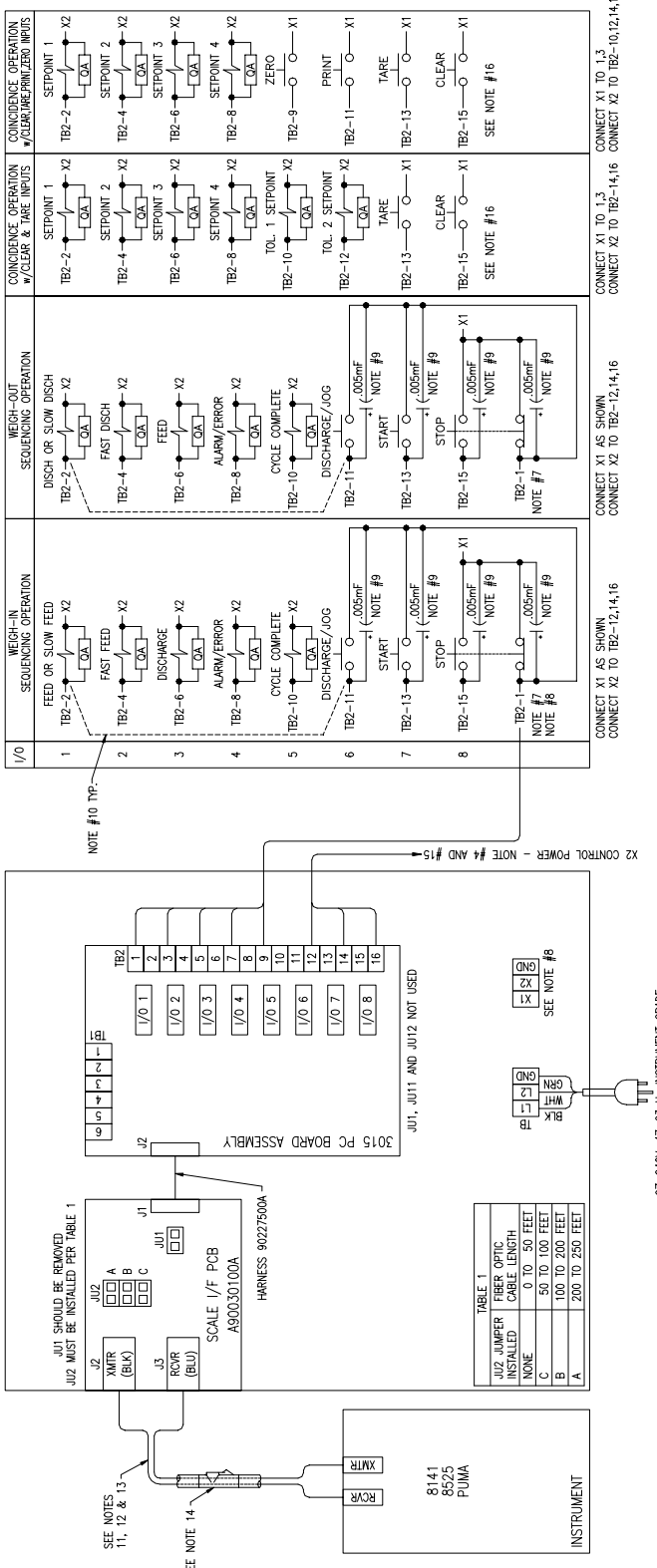
SERIAL CONNECTIONS

| INSTRUMENT | T1 | T2 | T3 |
|---|---|---|---|
| 8582 DESK/WALL | I/O 1-5 | I/O 1-2 | I/O 2-3 |
| 8510 PANEL PRINTER PORT | 5 | 2 | 3 |
| 8511 WALL | TB2-GND | TB2-RCV | TB2-XMIT |
| 8530 DESK/RACK | PN-7 | PN-3 | PN-2 |
| 8530 WALL | PN-G | PN-C | PN-B |
| JAGUAR | COM1-GND | COM1-RxDA | COM1-TxDA |
| LYNX | COM2-GND | COM2-RxD | COM2-TxD |
| PANTHER | GND | RxD | TxD |
| | | | |

# Fiber Optic Wiring




NOTES:

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3. QA DENOTES QUENCHARC SUPPRESSOR. ALL OUTPUTS MUST BE SUPPRESSED AS SHOWN. QUENCHARC TO BE INSTALLED AS CLOSE TO LOAD AS POSSIBLE.
4. CONTROL POWER WIRING IS SHOWN FOR SEQUENCE OF OPERATION. THESE CONNECTIONS MUST BE WIRED BY THE USER. FOR COINCIDENCE OPERATION, CONNECT X1 CONTROL POWER TO ALL ODD NUMBERED TERMINALS.
5. CUSTOMER NEED ONLY TO PROVIDE A SINGLE HOT AND COMMON TO I/O. CONTROL POWER MUST BE SEPERATE FROM INSTRUMENT POWER SOURCE.
6. CUSTOMER MUST PROVIDE COMMON FOR ALL OUTPUTS TO CONTROL POWER SOURCE EXTERNAL TO I/O MODULE. CUSTOMER MUST PROVIDE HOT FOR ALL INPUTS TO CONTROL POWER SOURCE EXTERNAL TO I/O MODULE.
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9. THE .005mF CAPACITORS ARE INSTALLED BY METTLER-TOLEDO ON 3015 ASSEMBLIES WITH DOOR MOUNTED OPERATORS ONLY.
10. THE "DISCHARGE" BUTTON MAY BE IDENTIFIED AS A "JOG" BUTTON. IF SO, THE WIRE GOING TO TB2-11 MUST BE REMOVED AND RECONNECTED TO TB2-2 FOR JOG OPERATION.
11. UL RECOGNIZED FIBER OPTIC CABLE MUST BE INSTALLED IN RIGID METAL CONDUIT. FIBER OPTIC CABLE MAY BE RUN WITHOUT CONDUIT OR IN CABLE TRAYS, IF THE CABLE IS UL LISTED (UL) AND MARKED (OFN).
12. FIBER OPTIC CABLE MUST NOT BE BENT TO A RADIUS LESS THAN 1.5". BENDING CABLE TO A RADIUS LESS THAN 1.5" MAY RESULT IN TRANSMISSION LOSS. BENDING CABLE TO A RADIUS LESS THAN 0.5" MAY RESULT IN FIBER DAMAGE.
13. FIBER OPTIC CABLE MAXIMUM LENGTHS
    MAXIMUM LENGTH OF EXPOSED FIBER OPTIC CABLE IN THE HAZARDOUS AREA SHALL BE LESS THAN 10'-0".
    8141 250 FEET MAXIMUM
    8525 100 FEET MAXIMUM
    PUMA 1000 FEET MAXIMUM (DEDUCT 500 FEET IF A COUPLER IS USED TO SPLICE CABLE.)
14. CONDUIT SEAL TO BE INSTALLED ACCORDING TO THE NATIONAL ELECTRIC CODE (N.E.C) AND LOCAL CODES IN NON-HAZARDOUS AREAS WITHIN 12" OF HAZARDOUS AREAS.
15. ALL EXTERNAL WIRING AND INSTALLATION PRACTICES MUST CONFORM TO NATIONAL ELECTRIC CODES (N.E.C.) FOR SINGLE CONTROL ENCLOSURES SUPPLIED BY MULTIPLE POWER SOURCES.
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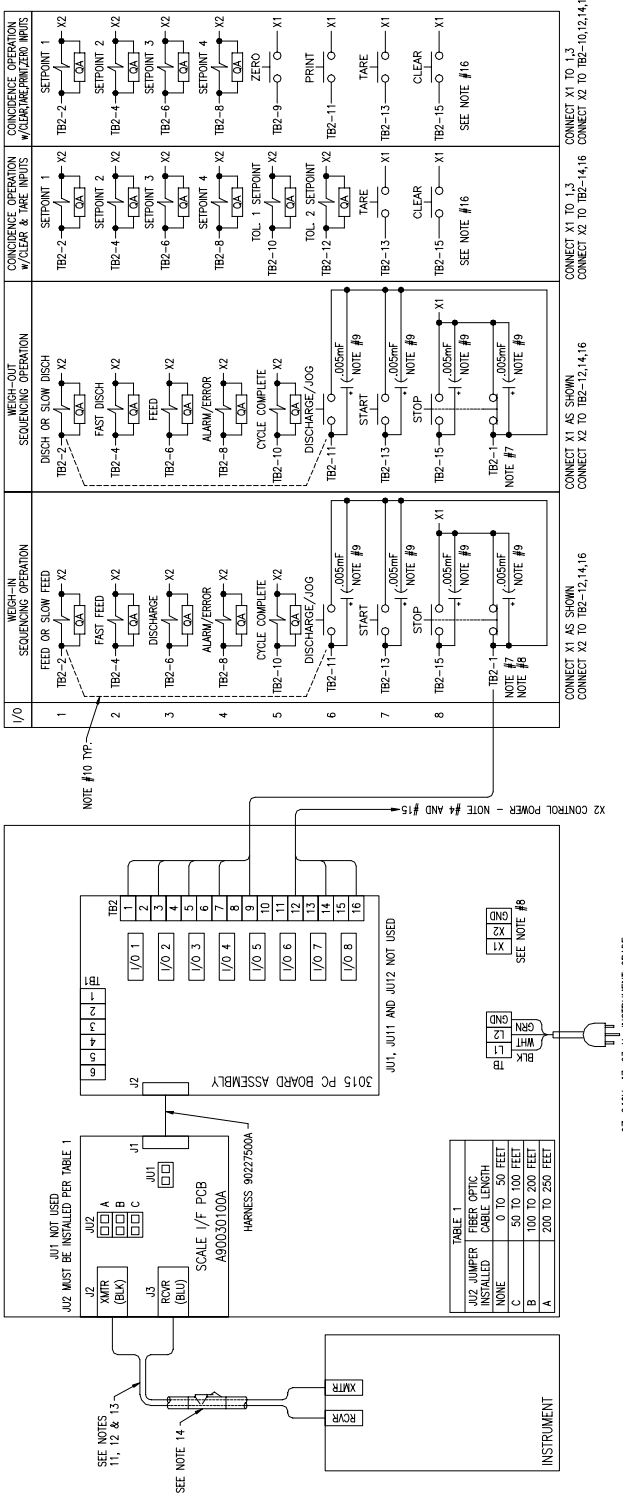
# 4-20mA External Wiring

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11. UL RECOGNIZED FIBER OPTIC CABLE MUST BE INSTALLED IN RIGID METAL CONDUIT. FIBER OPTIC CABLE MAY BE RUN WITHOUT CONDUIT OR IN CABLE TRAYS, IF THE CABLE IS UL LISTED (UL) AND MARKED (OFN).
12. FIBER OPTIC CABLE MUST NOT BE BENT TO A RADIUS LESS THAN 1.5". BENDING CABLE TO A RADIUS LESS THAN 1.5" MAY RESULT IN TRANSMISSION LOSS. BENDING CABLE TO A RADIUS LESS THAN 0.5" MAY RESULT IN FIBER DAMAGE.
13. FIBER OPTIC CABLE, RED, LENGTH 100'-0" MAXIMUM. MAXIMUM LENGTH OF EXPOSED FIBER OPTIC CABLE IN THE HAZARDOUS AREA SHALL BE LESS THAN 10'-0".
14. CONDUIT SEAL TO BE INSTALLED ACCORDING TO THE NATIONAL ELECTRIC CODE (N.E.C) AND LOCAL CODES IN NON-HAZARDOUS AREAS WITHIN 12" OF HAZARDOUS AREAS.
15. ALL EXTERNAL WIRING AND INSTALLATION PRACTICES MUST CONFORM TO NATIONAL ELECTRIC CODES (N.E.C.) FOR SINGLE CONTROL ENCLOSURES SUPPLIED BY MULTIPLE POWER SOURCES.
16. REFER TO INDICATOR MANUAL FOR NUMBER OF AVAILABLE SETPOINTS.

**⚠ WARNING**

WHEN THIS EQUIPMENT IS INCLUDED AS A COMPONENT PART OF A SYSTEM, THE RESULTING DESIGN MUST BE REVIEWED BY QUALIFIED PERSONNEL WHO ARE FAMILIAR WITH THE CONSTRUCTION AND OPERATION OF ALL COMPONENTS IN THE SYSTEM AND THE POTENTIAL HAZARDS INVOLVED. FAILURE TO OBSERVE THIS PRECAUTION COULD RESULT IN BODILY INJURY.

**⚠ WARNING**

THIS MODULE AND ITS ASSOCIATED EQUIPMENT MUST BE INSTALLED, ADJUSTED, AND MAINTAINED BY QUALIFIED PERSONNEL WHO ARE FAMILIAR WITH THE CONSTRUCTION AND OPERATION OF ALL EQUIPMENT IN THE SYSTEM AND THE POTENTIAL HAZARDS INVOLVED. FAILURE TO OBSERVE THESE PRECAUTIONS COULD RESULT IN BODILY INJURY.

**⚠ WARNING**

IF THIS DEVICE IS USED IN AN AUTOMATIC OR MANUAL FILLING CYCLE, ALL USERS MUST PROVIDE A HARD WIRED EMERGENCY STOP CIRCUIT OUTSIDE THE DEVICE CIRCUITRY. FAILURE TO OBSERVE THIS PRECAUTION COULD RESULT IN BODILY INJURY.

METTLER TOLEDO

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