METTLER TOLEDO

8525

Digital Indicator

With Setpoints

Service Manual

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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 writing to:

METTLER TOLEDO Training Center
1150 Dearborn Drive
Worthington, OH 43085-6712
(614) 438-4400 phone (614) 438-4444 fax

FCC NOTICE

This equipment has been tested and found to comply with the limits of the United States of America FCC rules for a Class A digital device, pursuant to Part 15 of the FCC Rules and the Radio Interference Regulations of the Canadian Department of Communications. 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. Operating this equipment in a residential area can cause harmful interference which the user will be required to correct at his own expense.

ORDERING INFORMATION

It is most important that the correct part number is used when ordering parts. Parts orders are machine processed, using only the part number and quantity as shown on the order. Orders are not edited to determine if the part number and description agree.

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This manual describes the operation and functionality of the 8525 Intrinsically Safe Digital Indicator containing software number 901869. The software number is displayed during the power-up sequence.

PRECAUTIONS

- **Read** this manual before operating or servicing this equipment.
- **Do not** connect or disconnect load cells or a scale base to the equipment with power connected or damage may result.
- **Save** this manual for future reference.
- **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 and/or property damage.

CAUTION

Observe precautions for handling electrostatic sensitive devices.

CAUTION

Remove power from the indicator and wait a minimum of 30 seconds before connecting or disconnecting any cables from PCBs or load cells as damage may result.

WARNING!

All equipment must be installed in accordance with the installation instructions detailed in the control drawing 133227. Deviation from the instructions in control drawing 133227 will impair the intrinsic safety of the unit and void Factory Mutual approval of the scale.

WARNING!

Do not install or perform any service on this equipment before the area has been secured as non-hazardous by personnel authorized to do so by the responsible customer.

WARNING!

Only the components specified in control drawing 133227 can be used in this unit. Incorrect, substitute components will impair the intrinsic safety of the unit and void Factory Mutual approval.

WARNING!

Do not attempt to open or repair the battery pack or power supply. The battery pack and power supply are not field repairable. Return to factory or dispose of properly in case of failure.

WARNING!

Do not use the battery charger in the hazardous area. The battery charger is not designed for or intended for use in hazardous areas.

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1 Introduction

This manual describes the digital indicator Model 8525 with Setpoints. The 8525 is a versatile, high performance digital indicator intended for weighing and setpoint applications in indoor, hazardous (classified) locations including Class I, II, and III, Division 1, Applicable Groups A, B, C, D, E, F, and G when installed in accordance with Mettler Toledo control drawing 133227. The 8525 Indicator must be used only with Mettler Toledo, Factory Mutual approved load cells only.

General Description

The 8525 is intended for use with Mettler Toledo, factory mutual approved analog load cell bases or DigiTOL load cell bases. Intrinsically safe DigiTOL load cell bases are marketed as the 96x and 97x series bases. Other DigiTOL load cell bases, the Model 2157 DigiTOL Floor scale, and the DigiTOL J-Box (Power Module) **are not approved for use in hazardous areas and must not be used in these applications**.

The 8525 provides a displayed resolution from 1000 to 20,000 increments with analog load cells, and from 1000 to 60,000 increments with DigiTOL load cell scale bases. Increment size is selectable from 0.00005 to 100.

The liquid crystal display (LCD) displays lb, kg, g, and ton weight symbols. Full keyboard tare and setpoint operation are offered in the standard 8525.

The 8525 is available with a desk mount enclosure or a wall mount enclosure. Both versions can be used in **most** hazardous (classified), indoor, industrial environments. Both versions can be used for desk-top, wall-mount, or column-mount applications.

The desk enclosure is constructed of anodized aluminum and has been designed to be dust-tight and splash-proof. The 8525 is IP65 rated for washdown applications. The desk enclosure version must not be exposed to corrosive liquids or gases.

The wall-mount enclosure is constructed of 304L stainless steel and is NEMA 4X rated for washdown applications.

The intrinsically safe battery pack and hazardous area AC power supply are rated for indoor use only and must not be located in washdown environments or exposed to corrosive liquids or gases.

Standard Features

The 8525 digital indicator is designed with the following standard features:

- A Factory Mutual approved power source. The intrinsically safe, 7 or 10 AH, 12 V battery pack provides up to 160 hours of operation with analog bases, and up to 80 hours with DigiTOL bases. The hazardous area AC power supply provides continuous operating power
- A low-power, LCD display with six 0.7-inch (17 mm) high digits, each with a decimal point and comma. The display includes a symbol that indicates low battery voltage. It also indicates gross weight, tare weight, net weight, and zero descriptors
- A multi-color, 4 in. x 5 in. keypad with domed keys to improve tactile feel and comfort. The keypad has an embossed, polycarbonate overlay with ridges to separate active key areas
- A +4 VDC gated excitation supply voltage (analog load cell versions) for up to four, 350 Ohm, Mettler Toledo factory mutual approved analog load cells
- +8 VDC for Mettler Toledo Factory Mutual approved DigiTOL load cell bases. The 8525 is not compatible with the DigiTOL Power Cells used in the DigiTOL Vehicle scales or the DigiTOL Power Module used in the Model 2157 DigiTOL Floor scale
- Keyboard entry of setpoint and tare weights. Setpoint operation is available with the Fiber Optic I/O option and the Model 3015 Setpoint controller
- A configurable filter provides added stability in the presence of vibration
- Auto Zero Maintenance (AZM) to compensate for small changes in zero over selectable ranges of ± 0.5 increments to ± 3 increments
- Auto zero capture at power-up selectable at ±2% or ±10% of scale capacity
- Pushbutton zero capture selectable at ±2% or ±20% of scale capacity
- Pushbutton switching between pounds and kilograms or conversion units
- Programmable automatic power-off timer to extend battery life
- Automatic display verify and selectable analog verify capability
- Continuous self testing to detect malfunctions or errors
- Dual or triple range weighing operation to permit finer increment size at low weight ranges
- Keyboard calibration and individual zero and span adjust
- Selectable, linearity compensated, three point calibration for demanding weighing applications
- Over-capacity blanking that can be programmed independent of scale capacity for specialized applications

Optional Features

Several optional features can be added to the indicator that give more capability and functionality to meet your specific needs.

- Factory Mutual approved, intrinsically safe, rechargeable 7 AH (P/N 0964-0078) or 10 AH (P/N 0919-0033), 12 VDC battery pack provides a portable power source and can be used in indoor, hazardous (classified) locations: Class I, II, and III, Division 1, Applicable Groups A, B, C, D, E, F, and G.
- Factory Mutual approved, 120 VAC power supply (P/N 0919-0044) provides an intrinsically safe output voltage and can be used in indoor, hazardous (classified) locations: Class I, II, and III, Division 1, Applicable Groups C, D, E, F, and G.
- Factory Mutual approved 230 VAC power supply (P/N 0964-0071) provides an intrinsically safe output voltage and can be used in indoor, hazardous (classified) locations: Class I, Division 1, Groups C and D; Class II, Division I, Groups E, F, and G.
- Desk enclosure mounting bracket (P/N 0917-0159) for mounting a desk enclosure unit to a desktop, wall, or column.
- Weight symbol display panels (0917-0166) for non-standard or legal-for-trade applications show displayed weight in ounces (oz), troy ounces (ozt), pennyweight (dwt), or Spanish symbols.
- Fiber Optic Data I/O (P/N 0917-0184).includes a transmitter/receiver for the indicator and a receiver/converter for safe-area locations.

Domestic Models

The 8525 indicator is available in four domestic models:

- 8525-0002—Desktop, NEMA 12 rated and conforming to IP65 specifications, analog load cells
- 8525-1002—Wall mount stainless steel rated NEMA 4X, analog load cells
- 8525-0102—Desktop, NEMA 12 rated and conforming to IP65 specifications, DigiTOL B/P
- 8525-1102—Wall mount stainless steel rated NEMA 4X, DigiTOL B/P

International Models

The 8525 indicator is available in two international models:

- 8525-0011—Desktop, NEMA 12 rated and conforming to IP65 specifications, analog load cells
- 8525-1011—Wall mount stainless steel rated NEMA 4X, analog load cells

Fiber Optic Data I/O

The Fiber Optic Data I/O option provides bidirectional RS-232C and 20 mA current loop interfaces for flexible printing applications, continuous data output for the 3015 Setpoint Controller, and/or connection to a computer located in a non-hazardous area. The fiber optic data I/O accepts single character ASCII remote commands for clear tare, print, tare, and zero functions.

Fiber Optic I/O (P/N 0917-0185) connects to input or output options that interface with fiber optic equipment including the 8617 Scoreboard, 8623/ 8624 Remote Displays, 9323 BCD Output option, 9325 Analog Output option, and the 9330 Contact Closure Gross, Tare, Print, Zero Input option.

Load Cell Input

DigiTOL Load Cell Input Version

A DigiTOL load cell input is connected to TB2 on the Main PCB. The following bench and portable bases contain Factory Mutual approved load cells that can be used with the 8525:

- Model 1996-0101
- Model 1996-0102
- Model 1996-0103
- Model 1997-0101
- Model 1997-0102
- Model 2096-0101
- Model 2096-0102
- Model 2097-0101
- Model 2097-0102
- Model 2196-0101
- Model 2196-0102
- Model 2197-0101
- Model 2197-0102

WARNING!

The 8525 is approved for use in hazardous (classified) locations with Mettler Toledo Factory Mutual approved DigiTOL load cells listed in the Mettler Toledo control drawing 133227 only. **Do not** connect any other DigiTOL load cell to the 8525.

Analog Load Cell Input Version

The 8525 analog load cell input version can power up to four 350 Ohm cells. A terminal strip on the analog input module provides “home run” cable termination. The 8525 standard analog input will work with 2 mV/V load cells only. A special version of the analog input module is available for 3 mV/V load cells.

The following analog bases contain Factory Mutual approved load cells that can be used with the 8525 in hazardous (classified) locations:

- Model 1985—Factory numbers 0001, 0002, 0003, 0005, 0006, 0007, 0008, 0009, 0013, 0114, 0115, 0116, 0017, 0018, 0019
- Model 2095—Factory numbers 0001, 0002, 0003, 0104, 0105, 0106, 0007, 0008, 0009, 0013, 0114, 0115, 0116, 0017, 0018, 0019
- Model 2155—all versions
- Model 2158—all versions
- Model 2185—all versions
- Model 2255—all versions
- Model 3165—Factory numbers 0004, 0005, 0006, 0007

WARNING!

The 8525 analog input module is Factory Mutual approved for use in hazardous (classified) locations with Mettler Toledo Factory Mutual approved load cells listed in Mettler Toledo drawings TA700001 and 122502 only. The use of other manufacturer’s load cells or load cells not specified in these drawings will void Factory Mutual approval.

Specifications

The 8525 conforms to the specifications listed in this chapter.

Temperature and Humidity

The 8525 operates within a temperature range of –10 to 45 °C (14 to 113 °F) at 10 to 95% relative humidity, noncondensing.

Storage temperature range is –40 to 70 °C (– 40 to 158 °F) at 10% to 95% humidity, noncondensing.

Hazardous Areas

The 8525 with an intrinsically safe battery pack or hazardous area AC power supply is approved for weighing applications in indoor, hazardous (classified) locations: Class I, II, and III, Division 1, Applicable Groups A, B, C, D, E, F, and G when installed in accordance with Mettler Toledo control drawing 133227. The 8525 must use one of the analog load cells listed in Mettler Toledo control drawings 122502 and TL700001 or a DigiTOL load cell as specified in Mettler Toledo control drawing 133227.

WARNING!

The AC power supply can **only** be located in Group C, D, E, F, or G locations. It **cannot** be located in Group A or B locations. The AC power supply can power the 8525 in Group A, B, C, D, E, F, or G locations.

Physical Dimensions

Desk Enclosure Model

The 8525 desk enclosure model is constructed of charcoal-black, anodized, extruded aluminum with painted cast aluminum end caps and is rated NEMA 12, IP65. The unit weighs approximately 5 lb (2.3 kg). Connections to the enclosure are made through sealed grip bushings on the left end cap. Allow an additional 2 in. (5.1 cm) for cable clearance at the left end of the enclosure. Figure 1-1 gives dimensional information for the desk enclosure model:

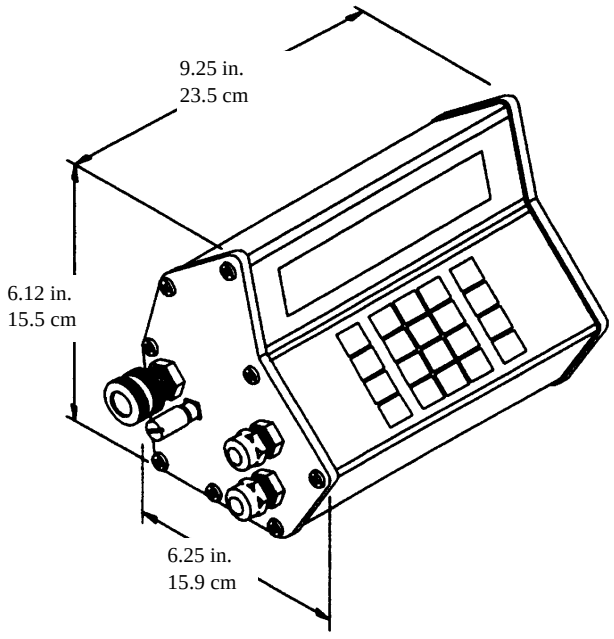


Figure 1-1 8525 Desk Enclosure Dimensions

Wall Enclosure Model

The wall enclosure model is constructed from brushed finish 304L stainless steel and is rated NEMA 4X. The unit weighs approximately 15 lb (7 kg). Connections to the enclosure enter through nylon cable grip bushings on the bottom. Allow an additional 2 in. (5.1 cm) for cable clearance at the bottom of the enclosure.

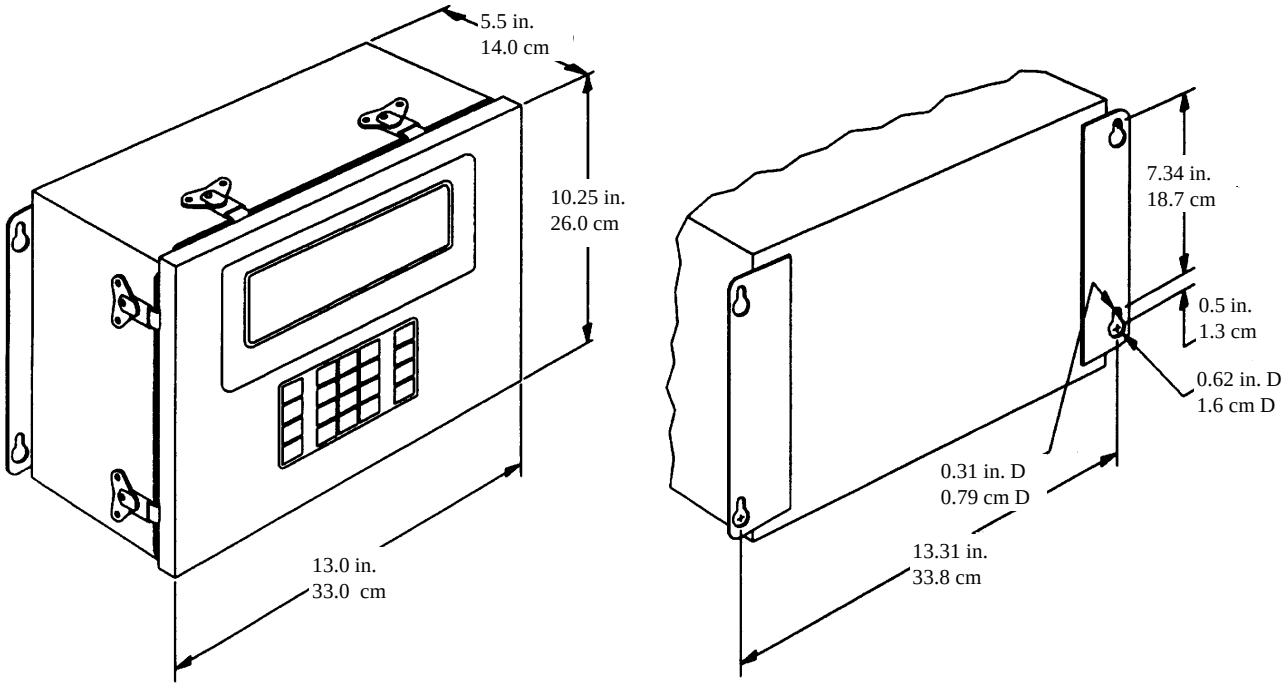


Figure 1-2 8525 Wall Enclosure Dimensions

10 AH Battery Pack Enclosure

The 10 AH battery pack enclosure is constructed of brushed 304L stainless steel with an integral handle on top. The battery pack weighs approximately 20 lb (9 kg). The power connection to the 8525 is made through an integral cable located at the bottom. The battery pack is designed to be hung by two keyholes on the bottom.

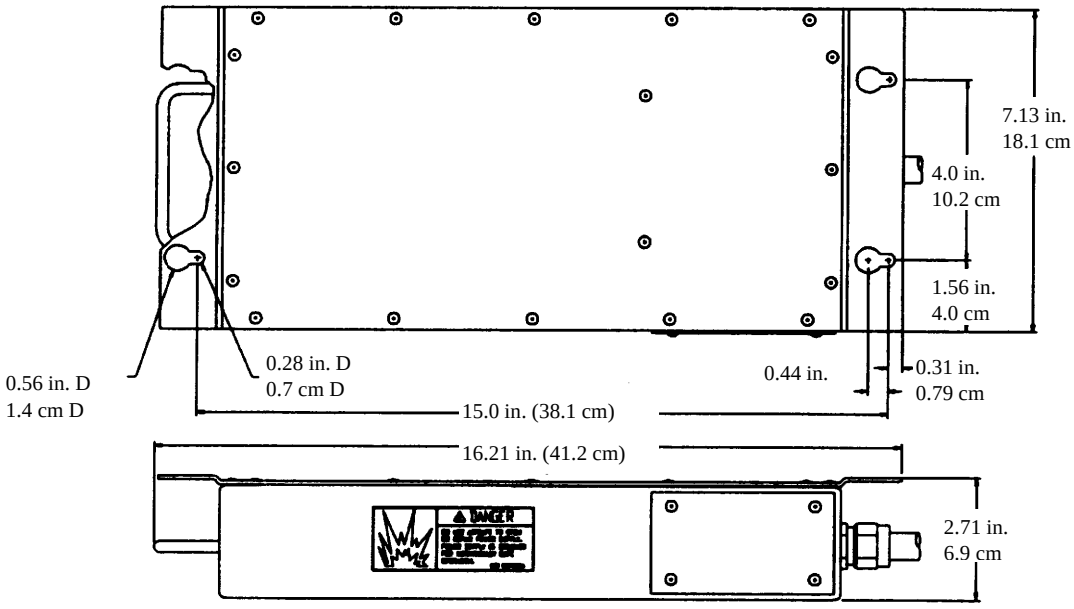


Figure 1-3 8525 10 AH Battery Pack Dimensions

7 AH Battery Pack Enclosure

The 7 AH battery enclosure is constructed of brushed 304L stainless steel. The battery pack weighs approximately 9 lb (4 kg). The power connection to the 8525 is made through a connector on the end of the pack. The battery pack is designed to be hung by two keyholes. Figure 1-4 gives dimensional information:

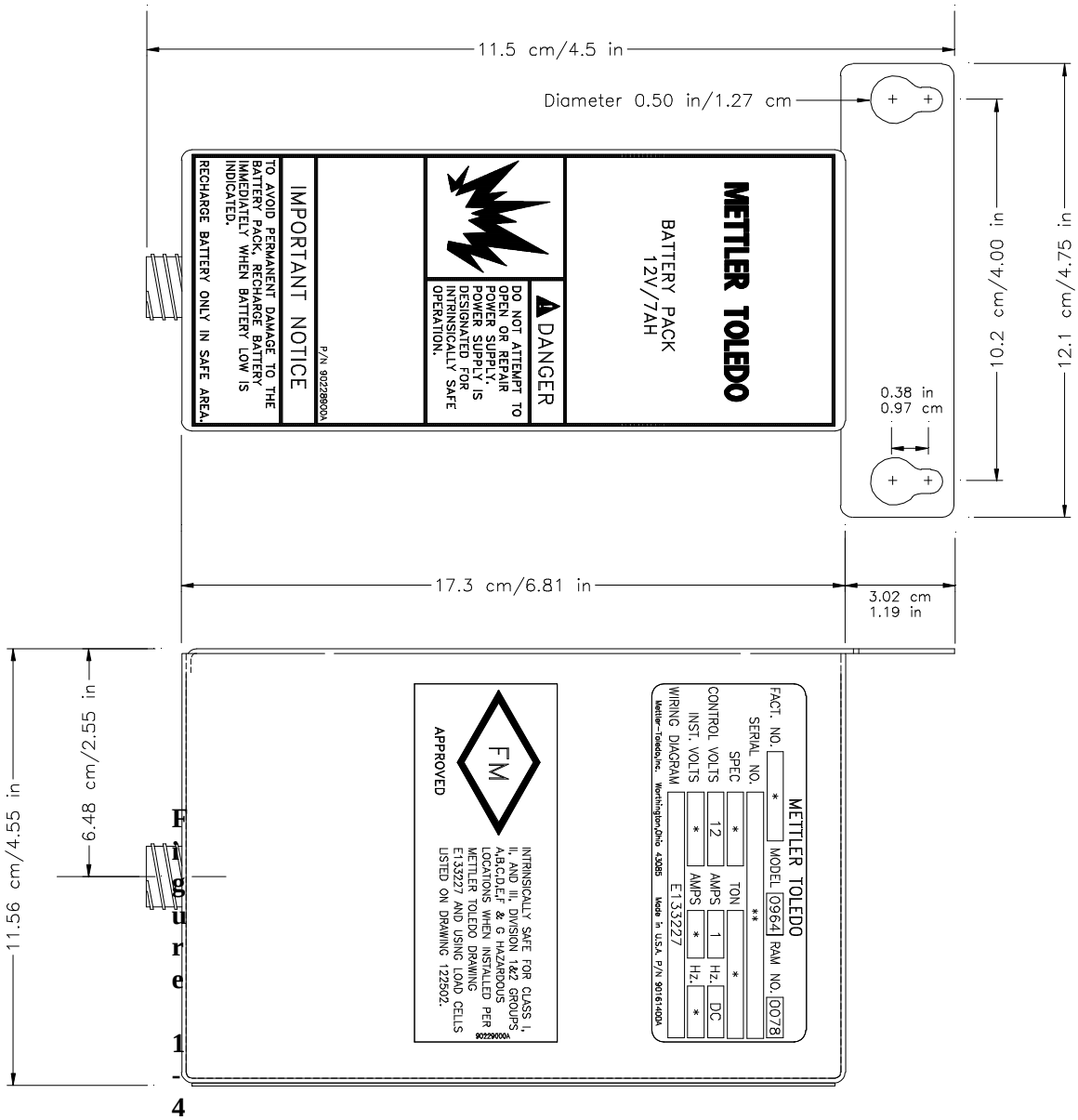


Figure 1-4 8525 7AH Battery Pack Dimensions

120 Volt AC Power Supply

The 120 volt (P/N 0919-0044) AC power supply enclosure is constructed of zinc plated cast iron and weigh approximately 8.5 lb (3.9 kg).The AC power connection is made through a 3/4 in. conduit fitting. The power connection to the 8525 is made through an integral twist-lock connector located on the end of the power supply. The AC power supply is designed to be mounted directly to a wall or support column.

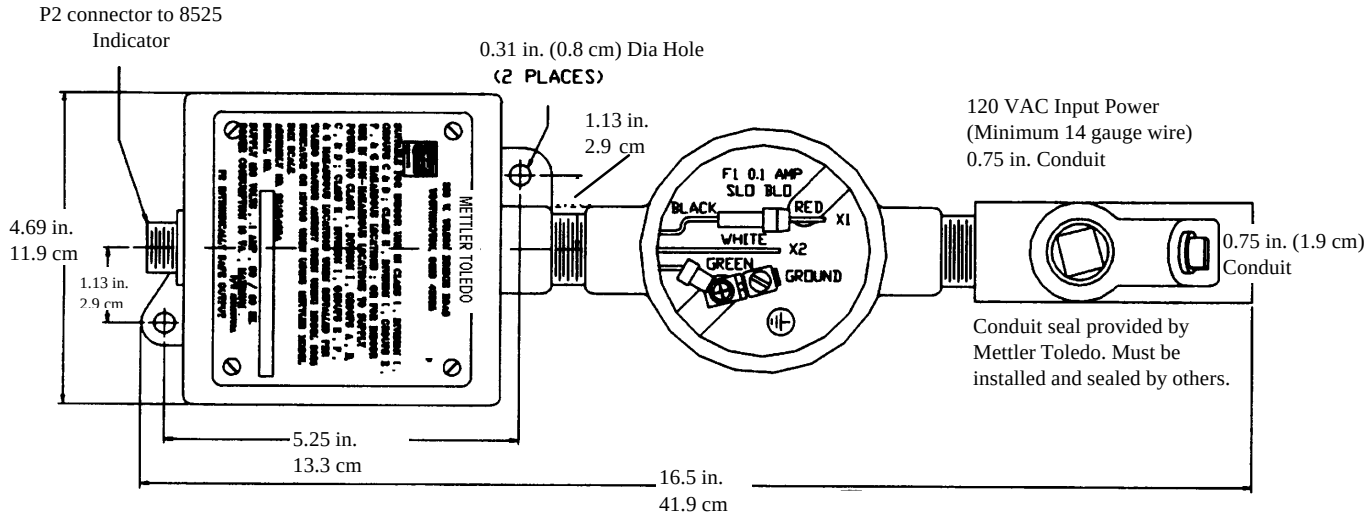


Figure 1-5 120 Volt AC Power Supply Dimensions

230 Volt AC Power Supply

The 230 volt (P/N 0964-0071) AC power supply enclosure is constructed of zinc plated cast iron and weigh approximately 8.5 lb (3.9 kg).The AC power connection is made through a 3/4 in. conduit fitting. The power connection to the 8525 is made through an integral twist-lock connector located on the end of the power supply. The AC power supply is designed to be mounted directly to a wall or support column.

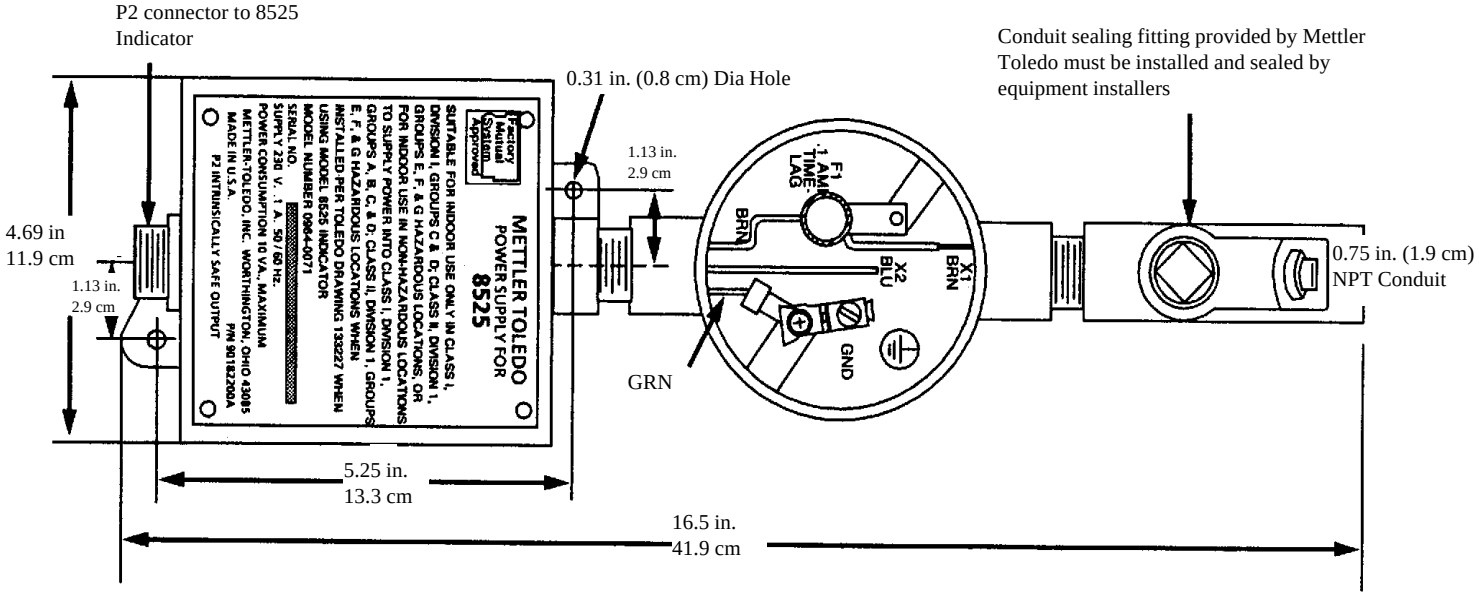


Figure 1-6 230 Volt AC Power Supply Dimensions

Power Requirements

The 8525 requires either the Factory Mutual approved, intrinsically safe battery pack or the Factory Mutual approved AC power supply for operation.

Intrinsically Safe Battery Pack

The 7 and 10 AH intrinsically safe battery packs include power management circuitry that transmits a “Battery Low” (TTL) signal when the battery voltage drops below 11.4 VDC. The power management disconnects the battery output when battery voltage drops below 11.1 VDC. The circuitry will not reconnect the battery output until the battery voltage exceeds 12.7 VDC, and it prevents total discharge of the battery pack which is the primary cause of premature battery failure.

A fully charged battery pack will power the 8525 continuously for up to 160 hours with analog bases, or 80 hours with DigiTOL bases before the “Battery Low” symbol is displayed. When a low battery condition exists, the battery still has reserve power to operate from 4 to 8 hours before battery shutdown occurs. Once shutdown has occurred, the battery must be completely recharged before it can be used again.

The 7 and 10 AH battery packs are fully interchangeable.

The intrinsically safe battery pack takes approximately 12 hours to recharge when the "Battery Low" symbol is displayed. You must use the Mettler Toledo battery charger (P/N 0964-0005, 0006, 0061, 0062, 0063, or 0064) to recharge both the 7 and 10 AH intrinsically safe battery packs.

WARNING!

Do not use the Mettler Toledo battery charger in a hazardous area. The battery charger is not designed for hazardous area operation.

Battery charge capacity is a major factor in estimating the maximum operating time of a charged battery pack. The battery pack uses a lead/acid "gel" cell that is similar to an automobile battery. **Lead/acid batteries lose charge capacity more quickly if they are completely discharged on a repetitive basis**. There is an inverse relationship between how deeply a battery is routinely discharged and how many times the battery can be recharged. A battery is considered to have ended its working life when the fully charged capacity is less than 50% of the original rated capacity.

To maximize the working life of a battery pack, recharge when the known operating life (hours) of the battery pack has reached approximately 50% rather than running it down to a low battery condition. For example, if a particularly battery pack has a maximum charge life of 180 hours, you should recharge the pack after approximately 90 hours of use. Also, alternating between two battery packs (with one kept on the charger) will greatly increase the service life of the battery, help prevent premature failure, and will ensure continuous operation.

Operating or charging a battery at temperatures higher than 30 °C (86 °F) will shorten the service life of the battery pack.

Always recharge the battery within 24 hours after it reaches the low battery condition. Batteries stored in a discharged state will deteriorate rapidly and may not accept a charge later. Batteries should be recharged every six months if stored at room temperature. Storing batteries at 10 °C (50 °F) or below will extend the shelf-life of a charged battery.

Hazardous Area AC Power Supply

The AC power supply for hazardous areas requires the following:

- Input Voltage: 120 VAC (P/N 0919-0044) nominal, –15% to +10% (102 to 132 VAC)
  Input Voltage: 230 VAC (P/N 0964-0071) nominal, –19% to 15% (187 to 264 VAC)
- Line Frequency: 50/60 Hz nominal
- Power Consumption: 10 VA maximum
- Fuse: 0.1 Amp, Time Lag fuse inside the junction box enclosure

Please see also the Hazardous Area Power Supply Technical Manual (P/N A 901102 00A) for additional information.

DC Power Output

The DC power output is intrinsically safe for Class I and II, Applicable Groups A, B, C, D, E, F, and G (power supply located in safe area) or intrinsically safe for Class I and II, applicable Groups C, D, E, F, and G (power supply located in hazardous area) per Factory Mutual standard class number 3610.

- Output open circuit voltage: 11.78 VDC to 13.0 VDC
- Short circuit output current: 100 mA typical
- Output voltage at 85 mA: 9.8 VDC

Output Cable (Power Supply to Indicator)

- Length: 150 feet (45.7 m) maximum
- Conductors: #23 AWG, 2 conductors minimum, stranded 19/32 tinned copper
- Shield: #36 AWG braided tinned copper, 85% minimum coverage
- Finished Outside Diameter: 0.40 inches (1.02 cm) maximum

Fiber Optic Data I/O

The Fiber Optic Data I/O option provides a bidirectional printer port with RS-232 and 20 mA current loop (active or passive) communication to a non-hazardous area. Data is output in a 10 bit frame consisting of 1 start bit, 7 data bits with parity or 8 data bits with no parity, and 1 stop bit. The baud rate is selectable from 300 to 9600 baud. Parity is selectable as even, odd, or none.

The data interface can be configured for demand, continuous, or <Enq> continuous output mode.

- Demand mode—is used to send data to a printer.
- Continuous output mode—is used for interfacing a device that will collect real-time weight data. The model 3015 setpoint controller, 9323 BCD output converter and the 9325 analog output converter all use the continuous output mode. The continuous output mode is also used to interface with computers.
- <Enq> continuous output mode—is used for real-time, dynamic weighing and to interface with computers.

Demand Mode

In demand mode, the 8525 sends messages (as formatted in setup) each time a print request occurs. Demand mode output is inhibited if weight on the scale is unstable, under gross zero, or over capacity. If a print request is inhibited due to unstable weight, an output occurs when the weight becomes stable. Demand output is disabled if the 8525 is in the expanded weight display mode. Please refer to Chapter 3 for more information on setup parameters including expanded weight display.

Continuous Mode

In continuous mode, the 8525 sends messages (formatted in setup) every time the display is updated. The 8525 display updates rate is approximately 15 updates per second for analog load cells, or 10 updates per second for DigiTOL load cells. The continuous output format includes displayed weight, tare weight, and status information. Unlike demand mode, continuous output occurs even when weight is unstable, under gross zero, or if the 8525 is in expanded weight display mode. The weight fields in the continuous output format are replaced with spaces if the 8525 display is blank due to an over- or under-capacity condition.

<Enq> Continuous Mode

In <Enq> continuous mode, the 8525 outputs one continuous formatted transmission each time a remote host sends an ASCII <Enq> character (hex 05). <Enq> should not be set more then two times per second.

The **ASCII input** mode accepts characters for clear (C), print (P), tare (T), and zero (Z) in both demand and continuous output mode. The data interface also accepts the <Enq> character.

Standards Compliance (Domestic)

The following domestic compliance standards apply to the 8525 indicator.

Factory Mutual Approval

The 8525 conforms to Factory Mutual Approval Standard 3610 Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations as specified in Mettler Toledo Control Drawing 133227.

Legal-For-Trade

The 8525 has received the National Type Evaluation Program (NTEP) Certificate of Conformance number 91-128 and can be used in legal-for-trade applications as a Class III or IIIL device (5000 divisions).

Water Penetration (Washdown)

The 8525 desk enclosure version is rated IP65 (dust-tight, splash-proof). The wall mount enclosure is constructed of 304L stainless steel and meets NEMA 4X washdown requirements. **The intrinsically safe battery pack and hazardous area power supply are not washdown rated and must not be used in washdown areas.**

FCC Regulations

The 8525 meets or exceeds FCC docket 80-284 for conducted and radiated emissions. If the 8525 is used in residential areas, you are required to correct any interference at your expense.

Radio Frequency Interference (RFI)

The 8525 meets the U.S., Canadian, U.K., and VDE 0871 Class B susceptibility specifications with a maximum change of one displayed increment.

RFI Radiated Emissions		
Specification	**Frequencies**	**Field Strength**
U.S.	27, 169, 464 MHz	3 Volts/Meter
Canadian	27, 464 MHz	4 Watts at 2 Meters
U.K.	27, 169, 464 MHz	10 Volts/Meter
VDE 0871, Class B	27, 144, 169, 464 MHz	3 Volts/Meter

Electrostatic Discharge (ESD)

The 8525 has been tested for ESD susceptibility using 6 kilovolts with an energy of 3.6 millijoules for 50 discharges at a repetition rate of one discharge every ten seconds. The 8525 sustained no hardware damage, lock-ups, mode change, or memory loss.

Standards Compliance (European)

The following European compliance standards apply to the 8525 International models 8525-0011 and 8525-1011 (described previously in this chapter). Both models are for analog load cells only.

- NMi, European Metrology and EC approvals—Metrology Certificate #TC2617 revision 0, in accordance with paragraph 8.1 of EN45501:1992. Approved for 3000e Class II and 1000e Class III.
- CE type-approval certificate #T2206 revision 7. Council Directive 90/384/EEC.
- Hazardous Area Approvals
  - Suitable for EEx ib, Class IIA/IIB/IIC, Temperature Rating T-6
  - PTB, Nr. Ex-91.C.2047 (8525 Terminal)
  - PTB, Nr. Ex-91.C.2076x (09190041 Battery)
  - PTB, Nr. Ex-88-B.2019x (SMX Power Supply)

Ordering Information

Please refer to the following Factory Number Reference chart when ordering equipment. A detailed description of each designation is given to help you determine accurately the specifications for the desired model.

Domestic Models (Factory Mutual Approval)	
8525-0002	Desk, Analog Load Cells
8525-1002	Wall, Stainless Steel, Analog Load Cells
8525-0102	Desk, DigiTOL Load Cells
8525-1102	Wall, Stainless Steel, DigiTOL Load Cells
International Models (PTB Approval)	
8525-0011	Desk, Analog Load Cells
8525-1011	Wall, Stainless Steel, Analog Load Cells

Shipping Information

The shipping carton for the desk enclosure model measures 18.5 in. (47 cm) wide, 15 in. (38 cm) deep, and 8 in. (20 cm) high. The shipping weight is 8 lb (3.6 kg).

The shipping carton for the wall mount enclosure model measures 19.5 in. (50 cm) wide, 17 in. (43 cm) deep, and 12 in. (30.5 cm) high. The shipping weight is 19 lb (8.6 kg).

The shipping carton for the battery pack model (0919-0033/0919-0041) measures 12 in. (30.5 cm) wide, 20 in. (50.8 cm) deep, and 7 in. (17.8 cm) high. The shipping weight is 23 lb (10.4 kg).

The shipping carton for the battery pack model (0964-0078) measures 14 in. (34 cm) wide, 10 in. (25 cm) deep, and 8 in. (20 cm) high. The shipping weight is 12 lb (5.5 kg).

The shipping carton for the AC power supply model measures 12 in. (30.5 cm) wide, 20 in. (50.8 cm) deep, and 7 in. (17.8 cm) high. The shipping weight is 8 lb (3.6 kg).

2 Installation

This chapter gives detailed instructions and important information you will need to install the 8525 indicator and its optional equipment successfully. Please read this chapter thoroughly before you begin installation.

Environment

Before you install your 8525 indicator, identify the best location for the equipment. The proper environment enhances the operation and longevity of the equipment. Consider the temperature and humidity specifications as listed in Chapter 1 of this manual.

Unpacking and Inspection

Please inspect the package as it is delivered by the carrier. If the shipping container is damaged, check for internal damage and file a freight claim with the carrier if necessary. **Shipping damage is not covered under warranty.**

If the container is undamaged, unpack and inspect each component for damage. If it is necessary to ship the indicator back to Mettler Toledo, use the original shipping container if possible. The 8525 must be packed correctly to ensure its safe transportation.

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

Package contents for the wall and desk mount 8525 indicators include:

- 8525 indicator
- This technical manual
- Quality feedback card
- Control drawing 133227
- Two ferrite cores (P/N 135174 00A)
- Capacity label
- Ten crimp-on spade terminals (P/N 140228 00A)

Additional contents for the desk enclosure model include:

- Two washers (P/N 000786210)
- Data tag (P/N A119914 00A)
- Two #8-32 x 1/2 in. screws
- 0.188 in. adapter bushing (P/N 136926 00A)

Additional contents for the wall enclosure model include:

- Tube, gasket sealant (P/N 118251 00A)
- Grip bushing grommet kit (P/N A117419 00A)

Warnings and Precautions

Please observe the following warnings and precautions as you install the 8525 and make all necessary electrical connections.

WARNING!

Only permit qualified personnel to service this equipment. Disconnect all AC power to this unit before servicing or removing the fuse. 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 and/or property damage.

CAUTION

Observe precautions for handling electrostatic sensitive devices.

WARNING!

Only the components specified in control drawing 133227 can be used in the 8525, and all equipment must be installed in accordance with the installation instructions detailed in the control drawing 133227. Incorrect components and/or deviation from the instructions in control drawing 133227 will impair the intrinsic safety of the unit and void Factory Mutual approval of the scale.

WARNING!

Do not install or perform any service on this equipment before the area has been secured as non-hazardous by personnel authorized to do so by the responsible customer.

Opening the Desk Enclosure Model

1. Remove the eight screws securing the end cap, then remove the end cap. Do not pull the end cap too far to the left or the keypad may be damaged. You can slide the Main PCB approximately one inch to the left without unplugging the keypad.
2. Continue to the section entitled Terminating the Load Cell.

Opening the Wall Enclosure

1. Unlatch the wing-type handle of each fastener , then turn the fastener 180° counterclockwise.
2. On the lower right side, use an 11/16 in. (17.5 mm) wrench to loosen this latch.
3. Loosen the hinge fasteners on the right end **last**. Loosen both hinge fasteners together to prevent jamming.
4. Swing the door open from the left.

Terminating the Load Cell

After the 8525 enclosure is opened, terminate the load cell(s) as follows:

WARNING!

Only permit qualified personnel to service this equipment. Disconnect all AC power to the unit before servicing or installing 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 and/or property damage.

Analog Load Cell

Please refer to Appendix 3 at the back of this manual for information on analog load cell jumper connections.

The analog load cell version of the 8525 can drive up to four, 350 Ohm, 2 mV/V load cells. The maximum length of the home run cable is 250 feet (80 m) for units powered by a battery pack, or 400 feet (125 m) for units powered by an AC power supply. Six conductor 20 gauge analog load cell cable (P/N 510620-370) is available by the foot from Mettler Toledo.

To terminate the analog load cell:

1. Prepare the 8525 end of the load cell cable as shown below in Figure 2-1. Strip the cable jacket and shield back 4 in. (10.2 cm) for the desk enclosure or 10 in. (25.4 cm) for the wall enclosure.

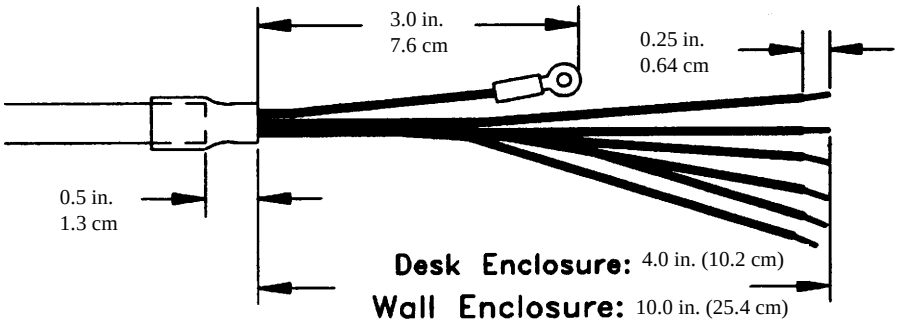


Figure 2-1 Load Cell Cable Preparation

2. Insert the cable into the enclosure through the load cell grip bushing and grommet until the outside jacket is flush with the inside edge of the grip bushing. For desk enclosures, the bushing and grommet are located on the front bottom of the left end cap. For wall mount enclosures, the bushing and grommet are located on the bottom of the enclosure.

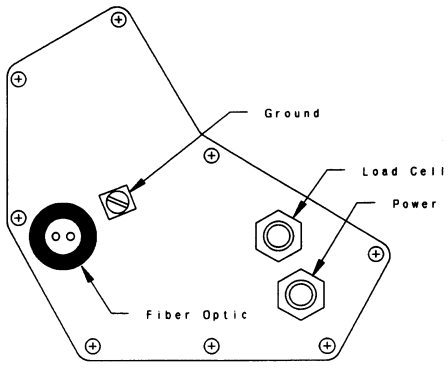


Figure 2-2 Desk Enclosure Left End Cap View

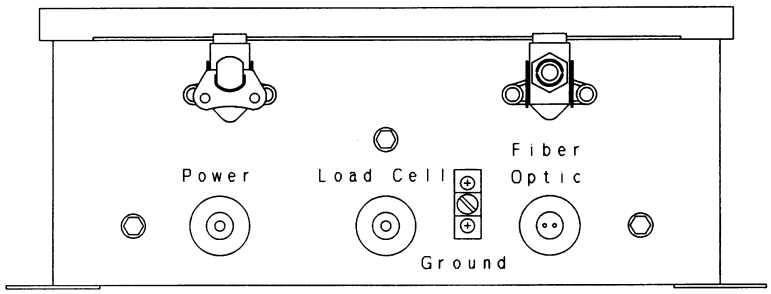
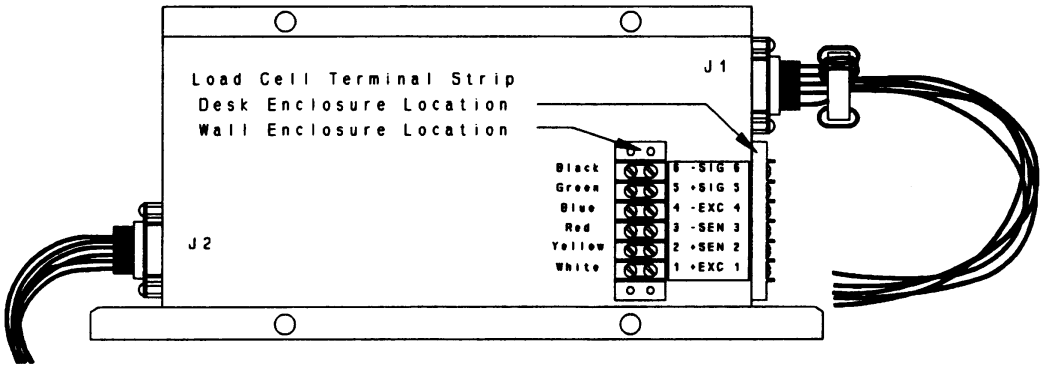


Figure 2-3 Wall Enclosure Bottom View

3. Tighten the bushing securely.
4. Attach the cable shield to the #8-32 stud beside the grip bushing. For desk enclosures, the #8-32 stud is located on the left end cap. For wall mount units, the #8-32 stud is located on the inside bottom. Use the #8-32 stud already present on the ground stud.
5. Terminate the load cell to the six-position terminal strip. Figure 2-4 below shows the terminal strip location for the desk enclosure and the wall mount enclosure.



Terminal Number	Signal Description	Mettler Toledo Color Code
6	-Signal	Black
5	+Signal	Green
4	-Excitation	Blue
3	-Sense	Red
2	+Sense	Yellow
1	+Excitation	White

Figure 2-4 Analog Load Cell Termination

Refer to Mettler Toledo control drawing 133227 for load cell field wiring instructions. Match the load cell signal description to the terminal strip description. Wire colors listed above are for the standard Mettler Toledo 6-wire load cell cable (P/N 510620-370).

DigiTOL Load Cell

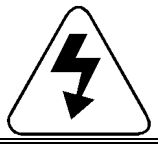
Please refer to Appendix 3 at the back of this manual for information on DigiTOL load cell jumper connections.

The 8525 provides a single DigiTOL load cell interface for operation with the following intrinsically safe DigiTOL Bench and Portable scale bases:

- Model 1996 and 1997
- Model 2096 and 2097
- Model 2196 and 2197

The 8525 DigiTOL load cell interface is **not** compatible with the Model 2157 DigiTOL Floor Scale, DigiTOL J-Box, or DigiTOL Power Cells that are used in multiple cell DigiTOL vehicle scale bases. **Do not connect the 8525 to these bases**.

All intrinsically safe versions of the DigiTOL Bench and Portable scale bases come with a blue jacketed, 10 foot integral load cell cable. If a Junction Box is required, the maximum length of the home run cable is 250 feet (80 m). Load cell cable (P/N 510620-370) is available by the foot from Mettler Toledo.



WARNING!

Intrinsically safe DigiTOL load cells come with an integral blue jacketed cable. **Do not** connect a DigiTOL load cell without a blue jacketed cable to the 8525.

To terminate the DigiTOL load cell:

1. Prepare the 8525 end of the load cell cable as shown below in Figure 2-5. If Mettler Toledo load cell cable is used, the two unused conductors (green and yellow) should be cut off at the J-box end and connected to the ground screw at the 8525 end. Strip the cable jacket and shield back 5 in. (12.7 cm) for the desk enclosure or 9 in. (22.7 cm) for the wall enclosure.

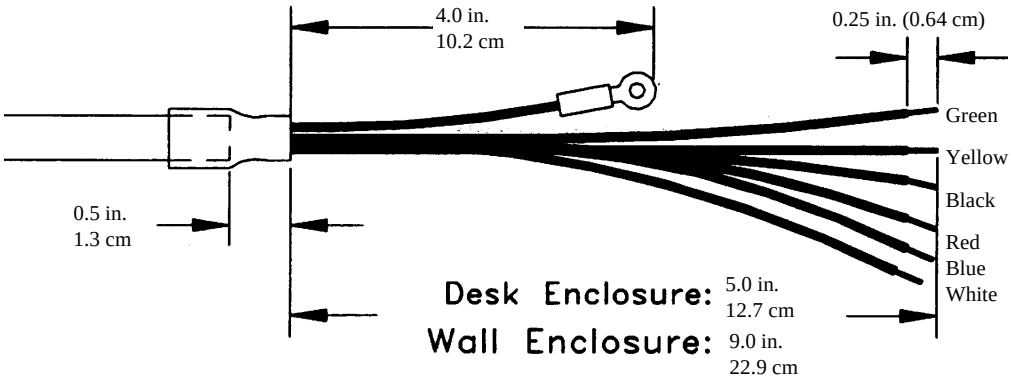


Figure 2-5 DigiTOL Load Cell Cable Preparation

2. Insert the cable into the enclosure through the load cell grip bushing and grommet. For desk enclosures, the bushing and grommet are located on the front bottom of the left end cap. For wall mount enclosures, the bushing and grommet are located on the bottom of the enclosure. Refer to Figures 2-2 and 2-3.
3. Wrap the load cell conductors (including the two unused conductors and shield ground wire) three times through the ferrite ring (P/N 134929 00A) included with the DigiTOL base. Keep the ferrite ring as close as possible to the grip bushing.

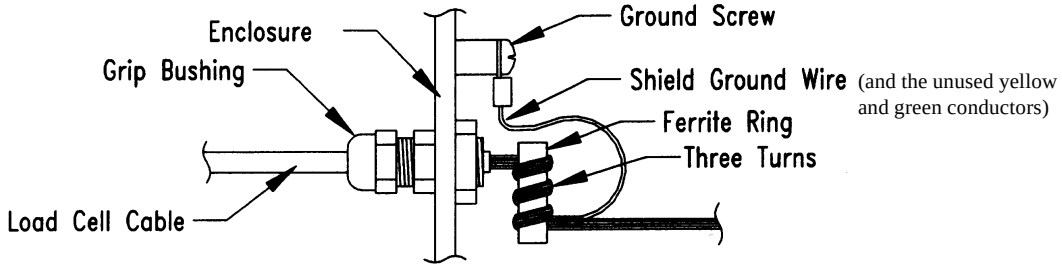
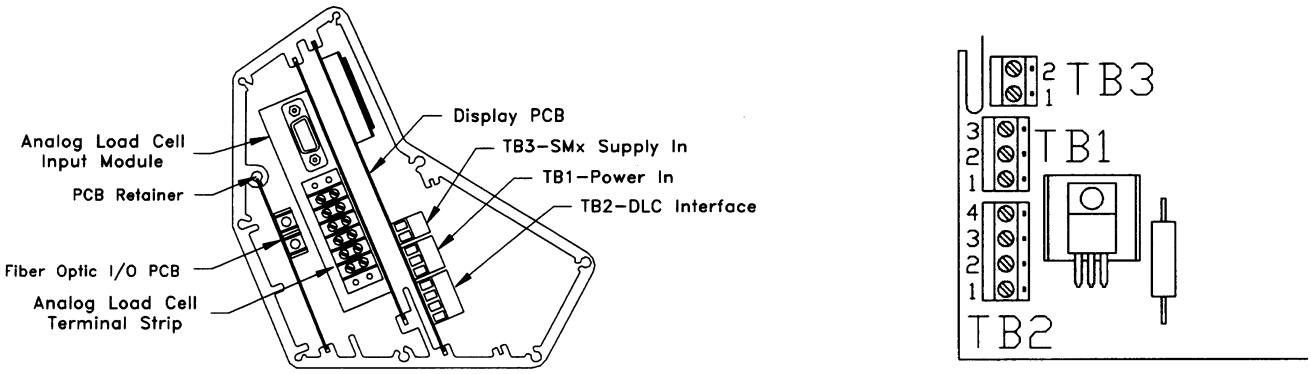


Figure 2-6 Ferrite Ring Installation

4. Position the outside jacket of the cable (through the load cell grip bushing and grommet) flush with the inside edge of the grip bushing.
5. Tighten the bushing securely.
6. Attach the yellow and green conductors and the shield to the #8-32 stud beside the grip bushing. For desk enclosures, the #8-32 stud is located on the left end cap. For wall mount units, the #8-32 stud is located on the inside bottom. Use the #8-32 stud already present on the ground stud.

7. Terminate the load cell cable to the terminal strip TB2 on the Main PCB. Figure 2-7 below shows the terminal strip location, TB2 location, and termination.



8525 DigiTOL Load Cell		
TB2 Pin	**Function**	**Wire Color**
4	TxD	Black
3	RxD	Red
2	Ground	Blue
1	+11 VDC	White

Figure 2-7 DigiTOL Load Cell Termination

Installing the Power Source

The 8525 is powered either by a battery pack or by an AC power supply. Proper installation of the power supply includes installing the Indicator Supply Cable then making the connection to the intrinsically safe battery pack assembly or to the hazardous area AC power supply assembly.

Indicator Supply Cable

Each 8525 contains a 60 in. indicator DC power supply cable that mates to either the 7AH battery twist lock connector, AC power supply twist lock connector (domestic), or to the inline cable twist lock connector on the 10AH battery box cable (export).

The maximum length of the indicator supply cable used with the battery pack is 50 feet (15 m). You can use 50 ft (15 m), 100 ft (30 m), or 150 ft (46 m) indicator supply cables with the AC power source. Please refer to Chapter 6 Parts and Accessories for extended length indicator supply cable part numbers.

To install the indicator supply cable:

1. Insert the indicator supply cable through the power grip clamp and grommet until the outside jacket is flush with the inside edge of the grip bushing. For desk enclosures, the clamp and grommet are located on the middle front of the left end cap. For wall mount enclosures, the clamp and grommet are located on the bottom left of the enclosure. Refer to Figures 2-2 and 2-3.
2. **For desk enclosure units using an AC power supply**, install the ferrite ring (P/N 134929 00A) on the indicator supply cable, then wrap the cable three times through the ferrite ring.

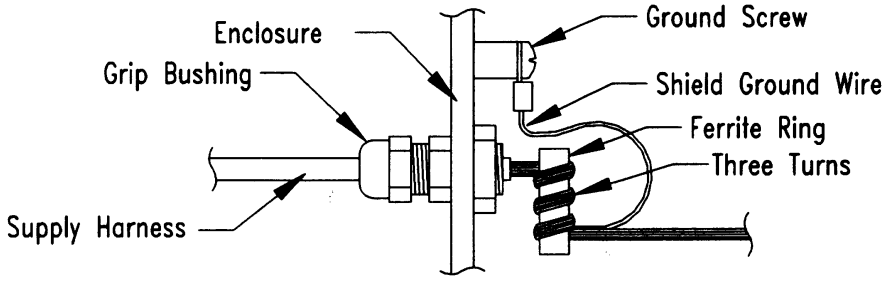
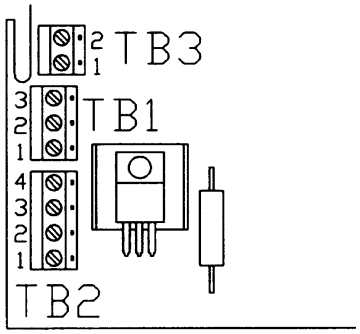


Figure 2-8 Ferrite Ring for Desk Enclosure with AC Power Supply

3. Attach the cable shield to the #8-32 stud beside the grip bushing. For desk enclosures, the #8-32 stud is located on the left end cap. For wall mount units, the #8-32 stud is located on the inside bottom. Use the #8-32 stud already present on the ground stud.
4. Terminate the indicator supply cable to the terminal strip TB1 on the Main PCB. Refer to Figure 2-7 for the terminal strip location.

Figure 2-9 below shows TB2 location and termination.



TB1 Power Termination		
Terminal Number	**Description**	**Wire Color**
3	Power In	Red
2	Ground	Green
1	*Battery Low	*Black

* The AC power supply does not use Battery Low input.

Figure 2-9 AC Indicator Supply Cable Termination

Battery Pack Connection

The 10 AH battery pack assembly includes a seven inch integral cable with a mating connector for connection to the indicator supply cable. The 7 AH battery pack has a mating connector attached to the bottom of the case. The connectors on the indicator supply cable and on the battery pack are keyed to prevent improper attachment. The keys must line up for the connectors to mate.

To make the battery pack connection:

1. Place the male connector of the battery pack into the female connector of the indicator supply cable harness.
2. Gently press the connectors together while at the same time rotating the connectors until the keys align and the connectors slide together.
3. Rotate the retaining ring on the indicator supply cable connector clockwise to lock the connectors together.

If the connectors need to be disconnected, rotate the retaining ring on the indicator supply cable counterclockwise to unlock them, then gently pull apart.

Hazardous Area AC Power Supply Connection

The AC power supply assembly has a mating connector for connection to the indicator supply cable. The connectors on the indicator supply cable and on the AC power source are keyed to prevent improper attachment. The keys must line up for the connectors to mate.

To make the AC power supply connection:

1. Place the male connector of the AC power source into the female connector of the indicator supply cable harness.
2. Gently press the connectors together while at the same time rotating the connectors until the keys align and the connectors slide together.
3. Rotate the retaining ring on the indicator supply cable connector clockwise to lock the connectors together.

If the connectors need to be disconnected, rotate the retaining ring on the indicator supply cable counterclockwise to unlock them, then gently pull apart.

Installing Options

The 8525 can be ordered with options already installed at the factory. Options can also be ordered separately and installed in the field.

Fiber Optic Data I/O

Please refer to Appendix 3 at the back of this manual for information on the Fiber Optic Data I/O jumper connections.

The Fiber Optic Data I/O option provides bidirectional RS-232C and 20 mA current loop interfaces for printing applications, continuous data output for the 3015 Setpoint Controller, and/or connection to a computer located in a non-hazardous area. Please refer to Appendix 2 Demand and Continuous Output Description for more information on these output data formats.

The fiber optic option kit does not contain fiber optic cables. You can obtain fiber optic cable from Mettler Toledo as preterminated cable (available in various lengths) or as bulk cable that you must terminate. Fiber optic cable part numbers are given in Chapter 6 Parts and Accessories.

Two fiber optic cables are required for bidirectional communication.

The installation procedure includes electrical connections and jumper settings for configuring the option.

Desk Enclosure Installation

To install the fiber optic data I/O for desk enclosures:

1. Remove power from the 8525 and disconnect the power source.
2. Unscrew the retaining screws and remove both end caps.
3. Gently pull the left end cap from the enclosure until it will not move further (approximately two or three inches). To avoid damage to the keypad connector, do not force the Logic PCB to the left.
4. Remove and discard the grip bushing located on the left end cap (near the rear).
5. Install the split grip bushing adapter into the rear grip bushing mounting hole as shown below:

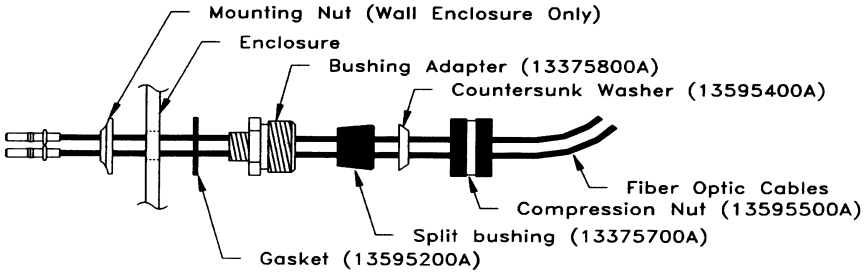


Figure 2-10 Fiber Optic Grip Clamp Installation

If only one fiber optic cable is used, insert plastic rivet (P/N 137743 00A) into the unused hole in the split bushing.

6. Insert the fiber optic cable(s) into the hole(s) of the split bushing and install the bushing, countersunk washer, and compression nut into the bushing adapter. Leave the compression nut loose to allow free movement of the fiber optic cables.
7. Feed the fiber optic cable through the split bushing until the cable reaches the right end of the enclosure (approximately eight inches).
8. Plug either end of the data I/O harness into connector J3 on the Fiber Optic PCB.

9. Plug in the fiber optic cables. J1 is transmit and J2 is receive.

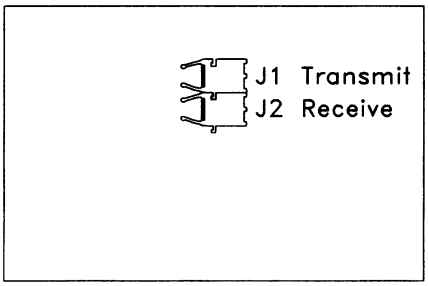


Figure 2-11 Fiber Optic Data I/O PCB

10. Slide the Fiber Optic PCB from the left end of the enclosure into the PCB retaining slot located behind the analog load cell input module. Slide the PCB retainer over the Fiber Optic PCB in the retaining slot.
11. Plug the other end of the data I/O harness into connector J1 on the Main PCB.
12. Replace the end caps making sure the gasket is intact and that no wires are pinched.
13. Tighten the compression nut on the outside of the grip bushing to secure the fiber optic cables. **Be sure the fiber optic cable is not bent to less than a 1/2 in. radius. Any sharp kink in the fiber optic cable will render it useless.**
14. Reconnect the power source and apply power to the 8525.

Wall Mount Enclosure Installation

To install the fiber optic data I/O for wall mount enclosures:

1. Remove power from the 8525 and disconnect the power source.
2. Open the enclosure as described previously in this chapter. Loosen the hinge fasteners on the right side last.
3. Remove and discard the grip bushing located on the bottom right of the enclosure. Retain all other parts of the cable grip clamp for use later.
4. Install four of the #6-32 nuts (P/N R03283 00A) on the four PCB mounting studs located on the inside rear of the enclosure.

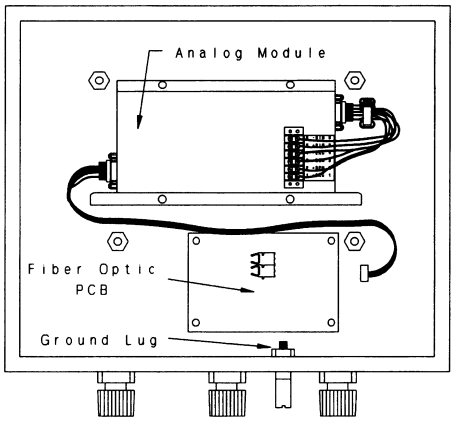


Figure 2-12 Wall Enclosure Interior View

5. Place the PCB insulator (P/N 132699 00A) on the four PCB mounting studs, then place the Fiber Optic PCB on the insulator and secure it with the four remaining #6-32 nuts.
6. Plug one end of the data I/O harness into connector J3 on the Fiber Optic PCB, then connect the other end of the I/O harness into connector J1 of the Main PCB.

If only one fiber optic cable is used, insert plastic rivet (P/N 137743 00A) into the unused hole in the split bushing.

7. Install the bushing into the existing cable grip adapter. Leave the compression nut loose to allow free movement of the fiber optic cables. Refer to Figure 2-6.
8. Plug in the fiber optic cables. J1 is transmit, and J2 is receive. Tighten the compression nut to secure the fiber optic cables. Refer to Figure 2-10. **Be sure the fiber optic cable is not bent to less than a 1/2 in. radius. Any sharp kink in the fiber optic cable will render it useless.**
9. Close the enclosure, reconnect the power source, and apply power to the 8525.

Dual Channel Fiber Optic Converter Module Configuration

The Dual Channel Fiber Optic Converter Module (P/N 900315 00A) provides two bidirectional channels: each channel has simultaneous 20 mA and RS-232 communications. The 8525 uses the fiber optic converter to provide compatibility with Toledo Scale printer models 307, 8806, 8844, 8856, 8860, and 8865. The converter is also used to communicate with a host computer.

Serial data is transmitted in a ten bit format consisting of 1 start bit, 7 data bits with parity **or** 8 data bits with no parity, and 1 stop bit. The baud rate is selectable from 300 to 9600 baud. Parity is selectable as even, odd, or none.

The Fiber Optic Converter Module uses jumpers to select active or passive 20 mA operation. Jumper configurations for 20 mA follow.

Jumper Configuration for 20 mA Current Loop

The following jumper configuration allows Mettler Toledo printer models 307, 8806, 8855, and 8860 to use the 20 mA current loop output in demand mode.

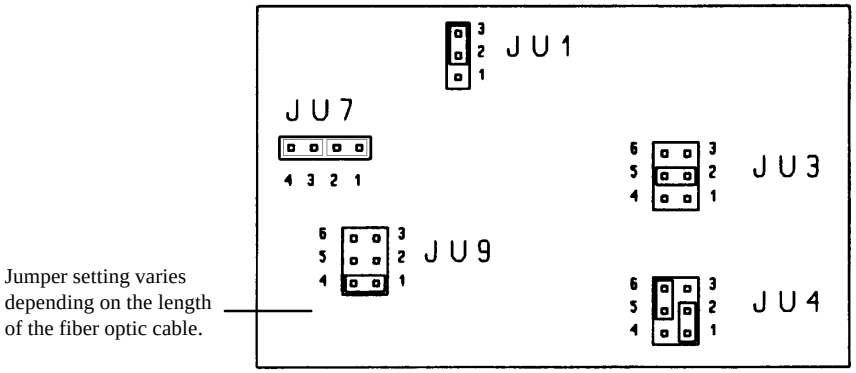


Figure 2-13 Jumper Selection for 20 mA Current Loop Active Transmit, Passive Receive

Jumper Configuration for RS-232C Printers and Computer Interfacing

The following jumper configuration allows Mettler Toledo printer models 8844, 8856, and 8865 to use the RS-232C output. This jumper configuration also enables the receipt of ASCII control characters from a host computer through the RS-232 port.

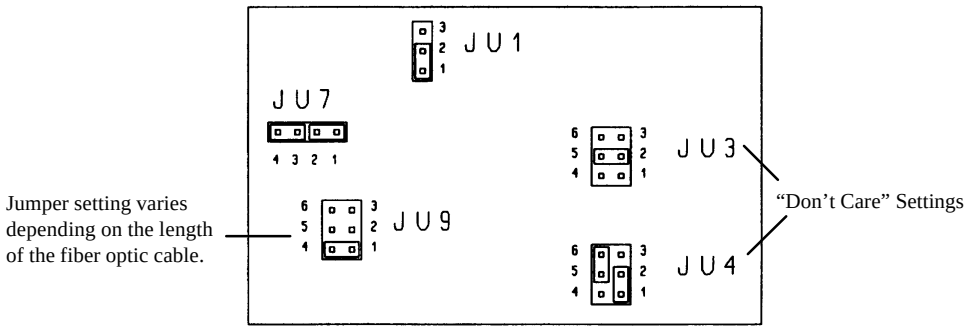


Figure 2-14 Converter Jumper Selection for RS-232 Printer and Computer Interfacing

Dual Channel Fiber Optic Converter Interconnection

The Dual Channel Fiber Optic Converter interfaces to Mettler Toledo printers and accessories through a DB-25 F connector.

The 20 mA current loop interface has superior electrical noise immunity and is recommended for applications in industrial environments such as on the factory floor where long cable runs are required.

The following tables give connection information to printers and accessories. The connection information applies to both 20 mA current loop and RS-232C connections. The maximum recommended cable length is 1000 feet (320 m) for 20 mA current loop and 50 feet (15 m) for RS-232. A shielded twisted pair cable of at least 24 gauge is recommended.

Fiber Optic Converter to Printer Interconnect Cabling						
Fiber Optic Converter		**Mettler Toledo Printer Model**				
Pin	**Description**	**307**	**8806 8860 Desk**	**8860 WD**	**8844 8856 8865**	**8855**
2	TxD (RS-232)	N.C.	N.C.	N.C.	3	N.C.
3	RxD (RS-232)	N.C.	N.C.	N.C.	N.C.	N.C.
7	Logic Ground	N.C.	N.C.	N.C.	7	N.C.
8	+RxD (20 mA)	N.C.	11	N.C.	N.C.	N.C.
9	+TxD (20 mA)	6	16	H	N.C.	3
10	–RxD (20 mA)	N.C.	22	N.C.	N.C.	N.C.
22	–TxD (20 mA)	7	18	K	N.C.	22
None	Jumpers	None	12-23	None	None	None

Fiber Optic Converter to Accessory Interconnect Cabling				
Fiber Optic Converter		**Mettler Toledo Accessory Model**		
Pin	**Description**	**3015 TB1**	**8623**	**8617 TB2 9323 9325**
2	TxD (RS-232)	5*	2*	2*
3	RxD (RS-232)	N.C.	N.C.	N.C.
7	Logic Ground	2	3	3
8	+RxD (20 mA)	3	N.C.	N.C.
9	+TxD (20 mA)	5*	8*	8*
10	–RxD (20 mA)	4	N.C.	N.C.
22	–TxD (20 mA)	6	10	9
None	Jumpers	None	12-23	None

* RS-232 or 20 mA, but not both at the same time.

Please refer to the Fiber Optic Technical Manual (P/N A900309 00A) for complete details on the Dual Channel Fiber Optics converter.

Fiber Optic Converter to PC Interface Cable			
Fiber Optic Converter		**Computer**	
Pin	**Description**	**DB-25-S**	**DB-9-S**
2	TxD (RS-232)	3	2
3	RxD (RS-232)	2	3
7	Logic Ground	7	5
PC Interface Cable Jumpers		4 – 5 – 6 ; 8 – 20	4 – 6 ; 7 – 8

Desk Enclosure Mounting Bracket

The optional mounting bracket lets you mount the 8525 desk enclosure model to any flat surface or to a bench or portable scale column.

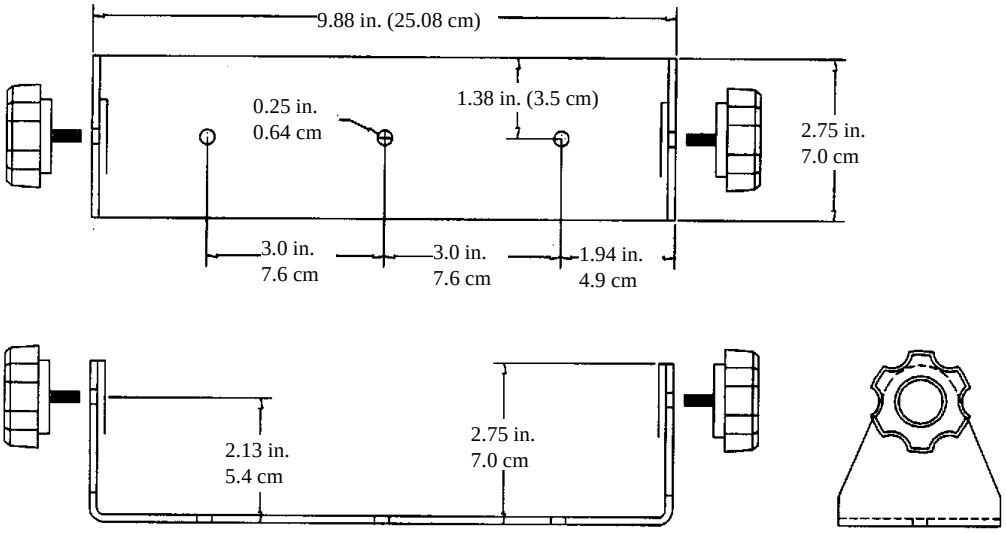


Figure 2-15 Desk Enclosure, Mounting Bracket Dimensions

Weight Unit Legends

The alternate weight unit legend is a separate, preprinted reflector plate that, when installed, displays alternate weight units.

To install an alternate legend plate:

1. Remove power from the 8525.
2. Open the 8525 enclosure as described previously in this chapter. For the desk enclosure, you need only slide the end cap enough to access the Logic PCB. For the wall mount enclosure, you must carefully remove the Logic PCB.
3. Remove the existing legend plate located behind the display sliding it to the right until it is free of the Logic PCB.
4. Remove the protective paper on the back of the legend plate.
5. Center and affix the new legend plate to a “backer” plate (included) so the hole in the backer plate is on the right. Take care not to scratch the new plate.

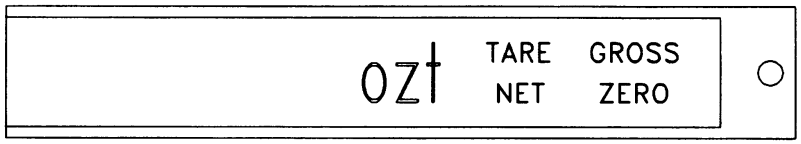


Figure 2-16 Alternate Legend Plate Installation

6. Slide the new plate assembly into the slots behind the display. When the plate is seated properly, the right edge of the backer plate aligns with the right edge of the Logic PCB. Do not force the new plate any further.
7. Replace the Logic PCB and close the enclosure (see the section entitled Sealing the Enclosure).
8. Reconnect the battery pack or the AC power supply.
9. Configure the 8525 for the new legend by selecting the correct alternate weight unit in setup. Chapter 3 Programming and Calibration gives instructions for selecting alternate units.

For the new legend to be clearly visible, you must select the appropriate weighing unit in setup.

Apply Power

Following the connection of the load cell, power supply, and the fiber optic I/O option (if applicable), you are ready to apply power to the 8525.

WARNING !

AC power sources must have proper short circuit and over current protection in accordance with local and national electrical regulations. Failure to provide this may result in bodily injury and/or property damage.

Do not use the battery charger in a hazardous area.

For AC powered units, energize the AC power, then press the ON key. For battery powered units, connect the battery then press the ON key.

Power-up Sequence

The 8525 indicator goes through a series of self tests when it is turned on. These tests confirm normal internal operation. The power-up sequence is as follows:

1. A diagnostic self test is performed on the memory and microprocessor. An error message is displayed if any component fails the test.
2. After the self tests are complete, the 8525 displays the software number (901869). The revision level of the software is indicated by an “L” followed by the revision number [L00].
3. After the software number is displayed, all segments of the display are lit. This verifies operation of all segments. As the display test progresses, the decimal point shifts from the far left position to the far right position, and all four windows around the legends are lit.
4. Next, the 8525 displays dashes [-----] as it establishes communication with the load cell. The 8525 displays weight when successful communication is established. If the 8525 is unable to establish communication, an error is displayed.

The power-up sequence requires approximately 20 seconds and is analogous to “booting” a personal computer.

Scale Build Determination

If a standard scale build is used for your application, you can proceed to Chapter 3 Programming and Calibration. The 8525 can display a maximum of 60,000 increments when connected to a DigiTOL load cell, or 20,000 increments when connected to an analog load cell.

Minimum increment size must be determined before calibration.

The minimum increment size (scale build determination) must be calculated if:

- A nonstandard build is desired
- Analog scale input is used with a lever system conversion
- A FlexMount® or Centerline® analog load cell is used

Minimum Increment Size for DigiTOL Scale Bases

The table below lists the minimum increment sizes possible for the DigiTOL Bench and portable single DLC scale base models (listed by factory number). Find the base you are connecting to the 8525 and compare the desired increment size to the minimum increment size listed.

The minimum increment size selections listed below are not legal-for-trade. **Scales used in legal-for-trade applications MUST NOT BE SMALLER than the minimum increment size (e-min) listed on the scale base's data plate.**

Single DigiTOL Load Cell, Minimum Increment Size			
Base Factory Number	**Load Cell Capacity**	**Minimum Increment Size**	
		lb	**kg**
1996-0001 1997-0001	30 kg	0.0005	0.0005
1996-0002	60 kg	0.001	0.0005
1997-0002 2096-0003 2097-0001	100 kg	0.002	0.001
1996-0003 2096-0001	140 kg	0.005	0.002
2096-0002 2096-0004 2097-0002	300 kg	0.01	0.005
2196-0001 2196-0003 2197-0001	500 kg	0.01	0.005
2196-0002 2196-0004 2197-0002	1000 kg	0.02	0.01

Minimum Increment Size For Analog Scale Input

The minimum increment size for an analog scale input is determined by calculating the microvolts per increment.

To calculate the microvolts per increment:

1. Solve the following equation for µV per increment.

$$\mu V \text{ per Increment} = \frac{\text{Increment Size} \times \text{cell output} \times 15000}{\text{Load Cell Capacity} \times \text{Ratio}}$$

   To use this equation, the increment size, scale capacity, and load cell capacity must all be measured in pounds. If any of these variables are listed in kg, multiply that variable by 2.2046 to convert to lb.

   Load cell output is rated in mV/V (millivolts per volt of excitation), and is marked on the load cell data tag. Mettler Toledo load cells are typically 2 mV/V. Other load cells can range from 1 mV/V to 4.5 mV/V.

   The load cell capacity is the rated capacity marked on the load cell data tag. The ratio is the total number of load cells in the system, or the total lever ratio (if scale is a mechanical lever system conversion).

2. Calculate the total number of increments by dividing the calibrated capacity by the increment size.

   Scales used in legal-for-trade applications MUST NOT have an increment SMALLER than the minimum increment size (e-min) listed on the scale base's data plate.

   The 8525 should never be programmed for less than 0.5 µV per increment in single load cell applications and never less than 0.3 µV per increment in multiple load cell applications.

Sample Calculation

1. Refer to the following example of µV per increment calculation for a Model 2158 floor scale installation.

Scale Capacity	5000 lb
Increment Size	0.5 lb
Load Cell Capacity	2500 lb
Number of Cells	4
Cell Output	2 mV/V
Excitation Voltage	4 VDC

2. Use the µV per increment formula given previously to calculate the µV per increment.

$$\mu V \text{ per Increment} = \frac{0.5 \text{ lb} \times 2 \text{ mV / V} \times 4 \times 1000}{2500 \text{ lb} \times 4 \text{ load cells}} = 0.4 \ \mu V/\text{inc.}$$

In multi-cell applications, the 8525 should not be programmed for less than 0.3 µV per increment.

3. Divide the scale capacity by the increment size to determine the total number of increments.

$$\frac{5000 \text{ lb}}{0.5 \text{ lb}} = 10{,}000 \text{ total Increments}$$

Seal the Enclosure

After the 8525 is properly installed and you have configured the unit as directed in Chapter 3 Programming and Configuration, you are ready to seal the enclosure.

Desk Enclosure

To seal the desk enclosure:

1. Remove power from the 8525.

Do not over-tighten the screws. Over-tightening may strip the threads.

2. Replace the end cap, securing it with the eight screws you removed when opening the unit. Do not pinch any of the wiring harnesses between the end cap and the enclosure.

Wall Mount Enclosure

To seal the Wall Mount enclosure:

1. Remove power from the 8525.
2. Clean the rubber cover gasket and apply an even bead of the sealant (P/N *118251 provided with the unit) to ensure a water-tight seal.
3. Close each of the fasteners over the lip of the front cover. For each fastener with a wing-type handle, tighten the handle turning it 180° clockwise. For the lower-right latch, use an 11/16 in. (17.5 mm) wrench to tighten.
4. Wipe away any excess sealant and secure the latch handles.

Setpoint Installation Considerations

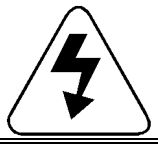
When installing the 8525 where setpoint outputs are used, please read and take the following precautions to ensure safe and reliable operation.

WARNING

When the 8525 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.

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.



WARNING

Failure to observe these precautions could result in bodily injury and/or property damage.

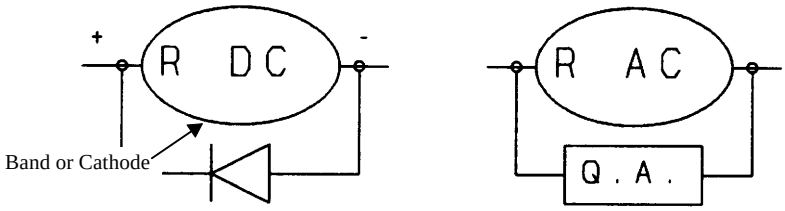
Power Precautions—3015 Setpoint Control Module

The 8525 and the setpoint outputs of the 3015 setpoint control must be operated from separate AC power sources.

Inductive Load Precautions

An inductive load can generate a “back” EMF voltage spike of several hundred volts. If unsuppressed, this voltage spike can feed back into the 8525 and cause erratic operation or failure. To prevent voltage spikes and the problems they cause, you must install a suppresser as close to the load as possible.

- For DC power applications, install a reverse biased diode (P/N 124390 00A) across the coil as shown. (Observe polarity.)
- For AC power applications, install an R-C network (P/N 118874 00A) across the coil.



- For applications with large solenoids or relay coils that are located near the scale or that share power with setpoint outputs, install Quencharcs™.

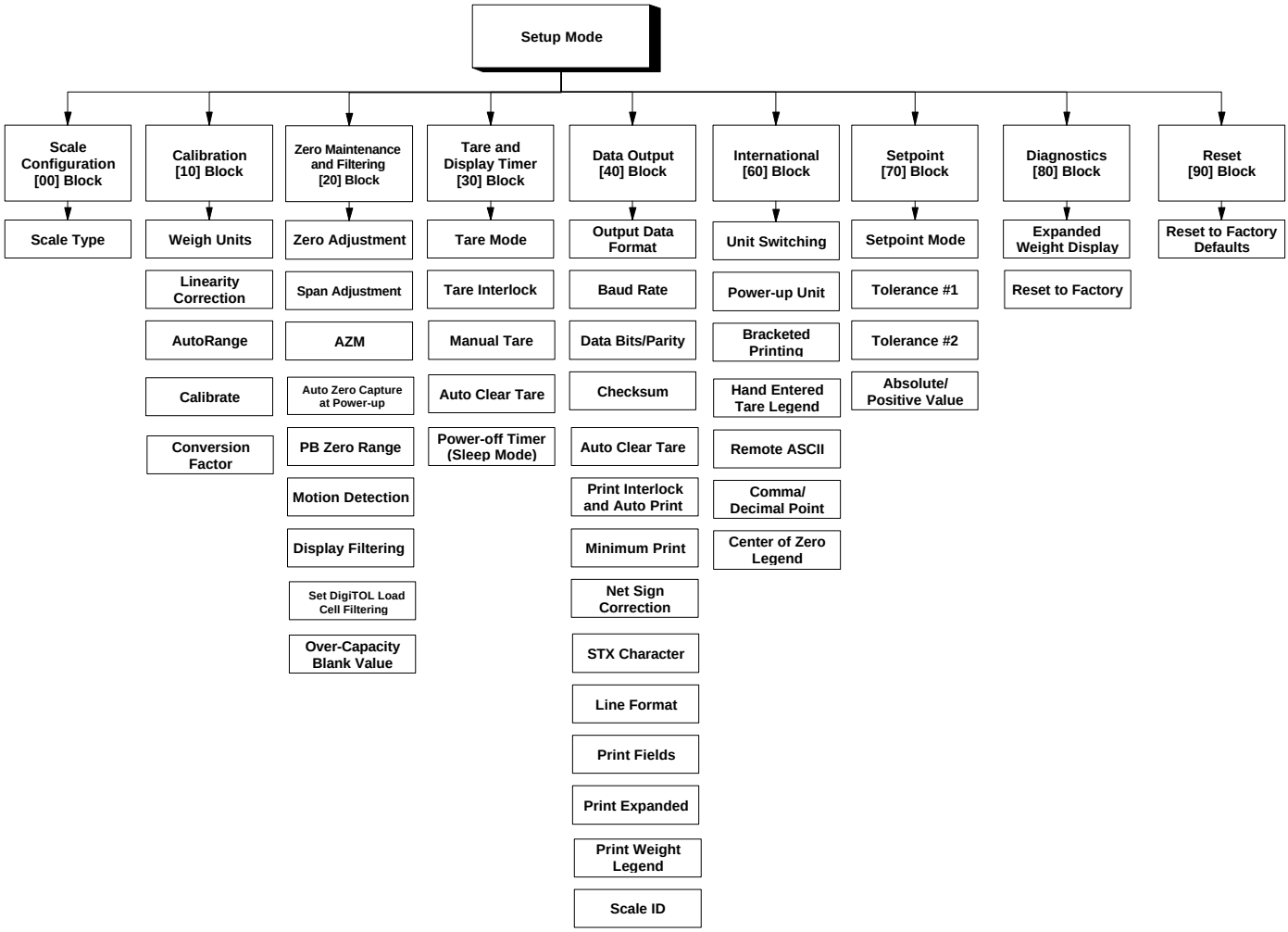
Static Discharge Precautions

Non-conductive materials such as flour, plastic, and rubber can generate static electricity when fed onto a scale hopper. The scale base, hopper, 8525, and all conductive feeders to the scale (conveyors, chutes, and pipes) must be electrically bonded together and connected to a true-earth ground.

3

Programming and Configuration

The 8525 operating functionality is determined by how you configure individual parameters of "program blocks" in setup mode. This chapter discusses basic features of program blocks and how to configure the specific parameters ("sub-blocks") of each. The following diagram gives an overview of the program blocks and sub-blocks:



General Information

The 8525 setup parameters are divided into nine program blocks. Each program block is divided into sub-blocks where you select and configure individual operating parameters. This chapter describes each program block and sub-block in detail. Appendix 1 gives an overview of setup options that you can use as a “quick reference” guide. You should read through this chapter and configure each parameter before you begin using the 8525 indicator.

The 8525 program blocks use several standard conventions. This section gives general information on keystroke functions, navigation procedures, and program block access and exit.

Keystroke Functions

Throughout the manual we make a distinction between key names and commands. Key names such as OFF, ON and ENTER are presented in all capital letters, and commands such as “select” and “enter” are presented in lower case. For example:

“Press ENTER...”—means to press the ENTER key on the key pad.

“Select an option...”—means to press the numeric key representing an item, then press ENTER.

The following keys are commonly used when configuring the program blocks.

Numeric Keys are used to access a particular program block and parameter, and select an option in a program block. Each program block and sub-block has a corresponding number that is entered to access its parameters. Each parameter also has a numeric assignment that is used to select the desired option. For some sub-blocks, the 0 key is used to scroll through a list of options.

ENTER completes a response when a selection has been made from a list of options. Press ENTER to accept the displayed option for a parameter and continue to the next prompt. You do not need to press ENTER for the 8525 to accept a response that has been keyed in.

CLEAR clears the response and allows you to reenter data. This is similar to the backspace key on a computer keyboard.

ZERO allows you to back up to the previously displayed prompt, one step at a time.

Program Block Access

Before you can set program block parameters, you must enter the setup mode. Open the 8525 as described in Chapter 2 of this manual and short jumper W1 pins as shown in Figure 3-1 below. Jumper W1 is located on the left edge of the Main PCB.

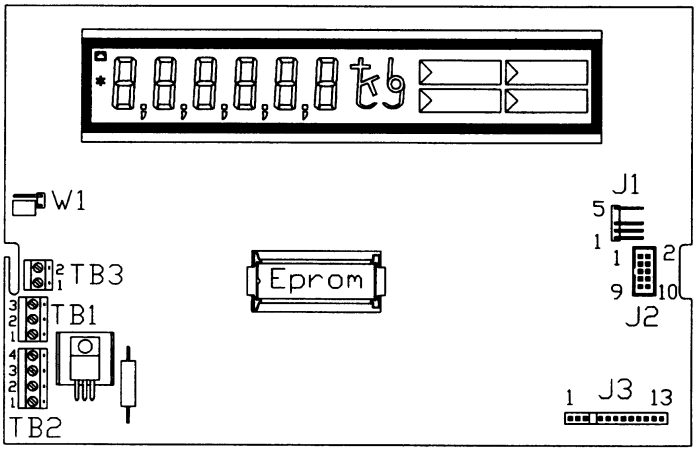


Figure 3-1 8525 Main PCB

When the jumper is shorted, the display shows two dashes [--] indicating that you are in setup mode.

When you are finished configuring the indicator, you must remove the short over jumper W1.

General Programming Procedure

After accessing setup mode, you configure each program block and sub-block according to the procedure outlined below. If you are configuring the 8525 for the first time, you should begin with the first sub-block of the first program block and progress through each program block to configure the unit for your particular application or environment.

1. At the **[--]** display prompt, use the numeric keys to type the two digit number corresponding to the program block you wish to access.
2. Press ENTER to access the program block. The 8525 automatically advances to the first sub-block in the program block. The display shows the number of the sub-block you have accessed and the last setting entered for that sub-block.

3. Press ENTER to accept the value displayed, or type a new value. The 8525 saves the configuration and advances to the next sub-block or displays the **[--]** prompt if no sub-blocks remain in the program block.
4. Repeat steps 1 through 3 to configure another program block.

For example, to access the Scale Configuration program block (the first program block) and configure the first sub-block, at the **[--]** prompt, type **00**, then press ENTER. The 8525 automatically displays **[01 1]**. Press **0** to display the DigiTOL Load Cell option, then press ENTER to select that option. The 8525 saves the scale type configuration and displays the **[--]** prompt indicating that there are no remaining sub-blocks in the 00 program block.

If the program block has more than one sub-block, the 8525 automatically advances to the next sub-block when you press ENTER.

Program Block Exit

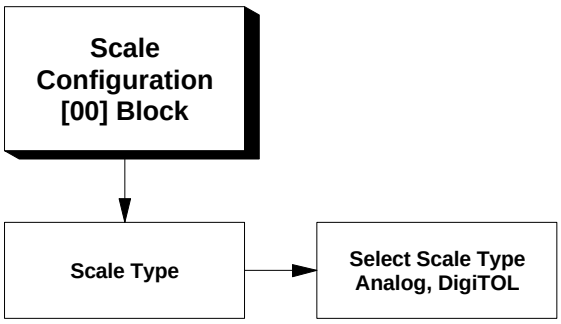
To exit setup:

1. Advance from the current location in the program block until the display shows the **[--]** prompt. If you are in the middle of a program block, you must step through each sub-block until the **[--]** prompt appears.
2. Remove the shorting block over jumper W1 pins. When the shorting block is removed, the display blanks for several seconds before returning to normal operating mode.

The following sections describe each program block.

Scale Configuration Program Block

The Scale Configuration program block lets you select the load cell type. Scale Configuration has only one sub-block. The following diagram describes this program block:



1. Scale Type Sub-block

To select the load cell type:

1. At the **[--]** prompt, enter 00 to access the Scale Configuration. The 8525 advances to the program block then displays [01 *]. (The asterisk represents the last setting entered.)
2. At the **[01 *]** prompt, press ENTER to accept the displayed selection, or enter the single-digit number corresponding to the desired scale type. Options include:

   - **0**—DigiTOL Load Cell
   - **2**—Analog Load Cell

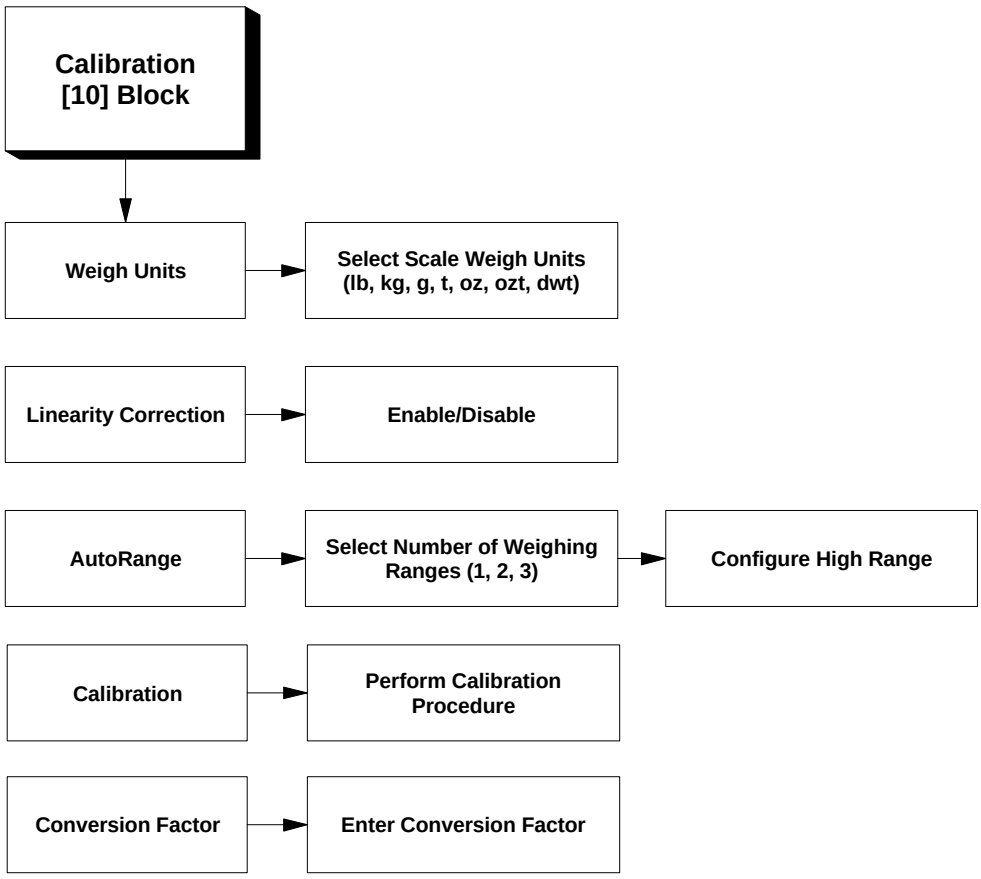
   *Options 1 and 3 are not used at this time.

   When you have configured the program block, the 8525 displays the **[--]** prompt. Continue to the next program block or exit setup mode.

Calibration Program Block

The Calibration program block has six sub-blocks that let you configure parameters that affect how your 8525 will be calibrated, then prompt you through the calibration process.

The following diagram describes this block:



1. Weigh Units Sub-block

The Weigh Units sub-block lets you select the unit of weight the 8525 will use for calibration and for display in normal operating mode.

To select weigh units:

1. At the **[--]** prompt, enter 10 to access the Calibration program block. The 8525 advances to the Calibration program block then displays [11 *] indicating the weigh units sub-block. (The asterisk represents the last setting entered.)
2. At the **[11 0]** prompt, press ENTER to accept the displayed value, or enter the single-digit number corresponding to the unit of weight you wish to use. Options include:

   Unit switching is disabled if you select a unit other than lb or kg.

   - **0**—lb (pounds)
   - **1**—kg (kilograms)
   - **2**—g (grams)
   - **3**—t (tons)
   - **4**—oz (ounces)
   - **5**—ozt (troy ounces)
   - **6**—dwt (pennyweight)
3. Continue to the next sub-block.

2. Linearity Correction Sub-block

Linearity correction lets you calibrate the scale using calibration reference weights at zero, mid-scale, and full-scale. Linearity correction allows for compensation of the non-linear performance of a load cell(s) or weighing systems. If linearity correction is enabled, the calibration process requires additional steps. The 8525 must be calibrated **after** you enable linearity correction.

To enable or disable linearity correction:

1. At the **[12 *]** prompt, select 0 or 1 to disable or enable linearity correction.
2. Continue to the next sub-block.

3. AutoRange Sub-block

The AutoRange sub-block lets you specify one, two, or three weighing ranges.

If two or three ranges are selected, then two or three different increment sizes are used over portions of the weighing range. For example, consider a scale configured for two ranges. If the high increment is 0.5, the indicator displays weight by 0.1 increments through the low range until weight reaches the division point, then by 0.5 increments through the second range to capacity.

To configure the AutoRange sub-block:

1. At the **[13 *]** prompt, press ENTER to accept the displayed number of weighing ranges, or enter the single-digit number corresponding to the number of ranges you wish to use. Options include:

   - **1**—Single range **(must be selected for legal-for-trade applications)**
   - **2**—Two ranges
   - **3**—Three ranges

   If 1 Range is Selected

   - At the **[14 xxxx]** prompt, use the numeric keys to enter the total capacity for the scale that is connected to the 8525 indicator. Scale capacity is entered using the unit of measure selected in the weighing units sub-block.
   - At the **[15 5]** prompt, press ENTER to accept the increment size, or enter a new increment size.

     The increment size is only selectable for single-range setup. The high range for a dual-range setup is fixed at 5 and the low range at 1. For triple-range setup, the high range increment is fixed at 5, mid range at 2, and low range at 1.

     First, press the 0 key to position the decimal point as desired.

     Next, use the numeric keys to select the desired numeric value for the increment. Options include:

     1—Accepts the current decimal point location with increment size 1

     2— Accepts the current decimal point location with increment size 2

     5— Accepts the current decimal point location with increment size 5

   - Continue to the next sub-block.

If 2 Ranges are Selected

- At the **[14 xxxx]** prompt, use the numeric keys to enter the total capacity for the scale that is connected to the 8525 indicator. Scale capacity is entered using the unit of measure selected in the weighing units sub-block.
- At the **[15 5]** prompt, press the 0 key to position the decimal point as desired, then press 5. The numeric value for the high increment is fixed at 5; therefore, the actual increment size can be selected as 5, 0.5. 0.05, or 0.005 depending on the location of the decimal point.
- At the **[17 1]** prompt, press ENTER to accept the default low range increment. The numeric value for the low increment is fixed as 1 and uses the same decimal point location that you selected for the high increment size.
- Continue to the next sub-block.

If 3 Ranges are Selected

- At the **[14 xxxx]** prompt, use the numeric keys to enter the total capacity for the scale that is connected to the 8525 indicator. Scale capacity is entered using the unit of measure selected in the weighing units sub-block.
- At the **[15 5]** prompt, press the 0 key to position the decimal point as desired, then press 5. The numeric value for the high increment is fixed at 5; therefore, the actual increment size can be selected as 5, 0.5. 0.05, or 0.005 depending on the location of the decimal point.
- At the **[16 2]** prompt, press ENTER to accept the default mid range increment size. The numeric value for the mid increment is fixed at 2 and uses the same decimal point location that you selected for the high increment size.
- At the **[17 1]** prompt, press ENTER to accept the displayed low range increment size. The numeric value for the low increment is fixed at 1 and uses the same decimal point location that you selected for the high increment size.
- Continue to the next sub-block.

4. Calibration Sub-block

Calibration involves emptying the scale then placing a known test weight on the platform and allowing the 8525 to capture values for zero and span. You can calibrate a scale with or without linearity correction. The 8525 prompts you through the calibration process.

To begin the calibration process, at the **[18]** prompt, press 1. Alternately, you can press 0 to bypass the calibration sub-block.

Calibration Without Linearity Correction

1. At the **[E SCL]** prompt, empty the scale, then press ENTER. The indicator counts down from 16 to 1 as a zero reference is captured.
2. At the **[Add Ld]** prompt, place a test weight on the platform equaling the scale's capacity, or as close to full capacity as practical. Press ENTER (the display will blank).
3. At the blank display, use the numeric keys to enter the value of the test weight you used in step 2, then press ENTER**. The test weight used must be a multiple of the increment size.** The indicator counts down from 16 to 1 as span is calculated.
4. At the next **[E SCL]** prompt, remove the test weight and press ENTER. The indicator counts down from 16 to 1 as the zero reference is verified.

The second [E SCL] prompt generally appears only for analog load cells. This prompt may appear for DigiTOL load cells if the increment size is unusually small.

The 8525 displays **[CAL d]** when calibration is done. This prompt clears automatically after approximately two seconds and the indicator returns to the **[--]** prompt.

Continue to the next program block.

Calibration With Linearity Correction

1. At the **[E SCL]** prompt, remove any weight from the scale platform, then press ENTER. The indicator counts down from 16 to 1 as a zero reference is captured.
2. At the **[Add FL]** prompt, place a test weight on the platform equaling the scale's full capacity, or as close to full capacity as practical. Press ENTER. The display blanks when you press ENTER.
3. At the blank display, use the numeric keys to enter the value of the test weight you used in step 2, then press ENTER. **The test weight used must be a multiple of the increment size.** The indicator counts down from 16 to 1 as span is calculated.
4. At the **[Add LO]** prompt, place a test weight on the platform equaling 50% of the scale's full capacity or as close to half-capacity as practical. Press ENTER. The display blanks when you press ENTER.
5. At the blank display, use the numeric keys to enter the value of the test weight you used in step 4, then press ENTER. The indicator displays a countdown from 16 to 1 as span is calculated.
6. At the next **[E SCL]** prompt, remove the test weight from the scale and press ENTER. The indicator displays a countdown from 16 to 1 as the zero reference is verified.

The second [E SCL] prompt generally appears only for analog load cells. This prompt may appear for DigiTOL load cells if the increment size is unusually small.

The 8525 displays **[CAL d]** when calibration is done. This prompt clears automatically after approximately two seconds.

5. Conversion Factor Sub-block

The Conversion Factor is NOT Legal for Trade.

The Conversion Factor sub-block lets you enter a multiplier that will convert the currently selected weight unit to an alternate unit.

1. At the **[19 *]** prompt, press the "0" key then ENTER to position the decimal point for the conversion value that you will enter in step 2.
2. At the **[19A]** prompt, use the numeric keys to enter a conversion value, then press ENTER. The 8525 uses the conversion value to convert weight in calibrated units to the desired alternate unit (keeping the decimal point location selected above).

   If you make an error when entering the conversion value, press CLEAR, then reenter the correct value.

   If you enter a conversion value other than zero, the LB/KG key toggles between the calibrated unit and the alternate unit. If you enter a conversion value of zero, the LB/KG key toggles between pounds and kilograms in normal operating mode (alternate units disabled).
3. At the **[19B]** prompt, press the "0" key to select the decimal place for the alternate weight unit (as calculated using the conversion factor), then press ENTER. Options include:

   - 0.000001 0.100000
   - 0.000010 1.000000
   - 0.000100 10.00000
   - 0.001000 100.0000
   - 0.010000

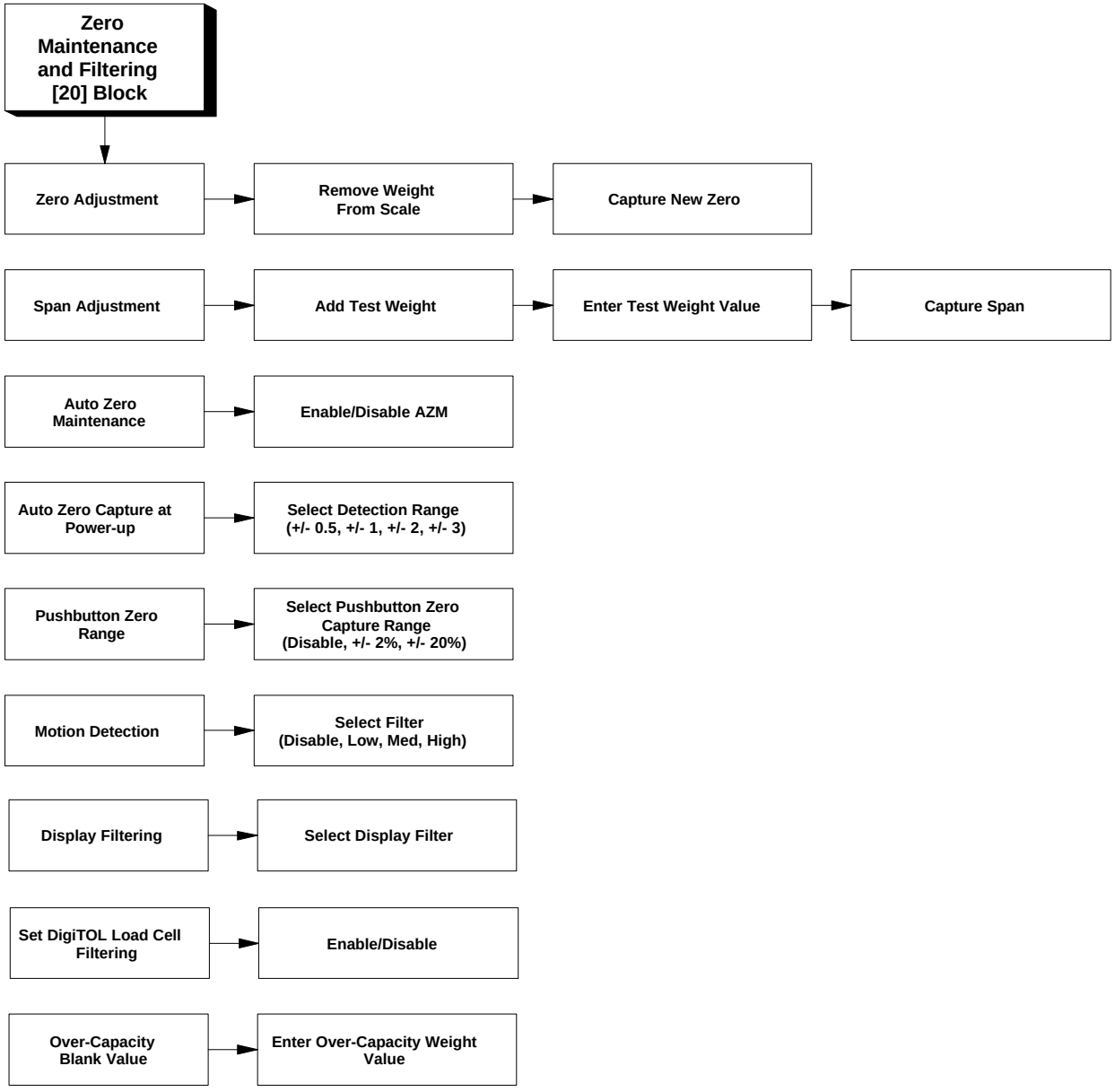
   Converted values are rounded to the selected decimal place before being displayed or printed.

Continue to the next program block or exit setup mode.

Zero Maintenance and Filtering Program Block

The Zero Maintenance and Filtering program block has nine sub-blocks that let you configure parameters affecting zero and span, vibration rejection and compensation, and over-capacity blanking.

The following diagram describes this block:



1. Zero Adjustment Sub-block

The zero value is the scale-empty reference as determined during calibration. The Zero Adjustment block lets you re-establish this value to compensate for any change such as material build-up since the last calibration. The zero value captured during the adjustment process is stored in non-volatile memory.

To adjust zero:

Remove any residual weight on the platform so the 8525 captures zero as accurately as possible.

1. At the **[--]** prompt, enter 20 to access the Zero Maintenance and Filtering program block. The 8525 advances to the program block then displays [21] indicating the zero adjustment sub-block.
2. At the **[21]** prompt, press ENTER to accept the "no adjust" default response (0), or press 1 to begin the zero adjustment process. The 8525 automatically captures and stores the current weight on the scale as the new center of zero reference.
3. Continue to the next sub-block.

2. Span Adjustment Sub-block

The Span Adjustment feature lets you make minor span adjustments without completely recalibrating the scale. **You must place known test weights on the scale prior to entering span adjust.** The weight must be a multiple of the increment size.

To adjust span:

1. Place a test weight of known value on the scale platform.
2. At the **[22 0]** prompt, press ENTER to accept the "no adjust" default response (0), or press 1 to begin the span adjustment process. If you press 1, the display goes blank.
3. At the blank display, use the numeric keys to enter the known value of the weight placed on the platform in step 1, then press ENTER. The 8525 automatically captures and stores a new span.
4. Continue to the next sub-block.

3. Auto Zero Maintenance Sub-block

Auto Zero Maintenance (AZM) automatically compensates for small changes in zero resulting from material build-up or temperature changes. This sub-block lets you select the weight range (±) around gross zero within which the 8525 will capture zero. If residual weight on the scale exceeds the weight range, the 8525 will not capture zero.

To configure auto zero maintenance:

1. At the **[23 2]** prompt, press ENTER to accept the default weight range, or use the numeric keys to select the desired AZM range. The following table gives options for AZM:

Option	AZM Range	Legal-For-Trade Applications	AZM Mode
0	AZM Disabled	Not Applicable	Gross weight mode at gross zero.
1	±0.5 Increment	Animal, Food, and Retail Scales	
2	±1 Increment	All Other Industrial Scales	
3	±3 Increment	Vehicle Scales	
4	±0.5 Increment	Animal, Food, and Retail Scales	Gross or Net weight mode at zero. This is used for applications that require the scale to be in net weight mode for long periods of time and allows the 8525 to compensate for changes any time the scale is empty (net or gross zero).
5	±1 Increment	All Other Industrial Scales	
6	±3 Increment	Vehicle Scales	

2. Continue to the next sub-block.

4. Auto Zero Capture at Power-up Sub-block

The Auto Zero Capture at Power-up feature automatically zeros the indicator at power-up if weight on the scale is within a given range. If the weight on the scale is beyond the designated range, the indicator will not capture zero until weight falls within the range.

To configure auto zero capture at power-up:

1. At the **[24 1]** prompt, press ENTER to accept the default weight range, or use the numeric keys to select the desired weight range. Options include:

   You should disable auto zero at power-up for tank or hopper scale applications.

   - **0**—Disables auto zero capture at power-up
   - **1**—Enables auto zero capture at power-up if weight on the scale is within ± 2% of the scale capacity
   - **2**—Enables auto zero capture at power-up if weight on the scale is within ± 10% of the scale capacity
2. Continue to the next sub-block.

5. Pushbutton Zero Range Sub-block

Pushbutton Zero compensates for material build-up on the scale and lets you recapture zero by pressing the ZERO key. The pushbutton zero range is based on the zero reference recorded during the calibration process. Pushbutton zero is not stored in non-volatile memory and is lost on power-down.

To configure pushbutton zero:

1. At the **[25 2]** prompt, press ENTER to accept the displayed zero range, or use the numeric keys to select a different zero range. Options include:
   - **0**—Disables pushbutton zero capture
   - **1**—Enables pushbutton zero capture if weight on the scale is within ± 2% of the scale capacity
   - **2**—Enables pushbutton zero capture if weight on the scale is within ± 20% of the scale capacity
2. Continue to the next sub-block.

6. Motion Detection Sub-block

The motion detection feature determines when a no-motion condition exists on the scale platform. The sensitivity level determines what is considered stable. Printing, pushbutton zero, and tare entry will wait for scale stability before carrying out the command.

Stability detection occurs over a predefined period of time and allows a predetermined “acceptable” amount of motion (in scale increments).

To configure the Motion Detection sub-block:

1. At the **[26 2]** prompt, press ENTER to accept the default motion detection option, or use the numeric keys to select one of the following options:

   Legal-for-trade applications must select the option based on the type of scale in use.

   - **0**—Disables motion detection
   - **1**— ± 0.5 increment. Legal-for-trade animal, food, and retail scales
   - **2**— ±1 increment. Legal-for-trade and all other industrial scales
   - **3**— ± 2 increment.
   - **4**— ± 3 increment. Legal-for-vehicle scales
2. Continue to the next sub-block.

7. Filtering Rate Sub-block

The 8525 uses a lowpass, multi-pole digital filter to minimize the effects of vibration on the displayed weight. This sub-block lets you select the amount of filtering. The lighter the filter, the faster the indicator responds to a change in weight.

To configure the sub-block:

1. At the **[27 1]** prompt, press ENTER to accept the displayed filter selection, or select another filter setting:

   Material feeding applications should disable or use low filtering to get the fastest response to weight change.

   - **0**—Disables vibration filtering
   - **1**—Low filtering
   - **2**—Medium filtering
   - **3**—High filtering
2. Continue to the next sub-block.

8. DigiTOL Load Cell Filtering Sub-block

This sub-block does not appear if analog load cell is selected.

This sub-block lets you select an internal filter if a DigiTOL load cell is selected in the Scale Configuration program block (step 01).

To configure the DigiTOL load cell filter:

1. At the **[27A 1]** prompt, press ENTER to enable the internal load cell filter or press 0 to disable the filter.

9. Over-Capacity Blanking Sub-block

The Over-Capacity Blanking sub-block lets you enter a weight value beyond which the display blanks. If blanked, weight on the scale must fall below the blanking value before the 8525 will display weight again.

To enter the over-capacity blanking value:

1. At the **[28]** prompt, use the numeric keys to enter the weight at which the indicator will blank. Legal-for-trade application must use 105% of scale capacity.
2. Press ENTER.

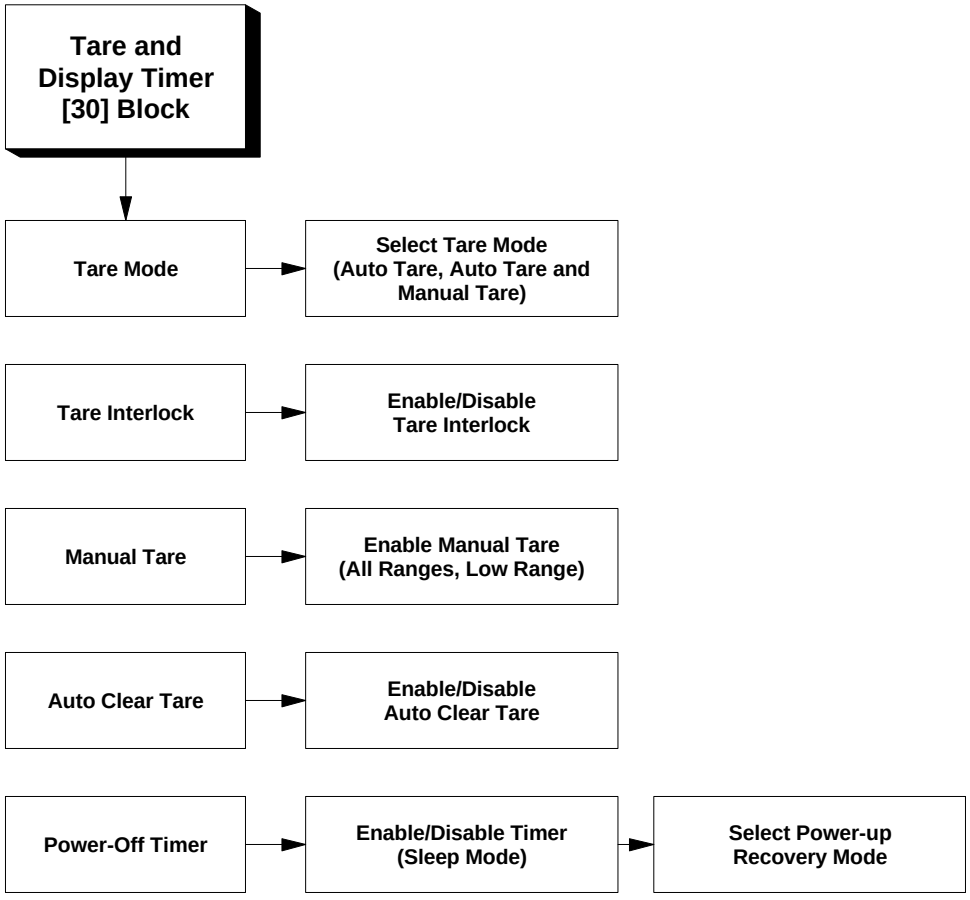
When the Zero Maintenance and Filtering program block is configured, the 8525 displays the **[--]** prompt.

Continue to the next program block or exit setup mode.

Tare and Display Timer Program Block

The Tare and Display Timer program block has five sub-blocks that let you configure the 8525's tare features as well as a timer feature that causes the 8525 to power-down after a predetermined period of inactivity.

The following diagram describes this program block:



1. Tare Mode Sub-block

The Tare Mode sub-block lets you select how tare weight can be entered. The 8525 supports semi-auto tare and manual tare. When a tare value is entered, the 8525 displays subsequent weight on the platform as net weight.

Semi-auto tare is used generally for applications where the weight of an empty container is not known. Manual tare is used generally for applications where the empty weight of a container is known.

The 8525 also supports chain tare, or multiple tares. Chain tare is accomplished when the TARE key is pressed while the indicator is in net mode.

To configure tare mode:

1. At the **[--]** prompt, enter 30 to access the Tare and Display program block. The 8525 displays [31 2] indicating the tare mode sub-block.
2. At the **[31 2]** prompt, press ENTER to accept the displayed mode, or use the numeric keys to select a different tare mode. Options include:
   - **0**—Disables tare
   - **1**—Enables Auto Tare only
   - **2**—Enables Semi-auto Tare and Manual Tare
3. Continue to the next sub-block.

2. Tare Interlock Sub-block

The tare interlock feature, if enabled, places certain limitations on how tare values can be cleared and entered in legal-for-trade applications. Specifically, tare interlock meets legal-for-trade requirements by making the following restrictions:

- Tare weights can be cleared only at gross zero (with the scale empty)
- Tare can be entered only when the scale is in gross mode
- Manual tare can be entered only at gross zero (with the scale empty)
- Previous tare values must be cleared before a new tare value can be entered (chain tare disabled)
- The gross and net legend windows do not blank during scale motion

To configure tare interlock:

1. At the **[32 0]** prompt, press ENTER to accept the displayed option, or use the numeric keys to select another:
   - **0**—Disables tare interlock
   - **1**—Enables tare interlock
2. Continue to the next sub-block.

3. Manual Tare Sub-block

The Manual Tare sub-block lets you enable or disable manual tare entry in all weight ranges or in low range only when AutoRange is enabled. If manual tare is restricted to the low weight range, the 8525 will not accept any tare value greater than the low range capacity.

The manual tare configuration does not affect semi-auto tare; however, it does disable chain tare.

To configure the sub-block:

1. At the **[33 0]** prompt, press ENTER to accept the displayed option, or use the numeric keys to select another:
   - **0**—Enables manual tare up to total (high range) scale capacity
   - **1**—Enables manual tare in the low weight range only
2. Continue to the next sub-block.

4. Auto Clear Tare Sub-block

Auto Clear Tare, if enabled, allows the 8525 to clear tare automatically when the scale returns to the center of zero (within ±0.25 increments), and after settling to a no motion condition at least 10 increments above net zero.

The CLEAR key still functions to clear tare manually regardless of the auto clear tare configuration.

To configure auto clear tare:

1. At the **[34 0]** prompt, press ENTER to accept the displayed option, or use the numeric keys to select another:
   - **0**—Disables auto clear tare
   - **1**—Enables auto clear tare
2. Continue to the next sub-block.

5. Power-off Timer Sub-block (Sleep Mode)

The power-off timer (sleep mode) feature maximizes battery life by powering down after a preset period of time with no keyboard activity or weight changes that signify motion. The 8525 powers itself down automatically after the selected number of minutes of inactivity. The power-up recovery mode feature lets you configure the 8525 to power back up with the same zero and tare values that were set when it powered down. **Power-up recovery cannot be used for legal-for-trade applications**.

To configure the power-off timer:

Pressing Function (F) then 9 causes the 8525 to go into Sleep Mode.

1. At the **[35 *]** prompt, press ENTER to accept the current setting, or use the numeric keys to enter the number of minutes before power-down (01 to 99). A value of zero disables the power-off timer.
2. At the **[35A 0]** prompt, select the desired power-up recovery mode:
   - **0**—disables power-up recovery of zero and tare values; however, the 8525 power-off timer is still enabled.
   - **1**—enables the 8525 to power-up with the same zero and tare values that were set when it powered down.

Zero Capture at Power-up must be disabled to use the power-up recoverv mode.

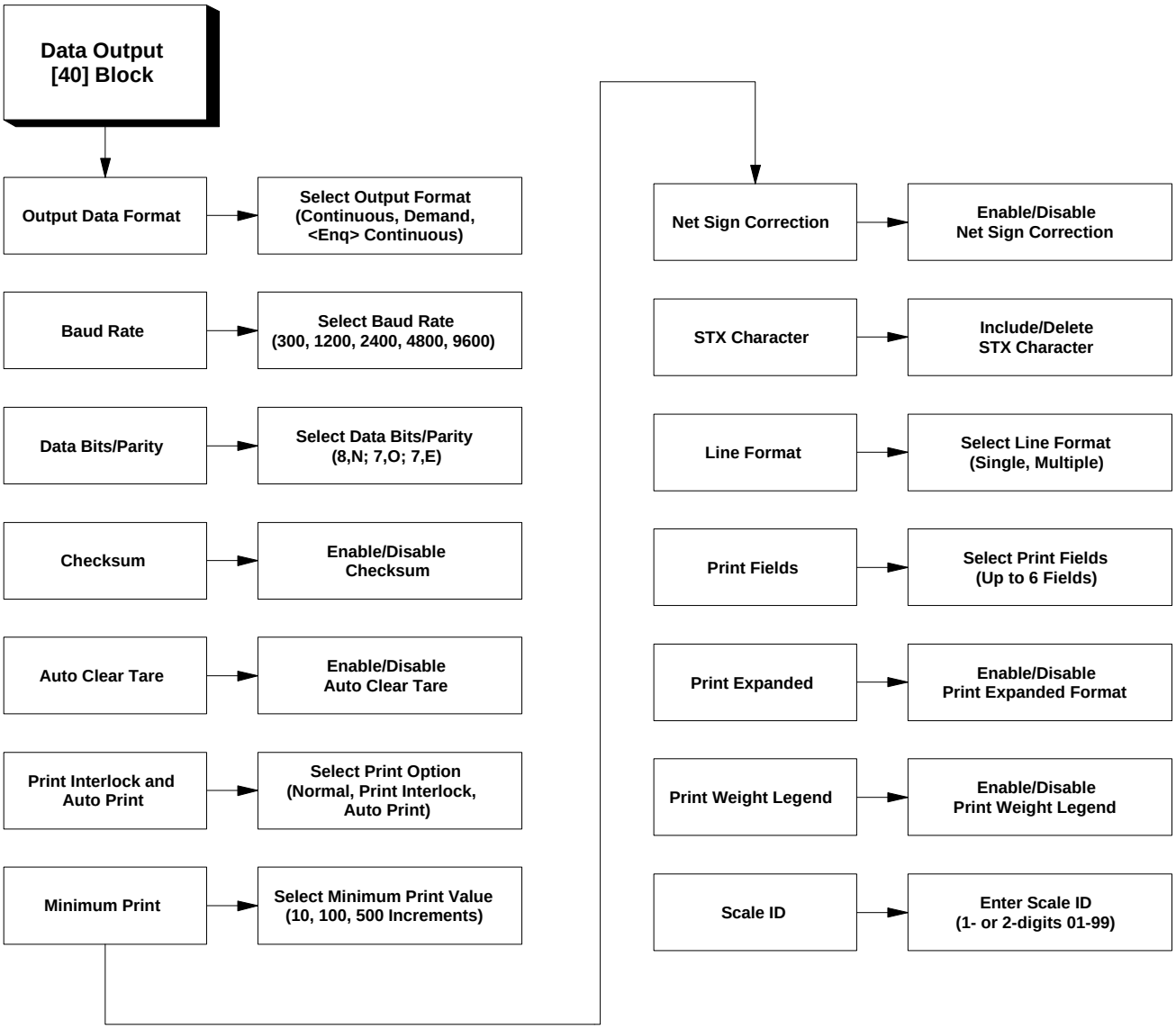
When the Tare and Display Timer program block is configured, the 8525 displays the **[--]** prompt.

Continue to the next program block or exit setup mode.

Data Output Program Block

The Data Output program block has 14 sub-blocks that let you set communications parameters and configure the printing format.

The following diagram describes this program block:



1. Output Data Format Sub-block

The 8525 supports three modes of data output: demand, standard continuous, and <Enq> continuous.

Demand output refers to data sent from the 8525 when a print request is received. The 8525 can receive a print request from the PRINT key, from the Auto Print function, or from an external request. The demand output format varies depending on the scale situation when the print request is made. Details on the demand output format are given in Appendix 2 at the back of this manual.

Standard continuous output refers to data that is sent continuously from the 8525 at regular intervals. The 8525 outputs data every A/D update. Details on the standard continuous output format are given in Appendix 2 at the back of this manual.

<Enq> continuous output refers to data that is sent from the 8525 when requested by a remote computer. <Enq> continuous output is similar to standard continuous output and uses the same format. Details on the <Enq> continuous output format are given in Appendix 2 at the back of this manual.

To select the data output mode:

1. At the **[--]** prompt, enter 40 to access the Data Output program block. The 8525 advances to the program block then displays [41 *] indicating the output data format sub-block.
2. At the **[41 *]** prompt, press ENTER to accept the current output data format selection, or use the numeric keys select another:
   - **0**—Continuous
   - **1**—Demand
   - **2**—<Enq> continuous
3. Continue to the next sub-block.

2. Baud Rate Sub-block

The Baud Rate sub-block lets you select the data transfer rate.

To configure baud rate:

1. At the **[42 *]** prompt, press ENTER to accept the displayed baud rate selection, or press 0 to scroll through the other options:
   - 300
   - 1200
   - 2400
   - 4800
   - 9600
2. Press ENTER when the desired baud rate is displayed.
3. Continue to the next sub-block.

3. Data Bits/Parity Sub-block

This sub-block lets you select the number of data bits and parity for data transmission. Data bits refers to the number of bits that make up an ASCII character. Most Mettler Toledo equipment uses seven data bits, even parity. Parity is an error checking mechanism for each byte.

1. At the **[43 *]** prompt, press ENTER to accept the displayed selection, or use the numeric keys to select the desired data bit/parity option. Options include:
   - **0**—8 bits, No parity
   - **1**—7 bits, Odd parity
   - **2**—7 bits, Even parity
2. Continue to the next sub-block.

4. Checksum Sub-block

The Checksum sub-block lets you enable or disable this error detection technique. Checksum is a method of checking each line of data transmitted by adding a check digit character at the end of the string. The receiving device must be able to calculate and compare this character to verify that the data is correct.

Checksum is defined as the 2's complement of the seven low-order bits of the binary sum of all characters preceding the checksum including the <STX> and <CR> control characters. Bit 8 of the checksum is the parity bit (if enabled) of the seven low-order bits of the checksum character.

To configure the checksum feature:

1. At the **[44 0]** prompt, press ENTER to accept the default selection (disabled), or press 1 to enable checksum.
2. Continue to the next sub-block.

5. Auto Clear Tare Sub-block

The Auto Clear Tare sub-block lets you enable or disable the auto clear feature. If enabled, the 8525 automatically clears tare after printing. If disabled, the 8525 does not clear tare after printing; the operator must clear tare manually.

To configure the sub-block

1. At the **[45 0]** prompt, press ENTER to accept the default selection (disabled), or press 1 to enable auto clear tare after printing.
2. Continue to the next sub-block.

6. Print Interlock and Auto Print Sub-block

This sub-block lets you configure the auto print and print interlock parameters.

To configure the sub-block:

1. At the **[46 *]** prompt, press ENTER to accept the displayed selection, or use the numeric keys to select another option. Options include:
   - **0**—Normal Print sends a print request each time the PRINT key is pressed.
   - **1**—Print Interlock restricts printing capabilities for legal-for-trade applications. Print interlock allows only one print if scale weight is above the minimum print value. To print again, weight on the scale must return to zero, then settle above the minimum print value.
   - **2**—Auto Print sends a print request each time weight on the scale is above the minimum print value and the scale has a no-motion condition.
2. Continue to the next sub-block.

7. Minimum Print Sub-block

The Minimum Print sub-block lets you select the threshold value above which print operations can take place. When weight falls below the designated minimum print value, print operations are disabled. The minimum print configuration also affects print interlock and auto print as described above.

To configure the minimum print requirement:

1. At the **[47 *]** prompt, press ENTER to accept the displayed selection, or use the numeric keys to select another minimum print value. Options include:

   Minimum print must be disabled to use the print interlock and auto print features.

   - **0**—Minimum print disabled
   - **1**—10 increments
   - **2**—100 increments
   - **3**—500 increments
2. Continue to the next sub-block.

8. Net Sign Correction Sub-block

The Net Sign sub-block lets you configure the 8525 to always display weight values as positive. If enabled, net sign correction compares the weight in the tare register with the current weight on the scale and configures them so the net weight displayed is always positive. The 8525 supports two treatments of negative weight values. You can enable net sign correction to allow negative net weight to print positive and display negative, or print and display positive.

To configure net sign correction:

1. At the **[48 *]** prompt, press ENTER to accept the displayed selection, or use the numeric keys to select another net sign correction option. Options include:
   - **0**—Disable net sign correction. Negative net weight prints and displays as a negative value
   - **1**—Enable net sign correction to print negative net weight as a positive value and display negative net weight as a negative value
   - **2**—Enable net sign correction to print and display negative net weight as a positive value
2. Continue to the next sub-block.

9. STX Character Sub-block

The Enable STX sub-block lets you configure the 8525 to transmit the ASCII Start of Text special character in demand output mode. The <STX> character must be enabled if you are using a Mettler Toledo scale printer model 307, 8806, 8860, or 8865.

To configure the sub-block:

1. At the **[49 1]** prompt, press ENTER to accept the default selection, or use the numeric keys to select the desired <STX> character treatment. Options include:
   - **0**—No leading <STX> character in demand mode output
   - **1**—Leading <STX> character in demand mode output
2. Continue to the next sub-block.

10. Line Format Sub-block

The Line Format sub-block lets you select the line format for demand mode output. The 8525 supports single and multiple line output.

Please refer to Appendix 2 at the back of this manual for more information on the demand mode output format.

Single line output sends all selected data fields (refer to the Print Fields sub-block) as one line of data. The length of the line will vary depending on how many data fields are selected. You can include up to six data fields in single line output. Each single line of data is separated from the next by a "new line" (a carriage return <CR> character, optional checksum, and a line feed <LF> character).

Multiple line output sends each selected data field (refer to the Print Fields sub-block) as an individual line. You can include up to six fields. Multiple line output is separated from the next multiple line output by a new line (a carriage return <CR> character, optional checksum, and a line feed <LF> character).

To configure the sub-block:

1. At the **[51 *]** prompt, press ENTER to accept the displayed selection, or use the numeric keys to select the line format. Options include:
   - **0**—Single line (use with model 307 printer)
   - **1**—Multiple line (use with model 8860 or 8865 printer)
2. Continue to the next sub-block.

11. Print Fields Sub-block

The Print Fields sub-block lets you select the fields sent in demand mode output. You can include up to six fields in each output. Fields are printed in the order in which they are selected.

To select data fields:

1. At the **[52]** prompt, use the numeric keys enter up to six data field selections. Choose data fields from the following table:

Option	Data Field
0	Field Turned Off
1	Displayed Weight
2	Gross Weight
3	Tare Weight
4	Net Weight
5	Scale ID Number
6	Blank Line

2. Press ENTER to accept the selection(s).
3. Continue to the next sub-block.

12. Print Expanded Sub-block

The Print Expanded sub-block lets you configure the 8525 to print scale weight in an expanded format to the Mettler Toledo 307, 8806, and 8860 printers. If enabled, the 8525 transmits an ASCII <SO> character before the weight field and an ASCII <SI> character after the weight field. The <SO> and <SI> characters work only with printers that recognize <SO> and <SI> as expand and normal control codes.

To configure the sub-block:

1. At the **[53 *]** prompt, press 0 to disable, or 1 to enable expanded print.
2. Continue to the next sub-block.

13. Print Weight Legend Sub-block

This sub-block lets you configure the 8525 to print an alternate weight unit (if selected in the Weigh Units sub-block in the Calibration program block) with the weight value. This feature is used for legal-for-trade applications that require the printed units to match the units displayed on the indicator. To use the Print Weight Legend feature in accordance with legal-for-trade requirements, you must install the optional unit legend plate (refer to Chapter 2 of this manual).

To configure the sub-block:

1. At the **[54 *]** prompt, press 0 to disable, or press 1 to enable unit legend print.
2. Continue to the next sub-block.

14. Scale ID Sub-block

The Scale ID sub-block lets you enter a numeric identification for the scale. Scale ID can be included in output transmission if selected in the Print Fields sub-block. Scale ID is always transmitted as a two-character field. You can use a leading zero as one of the two digits, or you can enter a single digit.

To enter a scale ID:

1. At the **[55 *]** prompt, press ENTER to accept the displayed selection, or use the numeric keys to enter a one- or two-digit scale ID (01 to 99).
2. Press ENTER to accept the ID as displayed.

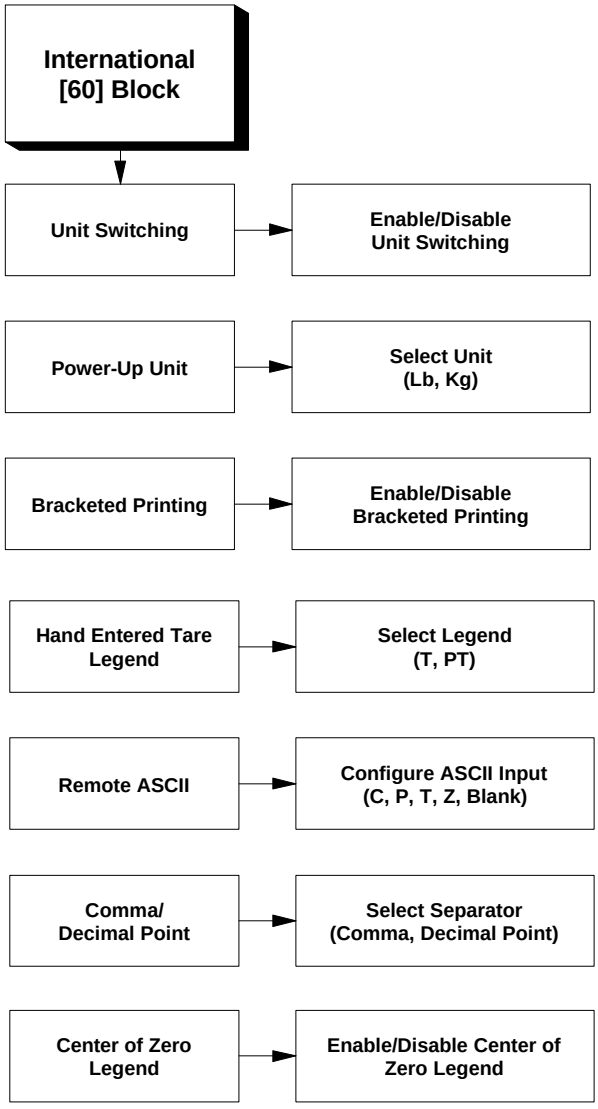
When the Data Output program block is configured, the 8525 displays the **[--]** prompt.

Continue to the next program block or exit setup mode.

International Program Block

The International program block has seven sub-blocks that let you configure the 8525 for applications that use international weight units, characters, and data output conventions.

The following diagram describes this program block:



1. Unit Switching/ Alternate Unit Sub-block

This sub-block lets you enable or disable the unit switching and alternate (conversion) unit features. If enabled, each time the LB/KG key is pressed, the 8525 converts weight from the current unit (lb or kg) and displays the result in the other unit. If a conversion factor is assigned in the Calibration program block, the LB/KG key alternates between the selected calibration weight unit and the custom unit defined by the conversion factor. The custom unit does not have a designation in the display window.

LB/KG switching must be disabled for export legal-for-trade and multi-ranging applications.

LB/KG switching must be enabled for conversion factor operation, (Sub-block 19).

To configure the sub-block:

1. At the **[62 1]** prompt, press 0 to disable, or press 1 to enable unit switching. If unit switching is disabled, the LB/KG key is inoperative.
2. Continue to the next sub-block.

2. Power-up Unit Sub-block

The Power-up Unit sub-block lets you configure the 8525 to display scale weight in pounds or kilograms on power-up. To configure the sub-block:

The setting for the Print Weight Legend sub-block can override the pound selection in this sub-block. If Print Weight Legend is enabled, the 8525 cannot power-up in pounds.

1. At the **[63 *]** prompt, press 1 to use pounds (lb), or press 0 to use kilograms on power-up.
2. Continue to the next sub-block.

3. Bracketed Printing Sub-block

The 8525 supports bracketed printing for gross and/or tare weight fields. If enabled, actual scale weight will be printed between a left and right bracket (<>). Hand entered weight cannot be printed in brackets (see Hand Entered Tare Legend sub-block). If disabled, weight fields do not print with brackets.

To configure the Bracketed Printing sub-block:

1. At the **[64 0]** prompt, press 0 to disabled, or press 1 to enable bracketed printing.
2. Continue to the next sub-block.

4. Hand Entered Tare Legend Sub-block

This sub-block lets you select the hand entered tare legend as “T” or “PT” (preset tare). The selected legend lights when tare is entered by the operator pressing the TARE key.

To configure the sub-block:

1. At the **[65 *]** prompt, press 1 to select (T), or press 0 to select the PT tare legend.
2. Continue to the next sub-block.

5. Remote ASCII Sub-block

The Remote ASCII sub-block lets you configure the 8525 Fiber Optic Data I/O option for light pules input (act as a remote key for a function) or to receive the ASCII characters C, P, T, and Z to perform Clear, Print, Tare, and Zero functions. All remote inputs except remote blank are momentary inputs. Light pulse must be maintained for remote blank input.

To configure the sub-block:

1. At the **[66 *]** prompt, press ENTER to accept the displayed selection, or select another function:
   - 0=Remote Print
   - 1=Remote Tare
   - 2=Remote Zero
   - 3=Remote Clear
   - 4=Remote Blank Display
   - 5=ASCII Character Input
2. Continue to the next sub-block.

6. Comma/Decimal Point Sub-block

The Comma/Decimal Point sub-block lets you configure the 8525 to use a comma (European standard notation), or a decimal point (United States standard notation). The selected separator is also used in printed output.

To select comma or decimal point:

1. At the **[68 *]** prompt, press ENTER to accept the displayed selection (decimal point), or press 1 to use a comma.
2. Continue to the next sub-block.

7. Center of Zero Legend Sub-block

This sub-block lets you enable or disable the center of zero legend on the display. If enabled, the center of zero legend is lit when weight on the scale is within ±0.25 increments of zero. For 8525 indicators used in the United States, the gross zero legend must be enabled as described below.

To configure the sub-block:

1. At the **[69 *]** prompt, press ENTER to accept the displayed selection, or use the numeric keys to select another center of zero legend option. Options include:

   - **0**—Disable center of zero legend
   - **1**—Enable gross zero legend
   - **2**—Enable gross and net zero legends

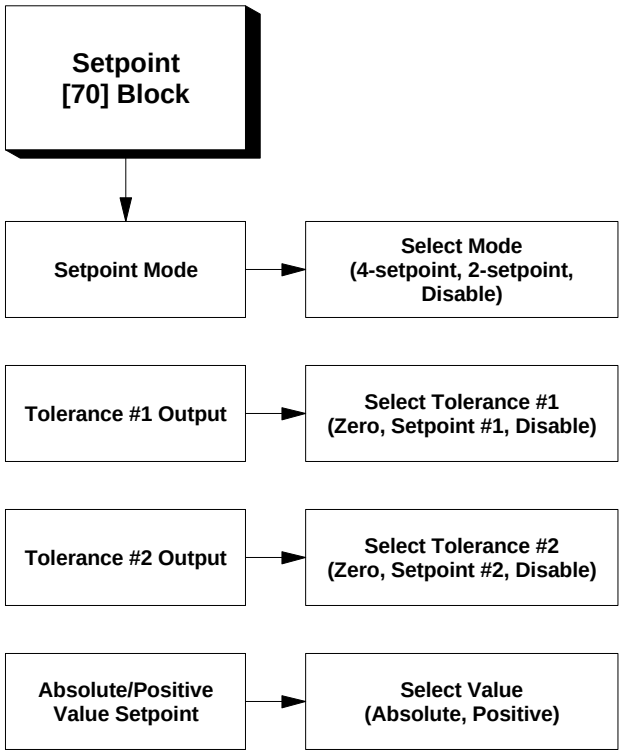
When the International program block is configured, the 8525 displays the **[--]** prompt.

Continue to the next program block or exit setup mode.

Setpoint Program Block

The Setpoint program block has four sub-blocks that let you configure the parameters governing setpoint operation. Information on using setpoints is given in Chapter 4 of this manual.

The following diagram describes this program block:



1. Setpoint Mode Sub-block

The 8525 supports two setpoint modes. The 2-setpoint mode has outputs for two dual-speed setpoints with independent setpoint, dribble, tolerance, and preact values. The 4-setpoint mode has outputs for four single-speed setpoints with independent preact values.

To select the 8525 setpoint mode:

1. At the **[--]** prompt, enter 70 to access the Setpoint program block. The 8525 advances to the program block then displays [71 *] indicating the setpoint mode sub-block.
2. At the **[71 *]** prompt, press ENTER to accept the displayed setpoint mode selection, or use the numeric keys to select another. Options include:
   - **0**—Disable setpoints
   - **1**—4-setpoint mode
   - **2**—2-setpoint mode
3. Continue to the next sub-block.

2. Tolerance #1 Output Mode Sub-block

The Tolerance #1 Output Mode sub-block lets you configure how the 8525 controls the tolerance output #1. Tolerance #1 can be used to indicate an in-tolerance weight for setpoint #1 (if 2-setpoint mode is selected). Alternately, Tolerance #1 can be used as a zero tolerance output for Setpoint #1.

To select the Tolerance #1 mode:

1. At the **[72 *]** prompt, press ENTER to accept the displayed tolerance #1 mode selection, or use the numeric keys to select another. Options include:
   - **0**—Disable Tolerance #1
   - **1**—Zero tolerance mode
   - **2**—Setpoint #1, Weight tolerance
2. Continue to the next sub-block.

3. Tolerance #2 Output Mode Sub-block

The Tolerance #2 Output Mode sub-block lets you configure how the 8525 controls the tolerance output #2. Tolerance #2 can be used to indicate an in-tolerance weight for setpoint #2 (if 2-setpoint mode is selected). Alternately, Tolerance #2 can be used as a zero tolerance output. This lets the 8525 verify that the scale is empty or tare has been taken before beginning a fill cycle. The zero tolerance mode can also be used as a discharge cutoff.

To select the Tolerance #2 output mode:

1. At the **[73 *]** prompt, press ENTER to accept the displayed tolerance #2 mode, or use the numeric keys to select another mode. Options include:
   - **0**—Disable Tolerance #2 output
   - **1**—Zero tolerance mode
   - **2**—Setpoint #2, Weight tolerance mode
2. Continue to the next sub-block.

4. Absolute/Positive Value Setpoints Sub-block

The Absolute/Positive Value Setpoints sub-block lets you configure the setpoints to operate on absolute value (positive or negative weight data from the scale) or positive weight value only. Absolute setpoints are used in weigh-out operations.

To configure the sub-block:

1. At the **[74 *]** prompt, press 1 to select absolute value, or press 0 to select positive value setpoint mode.

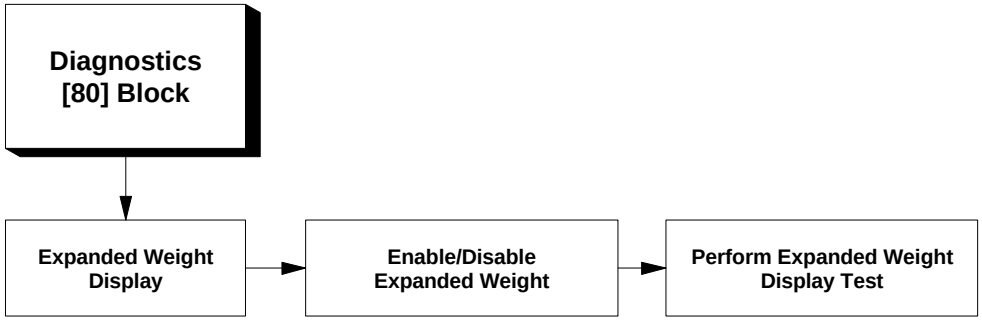
When the Setpoint program block is configured, the 8525 displays the **[--]** prompt.

Continue to the next program block or exit setup mode.

Diagnostics Program Block

The Diagnostics program block has two sub-blocks that let you perform diagnostic tests to verify correct and accurate operation. This program block also has a Reset to Factory sub-block that lets you return all program block and sub-block parameters to the factory default values.

The following diagram describes this program block:



1. Expanded Weight Display Sub-block

If expanded weight is enabled when you exit setup mode, the RECALL key toggles between normal weight display and expanded weight display in normal operating mode.

The Expanded Weight sub-block lets you configure the 8525 to display scale weight at ten times the normal display resolution (with an increment size of 1, and no decimal point). The RECALL key toggles between expanded weight display and raw internal counts (in normal operating mode).

The expanded weight display diagnostic tool is used to test the installation of a new indicator and to troubleshoot potential weighing errors. This feature is **not** intended for use in every-day weighing situations.

To perform an expanded weight display diagnostic test:

1. At the **[--]** prompt, enter 80 to access the Diagnostics program block. The 8525 then displays [81 0] indicating the expanded weight display sub-block.
2. At the **[81 0]** prompt, press 1 to enable expanded weight display or press ENTER to disable expanded weight display.
3. Exit setup mode and place a known weight on the scale.

4. Press RECALL. The 8525 displays the weight on the scale at ten times its normal weight display resolution so you can verify the accuracy of the indicator.

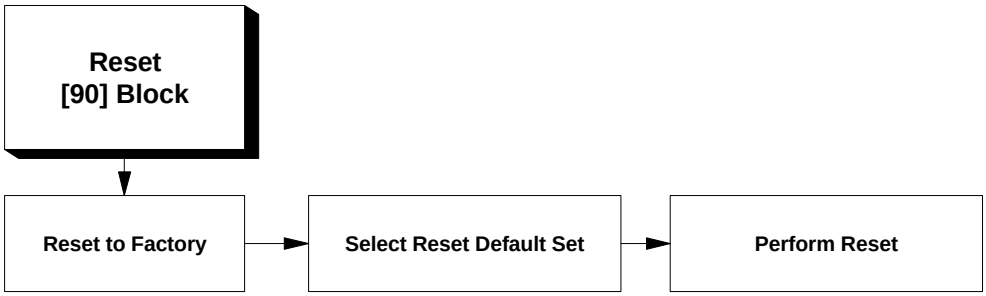
   The 8525 toggles between displaying expanded weight and the counts coming from the A/D converter each time the RECALL key is pressed. The counts from the A/D converter (when connected to a Mettler Toledo analog load cell) reflect the absolute loading on that cell(s). If an analog load cell is loaded to 100% of capacity, the count from the A/D converter will be 720,000. By comparing the counts to 720,000, you can determine what the “initial” loading on the load cell(s) might be.

   If a digital load cell is connected, the response is similar except that the maximum number of counts is determined by the type of digital load cell being used.

5. Press RECALL again to return the display to normal resolution.
6. When finished, return to setup mode and, at the [81 0] prompt, press 0 to disable the expanded weight display feature.
7. Continue to the next sub-block.

Reset Program Block

The Reset program block lets you reset the 8525 setup parameters to either U.S. or Export (International) settings. The reset to factory feature **does not** affect calibration. The following diagram describes this program block:



To reset the 8525 setup parameters to factory default settings:

1. At the **[99 0]** prompt, press ENTER to accept the default reset response 0 (do not reset), or use the numeric keys to select another option:

   - **0**—Do not reset to factory defaults
   - **1**—Reset to U.S. default settings
   - **2**—Reset to Export default settings

2. If you select either of the reset options (1 or 2), at the flashing **[SUrE]** prompt, press

   - **0**—Abort the reset action
   - **1**—Reset to the selected default settings

3. Press ENTER

Please refer to Appendix 1 for a list of U.S. and Export default settings.

When you are through with the Reset program block, the 8525 displays the **[--]** prompt. At this time you can enter a two-digit code and return to any to the previously described program blocks, or you can remove the W1 jumper and exit setup mode.

4 Operating Instructions

This chapter provides information that an operator will need to use the 8525.

Display Area

The 8525 display is pictured below:

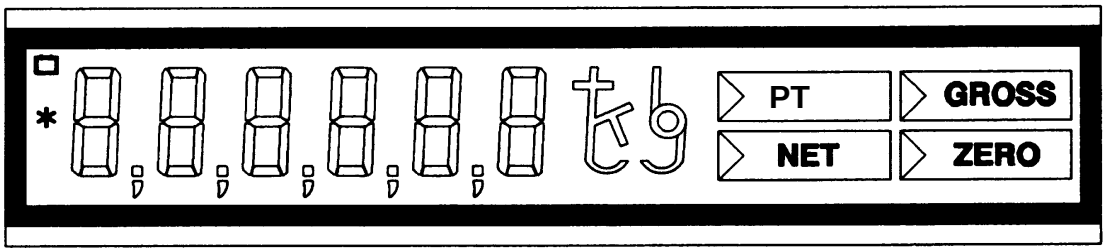


Figure 4-1 8525 Display

The 8525 uses a low-power liquid crystal display. The display uses six, 7-segment digits (0.7 in. (1.8 cm) high). Over-capacity is indicated with a blank display. The center segment of the digit at the far left of the display lights to indicate negative weight. (If the 8525 is displaying negative weight using all six digits, the display alternates between showing net weight and six minus signs.)

Legends and Symbols

The 8525 uses legends and symbols to indicate units, weight modes, and battery status.

Weight Mode Legends

The four weight mode legends are printed on a reflector plate and are always visible. These legends are "lit" by a window and cursor.

PT— indicates the displayed value represents tare weight. The tare legend lights when you enter a tare weight value manually or if you recall tare weight.

Net—indicates the displayed value represents net weight. If tare interlock is disabled in setup, the net legend blanks when weight on the scale is unstable.

Gross—indicates the displayed value represents gross weight. If tare interlock is disabled in setup, the gross legend blanks when weight on the scale is unstable.

Zero—indicates the 8525 is within ± 0.25 increments of the center of gross or net zero as configured in setup.

Unit Weight Legends

The appropriate segments(s) of the two weight legend indicators light to form the weight unit abbreviation according to the selected weight units:

- lb—indicates pounds
- kg—indicates kilograms
- g—indicates grams
- t—indicates tons

If an alternate legend panel is installed the 8525 displays the following alternate unit legends:

- oz—indicates ounces
- ozt—indicates troy ounces
- dwt—indicates pennyweight

Battery Symbol

The battery symbol is located in the upper left-hand corner of the display and lights to indicate a low-battery condition. The battery will last 8 to 12 hours from the time the battery symbol first appears.

Asterisk

The asterisk, located in the center of the display on the left side, indicates weight instability (motion detect). When lit, the load on the scale is not stable.

Keypad

Each 8525 indicator is equipped with a 4 x 5, 20 key keypad as seen below:

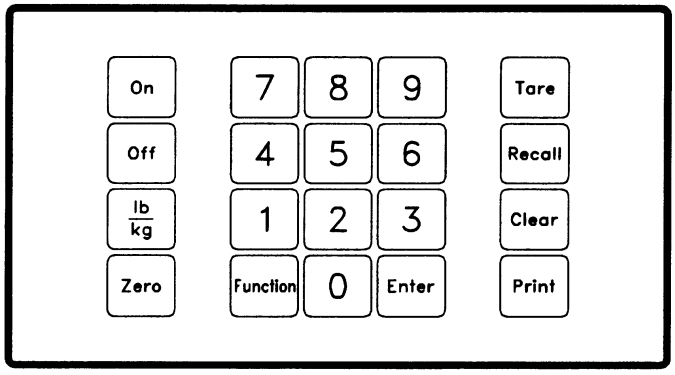


Figure 4-2 US Keypad

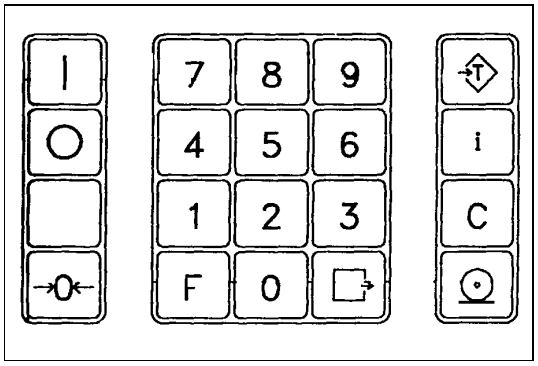


Figure 4-3 International Keypad

The keys perform the following functions:

ON—turns the 8525 on.

OFF—turns the 8525 off. If enabled, a power-off timer turns the 8525 off after a predetermined period of inactivity.

LB/KG—switches the displayed value between pound and kilogram weight units. This key also switches between the selected calibration units and the alternate unit if a conversion factor is entered in the Calibration program block. The 8525 adjusts the increment size and decimal point of the displayed weight to the nearest equivalent when switching units. For example, the 8525 adjusts a 1 lb increment to 0.5 kg, or a 2 lb increment to 1.0 kg. The 8525 supports unit switching only if the weight unit is selected as lb or kg in setup. Otherwise the LB/KG key is disabled. This key is blank on the International keypad.

ZERO—captures a new center of zero if the 8525 is in gross mode and weight on the scale is stable. Weight on the scale must also be within the pushbutton zero capture range as determined in setup. The center of zero reference captured by the ZERO key is temporary and is lost when the 8525 is turned Off.

Numeric Keys—allow numeric entry for some parameters in setup, and entry of keyboard tare and setpoint values.

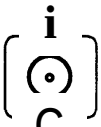
FUNCTION—accesses setpoint data entry. In addition, pressing FUNCTION then “9” puts the unit in “sleep” mode.

ENTER— accepts data entered from the keypad and responses entered in setup mode.

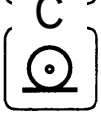
TARE—records the current weight on the scale as tare weight, causing the display to show net weight zero. Tare must be a positive, non-zero, stable weight.

The TARE key also terminates a manual tare entry from the keypad. In this case, the least significant digit of the tare value must equal the scale increment size. If tare interlock is enabled, you can enter keyboard tare only when the scale is at gross zero.

You can enter tare manually using the keypad whenever the 8525 is in gross or net mode. When you press the first numeric key, the tare legend illuminates and the display blanks to accept additional numeric entry. You can enter up to six digits, however, the decimal point is fixed. You must press TARE within five seconds of entering the last digit or the 8525 returns to the previous weight display mode.



RECALL—displays the current tare weight for approximately five seconds.



CLEAR—clears the tare weight when the indicator is in net mode; the 8525 to returns to gross mode. If tare interlock is enabled, you can clear tare only when the scale is at gross zero.

PRINT—transmits data from the serial port according to the data output configured in setup. The 8525 processes a print command when weight on the scale is stable. If you configured the 8525 for continuous data output, bit number 3 in status word C toggles with each print request.

Basic Functions

Operator functions are those procedures that can be done by any knowledgeable person with access to the indicator. This section discusses the following basic operator functions:

- Zero the scale
- Perform tare operations
- Initiate print operations

Zero the Scale

If Pushbutton Zero is enabled, press ZERO to establish a new zero. Weight on the scale must be within the zero capture range.

Tare Operations

The 8525 supports the following tare and tare-related functions:

- Semi-auto Tare
- Manual Tare
- Recall Tare
- Auto Clear Tare
- Tare Interlock

Tare operations are configured through Block 30 (Tare and Display Timer program block).

Semi-Auto Tare

Semi-auto tare lets you capture tare and clear the display by pressing the corresponding key.

1. Place a container on the scale and press TARE. The indicator displays 0000.0 and displays net weight when a load is placed in the tared container.
2. Press CLEAR to clear the tare and net weight display. The indicator returns to gross mode.

Manual or Keyboard Tare (PT)

Manual tare lets you enter the known value of a container or other weight on the scale using the numeric keys on the keypad. To enter manual tare:

1. Place a loaded container on the platform. The display shows gross weight.
2. Use the numeric keys to enter the known weight of the container, then press TARE. The 8525 displays net weight of the contents and lights the net legend.
3. Press CLEAR to return to gross mode.

Auto Clear Tare

If enabled, the 8525 automatically clears tare when the scale returns to the center of zero (within ± 0.25 increments) after settling to a no-motion condition at least ten increments above net zero.

Recall Tare

The 8525 lets you view the tare value currently recorded in temporary memory while in net mode. To recall tare, press RECALL. The 8525 displays the tare value for approximately five seconds before returning to net mode.

Tare Interlock

Tare interlock imposes some restrictions on tare operations. If tare interlock is enabled, tare may be cleared only at gross zero, and multiple tares are inhibited.

Print Operations

Parameters affecting the Print function and data output formats are configured in Block 40 (Data Output program block). To initiate a print command, press PRINT. The 8525 transmits the data through the serial port and it is printed according to the data output configuration.

Unit Switching

The 8525 supports unit switching if the weigh unit is selected as lb or kg and if unit switching is enabled in Block 60 (International program block). To switch units, press the LB/KG key. The 8525 switches to the alternate unit and adjusts the increment size and decimal point accordingly.

Setpoint Operation

The 8525 supports single-or dual-speed cutoff operation when used with the 3015 Setpoint Controller. You can configure the setpoint outputs as:

- Four single-speed cutoffs with individual preact selections
- Two dual-speed cutoffs with individual dribble and preact selections

The 8525 also supports two tolerance outputs that you can configure as weight tolerance outputs (dual-speed) or as individual zero tolerance outputs (single- and dual-speed).

Setpoint outputs can operate on the absolute or positive only value of the displayed weight, and can be used as feed-in or feed-out setpoints. Please refer to the 3015 Setpoint Controller manual for wiring and connection details.

WARNING!

When the 8525 and setpoint controller are included as components in 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 potential hazards.

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 and/or property damage.

Four Single-Speed Setpoints

The 8525 aborts the setpoint data entry process if more than 5 seconds pass without key entry. The least significant digit of the entry must agree with the 8525 displayed increment. Incomplete entries will be aborted and the previous value will be used.

To enter data for the four single-speed setpoints:

1. Be sure the 4-setpoint option is selected in Block 70 (Setpoint program block).
2. Press FUNCTION.
3. Press the numeric key corresponding to the setpoint you wish to use (1, 2, 3, or 4).
4. At the **[SP-x]** prompt, press ENTER to view the current cutoff value for the selected setpoint (xxx.x).
5. At the **[xxx.x]** display, press ENTER to accept the cutoff value, or use the numeric keys to enter a new value.
6. At the **[Pr-x]** prompt, press ENTER to view the current preact value (xxx.x). Preact refers to the amount of material that may come onto the scale after the material feed has been turned off.
7. At the **[xxx.x]** display, press ENTER to accept the value, or use the numeric keys to enter a new value.

When you press ENTER after step 7, the 8525 advances to normal operating mode.

To configure the zero tolerance value for Tolerance #1 and/or Tolerance #2:

1. Be sure the 4-setpoint option is selected in Block 70 (Setpoint program block).
2. Press FUNCTION.
3. Press the numeric key corresponding to the Tolerance setpoint you wish to use (5 or 6).
4. At the **[0tol-x]** prompt, press ENTER to view the current value for the selected tolerance (xxx.x).
5. At the **[xxx.x]** display, press ENTER to accept the displayed tolerance, or use the numeric keys to enter a new value.

When you press ENTER after step 5, the 8525 advances to normal operating mode.

Two Dual-Speed Setpoints

The 8525 aborts the setpoint data entry process if more than 5 seconds pass without key entry. The least significant digit of the entry must agree with the 8525 displayed increment. If the last digit entered is not a multiple of the displayed increment, the entry aborts and the previous value will be used.

To enter data for the two dual-speed setpoints:

1. Be sure the 2-setpoint option is selected in the Setpoint program block in setup.
2. Press FUNCTION to access the setpoints.
3. Press the numeric key corresponding to the setpoint you wish to use (1 or 2).
4. At the **[SP-x]** prompt, press ENTER to view the current cutoff value for the selected setpoint.
5. At the **[xxx.x]** display, press ENTER to accept the displayed value, or use the numeric keys to enter a new cutoff.
6. At the **[dr-1]** prompt, press ENTER to view the current dribble value (xxx.x). The dribble value determines when the setpoint switches from fast-feed to slow-feed.
7. At the **[xxx.x]** display, press ENTER to accept the dribble value, or use the numeric keys to enter a new value.
8. At the **[Pr-x]** prompt, press ENTER to view the current preact value (xxx.x). Preact refers to the amount of material that may come onto the scale after the cutoff value has been reached.
9. At the **[xxx.x]** display, press ENTER to accept the current preact value, or use the numeric keys to enter a new value.
10. At the **[tol-1]** or **[0tol-x]** prompt, press ENTER to view the current value for the weight or zero tolerance (xxx.x).
11. At the **[xxx.x]** display, press ENTER to accept the tolerance value, or use the numeric keys to enter a new value.

When you press ENTER after step 11, the 8525 advances to normal operating mode.

AutoRange Operation

When AutoRange is enabled, the 8525 switches between ranges when the total number displayed increments for a range is equal to the total number of displayed increments of the high range. You can determine where the 8525 will switch ranges and the active weight ranges by solving the following equation based on the AutoRange configuration in setup.

The increment sizes are fixed at 5 for high range, 2 for mid range, and 1 for low range. The decimal point is the same for all ranges.

$$\textbf{Low Range Capacity} = \frac{\text{Scale Capacity} \times 1}{5}$$

Therefore, the active low weight range is 0 to low range capacity.

$$\textbf{Mid Range Capacity} = \frac{\text{Scale Capacity} \times 2}{5}$$

Therefore, the active mid weight range is from low range capacity to mid range capacity.

High Range Capacity = Scale Capacity

Therefore, the active high weight range is from mid range capacity to high range capacity.

Consider the following example and determine the weights where the 8525 will switch from one range to another where:

- Scale is calibrated in pounds
- Capacity = 5000 lb
- AutoRange is configured for three ranges (low, mid, high)
- High range increment size =5
- Mid range increment size = 2
- Low range increment size = 1

1. The Low Range Capacity is calculated to be 1,000 lb
2. The Mid Range Capacity is calculated to be 2,000 lb
3. The High Range Capacity is calculated to be 5,000 lb
4. The active weight ranges are determined to be
   - 1 lb to 1,000 lb for the low range
   - 1,002 lb to 2,000 lb for the mid range
   - 2,005 to 5,000 lb for the high range

5

Service and Maintenance

This section provides information on servicing/upgrading and maintaining the 8525 including:

- Cleaning and regular maintenance
- Troubleshooting
- Replacing parts

	WARNING!
	**Permit qualified personnel only to service this equipment. Disconnect all AC power to this unit before servicing or removing the fuse. Exercise care when making checks, tests, and adjustments that must be made with power on.**

Tools and Supplies

You should keep the following items on hand for service and maintenance of the 8525 indicator. Some common hand tools may also be required.

- Volt-Ohm meter
- Analog load cell simulator
- Soft, lint-free cleaning cloth
- Anti-static bags for PCBs
- Anti-static wrist strap and mat

Cleaning and Regular Maintenance

Wipe the keyboard and covers with a clean, soft cloth that has been dampened with a mild cleaner. Do not use any type of industrial solvent such as toluene or isopropanol (IPA). These may damage the terminal's finish. Do not spray cleaner directly on the terminal.

Regular maintenance inspections by a qualified service technician are also recommended. You can use the Maintenance Log found in Appendix 4 to keep track of maintenance.

Warnings and Precautions

Please use extreme caution and observe the following warnings and precautions any time you are working on the 8525.

WARNING!

Only permit qualified personnel to service this equipment. Disconnect all AC power to this unit before servicing or removing the fuse. 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 and/or property damage.

CAUTION

Observe precautions for handling electrostatic sensitive devices.

WARNING!

Only the components specified in control drawing 133227 can be used in the 8525, and all equipment must be installed in accordance with the installation instructions detailed in the control drawing 133227. Incorrect components and/or deviation from the instructions in control drawing 133227 will impair the intrinsic safety of the unit and void Factory Mutual approval of the scale.

WARNING!

Do not install or perform any service on this equipment before the area has been verified as non-hazardous by personnel authorized to do so by the responsible customer.

Troubleshooting

The 8525 is designed to be reliable. If problems do occur, do not attempt to repair the scale or terminal before you have determined the source of the problem. Record as much information as possible about what has happened including any error messages and physical responses of the indicator and/or scale.

Many problems can be identified and resolved using the following troubleshooting techniques:

- **Verify Connections—**Check all wire and cable connections to be sure each is installed securely. If a PCB is suspected as being faulty, remove, then replace the PCB to ensure the problem is not caused by a poor connection.
- **Verify Setup Configuration—**Access setup mode and review all setup parameters to be sure they are correct for your equipment. Many operational errors can be resolved by changing or correcting setup configuration. If the setup appears to be correct, try recording the current settings and resetting the 8525 to factory defaults.
- **Check Battery Charge—**If the 8525 does not respond when power is applied and the unit is turned on by pressing the ON key, the battery pack may be completely discharged. Recharge the battery for at least 12 hours. If the problem still persists, the battery pack or charger may be defective. Perform the diagnostic tests described in the section entitled Voltage Tests to determine the problem.
- **Check DC Voltages—**Perform the DC voltage tests described in the section entitled Voltage Tests. Use instrument probes carefully to avoid causing short circuits and damage to circuit components.
- **Replace Suspected Faulty PCBs—**If a PCB is suspected to be faulty, or if you cannot identify the problem elsewhere, remove each PCB (one at a time) and replace it with a PCB that you know is good. Continue this methodical process until you isolate the defective PCB.

Error Codes and Actions

The following table lists the 8525's error messages, description, and remedy.

Error Message	Description	Remedy
E1	Fatal ROM memory error	1. Replace EPROM and Chip Carrier 2. Replace Main PCB
E2	Fatal internal RAM error	Replace Main PCB
E3	Setup memory corrupt	1. Enter setup and reprogram 2. Press CLEAR 3. Replace Main PCB
E4	Fatal external RAM memory error	Replace Main PCB
E8	Digital load cell, no data	1. Check load cell cable wiring 2. Check load cell excitation voltage 3. Replace load cell 4. Replace Main PCB
E9	Load cell out of range or Analog Module not present	1. Check base for mechanical problems 2. Verify load cell wiring and excitation voltage 3. Check load cell and replace if necessary 4. Replace Analog Module 5. Replace Main PCB
E21	Incorrect scale capacity	Enter correct capacity (in setup)
E24	Illegal high range division	Enter correct division size (in setup)
E32	Insufficient test weight or insufficient signal from load cell	1. Press CLEAR, then add additional test weight 2. Check base for mechanical problems 3. Verify scale capacity (in setup) 4. Verify load cell wiring 5. Replace Analog Module 6. Replace load cell
E34	Test weight too large	Press CLEAR and use test weight less than 105% of scale capacity
E35	Illegal test weight increment size	Recalibrate making sure the test weight value entered is a multiple of the setup increment.
E36	Build too small for load cell capacity	Recalibrate using a larger increment size
SP Err	Setpoint entry error	Reenter valid setpoint value
EEE -EEE	Scale not zeroed at power up	1. Verify scale is empty 2. Press ZERO to capture manually 3. Recalibrate the scale

Voltage Tests

The 8525 operates from the nominal 12 VDC supplied by the battery pack or AC power supply. All other DC voltages are derived from this supply. You can perform several voltage tests to help identify potential problems with the 8525. An interconnection diagram is included at the end of this chapter.

12 VDC Supply

Use the following diagram and chart to reference correct power supply connection and voltages. Verify that the 12 VDC supply from the battery pack or from the AC power supply is present across pins 2 and 3 of terminal strip TB1 on the Main PCB.

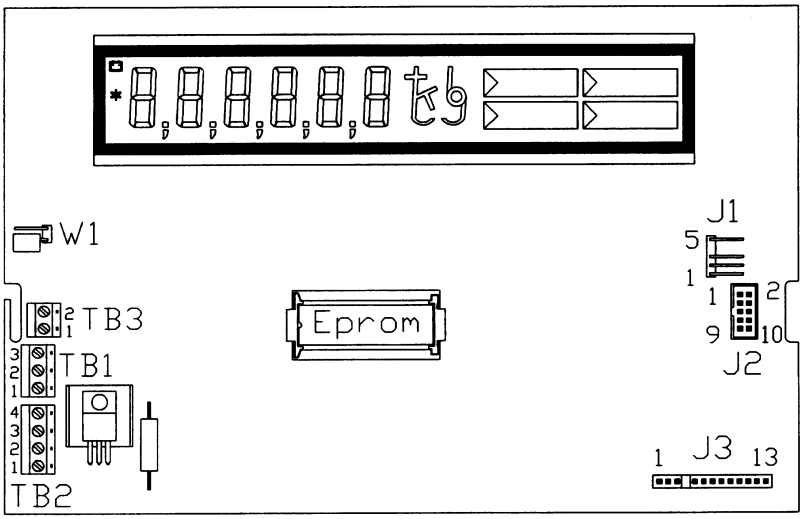


Figure 5-1 Main PCB

Function	+ Lead	– Lead	Minimum	Maximum	AC Ripple
+12 VDC AC Power Supply	Plug-Pin 5	Plug-Pin 3	11.2 VDC	13.0 VDC	0.5 VAC
+12 VDC Battery Pack	TB1-Pin 3	TB1-Pin 2	10.3 DC	12.2 VDC	0.0 VAC
+15 VDC Charger Supply	Plug-Pin 1	Plug-Pin 3	14 DC	16 VDC	0.5 VAC
+5 VDC Logic Supply	J1-Pin 2	J1-Pin 3	4.75 VDC	5.25 VDC	0.05 VAC
+4 Analog Cell Supply*	LC/TB-Pin 1	LC/TB-Pin 4	0.8 VDC	1.2 VDC	2.0 VAC
+10 VDC Digital Cell Supply	TB2-Pin 1	TB2-Pin 2	8.5 VDC	13.0 VDC	0.5 VAC

These readings are typical when using a digital multimeter in DC Volts mode.
*The analog load cell supply is “gated” and cannot be read accurately by a typical digital multimeter.
The values shown were obtained from a properly operating 8525 using a digital multimeter.

Hazardous Area AC Power Supply

With the input AC voltage within prescribed limits, the power supply open circuit output voltage is 11.8 VDC to 13.0 VDC. The power supply current is limited to 100 mA into a short circuit, and is rated to deliver a minimum of 9.3 VDC into an 85 mA load.

Troubleshoot the hazardous area AC power supply by measuring the DC output voltage. If the voltage is outside the 11.8 to 13.0 VDC range:

- Verify the AC line voltage is present and within specification.
- Replace the 0.1 Time-Lag fuse located inside the junction box enclosure if it is blown.

If the open circuit output voltage is outside the 11.8 to 13.0 VDC range, replace it. The AC power supply is a safety-expendable item. **Do not open or attempt to repair the AC power supply.**

Intrinsically Safe Battery Pack Power Supply

The battery pack is designed to disconnect the output voltage to the 8525 if battery voltage falls below approximately 11.5 V (10 AH) or 11.0 V (7 AH). Troubleshoot the battery pack by testing the output voltage. If output voltage measures 0.0:

- Charge the battery pack for 12 hours and retest with a fully charged battery. **Be sure the charger is in a non-hazardous area.**
- Verify that the battery charger is working. Check the voltage across pins 2 and 3 of the twist lock connector on the end of the battery charger cable.
- Replace the battery pack (if the charger is good). The battery pack is a safety-expendable item. **Do not open or attempt to repair the battery pack.**

Logic Supply

The +5 VDC logic supply is derived from the +12 VDC supplied by the battery pack. The logic supply is used by the Main PCB. It is also used by the Analog Module and the Fiber Optic PCB.

Measure the logic supply voltage across pins 2 and 3 of the J1 connector on the Main PCB. If the voltage is outside the 4.75 to 5.25 VDC range:

- Verify the +12 VDC supply from the battery pack.
- Disconnect the Analog Module or DigiTOL load cell **and** the Fiber Optic PCB and recheck the logic supply. If removal of one of these PCBs restores proper +5 VDC, replace that PCB.
- If the Analog/DigiTOL PCB and Fiber Optic PCB are OK, replace the Main PCB.

The Analog Module and the Fiber Optic PCB both use the logic supply and will not operate correctly if the logic supply is bad.

Gated Load Cell Excitation

The 8525 uses +4 VDC gated load cell excitation. The excitation voltage is switched on and off 240 times per second. A typical digital meter will average its readings. When connected to a 4 volt DC voltaged switched at 240 Hz, the meter will read between 0.8 and 1.2 VDC. A typical measurement is 0.99 V. This allows the 8525 to operate with the reduced excitation voltage that is required for hazardous area approval while maintaining high resolution and high noise rejection. Improper gated load cell excitation can cause unstable weight readings or an E9 error message.

Troubleshoot the gated load cell excitation voltage by measuring voltage across pins 1 and 4 of the load cell terminal strip on the Analog Module. If the load cell excitation voltage is outside the 0.8 to 1.2 VDC range:

- Verify that the sense leads from the load cells are connected properly to the Analog Module.
- Verify that the scale base does not exceed the load cell drive capability of the 8525. The Analog Module can drive a maximum of four 350 Ohm load cells or eight 770 Ohm load cells. **Do not attempt to drive a bridge resistance lower than 87.5 Ohms.**

DigiTOL Load Cell Excitation

The DigiTOL load cell interface provides a nominal +10 VDC power supply for the DigiTOL load cell. This voltage is generally 0.8 VDC **less** than the 8525 supply voltage.

Test the DigiTOL load cell supply voltage. If voltage is more than 1.0 volt below the instrument main supply voltage:

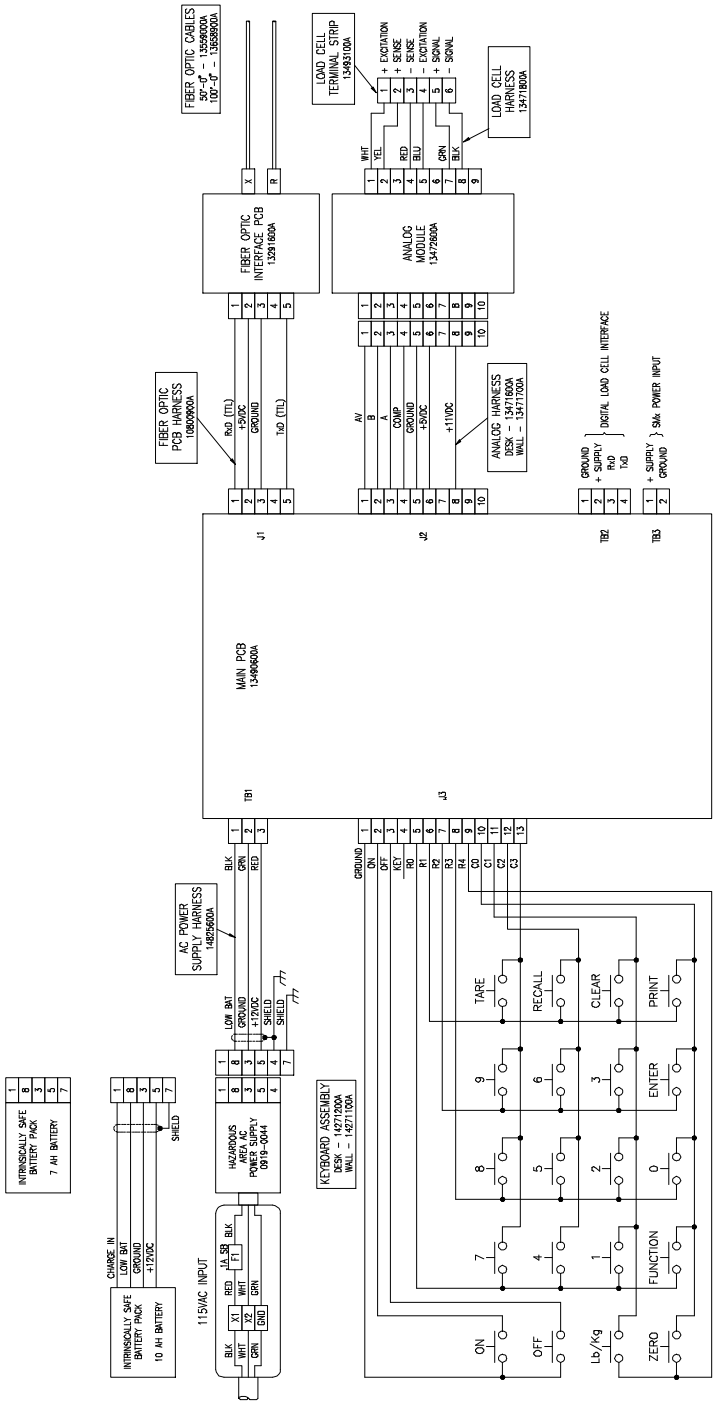
- Disconnect the DigiTOL load cell from the 8525 and retest. The digital load cell supply voltage should rise to a level slightly less than the indicator supply. Replace the Main PCB if the cell supply voltage is low with the DigiTOL load cell disconnected.

Replacing the Main PCB

If you have tested DC voltages to the 8525 and have found the Main PCB to be faulty, or if the PCB must be replaced for another reason:

1. Open the 8525 as described in Chapter 2 of this manual.
2. Remove the Main PCB.
3. Remove and save the aluminum legend plate behind the display (see Chapter 2).
4. Grasp the ends of the EPROM/carrier assembly and gently lift it from it socket in the center of the Main PCB. The EPROM/carrier assembly has a red adhesive label printed with the part number (901869 00A). Save the EPROM/carrier assembly.
5. Insert the EPROM/carrier assembly into the new Main PCB.
6. Install the new Main PCB.
7. Close the 8525 as described in Chapter 2.

Interconnection Diagram



6 Parts and Accessories

Refer to the following data tables when ordering parts and accessories for the 8525 indicator.

Recommended Spare Parts

To minimize down-time, Mettler Toledo recommends that you keep spare parts on hand:

8525 Indicator Spare Parts	
Part Number	**Description**
142720 00A	Main PCB
901869 00A	EPROM and Carrier Assembly
134728 00A	Analog Module (Analog Load Cell Versions Only)
142711 00A	Keyboard Assembly (Wall)
142712 00A	Keyboard Assembly (Desk)

Fiber Optic Option Spare Parts	
Part Number	**Description**
132916 00A	Fiber Optic PCB
900306 00A	Fiber Optic Converter PCB

Hazardous Area Power Supply Parts	
Part Number	**Description**
901054 00A	115 VAC Hazardous Area Power Supply
902287 00A	230 VAC Hazardous Area Power Supply
120185 00A	0.1 Amp Time-Lag 3AG Style Fuse
138756 00A	0.1 Amp Time-Lag TR5 Style Fuse (for AC power supplies manufactured after March, 1994, Date Code QV)
137746 00A	*Cable — Indicator to Power Supply, 72 in.
*For domestic units shipped after January 1996, the power supply cable (137746 00A) will be replaced by a 60 in. Universal cable (148256 00A).	

Intrinsically Safe Battery Pack Spare Parts	
Part Number	**Description**
134698 00A	Intrinsically Safe Battery Pack (10 AH)
902287 00A	Intrinsically Safe Battery Pack (7 AH)
901663 00A	Battery Charger, 120 V version
134938 00A	*Cable — Indicator to Power Supply, 40 in.
*For domestic units shipped after January 1996, the power supply cable (134938 00A) will be replaced by a 60 in. Universal cable (148256 00A).	

Serial I/O Interface Cables

The following table lists cables for use with the Fiber Optic Data I/O option only. The adapter plug (included with the 8860 desk version) must be used with the 8860 desk cable listed.

Printer Interface Cables			
Printer	**Cable Length**	**Part Number**	**Factory Number**
307	6 feet 20 feet	119714 00A 119715 00A	0900 0191 0900 0199
8806 8806 Desk	6 feet 20 feet	115544 00A 115545 00A	0900 0136 0900 0137
8844, 8856, 8865	6 feet 20 feet	128220 00A 128221 00A	0900 0214 0900 0215
8855	6 feet 20 feet	119722 00A 119723 00A	0900 0197 0900 0198
8860 Wash Down	Custom Cable, Contact Factory		

Accessories

Part Number	Description	Factory Number	Approvals
134715 00A	Fiber Optic Data I/O with Converter	0917-0184	N/A
137748 00A	Fiber Optic Data I/O without Converter	0917-0185	FM/PTB/SA
133206 00A	Wall Mount Bracket (Desk Enclosure)	0917-0159	N/A
133234 00A	Legend Plate	0917-0166	N/A
134698 00A	10 AH Battery Pack (US)	0919-0033	FM/SA
137762 00A	10 AH Battery Pack (Europe)	0919-0041	PTB
902287 00A	7 AH Battery Pack (US)	0964-0078	FM
900370 00A	*Battery Charger (U.S.) 120 VAC 60 Hz	0964-0005	N/A
900371 00A	*Battery Charger (Export) 240 VAC, 50 Hz	0964-0006	N/A
901660 00A	Battery Charger (UK) 230 VAC, 50 Hz	0964-0061	N/A

Part Number	Description	Factory Number	Approvals
901661 00A	Battery Charger (Europe) 230 VAC, 50 Hz	0964-0062	N/A
901662 00A	Battery Charger (China/Aus) 230 VAC, 50 Hz	0964-0063	N/A
901663 00A	Battery Charger (USA) 115 VAC, 60 Hz	0964-0064	N/A
135156 00A	Fiber Optic Converter (USA) 115 VAC, 60 Hz	0964-0043	N/A
901656 00A	Fiber Optic Converter (UK) 230 VAC, 50 Hz	0964-0058	N/A
901657 00A	Fiber Optic Converter (Europe/China) 230 VAC, 50 Hz	0964-0059	N/A
901658 00A	Fiber Optic Converter (Aus) No Power Supply	0964-0060	N/A
137745 00A	Intrinsically Safe Power Supply (U.S.) 115 VAC, 60 Hz	0919-0044	FM
901964 00A	Intrinsically Safe Power Supply (Export) 230 VAC, 50 Hz	0964-0071	FM
135974 00A	Intrinsically Safe Power Supply (Europe)	0919-0035	PTB/SA
901339 00A	Indicator Supply Cable (50 feet)	0960-0187	N/A
901324 00A	Power Cable (100 feet) AC Power Supply Only	0960-0185	N/A
901325 00A	Power Cable (150 feet) AC Power Supply Only	0960-0186	N/A
136584 00A	Fiber Optic Cable (50 feet)	0900-0268	N/A
136585 00A	Fiber Optic Cable (100 feet)	0900-0269	N/A
900313 00A	Fiber Optic Cable Field Termination Kit	0964-0053	N/A
900314 00A	Bulk Fiber Optic Cable (500 foot Spool)	0964-0054	N/A

* Obsolete

Fiber Optic I/O Data Option Parts

Fiber Optic Data I/O Option		
Part Number	**Description**	**Usage**
108009 00A	I/O Data Harness	Both
132699 00A	PCB Insulator	Wall
132916 00A	Fiber Optic PCB	Both
133211 00A	PCB Retainer	Desk
133757 00A	Split Bushing	Both
133758 00A	Bushing Adapter	Desk
135952 00A	Bushing Gasket	Desk
135954 00A	Countersunk Washer	Desk
135955 00A	Compression Nut	Desk
137743 00A	Plastic Rivet	Both
900315 00A	Fiber Optic Converter Module	Both
R03283 00A	#6-32 Self Locking Nut	Wall
135156 00A	Fiber Optic Converter (U.S.) 115 VAC Power Supply	N/A
901664 00A	Fiber Optic Converter (U.K.) Power Supply	N/A
901665 00A	Fiber Optic Converter (Europe) Power Supply	N/A
900306 00A	Fiber Optic Converter PCB	N/A

Appendices

Appendix 1: Quick Reference Setup Chart and Default Values

The following charts give all setup options for the 8525 including U.S. and Export Default settings. You can use this chart as a reference as you configure or reconfigure the program blocks and sub-blocks in setup mode. Mettler Toledo recommends that you read and follow the steps in Chapter 3 when you configure each program block for the first time. The default settings are used when you reset the 8525 to factory default values in setup.

Scale Configuration Program Block [00 Group]			
Sub-block	**Options**	**U.S. Default**	**Export Default**
[01] Scale Type	0=Digital Load Cell 2=Analog Load Cell	N.A.	N.A.

Calibration Program Block [10 Group]			
Sub-block	**Options**	**U.S. Default**	**Export Default**
[11] Weigh Units	0=pounds 1=kilograms 2=grams 3=metric tons 4=ounces 5=troy ounces 6=pennyweight	N.A.	N.A.
[12] Linearity Correction	0=Disabled 1=Enabled	N.A.	N.A.
[13] Auto Range	1=One Range 2=Two Ranges 3=Three Ranges	N.A.	N.A.

Calibration Program Block [10 Group]			
Sub-block	**Options**	**U.S. Default**	**Export Default**
[14] Capacity	Selections depend on scale base	N.A.	N.A.
[15] Increment Size	Selections depend on scale base	N.A.	N.A.
[18] Calibration Procedure	N.A.	N.A.	N.A.
[19] Conversion Factor Setup	N.A.	N.A.	N.A.

Zero Maintenance and Filtering Program Block [20 Group]			
Sub-block	**Options**	**U.S. Default**	**Export Default**
[21] Zero Adjustment	N.A.	N.A.	N.A.
[22] Span Adjustment	N.A.	N.A.	N.A.
[23] AZM	0=Disabled 1=AZM within ± 0.5 d (gross only) 2=AZM within ± 1.0 d (gross only) 3=AZM within ± 3.0 d (gross only) 4=AZM within 0.5 d (gross or net) 5=AZM within 1.0 d (gross or net) 6=AZM within 3.0 d (gross or net)	2	1
[24] Auto Zero at Power-up	0=Disable 1=Zero within ± 2% 2=Zero within ± 10%	1	2
[25] Pushbutton Zero Range	0=Disable 1=Zero within ± 2% 2=Zero within ± 20%	2	1
[26] Motion Detection	0=Disable 1= ± 0.5 increments 2= ± 1.0 increments 3= ± 2 increments 4= ± 3 increments	2	2

Zero Maintenance and Filtering Program Block [20 Group]			
Sub-block	**Options**	**U.S. Default**	**Export Default**
[27] Display Filtering	0=No Filtering 1=Light 2=Medium 3=Heavy	1	1
[27A] Digital Load Cell Filter	0=Disable 1=Enable	1	1
[28] Over-Capacity Blank	Selection depends on scale base	N.A.	N.A.

Tare and Display Timer Program Block [30 Group]			
Sub-block	**Options**	**U.S. Default**	**Export Default**
[31] Tare Mode	0=Disable 1=PB Tare Only 2=PB and Manual Tare	2	2
[32] Tare Interlock	0=Disable 1=Enable	0	0
[33] Manual Tare	0=Manual Tare (All Ranges) 1=Manual Tare (Low Range Only)	1	0
[34] Auto Clear Tare	0=Disable 1=Enable	0	0
[35] Power-Off Timer	0=Disable 1=Enabled	1	0
[35A] Time Setting	01 to 99 minutes	N.A.	N.A.

Data Output Program Block [40 Group]			
Sub-block	**Options**	**U.S. Default**	**Export Default**
[41] Data Output Format	0=Standard Continuous 1=Demand 2=<Enq> Continuous	1	1

Data Output Program Block [40 Group]			
Sub-block	**Options**	**U.S. Default**	**Export Default**
[42] Baud Rate	300 1200 2400 4800 9600	300	2400
[43] Data Bits/Parity	0=8;No Parity 1=7;Odd Parity 2=7;Even Parity	2	2
[44] Checksum	0=Disable 1=Enable	0	0
[45] Auto Clear Tare	0=Disable 1=Enable	0	0
[46] Auto Print/Print Interlock	0=Normal Operation 1=Print Interlock 2=Auto Print	0	0
[47] Minimum Print	0=0 increments 1=10 increments 2=100 increments 3=500 increments	0	0
[48] Net Sign Correction	0=Disable 1=Enable Print 2=Enable Print and Display	0	0
[49] STX Character	0=Disable 1=Enable	1	0
[51] Demand Mode Format	0=Single Line 1=Multiple Line	1	1
[52] Print Fields	0=Field Off 1=Displayed Weight 2=Gross Weight 3=Tare Weight 4=Net Weight 5=Scale ID Number 6=Blank Line	523400	523400
[53] Print Weight Expanded	0=Disable 1=Enable	0	0
[54] Print Weight Legend	0=Disable 1=Enable	1	1
[55] Scale ID	01-99	01	01

International Program Block [60 Group]			
Sub-block	**Options**	**U.S. Default**	**Export Default**
[61] Analog Verification	0=Disable 1=Enable	0	1
[62] Unit Switching	0=Disable 1=Enable	0	0
[63] Power-up in Pounds	0=kg 1=lb	1	0
[64] Bracketed Printing	0=Normal Print 1=Bracketed Printing	0	0
[65] Tare Legend	0=T 1=PT	0	0
[66] Remote ASCII Input	0=Print 1=Tare 2=Zero 3=Clear 4=Blank 5=ASCII	0	0
[68] Comma/Decimal Point	0=Decimal Point 1=Comma	0	1
[69] Center of Zero Legend	0=None 1=Gross Zero 2=Gross or Net Zero	1	1

Setpoint Program Block [70 Group]			
Sub-block	**Options**	**U.S. Default**	**Export Default**
[71] Setpoint Mode	0=Disable 1=4, Single-speed 2=2, Dual-speed	0	0
[72] Tolerance #1	0=Disable 1=Zero Tolerance 2=Setpoint #1 Tolerance	0	0
[73] Tolerance #2	0=Disable 1=Zero Tolerance 2=Setpoint #2 Tolerance	0	0
[74] Positive/Absolute Setpoint	0=Positive value 1=Absolute value	1	1

Diagnostics Program Block [80 Group]			
Sub-block	**Options**	**U.S. Default**	**Export Default**
[81] Expanded Weight Display	0=Disable 1=Enable	0	0

Reset Program Block			
[99] Select Default Set	0=Skip 1=Reset 0=U.S. Values 1=Export Values	N.A.	N.A.

Appendix 2: Demand and Continuous Output Data Description

Demand Output

A selectable STX (start of text) character and/or a checksum character can be included in the output data string. The net weight can be printed double width if the printer used accepts ASCII shift out <SO> and shift in <SI> characters to select expanded print. The scale ID number can also be included in the output string.

Demand output is disabled when the scale is "in motion", under gross zero, or in the expanded weight display mode. Output requests are buffered when the weight on the scale is unstable and then acted upon when the weight becomes stable. If the 8525 receives multiple requests while the scale is in motion, only the last will be executed.

Data fields are transmitted right-justified (padded with leading spaces) to maintain a constant length for each field. Non-significant leading zeroes are transmitted as spaces. If the 8525 is programmed to display a comma in place of a decimal point, then leading zeros are not replaced with leading spaces in the weight fields.

If a tare has not been taken but the tare and net fields have been selected to print, the tare and net lines are not transmitted.

Print Interlock

When print interlock is enabled, only one print of a weight is permitted. The weight on the scale must return to a net weight less than the value selected as the minimum print to reset the interlock. After the interlock has been reset, a single print of another weight greater than the minimum print value is possible.

Autoprint

Autoprint enables the 8525 to automatically print when the weight on the scale settles to no-motion. The weight on the scale must be greater than the value selected as the minimum print. After an autoprint, the net weight on the scale must return to a weight value less than the minimum print selection to reset the autoprint feature. The PRINT key remains inactive when autoprint is selected.

Net Sign Correction

Selecting this feature will enable the Model 8525 to use a tare value which is greater than the gross weight on the scale and still print a positive net weight. This is done by switching the positions of the gross and tare values and printing the absolute value of net weight. Net Sign correction allows keyboard entry of a gross weight into the tare register while the actual tare weight is on the scale and then printing gross, tare and net weight.

For example:

Weight entered into tare register:	12000	lb
Actual weight on the scale:	3000	lb
Displayed Weight	-9000	lb
The data printed would be:	12000	lb
	3000	lb TR
	9000	lb NET

Data Output Format

The 8525 can transmit demand mode data in either single or multiple line format. The data fields transmitted are selected in Group 40 (Print Fields sub-block). From one to six fields of data is output in the order selected in setup. Data fields can be repeated as desired. Refer to the following tables for single line and multiple line demand data formats.

Single Line Demand Format

Data	STX	DF1	UF1	DF2	UF2	DF3	UF3	DF4	UF4	DF5	UF5	DF6	UF6	CR	CHK	LF
Note	A	B	C	B	C	B	C	B	C	B	C	B	C	D	E	F

DF1 and UF1 and the first data field in the transmission.

- Data fields without a decimal point are seven characters long. All other data fields are eight characters long.
- Blank lines in a data transmission are eight spaces.
- No transmission is sent for fields turned off in setup.

Multiple Line Demand Format						
Line	**Data**					
1	STX	DF1	UF1	CR	CHK	LF
2		DF2	UF2	CR	CHK	LF
3		DF3	UF3	CR	CHK	LF
4		DF4	UF4	CR	CHK	LF
5		DF5	UF5	CR	CHK	LF
6		DF6	UF6	CR	CHK	LF
Note	A	B	C	D	E	F

Demand Format Table Notes

A—<STX> ASCII start of text character, hex value 02. <STX> is required by the Model 307, 8806 and 8860 printers. The <STX> character can be disabled in setup.

B—<DFX> Numeric component of data field. Refer to weight field format notes. Please refer to the Print Fields and Print Expanded sub-blocks in Chapter 3.

C—<UDF> Weight units for data field. May be any of the units selectable in setup. Please refer to the Weigh Units sub-block in Chapter 3.

D—<CR> ASCII carriage return, hex value 0D.

E—<CHK> Optional Checksum character, 2's complement of the 7 low order bits of the binary sum of all characters on a line, preceding the checksum. Checksum is used by Mettler Toledo products to detect transmission errors and can be disabled in setup.

F—<LF> ASCII line feed character, hex value 0A.

Weight Field Notes

If Print weight expanded is enabled, an ASCII <SO> character, hex 0E, will precede the net weight data field, or gross weight field if the 8525 is in the gross mode. An ASCII <SI> character, hex value 0F, will follow the corresponding units field.

If bracketed printing is enabled, then any truly measured weight (as opposed to a hand entered value) is preceded by a < character and followed by a > character.

The net weight field is an eight character field consisting of a sign character which is a space for positive weights or a minus character for negative weights followed by a seven character weight field. The seven character weight field

consists of six digits of net weight plus a decimal point. If no decimal point is used then a leading space is inserted.

If single line format is selected all weight data fields except net weight are a seven characters field consisting of six numeric digits plus a decimal point. If no decimal point is used a leading space is inserted. The most significant digit of the weight field is replaced with a minus character to indicate a negative weight.

If multiple line format is selected all weight data fields use the net weight format.

Weight data fields are followed by a units legend (such as “lb” indicating pounds) and also a description (such as “TARE” or “NET”). Refer to the Demand Mode Weight Units table (below) for weight units. The weight units legend can be disabled in setup, the “TARE” and “NET” descriptions after the tare and net weight fields cannot be disabled.

Hand entered tare in metric mode only is indicated by “T.”

Demand Mode Weight Units	
Data Field	**Weight Units (_ indicates a space)**
Gross Weight	lb, kg, g, oz, _oz_t, t, or dwt
Net Weight	lbNET, kgNET, gNET, oz NET, _oz_t_NET, tNET, or dwtNET
Tare Weight	lbTR, kgTR, kgT, kgPT, gTR, ozTR, _oz_t_TR, tTR, or dwtTR

Continuous Output Mode

The continuous output mode provides compatibility with Mettler Toledo products that require real time weight data such as the 3015 Setpoint Controller, 8623 remote display, 8617 Scoreboard, 9323 BCD Output, or the 9325 Analog Output.

The continuous output is a fixed format message output every A/D update, approximately 15 per second for analog load cell or 10 per second for DigiTOL load cells. The continuous format is fixed except for baud rate, parity, and checksum in or out. The following table shows the continuous format output:

Continuous Format																		
Character Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
					Indicated Weight						Tare Weight							
Data	STX	SWA	SWB	SWC	MSD	—	—	—	—	LSD	MSD	—	—	—	—	LSD	CR	CHK
Note	A	B	C	D	E						F						G	H

Continuous Format Table Notes

A—<STX> ASCII start of text character, 02 H.

B—<SWA> Status Word A. Refer the Status Byte A definition tables below. Note that the bit assignment changes if setpoints are enabled or disabled.

Status Word A Bit Definitions (Setpoint Enabled)				
Function	**Decimal Point Selection**	**Bit**		
		2	**1**	**0**
Decimal Point or Dummy Zero	X00	0	0	0
	X0	0	0	1
	X	0	1	0
	0.X	0	1	1
	0.0X	1	0	0
	0.00X	1	0	1
	0.000X	1	1	0
	0.0000X	1	1	1

Function	Bit
Setpoint 1, Feeding = 0	3
Setpoint 2, Feeding = 0	4
Always 1	5
Setpoint 3/Setpoint 1 Fast, Feeding = 0	6

Status Word A Bit Definitions (Setpoint Disabled)								
Function	**Selection**	**Bit**						
		6	**5**	**4**	**3**	**2**	**1**	**0**
Decimal Point or Dummy Zero	X00	ALWAYS 0	ALWAYS 1			0	0	0
	X0					0	0	1
	X					0	1	0
	0.X					0	1	1
	0.0X					1	0	0
	0.00X					1	0	1
	0.000X					1	1	0
	0.0000X					1	1	1
Increment Size	X1			0	1			
	X2			1	0			
	X5			1	1			

C—<SWB> Status. Refer the Status Byte B definition table below for setpoint enabled and setpoint disabled.

Status Word B (Setpoints Enabled)		Status Word B (Setpoints Disabled)	
Function	**Bit**	**Function**	**Bit**
Gross/Net, Net = 1	0	Gross/Net, Net = 1	0
Negative = 1	1	Negative = 1	1
Over-capacity = 1	2	Over-capacity = 1	2
Motion = 1	3	Motion = 1	3
lb/kg, kg = 1	4	lb/kg, kg = 1	4
Always 1	5	Always 1	5
Tolerance 1, IN Tolerance = 0 1	6	Power-up = 1	6

D—<SWC> Status Word C. Refer to Status Byte C definition table below for setpoint enabled and setpoint disabled.

The Print Request Bit (Bit 3 of Status Word C) is set to “true” (= 1) when a print request occurs. Motion does not affect this bit.

Status Word C (Setpoints Enabled)		Status Word C (Setpoints Disabled)	
Function	**Bit**	**Function**	**Bit**
Always 0	0	Always 0	0
Always 0	1	Always 0	1
Always 0	2	Always 0	2
Print Request = 1	3	Print Request = 1	3
Setpoint 4/Setpoint 2 Fast, Feeding = 0	4	Expanded Weight Mode = 1	4
Always 1	5	Always 1	5
Tolerance 2, IN Tolerance = 0	6	Manual Tare in kg Only Mode = 1	6

E—<INDICATED WEIGHT> Six digits of gross or net weight data. No decimal point in field.

F—<TARE WEIGHT> Six digits of numeric tare weight data. No decimal point in field.

G—<CR> ASCII carriage return, hex value 0D.

H—<CHK> Optional Checksum character, 2's complement of the 7 low order bits of the binary sum of all characters on a line, preceding the checksum.

Remote ASCII Character Input

The Model 8525 is capable of performing clear tare, print, auto tare and zero functions equivalent to pressing the Clear, Print, Tare and Zero key, when specific ASCII uppercase characters are transmitted to it. These functions are subject to the same restrictions as their keyboard equivalents. The parity and baud rate of the data input must be the same as those selected for data output.

The 8525 also supports the <Enq> continuous output mode. If <Enq> continuous mode is selected the 8525 will output one continuous format message every time an ASCII <Enq> character, hex 05, is received. The <Enq> continuous message format is identical to the standard continuous format and is not subject to demand mode output restrictions (such as unstable weight, over, under, expanded weight display).

The external commands that are recognized by the 8525 are listed in the table below. All commands sent to the 8525 must be upper case. A Carriage Return <CR>, Line Feed <LF> may be used to terminate a command but is not required.

Remote ASCII Control Characters

ASCII Command Character	Keyboard Equivalent
C	CLEAR Key
P	PRINT Key
T	TARE Key
Z	ZERO Key
< Enq >	None

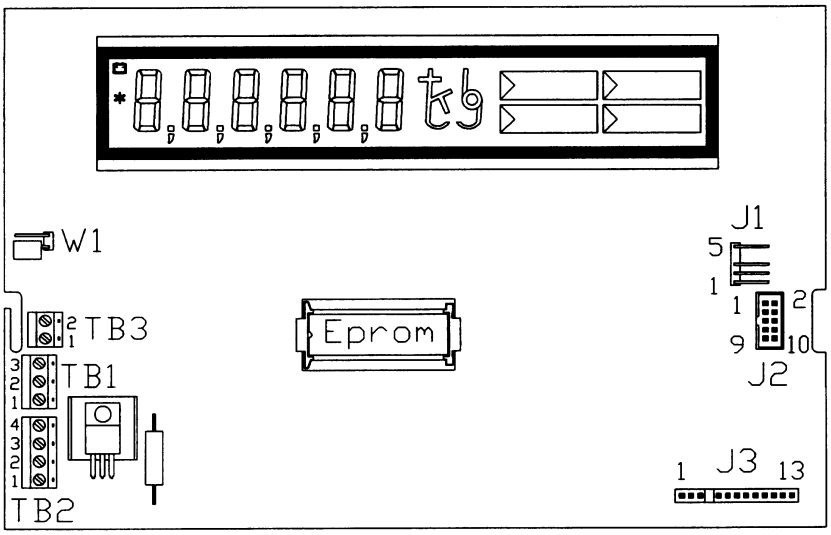
When a command is received by the 8525, it takes approximately 200 ms to process it. Any command received while the 8525 is processing a command is ignored. Command strings should be spaced no closer than 0.5 seconds apart. Any character received that is not listed in the Remote ASCII Control Character table is ignored.

Appendix 3: Connections and Jumpers

This section gives detailed jumper and connection information for the analog load cell, DigiTOL load cell, and Fiber Optic Data I/O PCB and converter module.

Main PCB

The following diagram and chart show jumpers and connections for the Main PCB.

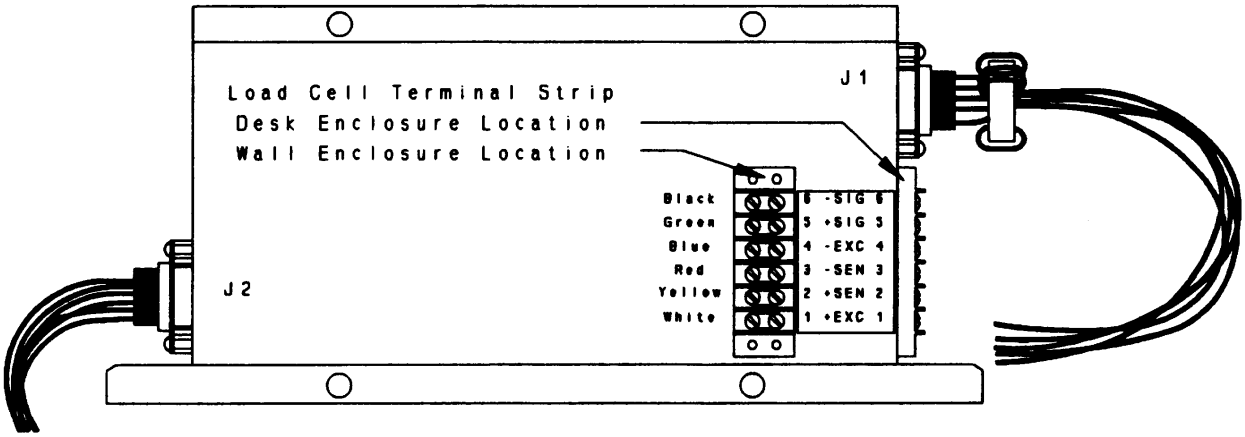


Main PCB Terminal Strips	Main PCB Connectors	Main PCB Jumpers
TB1 Battery Pack / AC Supply Input Pin 1—Low Battery IN (TTL) Pin 2—Ground Pin 3— +12 VDC Supply	J1—Data I/O J2—Analog Load Cell Interface Module J3—Keyboard	W1—Setup **Out = Normal Operation** In = Access Setup Mode
TB2 DigiTOL Load Cell Interface Pin 1— + 11 VDC Supply Pin 2—Ground Pin 3—RxD Pin 4—TxD		
TB3 SMx. Power Supply Input (Export) Pin 1— + 12 VDC Supply Pin 2—Ground		

Bold Indicates Default Settings

Analog Load Cell Interface Module

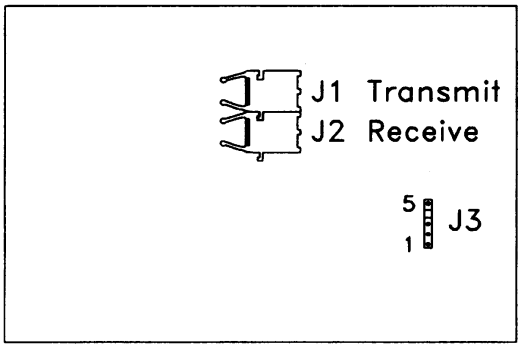
Analog Load Cell Module Connectors



J1—Analog Load Cell Input from Terminal Strip

J2—Data I/O to Logic PCB

Fiber Optic PCB Connectors



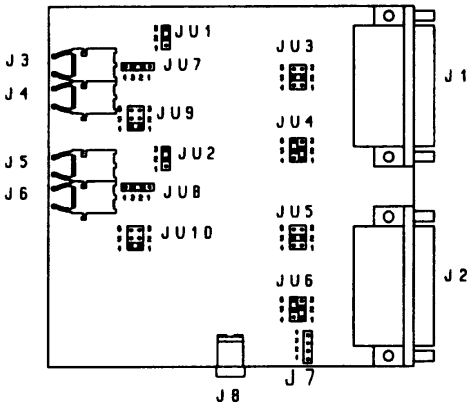
Fiber Optic PCB Connectors

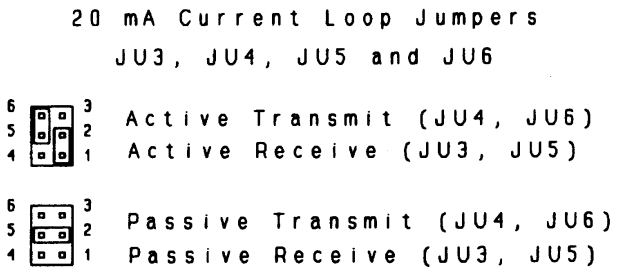
J1—Fiber Optic Transmit

J2—Fiber Optic Receive

J3—Data I/O

Optional Dual Channel Fiber Optic Converter Module





Fiber Optic Converter Connectors	**Fiber Optic Converter Jumpers**
J1—Channel 1: RS-232C/20 mA Data I/O	JU3—20 mA Receive Act/Pas (1-2), (5-6) Select Active Receive **(2-5) Select Passive Receive**
J2—Channel 2: RS-232C/20 mA Data I/O	JU4—Channel 1 20 mA Transmit Act/Pas **(1-2), (5-6) Select Active Transmit** (2-5) Select Passive Transmit
J3—Channel 1 Fiber Optic Transmit	JU5—Channel 2 20 mA Receive Act/Pas (1-2), (5-6) Select Active Receive **(2-5) Select Passive Receive**
J4—Channel 1 Fiber Optic Receive	JU6—Channel 2 20 mA Transmit Act/Pas **(1-2), (5-6) Select Active Transmit** (2-5) Select Passive Transmit
J5—Channel 2 Fiber Optic Transmit	JU7—Channel 1 Data/Remote Print Input (1-2), (3-4) ASCII Character Input **(2-3) Remote Print Pulse Input**
J6—Channel 2 Fiber Optic Receive	JU8—Channel 2 Data/Remote Print Input (1-2), (3-4) ASCII Character Input **(2-3) Remote Print Pulse Input**
J7—Not Used	JU9—Channel 1 Fiber Optic Cable Length (OUT) Less than 50 feet **(1-4) 50 to 100 feet**
J8—Power In	JU10—Channel 2 Fiber Optic Cable Length (OUT) Less than 50 feet **(1-4) 50 to 100 feet**

Bold indicates Default Settings

Appendix 4: Declaration of Conformity

Declaration of Conformity
Konformitätserklärung
Déclaration de Conformité
Delcaración de Conformidad
Verklaring de Overeenstemming
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, daβ 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: 8525 Digital, Low Voltage Indicator

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).
Al que se refiere esta declaración es conforme a la(s) norma(s) u otro(s) documento(s) normativo(s).
Waarnaar deze verklaring verwijst, aan de volende norm(en) of richtlijn(en) beantwoordt.
A cui se riferisce questa dichiarazione è conforme alla/e sequente/i norma/e o documento/i normativo/i.

CE Conformity / CE-Konformität / Conformité CE
90/384/EU Nonautomatic Balances and Scales / Nichteselbsttätige Waagen / Balances a Functionnement non automatique*
EN45501:1991 Adopted European Standard / Norme Européenne Adoptée / Angenommene Europäische Norm
89/336/EU EMC Directive / EMU-Richtlinie / Directive concernant la CEM*
EN55022, A 01.04.87 Emissions / Funkstörungen

Other Directives and Standards / Andere Richtlinien und Normen / Autres documents
corresponding to local requirements / entsprechend lokalen Anforderungen / correspondant aux exigences locales

FCC, Part 15, class A	Emissions / Funkstörungen*	
FM3610	Intrinsic Safety For Hazardous Area (as labeled, for class group and division)	
EN 55014:1977, EN 55020:1977	PTB Nr. Ex-91.C.2047	Intrinsic Safety For Hazardous Area
AS 2380, 1-1998/ AS 2380, 7-1987	Certificate No, Ex 1349	Intrinsic Safety For Hazardous Area**

*All testing was performed on this indicator using the 120 VAC power supply, the 230 VAC power supply, and the 12 VDC battery pack.
**Approved for use with battery pack only.

Office of Weights and Measures
Worthington, Ohio USA
August, 1995

according to EN45014

Appendix 5:
Maintenance Log

Maintenance Description	Performed By	Date

GLOSSARY

This glossary defines some of the specialized terminology and concepts that are used in the weighing industry.

Autotare—An autotare is taken by pressing the TARE key with the empty container on the scale. The 8525 then displays a zero weight with the net cursor illuminated. The container is then filled. The 8525 then displays the net weight of the contents. If the TARE key is pressed with the 8525 in the net mode then the current weight on the scale becomes the new tare value.

Auto Zero Maintenance (AZM)—AZM is a way for the 8525 to gradually rezero itself to compensate for small changes in zero. Class III, legal-for-trade scales typically use an AZM range of ±0.5 display increments. AZM is active any time the weight on the scale is stable and is within the AZM range near gross zero.

AZM, pushbutton zero, and zero reference captured at power-up are temporary variables that are lost when the 8525 is turned off. The only way to make a permanent change to the center of zero is to recalibrate the 8525 in setup mode or to capture a new permanent center of zero (Chapter 3, Zero Maintenance and Filtering program block).

Chain Tare—Chain tare is a rarely used mode of keyboard entered tare. If a tare is entered using the numeric keypad with the 8525 in the net weight mode, then the tare value entered is added to the current tare weight value. Tare interlocks inhibit chain tare.

Dribble—Dribble determines where the 8525 switches from fast to slow feed for dual speed setpoints. The 8525 switches to slow feed at a weight equal to the dribble value (see setpoint value). If the dribble value is larger than the setpoint value then the feed will start in slow speed.

Keyboard Tare—Keyboard entered tare is used when the empty weight of a container is a known value. The known tare weight is entered using the numeric keys, and the TARE key is pressed. The 8525 displays the net weight of the contents of the container.

Major Increment—Unit of display; smallest digit value displayed in normal operation.

Minor Increment—One more decade of resolution than is displayed during normal operation.

Net Sign Correction—Net sign correction is a feature that permits the 8525 to be used for both shipping (inbound empty) and receiving (inbound loaded) operations. If net sign correction is enabled, the 8525 will swap the gross and tare weight field on the printed ticket, if necessary, so that larger weight is the gross weight, the smaller weight is the tare weight. The result is always a positive net weight.

Preact—Preact compensates for the amount of extra material that feeds after the 8525 signals the feeder to stop and before the material feed actually stops.

Pushbutton Zero—Pushbutton zero is a way for the operator to capture a new gross zero reference point. The weight on the scale must be stable and within the pushbutton zero capture range of the original zero recorded during calibration.

Tare—Tare is the empty weight of a container or vehicle. Tare is normally used to determine the net weight of the contents of the container. Tare is used in several different ways.

European Standards

Auto Tare—No operator action is involved. The tare value comes from some remote location such as a computer or PLC.

Preset Tare—The operator enters a tare value manually using the keypad and presses the TARE key.

Semi-Auto Tare—The TARE key is pressed and the current weight on the indicator becomes the tare value.

United States Standards

Auto Tare—The weight on the scale becomes the tare value when a signal from an external controller is received. No operator action is involved.

Manual Tare (Keyboard Tare)—The operator enters a tare value manually and presses the TARE key.

Programmable Tare—A predetermined tare value is sent from a remote controller; no operator action is involved.

Semi-Auto Tare—The TARE key is pressed and the current weight on the indicator becomes the tare value.

Tare Interlocks—Tare interlocks are a set of restrictions on how tare can be used that are required by some local weights and measures regulations. If tare interlocks are enabled, the 8525 must be at gross zero to clear a tare weight or to enter a keyboard tare. Tare interlocks will prevent the 8525 from replacing an existing tare with a new autotare. Keyboard tare can only be entered with the 8525 in the gross weight mode.

Setpoints—Setpoints are on/off outputs that indicate whether the displayed weight on the scale is greater than or less than a preprogrammed weight value. Setpoints are typically used in material filling applications in order to fill a container to a preset weight.

The 8525 does not provide discrete outputs. The setpoint information is encoded in the continuous serial data output. To use the 8525 setpoint capabilities an additional piece of equipment that understands the continuous format data output is required. The Model 3015 setpoint controller understands the continuous format data output and can convert the setpoint data into high level on/off outputs to control a material feeder.

The 8525 provides either single-speed, 4-setpoint capability or dual-speed, 2-setpoint output capability. Dual speed mode is used with variable-speed feeders that permit coarse filling at a high rate of feed, then switch to a fine-feed rate to provide an accurate cutoff.

Setpoint Value—The setpoint value is the final weight cutoff desired. The slow-feed output stops at a weight equal to the setpoint value minus the preact value (see preact).

Zero—Zero is the empty weight of the scale platform or weighbridge. The gross zero reference is recorded during the calibration procedure. The zero reference recorded during calibration can be modified to compensate for changes that are due to material buildup on the scale or temperature change.

Zero Capture at Power-up—If enabled, the 8525 attempts to capture a new center of zero when the 8525 is turned on. Weight on the scale must be stable and within the zero capture at power-up range of the original zero recorded during calibration. This value is lost when power is switched off.

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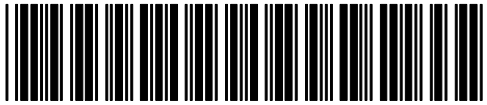

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