LYNX®

Industrial Terminal

Technical Manual

C14467800A
6/01

FCC Notice

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

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

METTLER TOLEDO RESERVES THE RIGHT TO MAKE REFINEMENTS OR CHANGES WITHOUT NOTICE.

This manual describes the operation and functionality of the LYNX terminal containing software number E145828. The software number is displayed during the power-up sequence.

CUSTOMER FEEDBACK

Your feedback is important to us! If you have a problem with this product or its documentation, or a suggestion on how we can serve you better, please fill out and send this form to us. Or, send your feedback via email to: quality_feedback.mtwt@mt.com. If you are in the United States, you can mail this postpaid form to the address on the reverse side or fax it to (614) 438-4355. If you are outside the United States, please apply the appropriate amount of postage before mailing.

Your Name:		Date:
Organization Name:		METTLER TOLEDO Order Number:
Address:		Part / Product Name:
		Part / Model Number:
		Serial Number:
		Company Name for Installation:
Phone Number: ( )	Fax Number: ( )	Contact Name:
E-mail Address:		Phone Number:

Please check the appropriate box to indicate how well this product met your expectations in its intended use?	
	Met and exceeded my needs
	Met all needs
	Met most needs
	Met some needs
	Did not meet my needs

Comments/Questions:

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

☐ Retail ☐ Light Industrial ☐ Heavy Industrial ☐ Custom

RESPONSE: Include Root Cause Analysis and Corrective Action Taken.

B12745800A

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Declaration of conformity

Konformitätserklärung
Déclaration de conformité
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We/Wir/Nous/WIJ/Noi: **Mettler-Toledo, Inc.**
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Worthington, Ohio 43085
USA

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dichiariamo sotto nostra unica responsabilitá, che il prodotto,

Model/Type: LYNX

to which this declaration relates is in conformity with the following standard(s) or other normative document(s).
auf das sich diese Erklärung bezieht, mitder/den folgenden Norm(en) oder Richtlinie(n) übereinstimmt.
Auquel se réfère cette déclaration est conforme à la (aux) norme(s) ou au(x) document(s) normatif(s).
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Waarnaar deze verklaring verwijst, aan de volende norm(en) of richtlijn(en) beantwoordt.
A cui si 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 à Functionnement non automatique
EN45501:1992 Adopted European Standard / Norme Européenne Adoptée / Angenommene Europäische Norm
89/336/EU EMC Directive / EMU-Richtlinie / Directive concernant la CEM
EN55022, B : 1987 Emissions / Funkstörungen
EN50082-2: 1995 Immunity
73/23/EU Low Voltage / Niederspannung / basse tension
EN61010 el. Safety / el. Sicherheit / sécurité el.

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

Darrell Flocken, Manager - Weights & Measures
Office of Weights and Measures
Worthington, Ohio USA
~~August, 1995~~
~~Revised November, 1995 (added compliance to NAWI Directive)~~
Revised June, 1997 (added compliance to EN50082-2) according to EN45014

Precautions

Read this manual before operating or servicing this equipment.

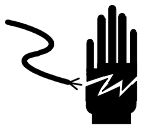
Always take proper precautions when handling static sensitive devices.

Do not connect or disconnect load cells or a scale base to the equipment with power connected or damage may result.

Always remove power and wait at least 30 seconds before disconnecting any cables. Failure to observe this precaution may result in damage to, or destruction of the equipment.

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.

WARNING

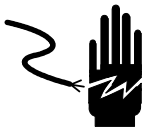
DISCONNECT ALL POWER TO THIS UNIT BEFORE INSTALLING, SERVICING, CLEANING OR REMOVING THE FUSE. FAILURE TO DO SO COULD RESULT IN BODILY HARM AND/OR PROPERTY DAMAGE.

WARNING

POWER OUTLETS MUST BE EASILY ACCESSIBLE AND LOCATED NO FURTHER THAN THE LENGTH OF THE POWER CORD SUPPLIED WITH THE PRODUCT. FAILURE TO DO SO COULD IN RESULT IN PERSONAL INJURY AND/OR PROPERTY.

CAUTION

OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.

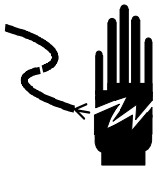


WARNING

FOR CONTINUED PROTECTION AGAINST SHOCK HAZARD, CONNECT TO PROPERLY GROUNDED OUTLET ONLY. DO NOT REMOVE THE GROUND PRONG.

CAUTION

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

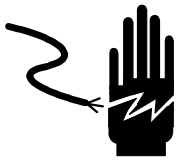


⚠ WARNING!

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

⚠ WARNING!

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



⚠ WARNING

POWER OUTLETS MUST BE EASILY ACCESSIBLE AND LOCATED NO FURTHER THAN THE LENGTH OF THE POWER CORD SUPPLIED WITH THE PRODUCT. FAILURE TO DO SO COULD IN RESULT IN PERSONAL INJURY AND/OR PROPERTY.

CONTENTS

1

Introduction

This manual provides information for programming and servicing the LYNX terminal, a flexible, high performance terminal designed for use in applications requiring dynamic weighing, weight accumulation, automatic filling, prompting an operator for sequencing, storing tare weights, and more.

NOTE: Specific information on the LYNX filling controller (LTFA) can be found in the appendix.

Refer to the LYNX Terminal Installation Guide for installation instructions. Review the instructions thoroughly before beginning installation. Once the unit is installed, proceed to the section entitled "Jumper and Switch Settings" on page 1-7 in this manual.

In addition, the CD-ROM includes the LYNX Terminal User's Guide which provides Information on operating the LYNX terminal.

Review all instructions and safety precautions provided in this manual carefully. Installation and service procedures should be performed only by authorized personnel.

Inspection and Contents Checklist

Follow the procedures listed here.

1. If the LYNX terminal's shipping container appears damaged upon delivery, check inside for damage. File a freight claim with the carrier if necessary.
2. If the container was undamaged, unpack the container if you have not already done so. Keep the original packing materials for future use.
3. Make sure the LYNX terminal package contains the following:
    - LYNX terminal
    - Screwdriver
    - Set of capacity labels
    - Documentation CD
    - Ferrite ring for DigiTOL scales

    In addition, the panel-mount version of the LYNX terminal includes:

    - Three nylon cable ties
    - 2 mm hex key
    - Weights and measures sealing screws
    - Allen wrench

If any materials are missing or damaged, please contact your authorized METTLER TOLEDO representative immediately.

Model Identification

The LYNX terminal is available in three models. The stainless steel harsh environment desk/wall model (LTHA) is suitable for use on a desktop or other flat surface, or can be mounted on a wall using the same mounting bracket used for desktop applications. The panel mount unit (LTPA) can be mounted through a flat panel using two integral brackets. The harsh environment filling controller (LTFA) is a special self-contained configuration for filling control applications. Use the information below to confirm the correct model number for the LYNX terminal with which you will be working. The model number is found on the data plate on the side of the LYNX terminal.

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LYNX Terminal

Enclosure Type

PA=Panel

HA=Harsh Environment (Desk/Wall)

FA=Harsh Filling Controller

Option #1

0=No Option

2=HAP Analog Load Cell

Option #2

0=No Option

5=BCD Output (LTPA only)

8=Analog Output

Option #3 (LTPA, LTFA only)

0=No High Level Setpoint Output Option

1=(1) 28-250VAC Output

2=(2) 28-250VAC Outputs

3=(3) 28-250VAC Outputs

4=(4) 28-250VAC Outputs

5=(5) 28-250VAC Outputs

6=Output Board Only

7=(5) 5-60 VDC Outputs

8=(5) N.O. Contact Outputs

A=(2) Inputs, (3) Outputs (90-140VAC)

B=(2) Inputs, (3) Outputs (180-280VAC)

Option #4

Always = 0

Destination Market

Refer to the appendix.

Physical Dimensions

The physical dimensions of the LYNX panel-mount model are as follows:

- 10.06 in. (255 mm) × 5.6 in. (142 mm) at the front of the terminal
- 9.5 in. (241 mm) × 4.91 in. (125 mm) at the rear
- 6.46 in. (164 mm) deep behind the panel

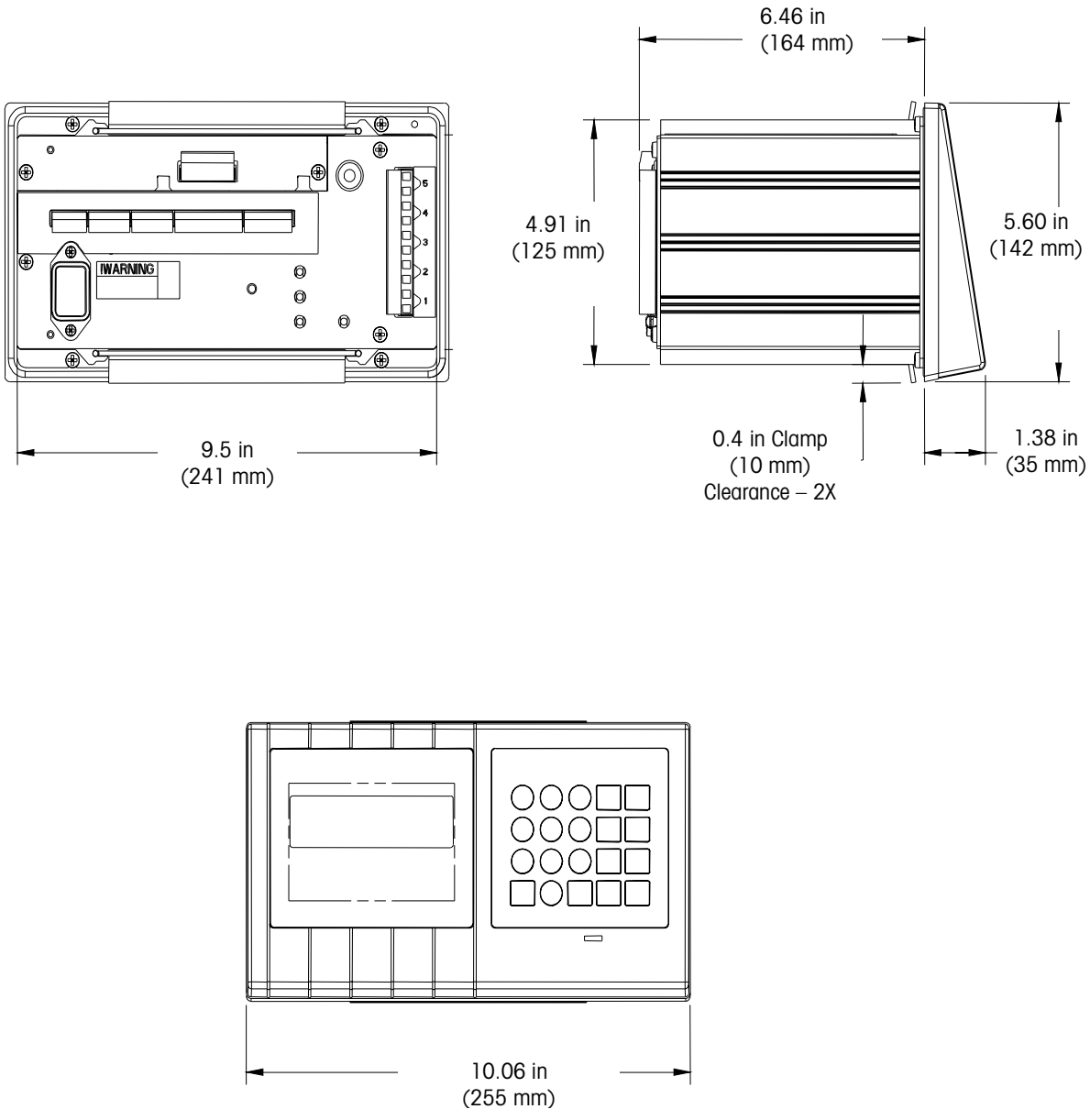


Figure 1-1 LYNX Panel Mount Dimensions

The harsh environment LYNX terminal measures:

- 10.00 in (254 mm) x 7.00 in (178 mm) at the front of the terminal
- 3.22 in (82 mm) deep

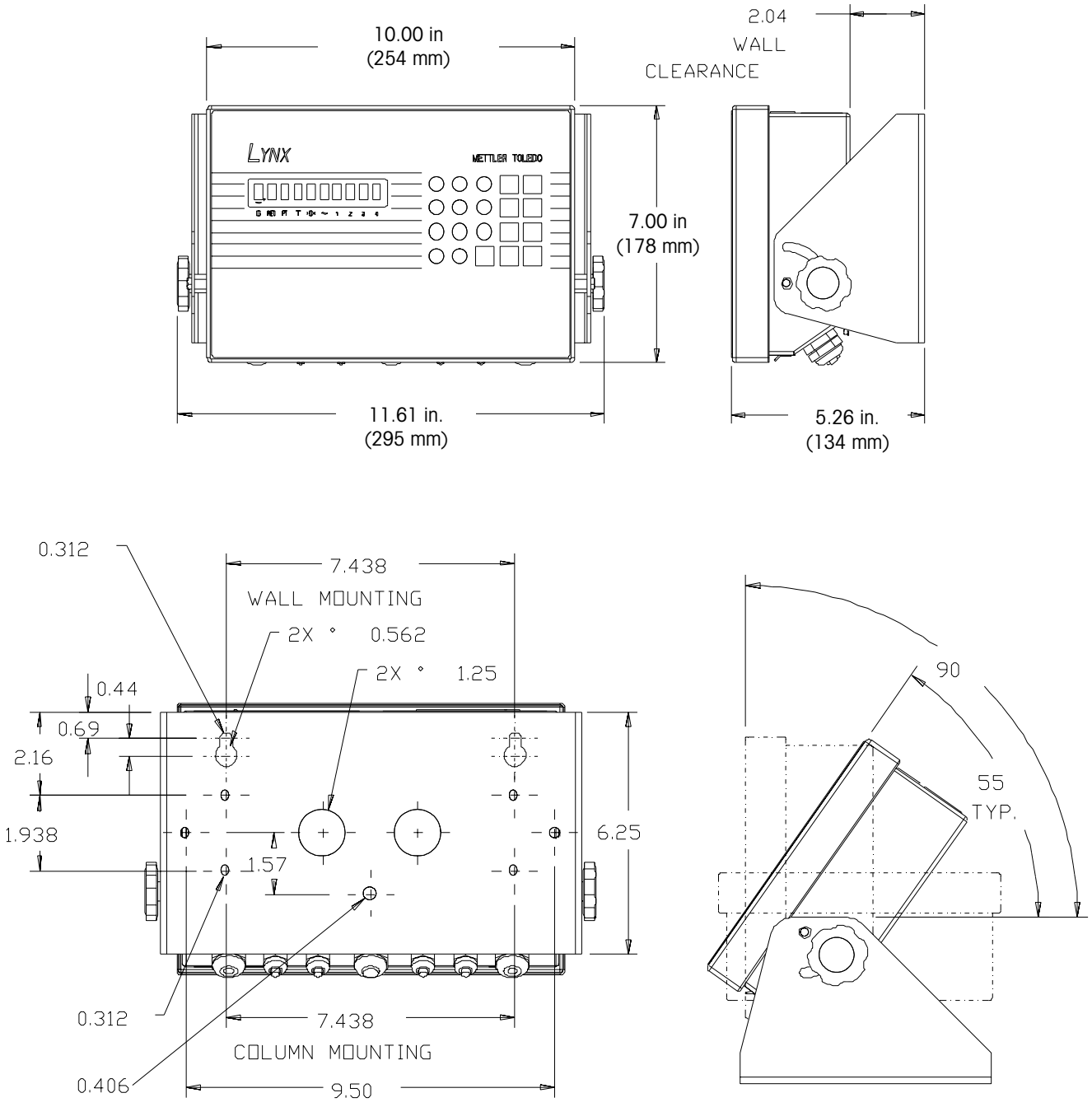


Figure 1-2 LYNX Harsh Environment (Desk/Wall) Dimensions

The harsh environment LYNX Filling Controller measures:

- 11.12 in (282 mm) x 9.42 in. (239 mm) at the front of the controller
- 9.62 in. (244 mm) deep (including wall mount brackets)

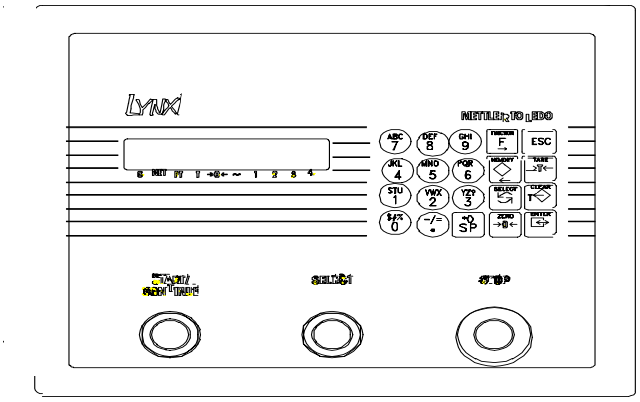


Figure 1-3: LYNX Harsh Environment Filling Controller Dimensions

Specifications

Model	Harsh Environment Enclosure	Panel Mount Enclosure	Harsh Environment Filling Controller
Dimensions	• 10.00 in (254 mm) x 7.00 in (178 mm) at the front of the terminal • 3.22 in (82 mm) deep	•10.06 in. (255 mm) × 5.6 in. (14.2 mm) at front •9.5 in. (241 mm) × 4.91 in. (125 mm) at rear •6.46 in. (164 mm) behind panel	• 11.12 in (282 mm) x 9.42 in. (239 mm) at the front of the controller • 9.62 in. (244 mm) deep (including wall mount brackets)
Construction	NEMA4x, IP65 brushed stainless steel (type 304)	NEMA4, IP65 front panel; NEMA1, IP30 behind the panel	NEMA4x, IP65 brushed stainless steel (type 304)
Shipping Weight	12 lb (5.5 kg)	11 lb (4.9 kg)	21 lb (9.4 kg)
Power	Power and power cord according to destination market code 100/120 VAC (85-132 VAC) or 220/240 VAC (180-264 VAC); 49-63 Hz; 12 watts maximum		
Operating Temperature	14°F to 113°F (-10°C to 45°C); 10-95% relative humidity, non-condensing		
Display	10-character, alphanumeric, vacuum fluorescent, 0.44 in (11mm) high; Updated 10 times per second		
Keypad	20-key, numeric, function, and alphanumeric input, polyester construction		
Scale Performance	•500 to 100,000 scale divisions capacity •0.00001 to 200 division size •Count-by 1, 2 or 5 •2 million internal counts for analog load cell scales	• 9 calibration engineering units of measure • 9 secondary engineering units of measure and custom units • Push button, preset, stored, and automatic tare	
Scale Interface	•Safe area analog load cells, maximum 8 x 350Ω; 2 or 3 mV/V selection •DigiTOL® load cell scales and junction box	• Hazardous area analog load cells when used with optional barrier	
Scale Update Rate	•Analog load cells at 20 updates per second	• DigiTOL load cells at 4-12 updates per second	
TraxDSP® Filtering	•100% digital filtering with software tuning •Analog and DigiTOL low pass and stability filters	• Analog notch filter • Automatic filter tuning algorithm	
Discrete Outputs	•5 low level, open-collector, 5-24 VDC outputs standard	• Programmable as 1- or 2-speed setpoints with preact, zero tolerance, setpoint tolerance, 1- or 2-speed feed control with preact, discharge control, motion, net mode, center of zero, under zero, over capacity	
Discrete Inputs	•3 low-level, ground true, 0-24 VDC inputs standard	• Programmable as tare, clear, zero, print, switch units, blank display, start dynamic weighing, inhibit key-board, x10 weight display, display accumulator total, OK to feed, OK to discharge, advance prompt list	
Serial Interface	• Continuous, Demand and Bi-directional Host Protocols • 300-38.4k baud, 7 or 8 data bits, 1 or 2 (COM2 and 3) stop bits	• Selectable parity, checksum, Xon/Xoff flow control • COM1 – RS-232 and RS-485 • COM2 – RS-232 and 20mA Current Loop • COM3 – RS-422 and DigiTOL load cell	
Memory	• Flash downloadable program memory • Removable EEPROM for calibration data • Battery-backed RAM and battery-backed, Y2K-compliant, time and date with multiple formats • 20 item prompt list for operator, process sequencing	• 20 user programmable, 40-character literal print messages • Consecutive numbering for print output serialization • Sub-total and total accumulators • 99 ID memory records for tare and/or accumulation • 4k bytes transaction record data storage	
Approvals	• UL (Underwriters Laboratories) per UL1950 • cUL (Canadian) per CSA 22.2 #950 • CE (European) Low Voltage Directive	• U.S. Weights and Measures Class III and IIIL NTEP Certificate of Conformance Number 95-085 • CE (European, OIML) Weights and Measures approval up to 6000e, # T2206 • Approval for other markets available on request	
Options	• 4-20mA, 0-5VDC, 0-10VDC, 16 bit D/A analog output • 6 decade, BCD weight data output (panel mount) • Internal high-level, solid-state discrete output relays (panel mount)	• Hazardous area analog load cell barrier • X-purged enclosure for hazardous area locations • Accessories including cables, printers, remote displays	

Jumper and Switch Settings

Controller

Jumpers and switches on the Controller PCB should be set as follows:

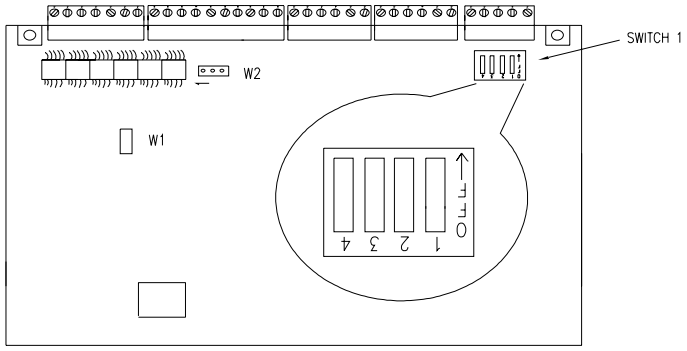


Figure 1-4 Controller PCB

Throughout this manual jumper status is denoted as follows: ON = jumper in
OFF = jumper out.

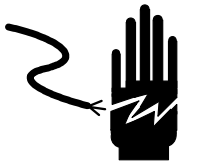
- **W1** jumper should be removed for 3 mV/V, installed for 2 mV/V analog load cell inputs.
- **W2** jumper is the voltage selection for the discrete output port PAR2. If jumpered between pins 1 and 2, the supplied voltage is 5 volts. If jumpered between pins 2 and 3 the reference voltage is 8 volts on early PCBs, 12 volts on later PCBs.
- **W3** jumper controls the on-board watchdog timer. It must be installed (enabled) except during testing at the factory.
- **W4-W7** (not shown) bypass the protective resistors installed in the LYNX terminal to protect the Controller PCB against mis-wiring to COM3. These jumpers should be installed only if communications problems occur when installing an RS-422/RS-232 converter to COM3. Leave the jumpers removed for all DigiTOL SCALES and other applications.
- **W8** (Not shown) provides a choice of +19V or 12V power for DigiTOL load cell operation. This jumper must be in the +19V (pins 1 and 2) position if analog load cells are connected.

Please note the direction of the OFF selection for Switch 1 settings. These are shown in the detail view shown in figure 1-4 toward the edge of the PCB.

- **SW1-1** is the setup enable switch. This switch should be ON to access all setup parameters.
- **SW1-2** is the legal-for-trade switch. SW1-2 should be ON for legal-for-trade applications. If ON, the LYNX terminal requires setting SW1-1 OFF when exiting setup.
- **SW1-3** is the flash enable switch. SW1-3 must be ON when downloading new software. It must be OFF during normal operation.
- **SW1-4** is always OFF.

Apply Power

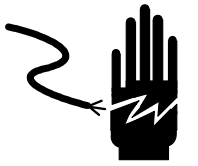
Following the connection of all external wiring and configuration of circuit board jumpers and switches, power can be applied to the LYNX terminal. Visually inspect the unit to verify that these steps have been properly carried out, then apply power.



WARNING

VERIFY POWER, NEUTRAL, AND GROUND WIRES ARE CORRECT AT THEIR SOURCE PRIOR TO APPLYING AC POWER. FAILURE TO DO SO MAY RESULT IN BODILY INJURY.

On harsh environment models, power is applied by plugging the line cord into a properly grounded AC power outlet. On panel mount models, power is applied by inserting the molded end of the power cable to the rear of the unit then plugging into a properly grounded AC power outlet.



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.

Power-up Sequence

See the appendix for information on loading software and power-up error messages and actions.

The software part number is shown on the display during power-up. The revision level is indicated by a letter before the part number. For example: PN E145828 indicates revision level E.

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

1. All segments of the display windows are lit. This verifies operation of all segments. The display then alternately illuminates blocks of segments.
2. The display reads "Mettler" then "Toledo" then "LYNX" while the terminal performs internal diagnostic self-tests on memory and identifies optional boards that are installed. The terminal also checks the location of setup parameters and memory fields. If these have been moved or changed (as when loading software), an error message appears.
3. Next, the terminal tests communication with the load cell. If the LYNX terminal is unable to establish communication, an error is displayed.
4. After a delay, the terminal displays the software part number and advances to normal operation mode. If the Power-up Timer is enabled (refer to Chapter 3), the LYNX terminal counts down the designated period before advancing to normal operation mode.

The total power-up sequence requires approximately 30 seconds. The power-up sequence is analogous to the time required to "boot" a personal computer.

Scale Build Determination

If a standard, recommended scale build is desired, proceed to Chapter 3, Programming and Calibration.

If a nonstandard build is desired or if the analog scale input is used with a mechanical lever system conversion, the minimum increment size for the scale base must be determined before calibration. The following sections describe minimum increment size for Bench and Portable Single DigiTOL load cell scale bases and analog load cell scales.

Minimum Increment Size for Bench and Portable Single DLC 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 LYNX 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 selection for an analog scale input is determined by calculating the microvolts per increment for the desired build.

To calculate the microvolts per increment:

For hazardous area applications, excitation voltage is 5.

1. Solve the following equation for μV per increment.

$$\mu V \text{ per Increment} = \frac{\text{Increment Size} \times \text{Cell Output} \times \text{Excitation Voltage (15)} \times 1000}{\text{Load Cell Capacity} \times \text{Number of Cells or Lever Ratio}}$$

   The increment size, scale capacity, and load cell capacity must all be measured in the same weight units, lb or kg. If the weight units for any of these variables are listed in kg units, multiply by 2.2046 to convert to lb units for the purposes of this calculation.

   Load cell output is rated in mV/V (millivolts per volt of excitation), marked on 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 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.

$$\text{\# Increments} = \frac{\text{Calibrated Capacity}}{\text{Increment Size}}$$

3. Use the following microvolt build table to determine if the μV per increment calculated in step 1 is within the range allowed for the total number of increments calculated in step 2. These parameters have demonstrated stable builds but smaller minimum μV per increment and larger total number of increments are possible.

Microvolt Build Table			
Total Number of Increments	Minimum µV per Increment	Maximum mV per Increment	
		2 mV/V	3 mV/V
600	5.0	43.3	63.3
1,000	3.0	26.0	38.0
1,200	2.5	21.7	31.7
1,500	2.0	17.3	25.3
2,000	1.5	13.0	19.0
2,500	1.2	10.4	15.2
3,000	1.0	8.7	12.7
4,000	0.75	6.5	9.5
5,000	0.6	5.2	7.6
6,000	0.5	4.4	6.4
8,000	0.375	3.3	4.8
10,000	0.3	2.6	3.8
12,000	0.25	2.2	3.2
15,000	0.2	1.7	2.5
16,000	0.18	1.6	2.4
20,000	0.15	1.3	1.9
25,000	0.12	1.0	1.5
30,000	0.1	0.87	1.3
32,000	0.1	0.81	1.2
35,000	0.1	0.74	1.1
40,000	0.1	0.65	0.95
45,000	0.1	0.58	0.84
48,000	0.1	0.54	0.80
50,000	0.1	0.52	0.76

The LYNX terminal should never be programmed for less than 0.5 µV per increment when used with single load cell applications and never less than 0.1 µV per increment when used with multiple load cell applications.

The LYNX terminal CANNOT be calibrated for builds that exceed the maximum µV per increment listed in the microvolt build table.

Sample Calculation Analog Cells

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	15 VDC

2. Use the formula from step 1 to calculate the µV per increment.

$$\mu V \text{ per Increment} = \frac{0.5 \text{ lb} \times 2 \text{ mV/V} \times 15 \times 1000}{2500 \text{ lb} \times 4 \text{ load cells}} = 1.5 \ \mu V/\text{inc.}$$

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

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

4. Check the microvolt build table to see that 1.5 µV per increment build is within the acceptable range for 10,000 increments. It is, so this is an acceptable build.

Sealing the Enclosure For Weights and Measures Applications

After setup is complete, most legal-for-trade applications require sealing the enclosure so modifications cannot be made. If your LYNX terminal is not used for legal-for-trade applications, skip this section. Make sure the SW1-1 switch (setup access) is OFF before sealing the enclosure.

Sealing the Panel Mount Enclosure

The enclosure may be sealed by applying destructible paper seals or a lead seal. To seal the panel-mount enclosure with a lead seal:

1. Screw the special through-hole sealing screw provided into the holes shown.
2. Tighten these two screws and run a wire seal through the holes in the heads of the screws.
3. Apply the lead seal.

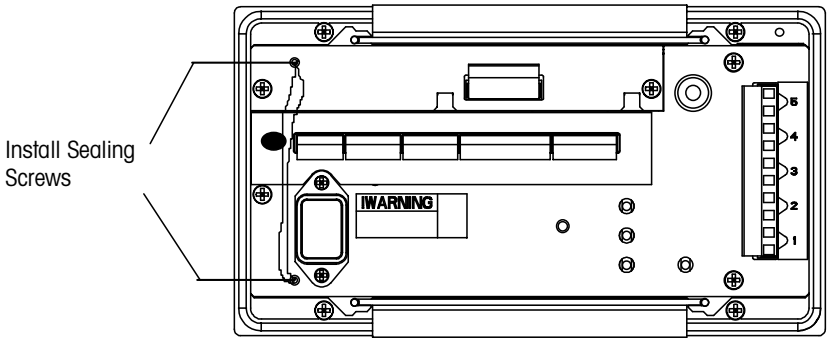


Figure 1-5

Sealing the Harsh Environment Enclosure

The harsh environment filling controller enclosure provides a similar provision for Weights and Measures sealing.

The enclosure may be sealed by applying destructible paper seals or a lead seal. To seal the harsh environment enclosure using a lead seal:

1. Locate the hole in the tang of the cover latching clip.
2. Run a wire seal through the hole and around the lead seal.
3. Apply the lead seal.

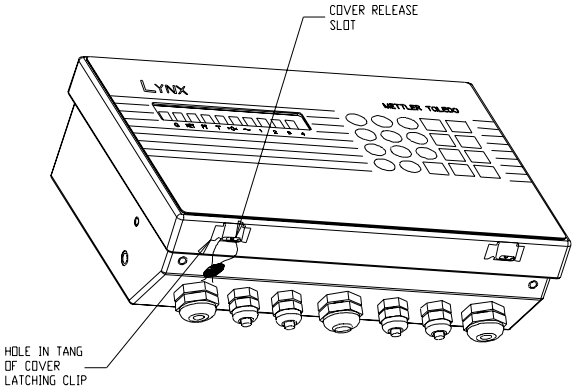


Figure 1-6

NOTES

2

Programming and Calibration

Refer to the LYNX Terminal Installation Guide for installation instructions. Review the instructions thoroughly before beginning installation. Once the unit is installed, proceed to the section entitled "Jumper and Switch Settings" on page 1-7.

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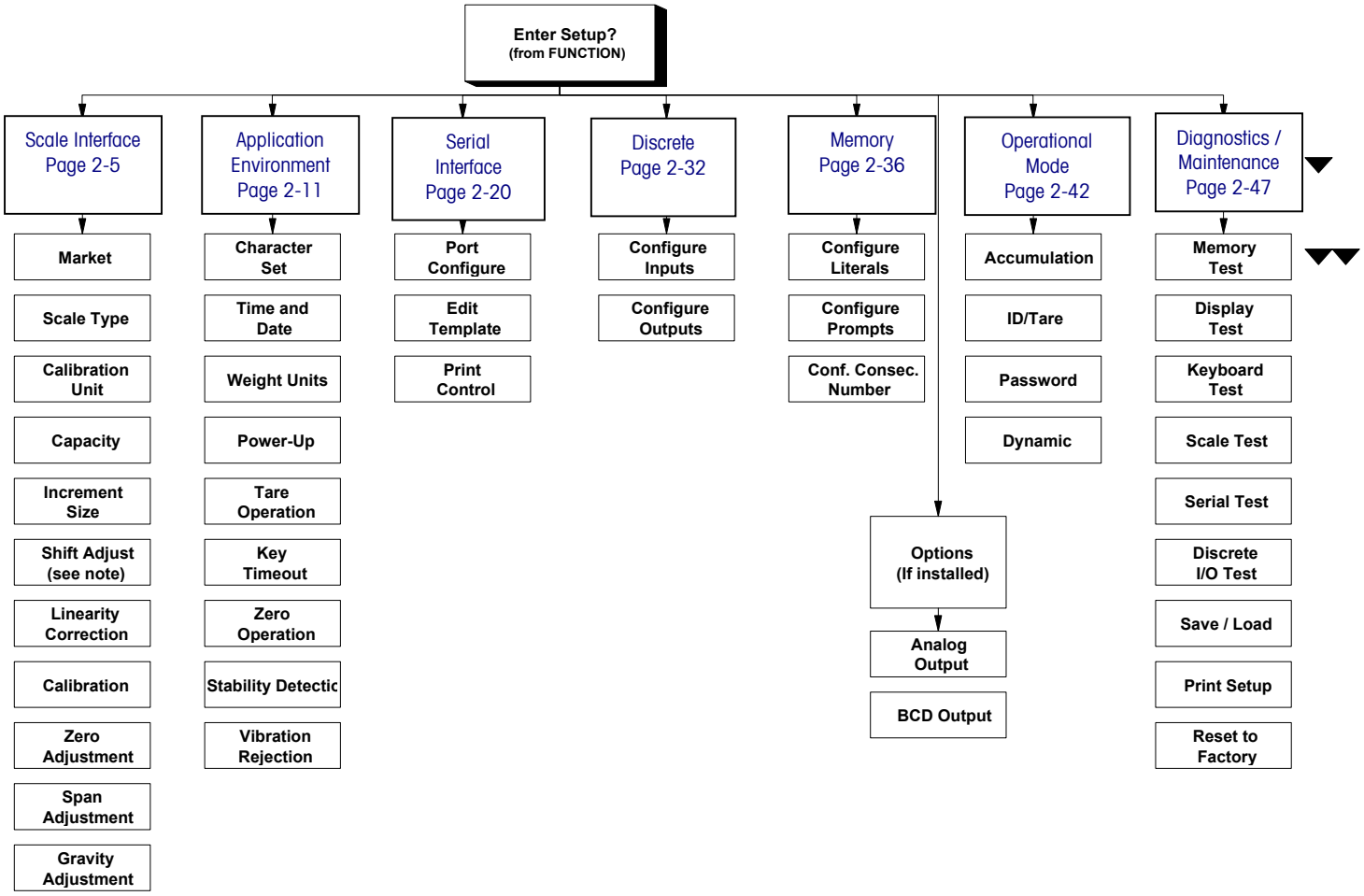


Note: Shift Adjust appears only when a DigiTOL junction box is selected.

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.

General Program Block Information

Keystroke Functions

Throughout this manual key names such as **ENTER** are presented in uppercase letters and bold type. Commands (instructions to do something such as "select") are presented in lowercase letters and regular type. Information appearing in the display, such as prompts, appears in bold type. For example:

"Press **SELECT** ..." — means to press the **SELECT** key on the keypad.

"Select an option..." — means to use the **SELECT** key to display an item, then press **ENTER** to use that item.

"Press **ENTER** at the **Are You Sure?** prompt" – means to press the **ENTER** key when the words "Are You Sure?" appear on the display.

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

Numeric keys are used to input numeric entries such as threshold values and scale capacity. These keys are also used for alphanumeric entries.

SELECT scrolls forward through a list of choices. As the **SELECT** key is pressed, programming items are listed and appear in the display area. The **SELECT** key can also be assigned a specific function such as to toggle between net and gross weight. See the Application Environment Program Block for details.

ENTER completes a response. Press **ENTER** after you have used the numeric keys to input data or used the **SELECT** key to display an option.

ESCAPE exits the current location. The parameters you have configured prior to pressing escape are saved when you exit. Each time you press **ESCAPE** you exit back to the previous level of setup. You may have to press **ESCAPE** several times to return to a desired location.

CLEAR clears the previous current entry and allows you to re-key the response.

ZERO key allows you to back up in the current program block and return to the previous step if you are in the first two levels of setup. The **ZERO** key scrolls backward through a list of choices.

FUNCTION moves the cursor one character to the right allowing you to change one character in a text string such as a literal without clearing and reentering the string.

MEMORY moves the cursor one character to the left allowing you to change one character in a text string such as a literal without clearing and reentering the string.

Navigating Within a Program Block

Navigation within program blocks is the same from block to block. The following information helps you find, select, and configure the areas you need.

Press **SELECT** or **ZERO** to scroll through the program blocks. When the desired block is displayed, press **ENTER** to open it. Proceed through each step in all program blocks to configure all parameters the first time the terminal is programmed.

Program blocks contain sub-blocks that handle specific areas of functionality. The **SELECT** and **ENTER** keys toggle and confirm parameter option selection.

After you have configured one sub-block, the terminal automatically proceeds to the next. When you finish the last sub-block in a program block, the terminal proceeds to the next program block. You can exit your position within a program block by pressing **ESCAPE** at any time. You may need to press it several times to exit setup mode and continue to normal operation.

Cursors under the display indicate your position within a program block. The following chart describes the cursors relative to block position.

Arrows	Block Position
1 Arrow ▼	Indicates you are in Setup Mode top level
2 Arrows ▼▼	Indicate you are in a Program Block
3 Arrows ▼▼▼	Indicate you are in a Sub-block
4 Arrows ▼▼▼▼	Indicate you are configuring an element within a Sub-block

Reset to Factory

Reset to Factory returns all setup parameters to their original settings. You cannot reset a single value or specify only a few of the sub-block values.

The Diagnostics and Maintenance block has a Master Reset option that lets you reset all parameters in all blocks, including or excluding Scale Interface. Reset to Factory is discussed in detail in the section entitled Diagnostics and Maintenance Program Block at the end of this chapter. The appendix lists the default values. To reset the parameters:

1. From within the Diagnostics and Maintenance program block, press **ENTER** at the **Factory Reset** prompt.
2. Respond to the **Sure?** prompt. Select **Y** or **N** to continue with the reset operation, then press **ENTER**. The terminal responds with the prompt **Rst Cal? N**
3. Press **SELECT** to display **Y** or **N** to include or exclude calibration parameters in the reset. The LYNX terminal displays the message **Resetting** while the parameters are reset to factory values. The terminal then goes through its power-up sequence and returns to normal operating mode.
4. Use caution when resetting the calibration values as all values will be reset.

Program Block Access

To access the program blocks, you must enter the setup mode as follows:

1 Press the **FUNCTION** key.

2 Press **SELECT** until the prompt **Setup?** is displayed, then press **ENTER**.

3 If the **Setup?** prompt is not displayed and the terminal returns to Normal Operation mode, try the following steps:

- Remove AC power.
- Turn SW1-1 (on the Controller PCB) to the ON position.
- Power the terminal and repeat steps 1 and 2.

4 The first program block, Scale Interface (Scale I/F), should be displayed. Press **ENTER** to open this block or press **SELECT** to choose another block to open.

Exit Setup Mode

When you have finished configuring the parameters in each sub-block and wish to return to normal operation, press **ESCAPE** several times until the prompt **Exit?** is displayed, then press **ENTER** to confirm. If you do not wish to exit at this time, press **SELECT** to choose another program block within the setup mode.

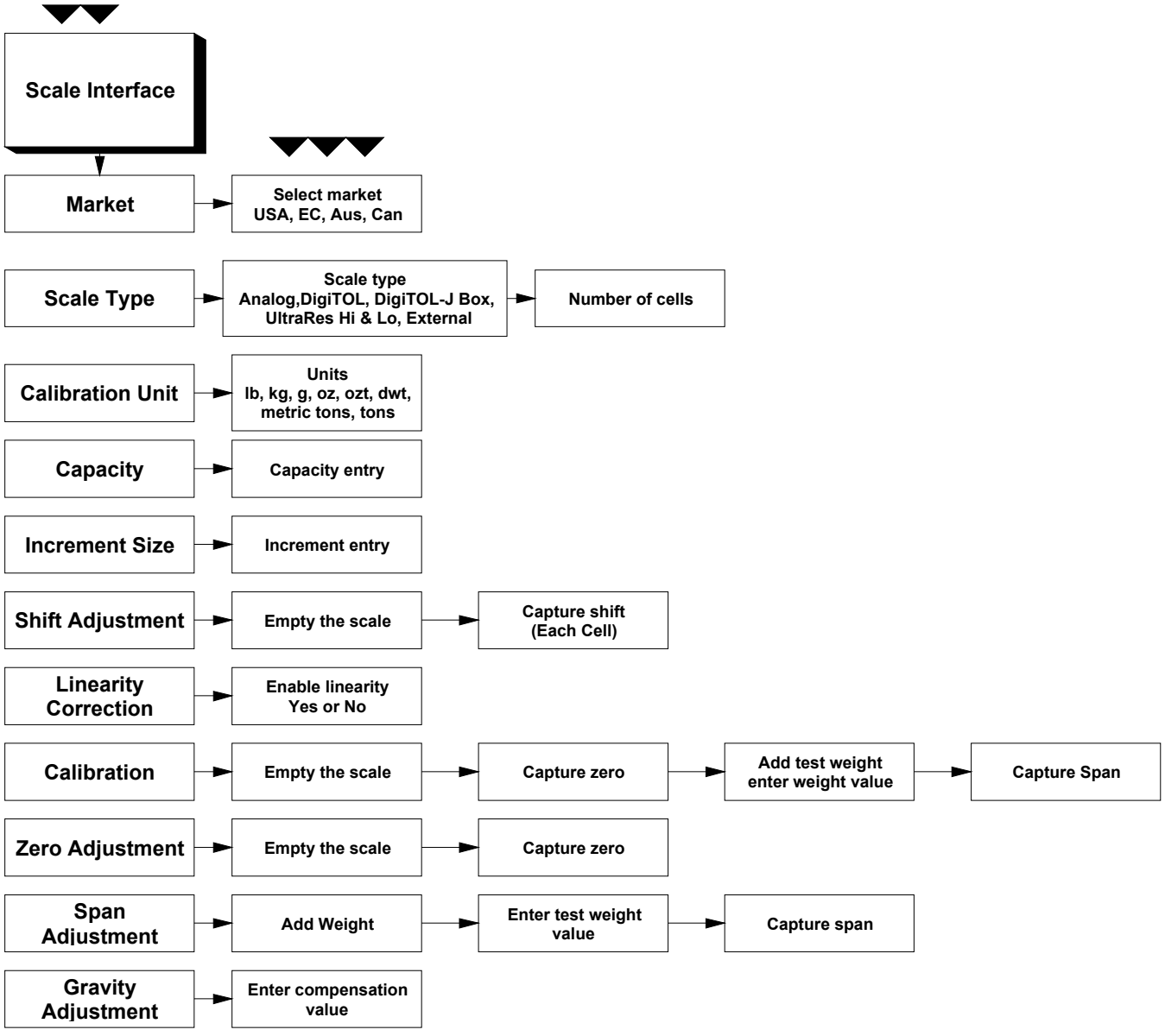
When you exit setup mode, the LYNX terminal may go through the power-up sequence before returning to normal operating mode depending on the changes you made.

If you wish to protect the setup parameters from being inadvertently changed by an operator, you can turn SW1-1 to the OFF position.

If the legal-for-trade switch (SW1-2) is ON, the LYNX terminal prompts **SW1-1 ON?** when exiting setup. This is a reminder to turn SW1-1 OFF for legal-for-trade applications.

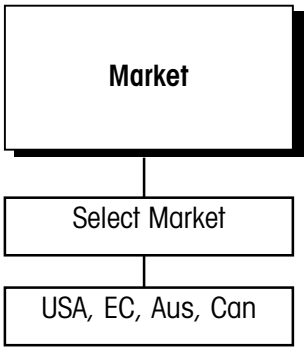
Scale Interface Program Block

The Scale Interface program block (Scale I/F) lets you set and calibrate the features that affect weighing performance. The following diagram describes this block:



Press **ENTER** at the **Scale I/F** prompt to access the Scale Interface program block and configure the sub-blocks.

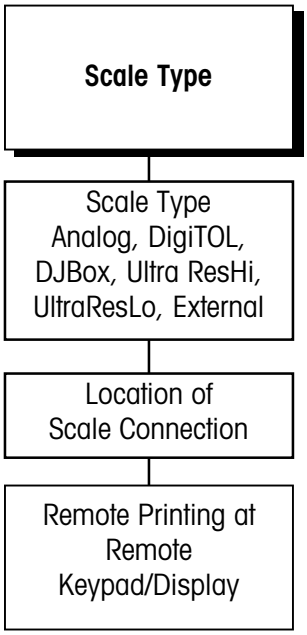
1. Market Sub-block



The Market sub-block lets you select a country or market area and limit parameters that affect legal-for-trade programming options.

1. Press **ENTER** at the **Market** prompt to access this sub-block.
2. Press **SELECT** until the desired market area is displayed, then press **ENTER**. Market areas include:
   - USA — United States
   - EC — European Community
   - Aus — Australia
   - Can — Canada
3. The LYNX terminal automatically continues to the next sub-block, or you can press **ESCAPE** twice to exit the setup mode.

2. Scale Type Sub-block



External scale type is used when the LYNX terminal will act as a remote keypad/display for another LYNX terminal or for another METTLER TOLEDO terminal (such as the JAGXTREME terminal) that is capable of handling Continuous Output and Command Input formats.

The Scale Type sub-block prompts you for the type of scale that will be used.

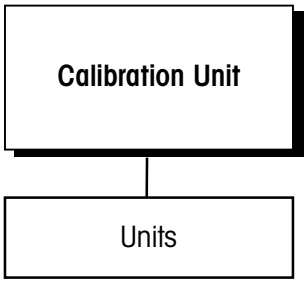
1. Press **ENTER** at the **Scale Type** prompt to open the sub-block.
2. Press **SELECT** until the desired scale type is displayed, then press **ENTER**. Scale types include:
   - Analog
   - DigiTOL (bench or portable – xx96, xx97*)
   - DJBox (Enhanced DigiTOL J-Box)
   - UltraResHi (UB, UBs, xx97**)
   - UltraResLo (UB, UBs, xx97**)
   - External (Using LYNX terminal as a remote display)

   *Produced prior to 5/98.
   **Produced after 4/98.

   If DigiTOL J-Box is Selected
   At the **Cells?** prompt, press **SELECT** to choose the correct number of cells connected to the DigiTOL J-Box (2-4). Press **ENTER** when the displayed number is correct.

   If External is Selected
   At the **Port?** prompt, press **SELECT** to indicate the COM port where the external scale is connected.
   At the **Rmt Prt** prompt, select Y to enable the remote display to print from its COM port or select **N** to enable printing only from the main LYNX terminal.
3. If the scale type is changed, the LYNX terminal displays the message **PleaseWait** as it exits setup mode and goes through the power-up sequence. You must re-enter setup mode to continue configuring the program blocks.
4. Continue to the next sub-block or exit the setup mode.

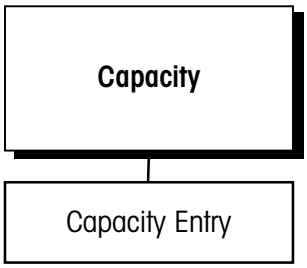
3. Calibration Unit Sub-block



This sub-block lets you enter the units of measure to use when calibrating the scale and configuring capacity and increment size**.** Recalibration is required if you change the calibration unit.

1. Press **ENTER** at the **Calib Unit** prompt to open the sub-block.
2. At the **Unit?** prompt, press **SELECT** until the desired calibration unit is displayed, then press **ENTER**. Calibration units include:
   - Pounds (lb)
   - Ounces (oz)
   - Metric tons (t)
   - Kilograms (kg)
   - Troy ounces (ozt)
   - Avoirdupois tons (ton)
   - Grams (g)
   - Penny weight (dwt)
   - Pounds/ounces (lb/oz)
3. If pounds/ounces (lb/oz) is selected, the capacity and increment sizes entered in sub-blocks 4 and 5 must be ounce values. For example, configuration for a 100 lb capacity scale using 0.5 ounce increments would be 1600 for capacity and 0.5 for the increment.
4. Continue to the next sub-block or press **ESCAPE** to exit the setup mode.

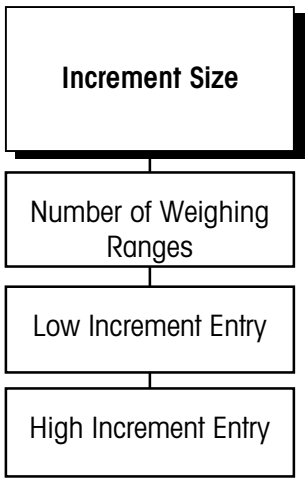
4. Capacity Sub-block



The Capacity sub-block lets you enter the maximum scale capacity. The capacity is given in the calibration units. The weight display will indicate **OVER RANGE** at 5 increments above this weight.

5. Press **ENTER** at the **Capacity** prompt to open the sub-block. The LYNX terminal displays the current scale capacity.
6. Key the desired scale capacity using the numeric keys.
7. Press **ENTER** to set the capacity.
8. Continue to the next sub-block or exit the setup mode.

5. Increment Size Sub-block



This sub-block lets you specify the increment size for one or more weighing ranges. An increment size is the smallest change in weight value that the terminal is able to display. For example, if the increment size is specified as 0.1 then, starting at 0.0 on the scale, adding an increasing load will cause the terminal to display 0.1, 0.2, 0.3 and so on through the entire weighing range of the scale. If you selected 0.2 for the increment size, the addition of an increasing load would display 0.2, 0.4, 06 as the weight is rounded to the 0.2 increment through the entire range.

If two ranges are selected, the operation is as described above except that two increments are now used over portions of the weighing range. For example, consider a scale configured for two ranges with the low increment specified as 0.1 and the high increment as 0.2. The scale displays weight by 0.1 increments through the first range until weight reaches the "low to high" (LoHi) threshold point, then by 0.2 increments through the second range to capacity. Increments may count by 1,2, or 5.

To configure the increment size:

1. Press **ENTER** at the **Increment Size** prompt to open the sub-block.
2. At the **Ranges?** prompt, use the **SELECT** key to choose 1 or 2 ranges.

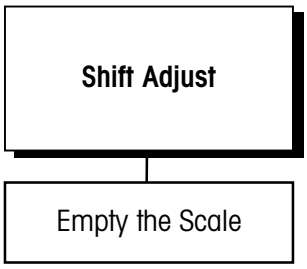
If 1 Interval Selected

- At the **Low?** prompt, enter the low increment size (0.00001-100).

If 2 Intervals Selected

1. At the **Low?** prompt, enter the low increment size (0.00001-100).
2. At the **High?** prompt, enter the high increment size (0.00001-100). The high increment must be greater than the low increment.
3. At the **LoHi?** prompt, enter the weight value where the scale will switch from the low increment to the high increment.

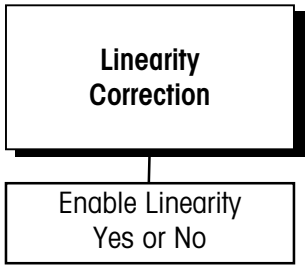
6. Shift Adjust Sub-block



The **Shift Adjust** prompt appears only if you selected Power Module (DigiTOL J-Box) as the scale type. When using a DigiTOL J-Box, each cell's output must be adjusted so that it is equal to the other cells. Cell adjustment is done by applying weight to each cell in sequence as prompted.

1. Press **ENTER** at the **Shift Adj** prompt to open the sub-block.
2. At the **EmptyScale** prompt, remove any weight on the platform, then press **ENTER**. The display reads **Cal Zero** as the terminal captures zero.
3. At the **Load On N** prompt, place on the platform a test weight equaling approximately 50% of the scale's capacity.
4. The LYNX terminal automatically shift adjusts the scale for the current load cell as the display reads **Do Shift N**.
5. Repeat steps 2 and 3 for each load cell connected to the DigiTOL J-Box.
6. When all load cells are shift adjusted, the terminal indicates **Shift Done**. Continue to the next sub-block or exit the setup mode.

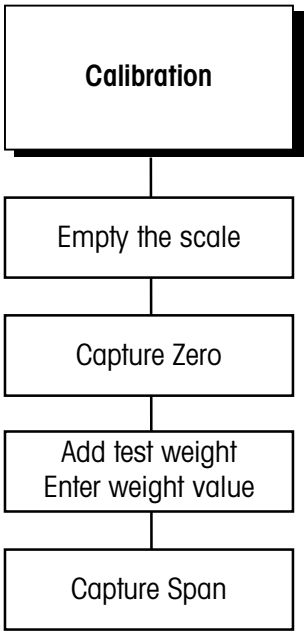
7. Linearity Correction Sub-block



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

1. Press **ENTER** at the **Linearity** prompt to open the sub-block.
2. Select **Y** to enable or **N** to disable linearity correction.
3. Continue to the next sub-block or exit the setup mode.

8. Calibration Sub-block



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

Without Linearity Correction

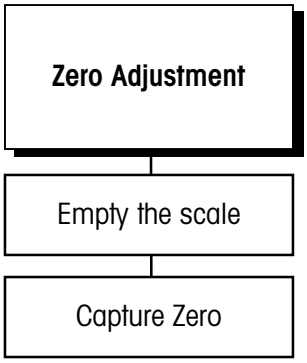
1. Press **ENTER** at the **Calibrate** prompt to open the sub-block.
2. At the **Empty Scale** prompt, remove any weight on the platform, then press **ENTER**. The terminal automatically captures zero while the display reads **Cal Zero.** The cursor moves across the display indicating the operation is in progress.
3. At the **Add Weight** prompt, place on the platform a test weight equaling the scale's capacity or another practical weight. Press **ENTER**.

   Note: While there is no minimum amount of test weight for calibration, METTLER TOLEDO recommends 60 to 100%. A calibration error may result if insufficient weight is used.
4. Enter the amount of weight you added in step 3. Press **ENTER**. The terminal automatically captures span while the display reads **Cal Span**. A cursor moves across the bottom of the display indicating the operation is in progress.
5. The terminal indicates **Cal Done**, then continues to the next sub-block.

With Linearity Correction Enabled

1. Press **ENTER** at the **Calibrate** prompt to open the sub-block.
2. At the **Empty Scale** prompt, remove any weight on the platform then press **ENTER**. The terminal automatically captures zero while the display reads **Cal Zero.** The cursor moves across the display indicating the operation is in progress.
3. At the **Add Mid Wt** prompt, place a weight on the platform equaling between 35% and 65% of the scale's capacity.
4. Enter the amount of weight you added in step 3. Press **ENTER**. The terminal automatically captures mid-scale while the display reads **Cal Mid.** The cursor moves across the display indicating the operation is in progress.
5. At the Add **Full Wt** prompt, place weight on the platform equaling at least 90% of scale capacity or as much as is practical. Press **ENTER**.
6. Enter the amount of weight you added in step 5. Press **ENTER**. The terminal automatically captures full scale while the display reads **Cal Full.** The cursor moves across the lower display indicating the operation is in progress. When finished, the terminal indicates **Cal Done**.
7. Continue to the next sub-block or exit the setup mode.

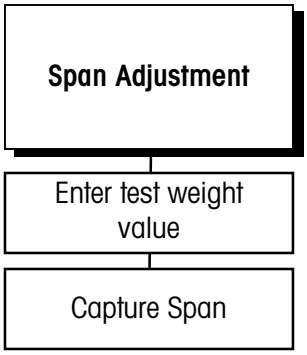
9. Zero Adjustment Sub-block



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 since the last calibration. The scale must be empty before resetting the zero value.

1. Press **ENTER** at the **Zero Adj.** prompt to open the sub-block.
2. At the **Empty Scale** prompt, remove any weight on the platform and press **ENTER**. The terminal captures zero while the display reads **Cal Zero.** The cursor moves across the display indicating the operation is in progress. The LYNX terminal displays the message **Zero Done** when finished.
3. Continue to the next sub-block or exit the setup mode.

10. Span Adjustment Sub-block

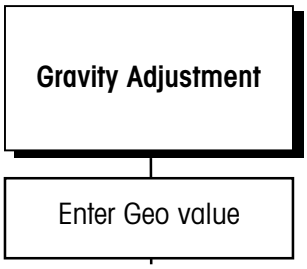


If linearity correction is enabled, you cannot do a span adjustment.

The Span Adjustment feature lets you make minor span adjustments without completely recalibrating the scale. Adjust the span by placing known test weights on the scale prior to entering span adjust. The terminal guides you through the procedure.

1. Press **ENTER** at the **Span Adj.** prompt to access the sub-block.
2. At the **Add Weight** prompt, place a test weight on the platform.
3. Enter the amount of weight placed on the platform in step 2. The display reads **Cal Span** while the terminal captures the new span. The cursor moves across the display indicating the operation is in progress. When finished, the LYNX terminal displays the message **Span Done**.
4. Continue to the next sub-block or exit the setup mode.

11. Gravity Adjustment Sub-block



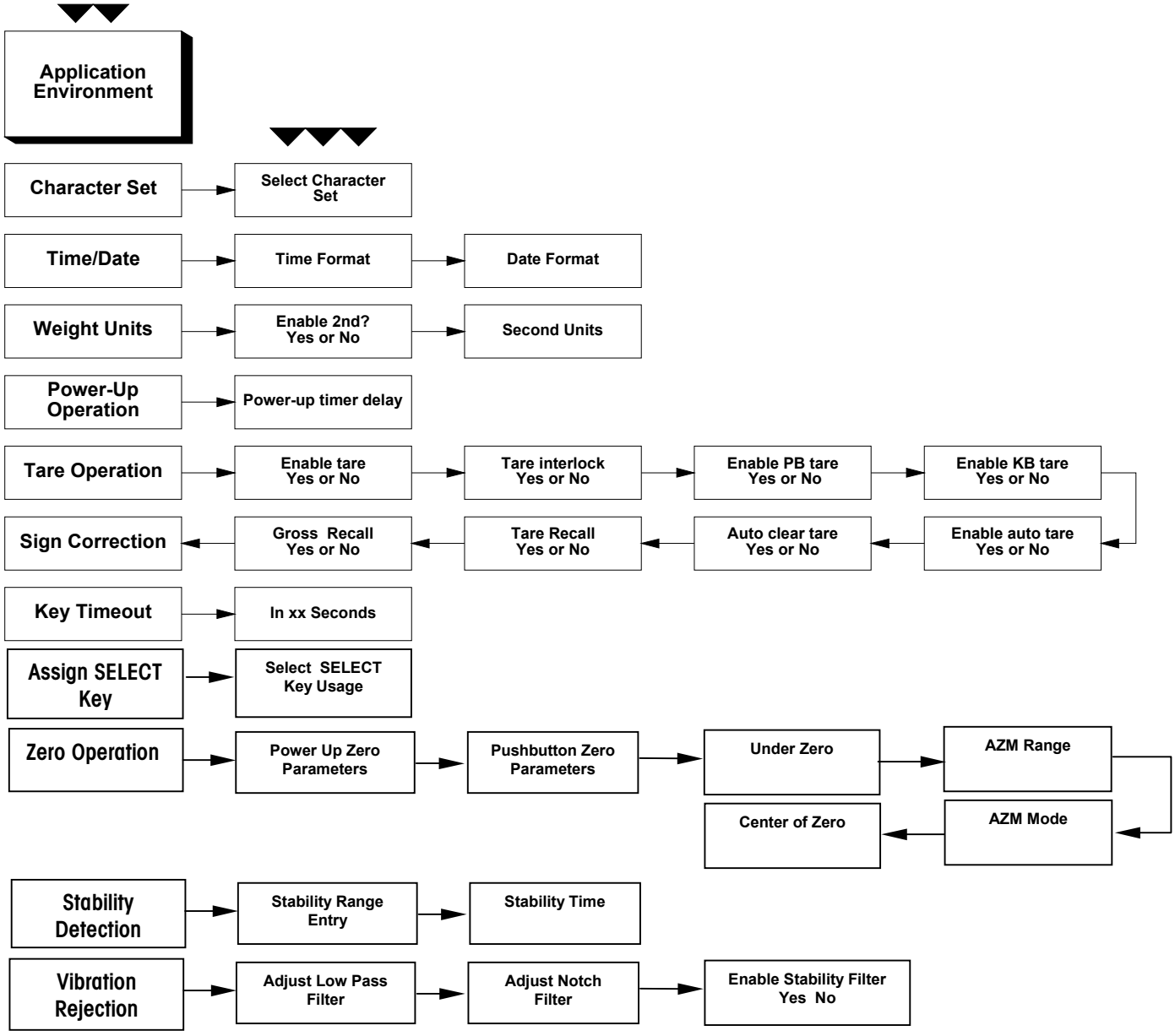
This sub-block is designed to let you enter a factor to compensate for gravitational differences between the factory calibration location and where the scale is currently located. If on-site calibration has already been performed, leave this value set to the factory default.

When you access the Gravity Adjustment sub-block, the current value is displayed.

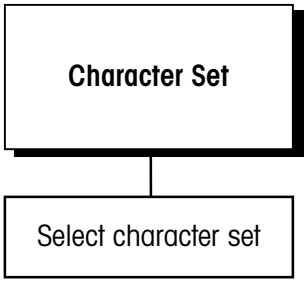
1. Press **ENTER** at the **Gravity** prompt to open the sub-block. The display reads **Geo Val?** and shows the current adjustment value.
2. Press **ENTER** to accept the current factor or enter a new gravitational factor. Use the Geo Value Table in the appendix to determine the appropriate constant.
3. Return to the first sub-block if desired, or exit the setup mode.

Application Environment Program Block

The Application Environment program block (Applic Env) lets you set the features of the scale that are specific to the customer's application. The following diagram describes this block:



1. Character Set Sub-block



Set your printer to match the character set chosen in this sub-block.

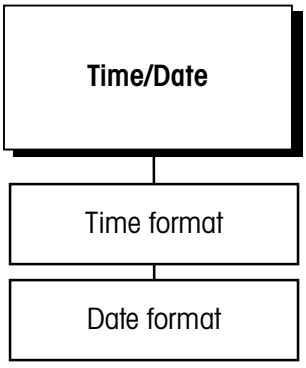
This sub-block lets you select the character set that the LYNX terminal will use for all displayed messages. Depending on the character set, some ASCII characters will be replaced automatically with specific international characters.

1. Press **ENTER** at the **Char. Set** prompt to access the sub-block.
2. Press **SELECT** to choose the character set. Options include:

   - USA
   - France
   - Germany
   - England
   - Denmark-1
   - Sweden
   - Italy
   - Spain-1
   - Japan
   - Norway
   - Denmark-2
   - Spain-2
   - Latin America

3. Press **ENTER** to use the displayed character set. Appendix 1 lists the ASCII characters that are replaced with this selection.

2. Time and Date Sub-block



The time format choices are given with the separator you selected in step 2.

This sub-block lets you set the time and date format. If you select **None** in step 3 below, the time or date feature is disabled.

To configure the sub-block:

1. Press **ENTER** at the **Time/Date** prompt, then press **ENTER** at the **Time Fmt?** prompt.
2. At the **Separ.?** prompt, select a character to separate hour, minutes, and seconds. Choices include:

   - (:) colon
   - (-) dash
   - (.) period
   - (sp) space

3. Next, select the desired time format. Choices include:

   - 24:MM 24-hour clock, no seconds
   - 24:MM:SS 24-hour clock with seconds
   - 12:MM 12-hour clock, no seconds
   - 12:MM:SS 12-hour clock with seconds
   - None Time disabled through **MEMORY** key

4. Press **ENTER** at the **Date Fmt?** prompt.

5. At the **Separ.?** prompt, select a character to separate month, day, and year. Choices include:

   - (:) colon
   - (-) dash
   - (.) period
   - (sp) space
   - (/) slash

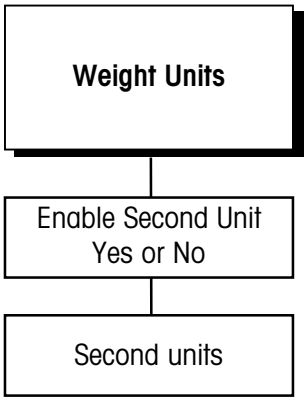
The date format choices are given with the separator you selected in step 5.

6. Next, select the desired date format. Choices include:

   - MM/DD/YY — Month (num), Day (num), Year (2 digits)
   - MMM/DD/'YY — Month (alpha), Day (num), Year (4 digits)
   - DD/MM/YY — Day (num), Month (num), Year (2 digits)
   - DD/MMM/'YY — Day (num), Month (alpha), Year (4 digits)
   - YY/MM/DD — Year (2 digits), Month (num), Day (num)
   - YY/MMM/DD — Year (4 digits), Month (alpha), Day (num)
   - None — Date disabled through MEMORY key

7. Press **ENTER** to continue to the next sub-block or **ESCAPE** to exit setup mode.

3. Weight Units Sub-block



The Weight Units sub-block lets you select a second unit of measure for weight display, and enable or disable units switching. You can select a second weight unit from various pre-programmed standard weight units, or you can create a special weight unit with a custom name and conversion factor.

To configure the sub-block:

1. Press **ENTER** at the **Wgt Units** prompt to open the sub-block.
2. At the **Ena 2nd?** prompt, select **Y** or **N** to enable or disable unit switching to second units. If unit switching is enabled, it will switch between the Main Units and the Second Units.

   NOTE: METTLER TOLEDO recommends that you disable unit switching when using setpoints to avoid errors and confusion.

3. If enabled, at the **2nd?** prompt, select a secondary weight unit. Selections include:

   - lb
   - kg
   - g
   - oz
   - lb-oz
   - ozt
   - dwt
   - t
   - ton
   - user (custom)

The unit selected for calibration is the main unit.

If User (Custom) Is Selected

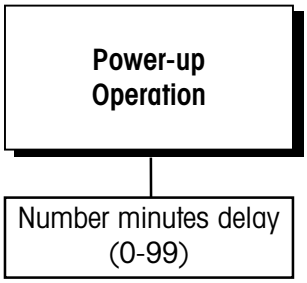
- At the **Fct?** prompt, enter a conversion factor. This factor is the number that will by multiplied by the main units to calculate the custom unit. Some rounding error may occur since this calculation uses a higher internal resolution to determine the converted value. Make sure that the maximum converted value does not exceed the display capacity of the display.

A value up to six digits can be entered (five digits to the right of the decimal).

- At the **Name?** prompt, enter the name for the custom unit, up to three characters.

4. Continue to the next sub-block or exit the setup mode.

4. Power up Operation Sub-block

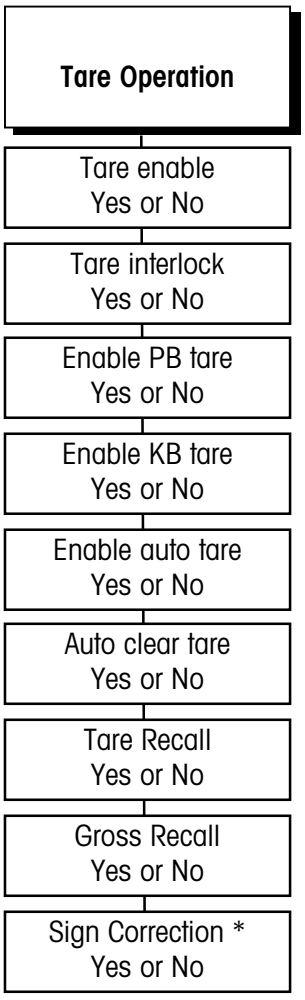


The Power-up sub-block lets you specify a time delay before the scale is operational. This delay allows a sufficient warm-up period for stabilization of the scale and load cell electronics. The LYNX terminal displays a count-down clock indicating the time remaining in the specified warm up period.

To configure the sub-block:

1. Press **ENTER** at the **Power-Up** prompt.
2. At the **Delay?** prompt, use the numeric keys to enter the number of minutes (0-99) that the terminal will delay prior to indicating weight in normal operating mode.
3. Continue to the next sub-block or exit the setup mode.

5. Tare Operation Sub-block



* In C Revision and later software, sign correction setup prompts are located here. In earlier revisions refer to the Serial Port Configure sub-block.

The Tare Operation sub-block lets you enable or disable the various tare options the LYNX terminal offers and in any combination. Three types of tare are available:

- **Pushbutton Tare** — If enabled, pushbutton tare subtracts the weight of an empty container on the scale when the TARE key is pressed. The LYNX terminal displays the net weight when material is placed in the container.
- **Keyboard Tare** — If keyboard tare is enabled, you can enter the known tare weight of a filled container, then press **ENTER** to subtract the container tare weight from the gross weight and display the net weight of the sample. This is also called preset tare.
- **Auto Tare** — If auto tare is enabled, the terminal tares the scale when the load on the platform exceeds a predetermined threshold value and settles to no-motion.

You can also configure:

- **Auto Clear Tare** — If auto clear tare is enabled, tare is automatically cleared and the indicator returns to gross mode when the weight goes above, then drops below a predetermined threshold value. You can also specify that tare be automatically cleared after a print operation.
- **Tare Interlock** — If tare interlock is enabled, limits are placed on how tare values can be cleared and entered in legal-for-trade applications.

To configure the Tare Operation sub-block:

1. Press **ENTER** at the **Tare Oper.** prompt to open the sub-block.
2. At the **Tare Ena?** prompt, select **Y** or **N** to enable or disable tare. If you select **N** to disable tare, the terminal proceeds to the Zero Operation sub-block. Access to other tare features is not possible if the tare feature is disabled.
3. At the **Tr Intlk?** prompt, select **Y** or **N** to enable or disable tare interlock.
4. At the **PB Tare?** prompt, select **Y** or **N** to enable or disable pushbutton tare.
5. At the **KB Tare?** prompt, select **Y** or **N** to enable or disable keyboard tare.
6. At the **Auto Tr?** prompt, select **Y** or **N** to enable or disable auto tare.

If Auto Tare Is Enabled

- Press **ENTER** at the **Threshold?** prompt; then enter the desired threshold value. The threshold value is a unit value such as 1.5 pounds. When weight on the platform exceeds the threshold value, then settles to no-motion, the terminal automatically tares.
- Press **ENTER** at the **Rst Thold?** prompt, then enter the desired reset threshold value. This is also a unit value and must be less than the tare threshold. When weight on the platform falls below the reset threshold value, as when the load has been removed, the terminal automatically rearms the auto tare trigger.
- At the **Chk Mot?** prompt, select **Y** or **N** to enable or disable the motion check. If enabled, the terminal checks for stability of the load on the platform before resetting the auto tare trigger.

Printing and tare operations will wait until a stable condition exists before proceeding with the action. See the Stability Detect sub-block in this chapter for more information on setting the sensitivity.

7. At the **Auto Clr?** prompt, select **Y** or **N** to enable or disable auto clear tare. Auto clear tare depends on the tare interlock condition.

Tare will clear only at gross zero if tare interlock and auto clear tare are both enabled.

If Tare Interlock and Auto Clear Tare Are Enabled
The terminal proceeds to the Gross Recall prompt. Continue to step 8.

If Tare Interlock Is Disabled, and Auto Clear Is Enabled

If auto clear tare after print is enabled, LYNX terminal does not display the Clear Threshold prompt.

- At the **Aftr Prt?** prompt, select **Y** to clear tare after a print command is issued, or select **N** to clear tare at a predetermined threshold value.

If Auto Clear Tare After Print Is Disabled

- Press **ENTER** at the **Clr Thold** prompt; then enter a unit value. When the gross scale weight exceeds then falls below the threshold value, the terminal automatically clears tare and returns to gross mode.
- At the **Chk Mot?** prompt, select **Y** or **N** to enable or disable the motion check. If enabled, the terminal checks for stability of the load on the platform before proceeding with auto clear tare.

8. At the **T Recall?** prompt, select **Y** or **N** to enable or disable the tare recall feature. If enabled, the terminal displays the tare value when you press **FUNCTION** in normal operating mode.

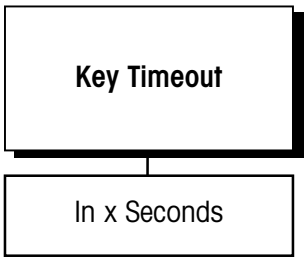
In C Revision and later software, sign correction setup prompts are located here. In earlier revisions refer to Port Configure sub-block.

9. At the **G Recall?** prompt, select **Y** or **N** to enable or disable the recall gross weight feature. If enabled, the terminal displays the gross value when you press the **FUNCTION** key in normal operating mode.
10. Press **ENTER** at the **Sign Corr** prompt to configure the net sign correction feature (see note at left).

Net Sign Correction allows you to store a gross weight in the tare register, then print the correct gross, tare, and net values when the tare weight is placed on the scale.

11. At the **Sign Corr?** prompt, select **Y** or **N** to enable or disable net sign correction in the demand output print. 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 is always positive.
12. Continue to the next sub-block or press **ESCAPE** to exit the setup mode.

6. Key Timeout Sub-block

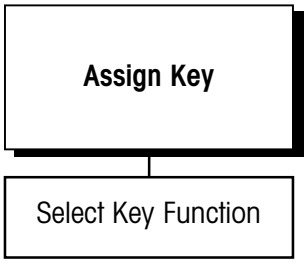


The Key Timeout sub-block lets you set the time in seconds for the operator to input tare and setpoints and for recall of non-active weight displays such as gross weights. After the time-out has elapsed, the LYNX terminal will return to its previous condition.

To configure the sub-block:

1. Press **ENTER** at the **Key Timeout** prompt to open the sub-block.
2. At the **In x Sec** prompt, enter the number of seconds for the timeout (0 - 9). A value of 0 disables the timeout.

7. Assign Select Key Sub-Block



The **SELECT** key can be reassigned to frequently repeat functions to reduce the number of keystrokes required to perform those functions.

1. Press **ENTER** at the Assign Key prompt to access the sub-block.
2. Press **SELECT** to scroll through the following assignments that are available for the **SELECT** key.

   None = Use the **SELECT** key in its default manner

   Net/Gross = Toggle between Net and Gross display

   Net/Tare = Toggle between Net and Tare display

   Net/Grs/Tr = Toggle between Net, Gross, and Tare display

   Units Sw. = Toggle between Primary and Secondary units

   Prompt = Process the Prompt List

   Store ID = Store an ID record

   Recall ID = Recall an ID record

   SP1 Entry = Prompt for entry of Setpoint number 1

   SP2 Entry = Prompt for entry of Setpoint number 2

   Dynamic Wt = Start dynamic weighing cycle

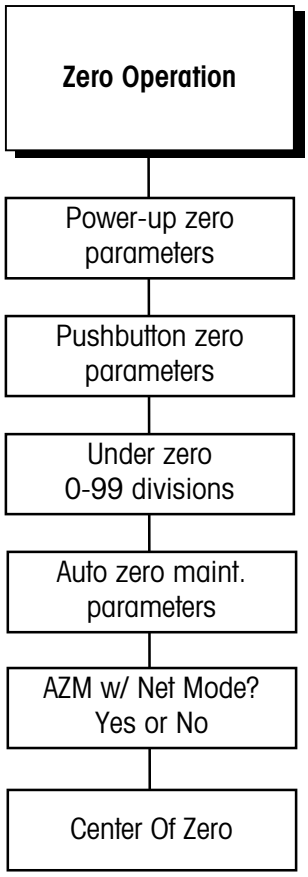
   Tot Recall = Recall Total Accumulator to Display

   Sub Recall = Recall Subtotal Accumulator to Display

   Print Accm=Print the Accumulation Report

3. Press **ENTER** to accept the reassignment selected.

8. Zero Operation Sub-block



METTLER TOLEDO recommends that power-up zero be disabled by setting Positive and Negative range to 0% for scales such as tanks and hoppers which may lose power in the middle of a control process.

Pushbutton zero values are stored in the LYNX terminal's memory. In case of power loss, the terminal will display an accurate weight when power is restored.

A pre-determined number of consecutive readings from the scale must fall within the range specified before the scale compensates for changes in the zero reference.

The Zero Operation sub-block lets you set the zero reference parameters. You can configure any or all of the following options:

- **Power-up Zero** — automatically zeros the terminal 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 display will not read zero until weight falls within the range.
- **Pushbutton Zero** — manually compensates for material build-up on the scale and recaptures zero.
- **Zero Blank** — determines when the display will go blank if weight falls below gross zero.
- **Auto Zero Maintenance (AZM**) — automatically compensates for small changes in zero resulting from material build-up on the scale or temperature fluctuations.
- **AZM w/Net Mode** — automatically corrects zero close to both net zero and gross zero.
- **Center of Zero** — determines if the center-of-zero annunciator lights at gross zero only or at gross and net zero.

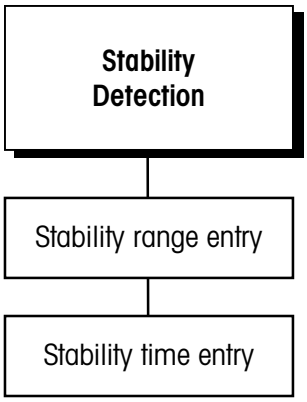
Power-up zero capture and pushbutton zero ranges are based on the actual calibrated zero. If the positive and/or negative range value for power-up zero is greater than that for pushbutton zero, it is possible for the scale to automatically capture more weight on power-up than can be compensated for manually.

To configure the sub-block:

1. Press **ENTER** at the **Zero Oper.** prompt to open the sub-block, then press **ENTER** at the **PwrUp Zr?** prompt to configure the power-up zero option.
2. At the **+ Range** prompt, enter a numeric value for the positive range of zero capture. You can enter a value from 0 to 10 indicating a percent of scale capacity.
3. At the **– Range** prompt, enter a numeric value for the negative range of zero capture. You can enter a value from 0 to 10 indicating a percent of scale capacity.
4. Press **ENTER** at the **PB Zero?** prompt to access these parameters.
5. At the **+ Range** prompt, enter a numeric value for the positive capture range. This value is a percent of scale capacity (0 - 99).
6. At the **– Range** prompt, enter a numeric value for the negative capture range. This value is also a percent of scale capacity (0 - 99).
7. At the **Under Zero** prompt, press **ENTER** to configure how far below gross zero the LYNX terminal will continue to display weight.
8. At the **Blank?** prompt, enter 0-99 to specify the number of display divisions behind gross zero before the display shows **Under Zero**. The default is 5. An entry of "99" allows the maximum negative weight display before **Under Zero** is displayed.
9. Press **ENTER** at the **AutoZrMain** prompt to access the parameters for this option.
10. At the **Rng?** prompt, enter a range (in divisions) within which the LYNX terminal adjusts for small changes in zero. Enter divisions 0.01 - 99.9. Adjustments are made at a rate of 0.03 increments per second.

11. At the **AZM Net?** prompt, select **Y** to automatically correct gross zero in both net and gross weight modes. Select **N** for AZM to function only in gross mode.
12. At the **COZ?** prompt, select if the center-of-zero annunciator should illuminate at **Gross** only, at **G&N** (Gross and Net) zero, or be off**.**
13. Press **ENTER** to continue to the next sub-block or **ESCAPE** to exit setup mode.

9. Stability Detection Sub-block



To disable motion detection, set the range to 99.9 and the number of seconds to 0.1.

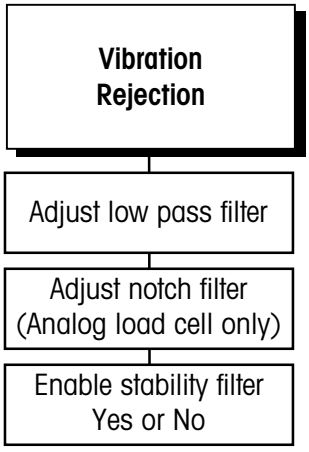
The stability detection feature determines when a no-motion condition exists on the weighing platform. The sensitivity level determines what is considered stable. Printing and tare operations will wait for scale stability before carrying out the command.

Stability detection occurs over a predefined period of time and allows a predetermined "acceptable" amount of motion in scale divisions. The acceptable amount of motion is considered the range and the period of time is called the interval.

To configure the sub-block:

1. Press **ENTER** at the **Stability** prompt, then press **ENTER** at the **Stab Rng** prompt.
2. At the **Range?** prompt, enter the acceptable motion range (+/- 0.1 to 99.9 divisions).
3. Press **ENTER** at the **# Updates?** prompt to configure the period of time to check for no-motion.
4. At the **In XX sec** prompt, enter the number of seconds (0.1 to 1.0) that the weight must remain within the range values for a no-motion condition.
5. Continue to the next sub-block or exit the setup mode.

10. Vibration Rejection Sub-block



If the scale type is other than analog, the prompt for step 2 does not appear. Begin configuration with step 3.

This sub-block lets you configure the TraxDSP filters for optimum vibration/disturbance rejection. The Vibration Rejection sub-block allows programming of values including:

- **Lowpass Filter Frequency** — Low Pass Frequency is the frequency above which all disturbances are filtered out. The lower the frequency, the longer the settling time required for the scale.
- **Poles** — The number of poles determines the slope of the filtering cutoff. For most applications, a slope value of 8 (analog load cell), 4 (DigiTOL load cell) is acceptable; however, decreasing this number will improve settling time slightly. For analog load cells, do not enter a value lower than 4 for this parameter.
- **Notch Filter Frequency (Analog Load Cell Only)** — The Notch Filter allows selection of one specific frequency that can also be filtered out. This enables setting the lowpass filter higher to filter out all but one frequency (that the notch filter will handle) and obtain a faster settling time.
- **Stability Filter** — The Stability Filter eliminates weight changes within a given range around a stable weight reading. This filter eliminates fluctuations in the weight display created by movement. Do not enable the Stability Filter for dynamic weighing, batching, or filling applications. Use the stability filter only for static weighing applications.

To configure the sub-block:

1. Press **ENTER** at the **Vibration** prompt to open the sub-block.
2. At the **Autotune?** prompt, select **N** to bypass the autotune process, or select **Y** to automatically tune the lowpass and notch filters.

   If **Y**, the display reads **Adjust 1** and the cursor moves across the display while LYNX terminal measures the vibration under current conditions. The LYNX terminal then automatically displays **Measure 1** and the cursor moves across the display while the LYNX terminal adjusts the vibration filter accordingly.

   The LYNX terminal can repeat the measure and adjust process up to six times depending on the amount and regularity of the vibration. When the vibration adjustment is made, the LYNX terminal indicates either **Auto Tune Completed or Auto Tune Failed** and continues to the next prompt.
3. Press **ENTER** at the **Low-pass?** prompt to configure the parameters governing the low pass filter. Disturbances falling below these parameters pass through the filter; disturbances above the parameters are filtered out.
4. At the **Freq?** prompt, enter the frequency above which disturbances are filtered out. You can enter frequency values in the range 0.2 to 9.9.
5. At the **Poles?** prompt, enter the number of poles.

The Adjust Notch parameter appears only if you are configuring an analog load cell. If configuring a DigiTOL load cell, the LYNX terminal proceeds to step 7.

6. Press **ENTER** at the **Notch?** prompt to configure the parameters governing selective filtering.
7. At the **Freq?** prompt, enter the frequency at which any disturbance is filtered out. You can enter frequency values in the range 0.0 to 99.9.
8. At the **Stable?** prompt, select **Y** or **N** to enable or disable the stability filter. Use this for static weighing applications only.
9. Continue to the next program block or exit the setup mode.

The default values for vibration rejection that are programmed in the factory are good for most applications; however, if you find that the weight display is still unstable, the following steps may help:

a. Set the Low Pass filter to 9.9, poles to 8 and the Notch Filter to 0.0.

b. Lower the frequency setting of the Low Pass Filter by increments of 1.0 and observe the amount of variation at each setting. When you see a noticeable improvement in display stability, vary the Low Pass Filter setting slightly below the frequency setting in increments of 0.1 for minimum fluctuation.

c. Record the frequency and approximate number of increments variation for the settings that show noticeable reduction in display fluctuation. This is the lowest frequency of vibration causing the display to fluctuate.

d. Set the Low Pass Filter back to 9.9.

e. Set the Notch Filter to the frequency that caused the largest reduction in increments change (recorded in step c).

f. If the display is still fluctuating too much, repeat step b. observing the display fluctuation. Reduce the Low Pass Filter setting until the display is acceptable.

Always be sure to check the weight display setting time after each filter adjustment to be sure that the setting time is fast enough for the application.

Serial Interface Program Block

The Serial Interface program block (Serial I/F) lets you set parameters controlling data flow across the LYNX terminal's serial communication (COM) ports. The input and output COM ports are used to communicate data on demand or continuously such as for printing applications. COM ports may also be used for information exchange between a PC and the terminal.

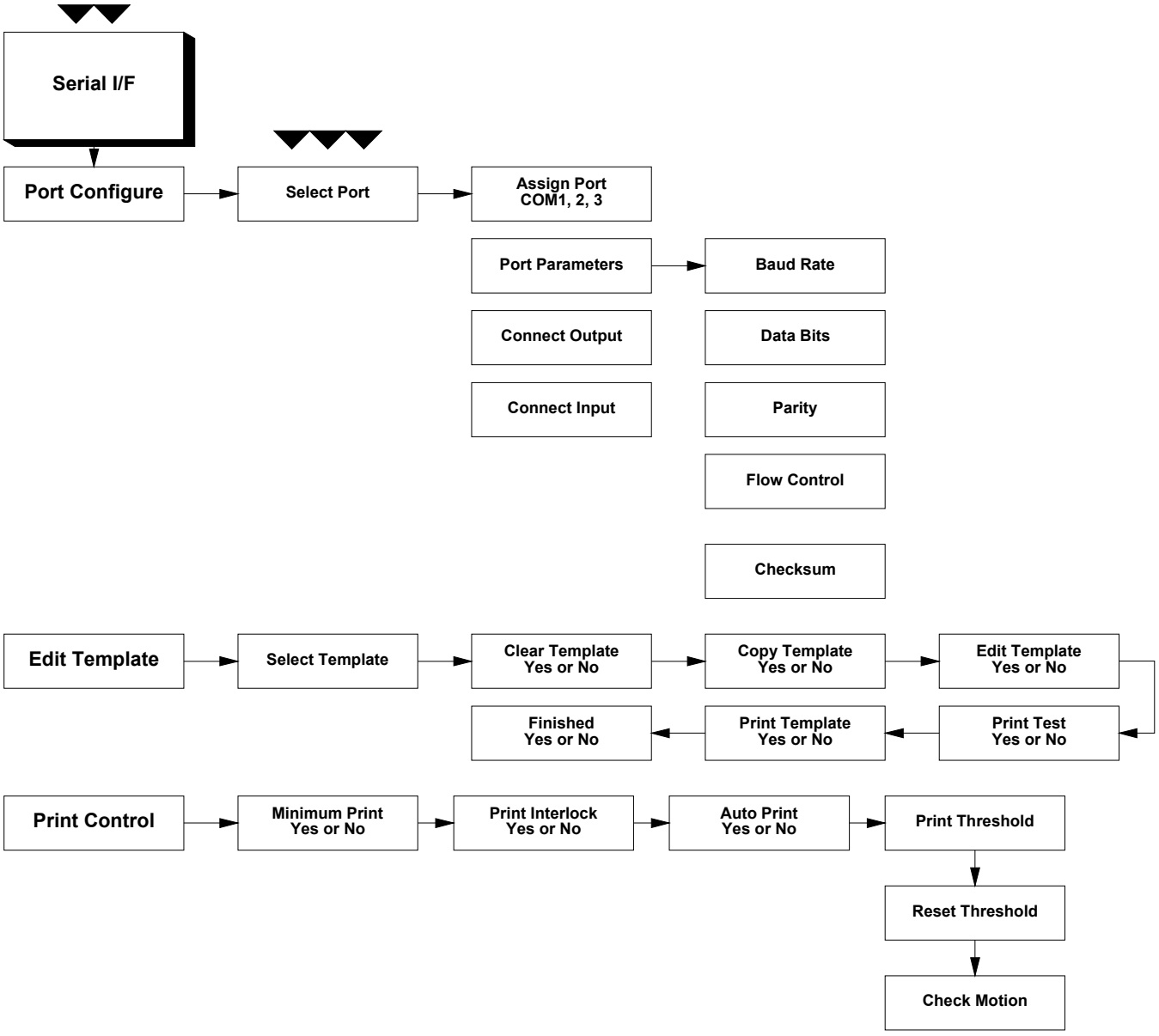
The LYNX terminal has three serial I/O ports (COM1, COM2, and COM3). While one port might be used to support a DigiTOL type scale, others can be used for data input/output as needed.

If a DigiTOL scale or DigiTOL J-Box is configured through the Scale Interface block, COM3 will be unavailable. In this case, you must reprogram the scale type in order to access COM3. If a DigiTOL scale or DigiTOL J-Box is selected, the serial port is automatically setup by the LYNX terminal for communications to a DigiTOL base.

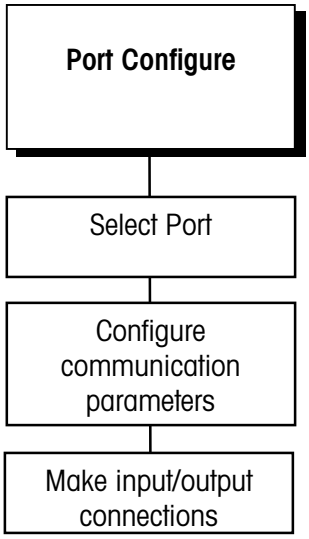
The Serial Interface program block lets you:

- Assign port parameters and configure ports
- Edit demand output templates
- Program print control parameters

The following diagram describes the Serial Interface program block:



1. Port Configure Sub-block



This sub-block lets you configure the serial ports on your terminal for data exchange. You can configure only those ports that are physically available. For example, if a DigiTOL scale is connected, its COM port will not be available for configuration. See Appendix 1 for detailed information on hardware connections, data output format, and template programming and formats.

To configure the program block:

1. Press **ENTER** at the **Serial I/F** prompt to open the program block. Press **ENTER** at the **Port Confg** prompt.
2. At the **Port?** prompt, select COM1, COM2, or COM3 as the port to be configured.
3. Press **ENTER** at the **Parameters** prompt, then configure the following parameters.
   - Baud Rate
   - Data Bits
   - Stop Bits (COM2 and COM3)
   - Parity
   - Flow Control
   - Checksum

Baud Rate
The baud rate is the rate of information transfer in bits-per-second.

- Press **ENTER** at the **Baud** prompt, then select the desired rate for the selected port. Baud rates include
  - 300
  - 600
  - 1200
  - 2400
  - 4800
  - 9600
  - 19.2k
  - 38.4k

Data Bits
Data bits refer to the number of bits that make up an ASCII character that is transferred between two units. Most METTLER TOLEDO equipment communicates using seven data bits.

- Press **ENTER** at the **Data Bits** prompt, then select 7 or 8 data bits.

COM1 always has 1 stop bit. If COM1 is selected, the Stop Bits prompt does not appear.

Stop Bits
The number of stop bits to be transmitted for each ASCII character can be selected for COM2 and COM3. Most METTLER TOLEDO products will work with either 1 or 2 stop bits.

Parity
Parity is an error checking mechanism for each byte.

- Press **ENTER** at the **Parity** prompt, then select the desired option. Parity options include:

  Even — the terminal sends an even number of logic 1 data bits. If the sum is odd, an eighth logic 1 bit is added for an even total. If the sum is even, a 0 bit is included to leave it unchanged.

  Odd — the terminal sends an odd number of logic 1 data bits. If the sum is even, an eighth logic 1 bit is added for an odd total. If the sum is odd, a 0 bit is included to leave it unchanged.

The Space and Mark parity selections are not provided on COM1.

Space — the eighth bit is always OFF (logic 0).

Mark — the eighth bit is always ON (logic 1).

None — for use with eight data bits.

XON/XOFF requires character input. It will only work if the serial port has no other input connections. For example, you cannot configure command In and XON/XOFF on the same port.

Flow

The flow parameter lets you control data flow from the selected port to a peripheral device such as a printer that supports XON/XOFF data flow. If enabled, the LYNX terminal monitors the XON/XOFF characters and controls data flow to help eliminate buffer overflow problems that can cause printing errors.

- Press **ENTER** at the **Flow Ctrl** prompt.
- At the XON/XOFF prompt, select **Y** to enable the handshake or **N** to disable the handshake. If enabled, the LYNX terminal stops transmission on receipt of the XOFF character (13h) and resumes on receipt of the XON character (11h).

Checksum

Checksum is selectable for continuous output modes only.

Checksum is a method of checking each line of data transmitted by encoding 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 control characters. Bit 8 of the checksum is the parity bit (if enabled) of the seven low-order bits of the checksum character.

- Press **ENTER** at the **Checksum** prompt, then select **Y** or **N** to enable or disable the transmission of the checksum character.

Connection

The LYNX terminal is programmed at the factory for a demand output and a command input for COM1. No other serial connections are preset. The type of connection determines if the both input and output can be configured. If Host or ENQ continuous mode is selected, both input and output are required. In this case, the prompt for input does not appear. If Demand or other continuous output is selected, a separate input mode can be configured for that port.

1. Press **ENTER** at the **Connection** prompt.
2. Press **ENTER** at the **Output?** prompt, to configure the output for this COM port, or press **SELECT** if you wish to configure input for the COM port. The LYNX terminal displays the current data mode for the COM port.
3. Press **ENTER** to accept the current data mode or press **SELECT** to choose a different mode. Options include:

   - Demand
   - Continuous
   - Host
   - None

When interfacing a LYNX terminal in Demand mode to an 8806, be sure to configure Start of Text as the first character of the template. This is done automatically in Continuous mode. Please refer to the Configure Template sub-block.

Demand

- Press **ENTER** at the **Sign Corr** prompt to configure the net sign correction feature.
- At the **Sign Cor?** prompt, select **Y** or **N** to enable or disable net sign correction in the demand output print. 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 is always positive.

In B revision and earlier software, sign correction setup prompts are located here. In later revisions, refer to Tare Operations sub-block.

- Press **ENTER** at the **DP/Comma** prompt, then press **SELECT** to choose comma or decimal point in the serial output data.
- Press **ENTER** at the **Sel Templ** prompt, then select the template to use with demand printing (ptp01, ptp02, both). Templates are custom output formats configured in the Edit Template sub-block.

When "Both" print templates are assigned to a serial connection, ptp01 is used when the scale is in gross mode, and ptp02 is used when the scale is in net mode.

- Continue to Step 4 to program the input connection.

Continuous

- Press **ENTER** at the **Format** prompt to select a format for the continuous output. You can select either standard or short form.
- Press **ENTER** at the **Status Byt** prompt. Select either standard status bytes or status byte with setpoints. Setpoint status bytes are required when converting the LYNX terminal to a 3015 setpoint controller.

If more than one output connection is set to "Demand" than the applicable prompts: "**Use Com1?N**" and/or "Use **Com2?N**" and/or "**Use Com3?N**" will appear when the ENTER key is pressed. This prompt(s) allow the operator to direct the demand print to a desired port(s).

- Press **ENTER** at the **Frequency** prompt, then select the frequency at which the continuous output port will transmit data. Options include:
  - A/D Synchronized output after each A/D cycle (approximately 20 Hz for analog load cells and approximately 10 Hz for DigiTOL load cells)
  - ENQ Synchronized (each time an ASCII ENQ is received)
  - User Rate (selectable from 0.1 to 20 Hz, but limited to the actual A/D rate of the load cell type)

  If User Rate is selected, at the **Rate** prompt, enter the desired frequency for the continuous output. Continue to Step 4 to program the input connection.

Host

- Press **ENTER** at the **Host** prompt, then select the desired host mode emulation. Options include:
  - 8142 mode
  - 8530 mode
  - SICS (High Precision) mode

The appendix describes the format, protocol, and commands for Host mode.

If 8142 or 8530 is selected, at the **Address?** prompt, enter a number (2 to 9) or letter (A-Z) representing the address to use for communications. This allows RS-422 and RS-485 multidropping.

If SICS is selected, no further parameters need to be configured and the LYNX terminal returns to the **Port** prompt.

If output type is Host, the **Input?** prompt does not appear.

4. If output type is Demand or Continuous, press **ENTER** at the **Input?** prompt, then select the input mode for the COM port. Options include:
   - Command
   - String
   - None

Command

No further parameters need to be configured. The command input mode performs several basic functions based on ASCII control characters received through the serial port. ASCII control characters and the LYNX terminal responses include:

C	Clears the scale from net to gross mode
T	Tares the current weight on the scale
xxxxxT	Enters xxxxx as a preset tare value (include decimal)
P	Initiates a print sequence
Z	Zeros the scale
U	Switches display units

XXXXX can be any number of digits from one increment to scale capacity. Leading spaces or zeros are not required.

String

String input is used from another serial device (such as a computer or bar code reader) to input data to the terminal. Data can be responses to operator prompts or can be used as a tare value when the terminal is in normal operating mode. The following parameters must be programmed for the type of string input to be used.

When responding to a prompt, if an ASCII carriage return is received, the data is entered on the display and automatically steps to the next prompt. If an ASCII carriage return is not received, the data will be entered on the display but will not proceed to the next step. This allows the operator to edit the string input data.

- Press **ENTER** at the **Terminator** prompt to configure parameters for the termination of the string input. String input can be terminated by either timing out after the last character received or when a specific character is received (for example an ASCII line feed character).
- At the **Timeout** prompt, select **Y** or **N** to enable or disable the timeout parameter for string termination.

If Timeout is Enabled

- At the **Val?** prompt, enter the number of seconds (0.0 to 9.9) to pass after the last character is received for LYNX terminal to terminate the input string.
- Press **ENTER** at the **First Char** prompt. At the **Char#?** prompt, enter the string position representing the first character to be used as the input to the prompt. This allows you to strip off any leading characters that are not part of a response.

The LYNX terminal recognizes the last character according to length of the string as determined in the Configure Prompts sub-block of the Memory program block.

If Timeout is Disabled

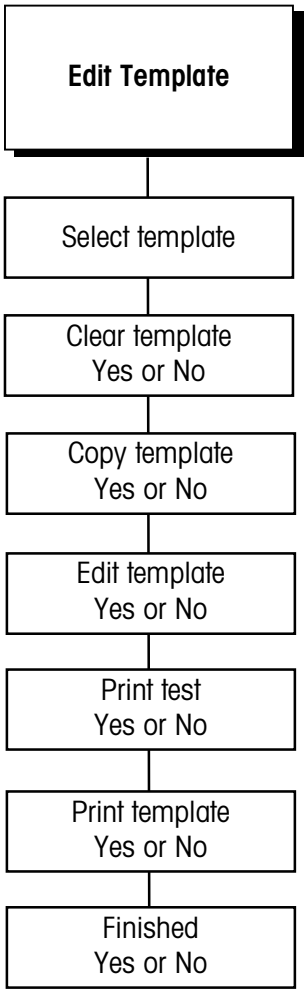
- At the **Char?** prompt, press **SELECT** to choose the ASCII character that will terminate the string input. You can select the displayed ASCII character or enter in a number, character, or upper case letter from the LYNX terminal keyboard.
- Press **ENTER** at the **First Char** prompt. At the **Char#?** prompt, enter the string position representing the first character to be used as the input to the prompt. This allows you to strip off any leading characters that are not part of a response.

The LYNX terminal recognizes the last character according to length of the string as determined in the Configure Prompts sub-block of the Memory program block.

After programming the input connection, LYNX terminal returns to the **COM1?** prompt.

5. At the **COM1?** prompt, configure another serial port or press **ESCAPE** to continue.

2. Configure Template Sub-block



Template ptp03 is used to specify the data format for the last printed data. This data can be uploaded to a host computer using the 8142 host command "Q." Refer to the description in the appendix.

If you are creating templates that are similar to each other, use the copy and edit template features to save time.

This sub-block lets you define the flexible templates. Templates are preconfigured output strings that are transmitted when a print operation is requested. Appendix 1 lists the LYNX terminal's default templates. You can use the default templates as they are given or edit them to create custom templates.

Templates are composed of elements which are any printed character, special character, or data field. Templates can include weight data, time and date, literal fields (for a name and address), and the prompts and responses from a prompt list. You can also add individual printable ASCII characters such as * or = characters and special ASCII characters (control characters) for extra printer control.

Templates ptp01 and ptp02 can store up to 800 format characters. Template ptp03 can store up to 191 format characters. When configuring a template, you should test-print occasionally so the LYNX terminal will "compile" the template and determine if space remains for more elements. If you overfill the allocated template space, the terminal responds with the message **Template Overflow** and the data that exceeds the 800 character limit will be lost. See Appendix 1 for information on how to calculate the total number of characters used by a template.

1. Press **ENTER** at the **Edit Templ** prompt to open the sub-block.
2. At the **TPL?** prompt, press **SELECT** to choose the number of the template you wish to edit or create (ptp01, ptp02 or ptp03).

Template ptp01, ptp02, or both ptp01 and ptp02 may be assigned to any demand output connection. Template ptp03 is used to specify the data format for the last printed data. This data may be unloaded to a host computer using the 8142 host command "Q." If the host connection is unused, ptp03 may be used as an included template in templates ptp01 or ptp02. When template ptp03 is cleared of all data fields and left blank, it provides a data format exactly like the Model 8142 in response to the 8142 host "Q" command.

3. Select the action you want to take with the selected template. You must respond **Y** or **N** to the prompt for each action. Actions include:
   - Clear Template
   - Copy Template
   - Edit Template

Clear Template

Select **Y** or **N** at the **Clear?** prompt. If **Y**, you must confirm your decision at the **Sure?** prompt.

Copy Template

Select **Y** or **N** at the **Copy?** prompt according to whether you want to copy a template or not. If **Y**, select Other or Default, then confirm your selection at the **Sure?** prompt. The current template will be cleared before the new template is copied.

When interfacing a LYNX terminal in Demand mode to an 8806, be sure to configure Start of Text as the first character of the template. This is done automatically in Continuous mode.

Edit Template

Select **Y** or **N** at the **Edit?** prompt if you wish to edit the current template. If **Y**, you can edit, insert, or delete template components.

If **Y,** the LYNX terminal displays **Elem # 001** (element number 001) for two seconds indicating that the first element of the template is being recalled, then the actual data for element 001 is displayed. If **End of Template** is displayed, then the template is empty.

If the element number you enter is greater than the last element number in the template, the LYNX terminal automatically displays the last element in the template.

Press **SELECT** to display the next element in the template. Press **ZERO** to display the previous element in the template. You can access any element in the template using the **SELECT** and **ZERO** keys.

You can also access specific elements by entering the number of the desired element. After entering the first digit of a new element, the display reads **Element? x** where "x" is the digit just entered. When the complete element number has been entered, press **ENTER** to access that element.

Press **ENTER** to begin editing the displayed element. You can also begin editing at the end of template position.

After the **Action?** prompt has been displayed for two seconds, select an editing option.

- **EDIT** allows you to "replace" the current element with new data. The current element is automatically deleted.
- **INSERT** allows you to insert a new field or character before the currently displayed element. All following elements are moved back one element number.
- **DELETE** deletes the current element and moves each remaining element up one element number.
- **DEL END** deletes all remaining elements from the displayed position to the end of the template.
- If you are editing or inserting, select a data type after the **What?** prompt clears (two seconds). Data can be field information, printable ASCII characters, or special characters.
- **FIELD** refers to actual data fields available through the LYNX terminal such as time, date, prompts, literals and weight data. Enter a field code defined in the following Field Code tables.

Although the Field Code table shows codes in lowercase letters, the LYNX terminal accepts field codes entered in upper or lower case.

LYNX DATA FIELD	FIELD CODE	LENGTH
Tare Source Description	ws109	2 A/N "<space> <space>", "T<space>", or "PT"
Setpoint Value - SP1	st105	10 A/N
Setpoint Values	st205, st305, stx05*	10 A/N
Preact Value - SP1	st106	10 A/N
Preact Values	st206, st306, stx06*	10 A/N
Dribble Value - SP1	st108	10 A/N
Dribble Value - SP2	st208	10 A/N
Weight Tolerance Value - SP1	st110	10 A/N
Weight Tolerance Value - SP2	st210	10 A/N
Zero Tolerance Value	zt104	10 A/N
Time of Print	jag20	11 A/N
Date of Print	jag19	11 A/N
Consecutive Number	jag09	8 N
Literal 01†	lit01	40 A/N
Literal 02†, etc	lit02, lit..	40 A/N
Prompt 01‡	pmt01	16 A/N
Prompt 02‡, etc	pmt02,pmt..	16 A/N
Prompt 01 Response	var01	As Programmed
Prompt 02 Response, etc	var02, var..	As Programmed
Template 1***	ptp01	As Programmed
Template 2***	ptp02	As Programmed
Accumulator Total	acc01	10 A/N
Accumulator Subtotal	acc02	10 A/N
Current Quick ID	idc02	2 N
Current Record ID	idc03	10 A/N
Current Description	idc04	20 A/N
Current Stored Tare	idc05	10 A/N
Current ID Accumulator	idc06	10 A/N
Current ID Transactions	idc07	8 N

* The setpoint number should be inserted for x.

** pb = pushbutton tare, kb = keyboard (preset) tare.

† Refer to the section entitled Configure Literals Sub-block in the Configure Memory Program Block later in this chapter for more information on entering literals.

‡ Refer to the section entitled Configure Prompts Sub-block in the Configure Memory Program Block later in this chapter for more information on entering prompts.

*** Using a template field code within another template will insert the entire template into the output.

Although the Weight Data field table shows codes in lowercase letters, the LYNX terminal accepts field codes entered in upper or lower case.

* lb/oz weight fields are active only while displaying lb-oz units.

WEIGHT DATA FIELD	FIELD CODE	LENGTH
Displayed Gross Wt.	wt101	12 A/N
Displayed Tare Wt.	ws102	12 A/N
Displayed Net Wt.	wt102	12 A/N
Displayed Wt. Units	wt103	3 A/N
lb/oz Gross Wt.*	wt104	12 A/N
lb/oz Tare Wt.*	ws103	12 A/N
lb/oz Net Wt.*	wt105	12 A/N
Scale Mode (Gross/Net)	ws101	1 A/N (G or N)
Custom Unit Conversion Factor	cs103	8 A/N
Custom Unit Name	cs102	3 A/N
Gross Weight - Main units	wt119	12 A/N
Tare Weight - Main Units	ws112	12 A/N
Net Weight - Main Units	wt120	12 A/N
Main Weight Units	wt121	3 A/N
Gross Weight - Secondary Units	wt122	12 A/N
Tare Weight - Secondary Units	ws113	12 A/N
Net Weight - Secondary Units	wt123	12 A/N
Secondary Weight Units	wt124	3 A/N
Manual Weight Designation	ws114*	9 A/N

Only available when net sign correction is enabled. May be required by some agencies to be printed next to gross weight.

For more information on entering alphanumeric characters, please refer to the section entitled Alphabetical and Special Character Entry in Chapter 4 of this manual.

CHAR refers to normal printable ASCII characters on the LYNX terminal keypad and CR/LF (carriage return and line feed) characters. Enter ASCII characters from the LYNX terminal keypad. CR/LF makes the termination of a printed line faster than selecting each character individually, and allows quick addition of multiple new lines to advance to the end of the page or to a position a line on a page. To choose CR/LF as a character, press **SELECT** at the **Character?** prompt.

At the **Quant?** prompt, enter the number of the selected character to print.

Refer to the appendix for a list of special characters.

SPEC CHAR refers to "special" control characters that are not on the LYNX terminal keypad or non-printable ASCII characters such as ASCII SO (shift out - 0E hex) which

may be used for printer control. Special characters also include lower case letters and various punctuation not available on the LYNX terminal keypad. Use the LYNX terminal **SELECT** and **ZERO** keys to scroll through the list of these characters and choose a character.

Use the digit keys to enter the decimal value of any special character 0-255.

1. At the **Quant?** prompt, enter the number of the selected character to print.

Formatting options allow you to customize the appearance of printed data and helps align data on the page. You can also limit the data field width which can help to eliminate unwanted characters.

2. At the **Format?** prompt, select the data position (justification) and field width. If field width is less than the code length default specified in the Field Code tables (above), characters will be stripped off automatically. Justification choices include:

   DEFAULT prints data as defined by METTLER TOLEDO default.

   LEFT prints data left justified within the field width. At the **Width?** prompt, enter the number of characters to define the field width.

Format options Left, Center, and Right use more memory than Default.

   CENTER prints data centered within the field. At the **Width?** prompt, enter the number of characters to define the field width.

   RIGHT prints data right justified within the field. At the **Width?** prompt, enter the number of characters to define the field width.

   ZERO FILL prints numeric data fields without suppressing leading zeros. If the value is negative, the negative sign will be the left-most character.

In a print template, data fields can now be programmed for "zero fill" format. This is intended for numeric fields only. In this format, leading zeros are not suppressed, and the negative sign always occupies the left most character.

   When the element is viewed on the display, the data is shortened to fit in the display area. The following examples illustrate the displayed data format.

   Example 1

   /wt101 L 15 where:

   "/" indicates a LYNX terminal Data Field. The other possibility is "A" for ASCII character.

   "wt101" is the gross weight field code.

   "L" indicates this field is left justified. Other possibilities are "R" for right and "C" for center.

   "15" is the specified field width.

   Example 2

   A 'G' 001 where:

   "A" indicates an ASCII character. The other possibility is "/" for a LYNX terminal Data Field.

   "G" is the ASCII character selected.

   "001" is the quantity of the "G" character to be transmitted. Printing multiple characters is a quick way to add spacing or create custom printouts. For example, multiple underscores (_) can create a signature line.

Print test allows you to check your data output without exiting the template sub-block.

3. Press **ESCAPE** when the template is finished or if you want to "compile" the template.

4. At the **Prt Test?** prompt, select **Y** or **N** to initiate or skip a test print of the template. If Y, the data defined by the template will print.

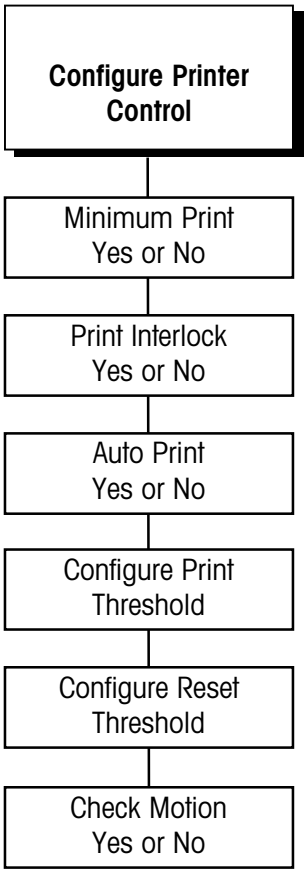
If more than one port is programmed as capable of printing the test, the LYNX terminal may prompt you to select a specific port for output.

5. At the **Prt Temp?** prompt, select **Y** or **N** to print the template elements. If **Y**, template elements are printed in the shortened format described above.

Print template gives a hard-copy record of the template configuration that can be useful for "debugging" a format as you configure the template.

6. If more than one port has been programmed to print this specific template, the LYNX terminal may prompt you to select a specific port for output.
7. At the **Finished?** prompt, select **Y** if you are finished or **N** to return and continue editing this template.
8. Continue to the next sub-block, or exit setup mode.

3. Configure Printer Control Sub-block



This sub-block lets you configure certain parameters that control when and how data is output to a printing device. These parameters apply generally to the LYNX terminal; they are not port specific. To configure the printer control sub-block:

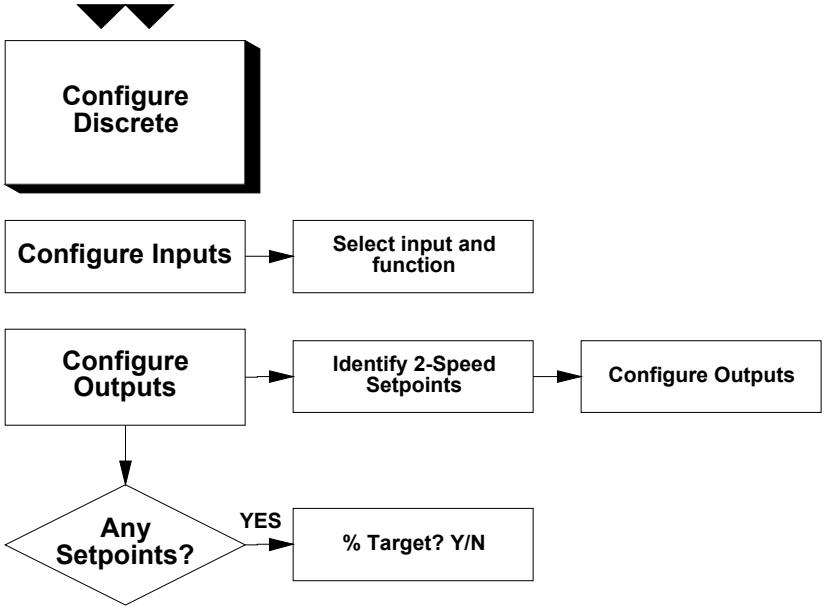
1. Press **ENTER** at the **Print Ctrl** prompt.
2. At the **Min. Prt?** prompt, select **Y** or **N** to enable or disable minimum print. If enabled, printing is possible only when scale weight exceeds a minimum value. If weight exceeds the threshold value, multiple prints are possible. The LYNX terminal prompts you for the minimum print threshold value.
3. At the **Prt I/L?** prompt, select **Y** or **N** to enable or disable print interlock. If enabled, Print Interlock disallows printing until weight on the scale exceeds a threshold value. Multiple prints are disabled until scale weight falls below then exceeds the threshold value again. The LYNX terminal prompts you for the print interlock threshold and reset values.
4. At the **Auto Prt?** prompt, select **Y** or **N** to enable or disable automatic printing. If enabled, printing will begin when scale weight is at no-motion above a threshold value. Auto-print requires the weight to drop below the reset threshold before another auto print operation can take place. The LYNX terminal prompts you for auto-print threshold and reset values.

If Enabled

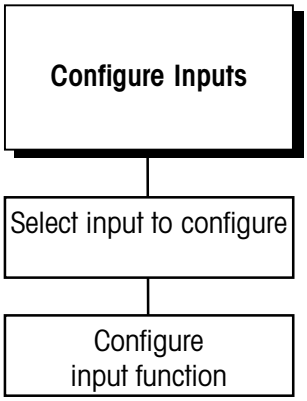
- Press **ENTER** at the **Prt Thres?** prompt, then enter a weight value. The LYNX terminal automatically prints when weight on the scale exceeds this threshold value.
- Press **ENTER** at the **Rst Thres?** prompt, then enter a weight value. The LYNX terminal automatically resets when weight on the scale falls below this reset value.
- At the **Chk Mot?** prompt, select Y or N to enable or disable the motion check feature. If enabled, the LYNX terminal waits for the load on the scale to stabilize below the reset value before allowing another print operation above the threshold value.

Discrete Program Block

The Discrete program block lets you configure use of the terminal's three discrete inputs and five discrete outputs.



1. Configure Inputs Sub-block



Note: An "OK to Feed" input is required if a FEED prompt will be used. An "OK to Discharge" input is required if a DSCH prompt will be used. Refer to the Memory Program Block for configuring a prompt list.

Refer to the appendix for a complete explanation of the use of discrete inputs.

This sub-block lets you configure the LYNX terminal's three inputs for the required functionality. Inputs are found on the PAR1 discrete input connector.

To configure inputs:

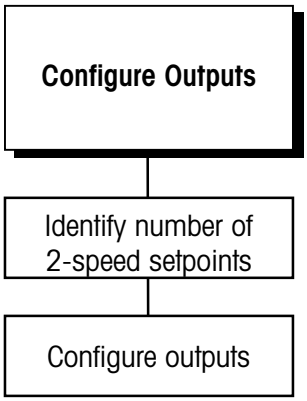
1. Press **ENTER** at the Confg In prompt to access the sub-block.
2. At the **Input? 1** prompt, press **ENTER** to configure Input1, or press **SELECT** to choose input 2 or 3. Press **ENTER** when the desired input is displayed.
3. Press **SELECT** to assign a function for the selected input. Options include:

- Tare
- Clear
- Zero
- Print
- Switch Units
- Blank Display
- Dynamic
- Inhibit Keypad
- X10 Weight
- Accumulator Total
- OK to Feed
- OK to Discharge
- Advance Prompt List *
- None

*This input will also cause the LYNX terminal to jump from the normal weighing mode to the first prompt in a prompt list.

4. Press **ENTER** then repeat steps 2 and 3 for all three discrete inputs. When finished press ESCAPE followed by **SELECT** to continue to the Configure Outputs sub-block.

2. Configure Outputs Sub-block



This sub-block lets you configure the LYNX terminal's five outputs for the required functionality. Outputs are found on the PAR2 discrete output connector. To simplify configuration, you must first select the number of 2-speed setpoints. Depending on the number of 2-speed setpoints, you then select the functions of the remaining outputs.

To configure the outputs:

1. Press **ENTER** at the **Confg Out** prompt to access the sub-block.
2. At the **# - 2 Speed?** prompt, press **ENTER** to accept the displayed quantity, or press **SELECT** to choose the number of 2-speed setpoints (0, 1, or 2). Press **ENTER** when the desired input is displayed.

   If **Zero 2-Speed setpoints** is selected, the terminal will advance to step 5 below to permit you to assign each physical output (1-5) to the desired output function.

If a discrete output is assigned as a setpoint, the operator can enter the setpoint values by pressing the **MEMORY** key or setpoint input can be configured as a step in the prompt list.

The following table shows the possibilities:

Quantity 2-Speed Setpoints = 0	
Output #	**Function Assigned**
1	Single Speed Setpoint or Assigned Status Output
2	Single Speed Setpoint or Assigned Status Output
3	Single Speed Setpoint or Assigned Status Output
4	Single Speed Setpoint or Assigned Status Output
5	Single Speed Setpoint or Assigned Status Output

If one or two 2-speed setpoints are selected, the LYNX terminal requires you to specify information about each setpoint.

The LYNX terminal can provide feed and discharge sequence logic through its prompt list. You configure the prompt list in the Memory Program Block.

3. At the **Source SP1** prompt, press **ENTER** then respond **N** to the **Feed?** prompt if you will not use setpoint 1 as a feed control output in the prompt list or Y if you will use it in the prompt list.
4. Next, press **SELECT** to choose the weight value that will be used as a source for comparison to the setpoint. Your choices are:
   - Displayed Weight (Net or Gross according to current scale more)
   - Gross Weight (regardless of scale mode)
   - Net Weight (scale must have a tare)
5. Next, choose if the setpoint will have a preact value associated with it. Finally, choose if the tolerance function for the setpoint will be a Zero tolerance or a Weight tolerance.

You can enable preact for setpoints if you want to compensate for material delivered after the output is turned off. Preact is subtracted from the setpoint to calculate the point where the output will be turned off.

6. If you choose two two-speed setpoints you must enter the same parameters for SP2 as for SP1 except that SP2 can be used in a prompt list for discharge output control rather than for feed control. Advance to step 7.

   If you choose one two-speed setpoint, the LYNX terminal will display the prompt **Use SP2?.** Respond **N** if you only require a single setpoint or respond **Y** if you require a second setpoint for single-speed feed control.

   If you responded N to the **Use SP2?** prompt, the LYNX terminal will advance to the next step so you can assign the remaining outputs. The following tables show the output configurations according to your previous choices:

You can specify if the weight tolerance output is controlled relative to zero or to the setpoint.

The SP1 and SP2 display cursors, on the front of the LYNX terminal, will indicate the state of outputs 1 and 2.

Quantity 2-Speed Setpoints = 2	
Output #	Function Assigned
1	Slow Feed, Setpoint 1
2	Fast Feed, Setpoint 1
3	Tolerance, Setpoint 1 or Zero
4	Slow Feed, Setpoint 2
5	Fast Feed, Setpoint 2

Refer to Appendix 3 for a complete explanation of the use of discrete outputs.

Quantity 2-Speed Setpoints = 1 AND Use Setpoint 2 = Y	
Output #	Function Assigned
1	Slow Feed, Setpoint 1
2	Fast Feed, Setpoint 1
3	Tolerance, Setpoint 1, or Zero
4	Feed, Setpoint 2
5	Weight Tolerance, Setpoint 2

Quantity 2-Speed Setpoints = 1 AND Use Setpoint 2 = N	
Output #	Function Assigned
1	Slow Feed, Setpoint 1
2	Fast Feed, Setpoint 1
3	Tolerance, Setpoint 1, or Zero
4	Setpoint 4 or Assigned Status Output
5	Setpoint 4 or Assigned Status Output

7. At the **Output? x** prompt, program the remaining outputs that were not automatically assigned. Press **SELECT** to choose the output to configure, then press **ENTER**. Press **SELECT** again to choose a function. Options include:

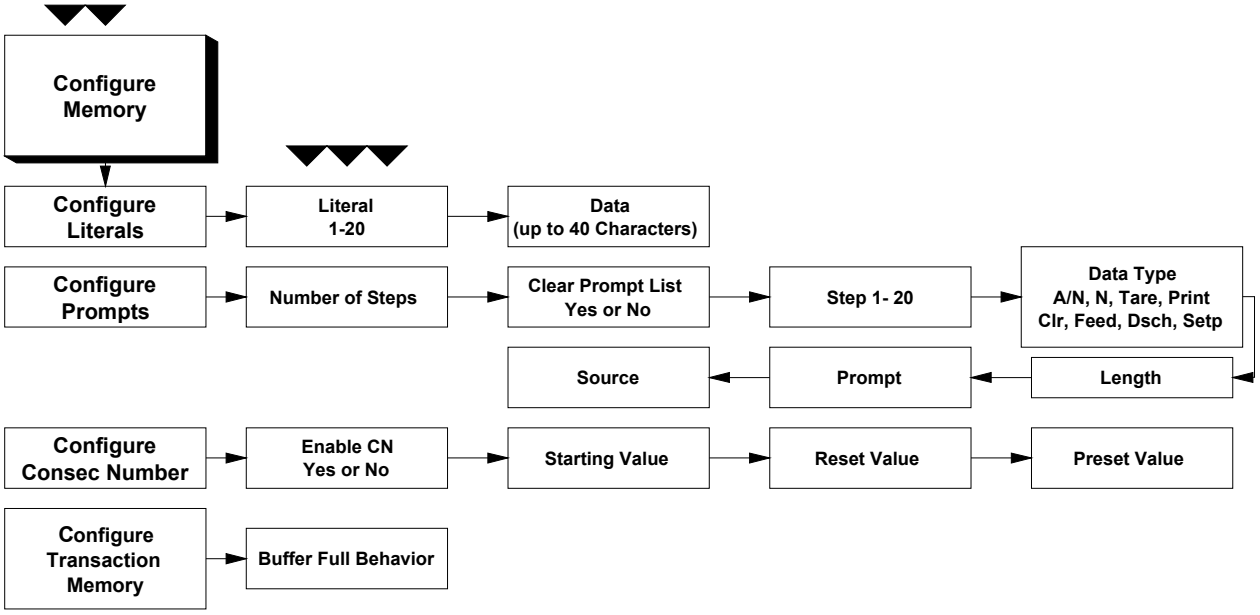
   - Setpoint (single-speed)
   - Net
   - Center of Zero
   - Motion
   - Under Zero
   - Over Capacity

If a Setpoint output is chosen, you must also set the other parameters associated with the setpoint as discussed previously. Continue until you have selected and configured all unassigned outputs then press **ESCAPE**.

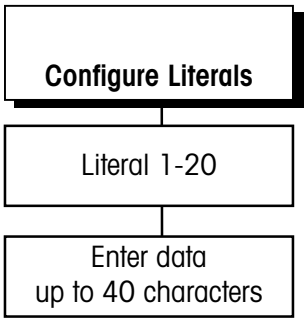
If you have configured any outputs as Setpoint outputs, you can designate data entry for the dribble, preact, and tolerance values as a percentage of the setpoint or as a weight value. At the **% Target?** prompt, select **Y** if these values are to be processed as a percent of the setpoint entry. Select N if these entries are to be weight values.

Memory Program Block

This program block lets you configure literals, prompt lists, consecutive numbering, and the behavior of the transaction memory table. Prompts and consecutive numbering are accessed when an operator presses the **MEMORY** key in Normal Operation mode. The following diagram describes the Configure Memory program block:



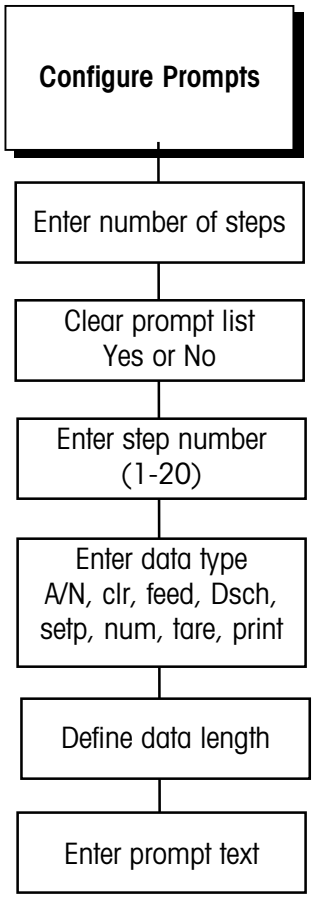
1. Configure Literals Sub-block



Literals are text strings such as site name or address that can be printed in a template. They can be up to 40 characters in length and are referenced by a field code. See the section entitled Configure Template Sub-block in this chapter. You can program up to 20 literals. To configure literals:

1. Press **ENTER** at the Cnfig Literals prompt to open the sub-block.
2. At the **Literal? 1** prompt, enter a number for the literal you are creating or editing (1-20).
3. At the **L01 (or current literal number)** prompt, enter the text for the literal. You can enter up to 40 alphanumeric characters. For information on entering alphabet characters, please refer to the section entitled Alphabetical Character Entry in Chapter 4.
4. Repeat steps 2 and 3 for each literal you wish to configure.
5. Press **ESCAPE** to continue to the next sub-block.

2. Configure Prompts Sub-block



A prompt list displays a written sequence for an operator to perform a task while in Normal Operation mode. You can include up to 20 steps in a prompt list. The LYNX terminal has three preprogrammed prompts:

Prompt 1: OPERATOR?

Prompt 2: PART NO?

Prompt 3: LOCATION?

1. Press **ENTER** at the **Prompts** prompt to open the sub-block.
2. Press **ENTER** at the **# Steps =** prompt. This number tells you how many steps are in the current prompt list.
3. At the **Clr List?** prompt, select **Y** if you wish to clear the existing prompt list and reset the step number to 0, or select **N** if you want to edit or add steps in the existing prompt list.

   If Y, at the **Sure?** prompt, select **Y** or **N** to clear or keep the current prompt list.

   If N, at the **Step 1?** prompt, press **SELECT** to display the step to be edited. If you are creating a new list, begin with Step 1. Press **ENTER** to continue. If editing an existing list, press **SELECT** to step to the next step or **ZERO** to back up. Pressing **CLEAR** will delete the prompt at the current step and moves the following prompts up. Pressing **MEMORY** allows entry of a new prompt ahead of the current prompt. The other prompts will move down.
4. At the **Type?** prompt, press **SELECT** to choose the type of data that will be entered or the action that will be taken from the following table:

Option	Action	Description
A/N	Alpha-Numeric Data Entry	Prompts for keypad or serial input of up to 40 A/N characters
Num	Numeric Data Entry	Prompts for keypad or serial input of up to 8 numbers with decimal point
Clr	Clear the Scale to Gross	Causes the scale to switch from Net to Gross mode
Tare	Tare the Scale	Allows Preset Tare entry, Push button tare, or Automatic tare
Prnt	Print	Causes a print command to be Issued
Feed	Feed a Material to Setpoint	Causes a material to be fed into the Scale to the setpoint 1 amount
Dsch	Discharge the Scale	Causes the scale discharge output to turn on until the scale is empty
SetP	Setpoint Entry	Prompts for keypad input of specified setpoint

Some option choices require input of additional parameters as follows:

Option	Additional Parameters
A/N	**Length?** – enter the length of the input up to 40 characters * **Prompt?** – enter the prompt for the operator
Num	**Length?** – enter the length of the input up to 8 numbers * **Prompt?** – enter the prompt for the operator
Clr	No additional parameters required
Tare	**Tare?** – press **SELECT** to choose the tare action as: **Tare** – permits push button or preset tare entry **PT** – permits preset tare entry only **Semi** – permits push button tare only **Auto** – cause an automatic tare
Prnt	No additional parameters required
Feed	No additional parameters required
Dsch	No additional parameters required
SetP	**SP Nbr?** – enter the setpoint number (1-5) to be entered **Prompt?** – enter the prompt for the operator

* Enter a length of zero if you wish to use the prompt as a "hold" function and do not expect data input for the prompt.

5. At the **Clr Data?** prompt, select **Y** to enable clearing of the data entered in the prior execution of the prompt or **N** if you wish to retain the last data entered.
6. At the **More?** prompt, select Y if you wish to enter more steps into the prompt list or **N** if you are finished editing the list.
7. At the **Loop?** prompt, select **Y** if you want the LYNX terminal to remain in the prompt mode once it is entered, looping from the last prompt to the first prompt until **ESC** is pressed.

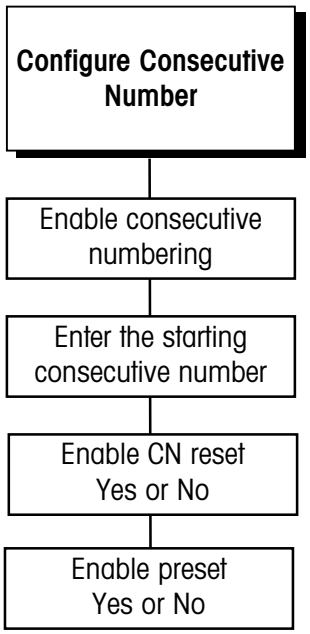
Automatic prompting provides a method of automating LYNX terminal program execution to simplify operator interaction and to eliminate or minimize operator keystrokes!

If **No** is selected for Loop, at the **Auto Pmt?** prompt select **Y** if you want the LYNX terminal to automatically execute the prompt list whenever the weight on the scale exceeds a threshold value.

If Automatic Prompting Is Enabled

- At **Pmt Thres?** press **ENTER** to input the weight threshold that will cause the terminal to jump from the normal weighing mode to the first prompt in the prompt list.
- At **Rst Thres?** press **ENTER** to input the weight threshold that the scale must pass through to reset automatic prompting for the next cycle.
- At the **Chk Mot?** prompt, select **Y** if you want the weight on the scale to have to settle to a no-motion state prior to jumping to the prompt list or prior to being reset for the next cycle.

3. Configure Consecutive Numbering Sub-block

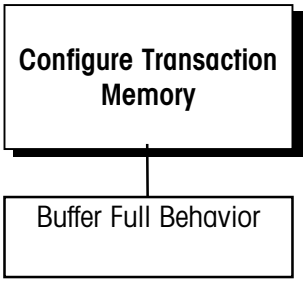


Consecutive numbering is used for sequencing purposes. The LYNX terminal automatically increments the number from a defined starting point. Consecutive numbers can be up to eight digits.

To configure consecutive numbering:

1. Press **ENTER** at the **Cons Numbr** prompt to open the sub-block.
2. At the **Ena CN?** prompt, select **Y** or **N** to enable consecutive numbering.
3. Press **ENTER** at the **Start at:** prompt, then enter the first consecutive number to be used (0-99999999) after a reset.
4. At the **Ena Rst?** prompt, select **Y** or **N** to enable or disable the consecutive number reset. If enabled, the operator can manually reset the consecutive number from the LYNX terminal's keypad.
5. At the **Ena Pre?** prompt, select **Y** or **N** to enable or disable the consecutive number preset feature. If enabled, the operator can manually enter from the keypad a number to be used as the starting consecutive number.
6. Press **ENTER** to continue to the next sub-block or press **ESCAPE** to exit the Configure Memory program block.

4. Configure Transaction Memory



Note that for systems requiring secure data record capture, you should configure this prompt to halt and instruct the operator to notify a designated responsible party if a **Mem Full!** message is displayed.

The LYNX terminal can store transaction data records in a transaction memory buffer to make them available for a host computer to acquire. The transaction memory buffer is 4,090 bytes long. This sub-block allows you to configure the LYNX terminal to behave in a prescribed manner should the buffer become full.

To configure the transaction memory buffer full behavior:

1. Press **ENTER** at the **Trans Mem** prompt to open the sub-block.
2. At the **Full?** prompt, press **SELECT** to choose between these options for the behavior of the LYNX terminal when the transaction memory buffer is full.

Option	Action	Description
None	Continue normal operation	The oldest transaction record will be overwritten and printing will take place.
Warn	Warn the operator that the buffer is full	The operator will be warned. The oldest transaction record will be overwritten. The LYNX will print.
Halt	Warn the operator and inhibit new records, accumulation, and printing	The operator will be warned. A new record will not be written to the buffer, and accumulation and printing will be inhibited.

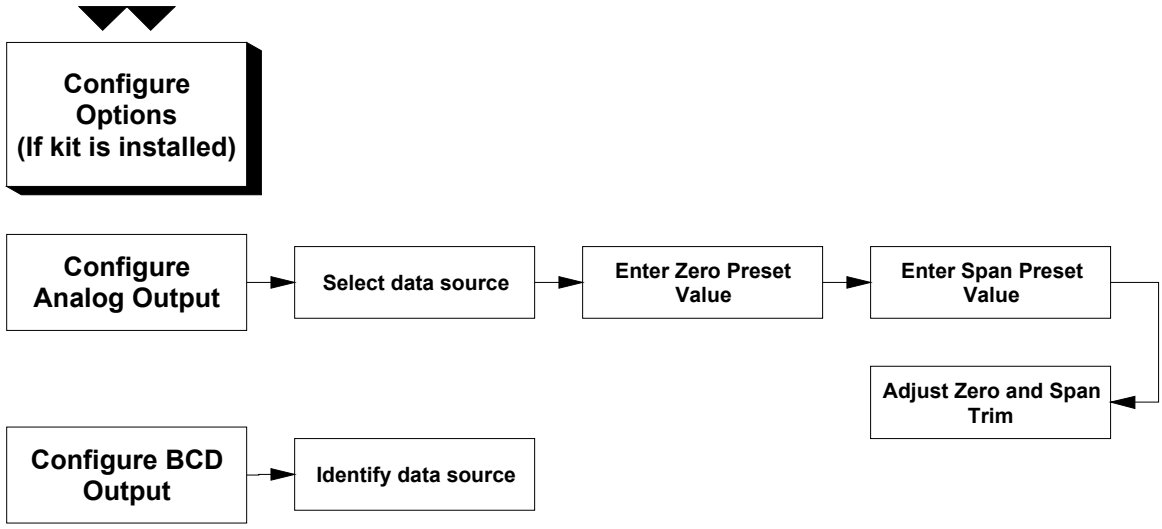
Refer to the appendix to learn how to use a host computer to acquire the data records from the transaction memory buffer.

Configure Options Program Block

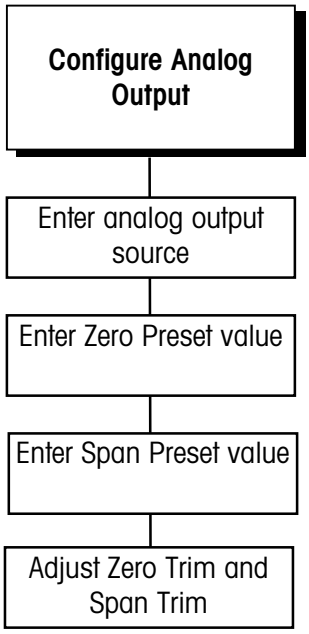
The Configure Options program block lets you configure parameters for the optional Analog Output kit and/or the optional Binary Coded Decimal (BCD) Output kit. This program block appears only if an option kit (either analog output or BCD) is installed, and parameters appear only for the option kit(s) that are installed. For example, if you have installed the BCD Output option kit, the Options program block appears in setup mode showing only parameters for the BCD Output option.

The Analog Output option kit can be installed in the LYNX terminal harsh environment, desk/wall, filling, or the panel mount model. The BCD Output option kit, however, can be installed only in the panel mount LYNX terminal.

The following diagram describes the Options program block:



1. Analog Output Sub-block



The Analog Output option kit provides a 4 to 20 mA, 0 to 5 VDC, or 0 to 10 VDC analog signal for gross weight or displayed weight. The Analog Output sub-block lets you select the data source and calibrate analog zero and full-scale values. The terminal must be calibrated before making Analog Output adjustments. (Refer to the appendix for more detailed information.)

To configure the Analog Output option:

1. Press **ENTER** at the **Analog** prompt to access the sub-block.
2. Press **ENTER** at the **Source** prompt, then select gross weight display or displayed weight output as the data source for analog output.
3. Press **ENTER** at the **Zero Preset** prompt. Enter a weight value for the analog output to use as the analog zero value. You must enter a numeric value for zero preset.
4. The default value for Zero Preset is appropriate only for the default scale build from the factory. You must enter an appropriate value based on your scale build.
5. Press **ENTER** at the **Span Preset** prompt, then enter a weight value for the analog output to use as the full-scale value. The default value Span Preset is appropriate only for the default scale build from the factory. You must enter an appropriate value based on your scale build.
6. Press **ENTER** at the **Zero Trim** prompt. The zero output factors may now be trimmed either with or without test weights. When entering the trim section, the user is asked **Use Weights?** If "Yes," the continuously updating scale weight is taken as input data and trim is adjusted based on that value. If "No," trim is accomplished using a constant value for zero. At the **Coarse** prompt, press the **MEMORY** key to increase the output, or press the **FUNCTION** key to decrease the output. Press **ENTER** when the desired adjustment is displayed.

The coarse tuning adjustment increment is approximately ± 0.01.

7. At the **Fine** prompt, press **MEMORY** to increase the output, or press the **FUNCTION** key to decrease the output. Press **ENTER** when the desired adjustment is displayed.

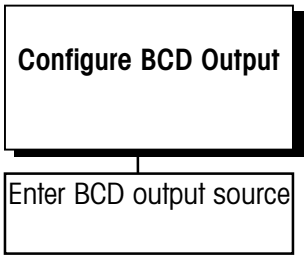
The fine tuning adjustment increment is approximately ± 0.01.

8. Press **ENTER** at the **Span Trim** prompt. The full-scale output factors may now be trimmed either with or without test weights. When entering the trim section, the user is asked **Use Weights?** If "Yes," the continuously updating scale weight is taken as input data and trim is adjusted based on that value. If "No," trim is accomplished using a constant value for full scale. At the **Coarse** prompt, press the **MEMORY** key to increase the output, or press the **FUNCTION** key to decrease the output. Press **ENTER** when the desired adjustment is displayed.

The target weight must be on the scale before making Span Trim adjustments when "Use Weights? **Y**" is selected..

9. At the **Fine** prompt, press **MEMORY** to increase the output, or press the **FUNCTION** key to decrease the output. Press **ENTER** when the desired adjustment is displayed.

2. BCD Output Sub-block



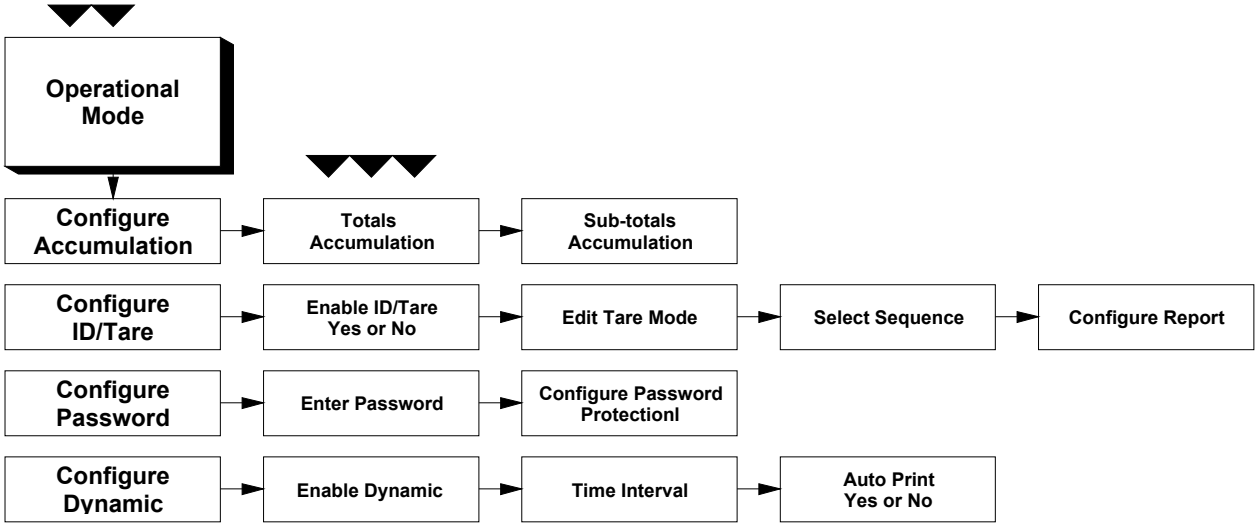
The BCD Output option kit provides up to six decades of TTL data. This sub-block lets you select the source data for BCD Output. To configure the sub-block:

1. Press **ENTER** at the **BCD** prompt.
2. Press **ENTER** at the **Source** prompt, then select gross weight output or displayed weight output.

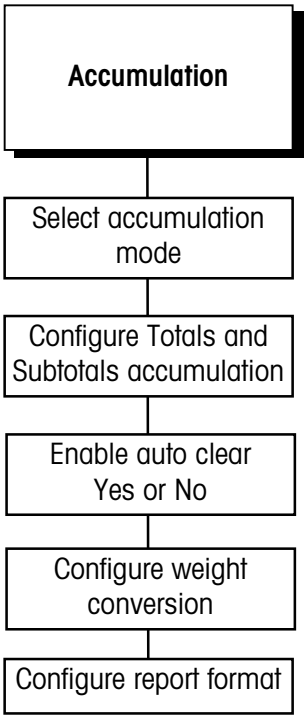
Operational Mode Program Block

The Operational Mode program block lets you configure the LYNX terminal for weight accumulation (total and sub-total registers), dynamic weighing (unstable loads such as livestock), or ID/Tare storage and recall.

The following diagram describes this program block:



1. Accumulate Sub-block



The LYNX terminal uses the primary weight unit (calibration unit) for accumulation.

The Accumulate sub-block lets you configure the Total and Sub-total accumulator. This feature allows accumulation of multiple weighings in a register. The accumulated weight can be selected as net weight (if tare has been entered), gross weight, or displayed weight (gross or net). Accumulation occurs when the LYNX terminal receives and performs a print request. Accumulation can also be used with dynamic weighing.

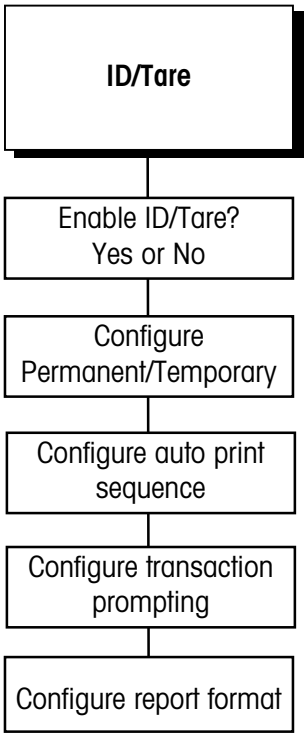
To configure the sub-block:

1. Press **ENTER** at the **Accumulate** prompt, then press **ENTER** again at the **Accum Mode** prompt.
2. Select the type of accumulation. Options include:
   - None
   - Net weight
   - Gross weight
   - Displayed weight
4. If ID/Tare Permanent Tare Total and Number of Transactions are desired then Accumulation must be set to Net, Gross or Displayed Weight.
5. If "None" is selected, then operation proceeds to the ID/Tare sub-block.
3. Press **ENTER** at the **Total** prompt to configure the accumulator auto clear total feature. At the **AutoClr?** prompt select **Y** or **N** to enable or disable auto clear the total and subtotal values (if enabled) after printing.
4. Press **ENTER** at the **Subtotal** prompt to configure the subtotal accumulator. At the **Ena Sub?** prompt, select **Y** or **N** to enable or disable the subtotal accumulator.

   If enabled, press **SELECT** at the **Auto Clr?** prompt to enable or disable the subtotal accumulator auto clear after print. **Y** will cause the accumulator to clear after printing the accumulated totals.
5. At the **Conv Wt?** prompt select **Y** or **N** to enable or disable weight conversion if secondary units are used. If enabled, the LYNX terminal converts the displayed secondary weight unit to the primary weight unit for accumulation. If disabled, secondary weight units are ignored and are not accumulated.
6. Press **ENTER** at the **Report Fmt** prompt, then select the fields to include in the printed accumulation report. You must respond **Y** or **N** to each report field option. You can include:
   - Literals 9 and/or 10
   - Time
   - Date
   - Last consecutive number
   - Subtotal

   Please refer to the appendix for a sample accumulation totals report.

2. ID/Tare Sub-block



The ID Tare sub-block lets you configure the stored weight features, configure the print and prompt sequence, and configure the report format. The Permanent ID/Tare entry and recall feature is useful when a tare weight will be used repeatedly (such as the same box used many times on the same scale). Temporary ID/Tare is useful when a tare weight will be used once for a single transaction.

1. Press **ENTER** at the **ID/Tare** prompt to access this sub-block.
2. At the **Ena ID/T?** prompt, select **Y** or **N** to enable or disable permanent and temporary tare recall. If enabled, press **ENTER** at the **Edit Tare** prompt, then select the tare register to configure. Options include:

   • Permanent • Temporary

   If Permanent

   - At the **ManEntry?** prompt, select "**Y**" to enable entry/edit of a permanent tare (see the memory key description in Chapter 4) or select "**N**" to disable entry/edit of a permanent tare.

     Note that selecting "ManEntry?**N**" does not disable previously entered permanent tares but instead prevents the operator from changing the permanent tare values.

   - At the **Auto Clr?** prompt, select **Y** or **N** to enable or disable automatic clearing of a permanent record. If enabled, the LYNX terminal will automatically clear the permanent record after a predetermined number of transactions has occurred.
   - At the **Trigger?** prompt, select **Y** or **N** to enable or disable the prompt for the number of transactions required before clearing a permanent tare. If enabled, this forces the operator to reenter permanent tare values after a specific number of transactions. If Trigger is enabled, press **ENTER** at the **Transact** prompt. At the **# Trans** prompt, enter the number of transactions to take place before a permanent tare is cleared and the operator must reenter permanently stored tare values.

   If Temporary

   - At the **Auto ID?** prompt, select **Y** or **N** to enable or disable the Auto ID feature. If enabled, the terminal automatically assigns a temporary tare ID number and displays the assigned ID at time of storage. If "**N**" is selected, manually entered ID numbers are possible, provided the selected memory location is empty.

The Trigger feature can be used for applications when it is necessary to update permanent tare information due to fuel loss, dirt build-up, etc.

3. Press **ENTER** at the **Sequence** prompt, then configure the auto print capability.
   - At the auto print **Inbound?** prompt, select **Y** or **N** to enable or disable auto print after the ID is entered and weight is put on the scale for an inbound transaction.
   - At the auto print **Outbound?** prompt, select **Y** or **N** to enable or disable auto print after the ID is entered and weight is put on the scale for an outbound transaction.
   - Press **ENTER** at the **Prmpt Desc** prompt, then determine when the description prompt occurs. Options include:
     - In only
     - Out only
     - In and out
     - None

     Any selection other than "None" will enable display of the current record description and editing of the description, if desired.

3. Press **ENTER** at the **PromptList** prompt, then select the appropriate transaction type. This allows you to automatically use the predefined prompt list during transactions. Options include:

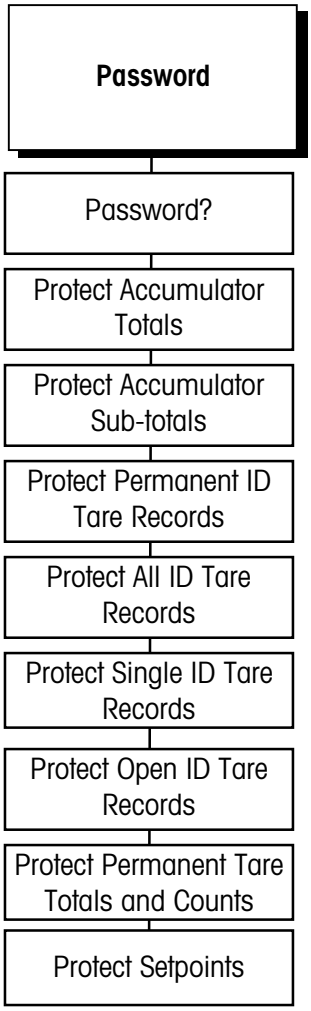
   - In only
   - Out only
   - In and out
   - None

4. Press **ENTER** at the **Report Fmt** prompt, then select **Y** or **N** to define the fields to include in the printed report. Field options include:

   - ID
   - Record ID
   - Description—respond No if using a 40 column printer
   - Tare (permanent records)
   - Accum (permanent records only)
   - Transactions (permanent records only)
   - Weight (temporary records)

5. Continue to the next sub-block or exit setup mode.

3. Password Sub-block



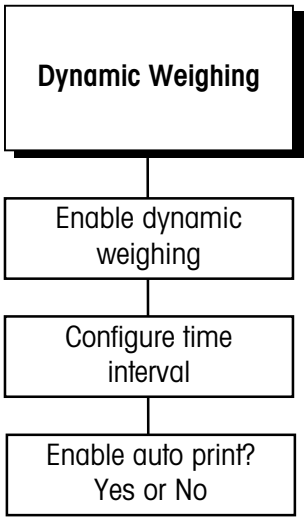
This sub-block lets you create and enable a password that can be used to protect:

- Accumulator totals
- Accumulator sub-totals
- Permanent ID tare records
- All ID tare records (including temporary)
- Single ID tare records (as desired in normal operating mode)
- Open ID tare records (temporary)
- Permanent tare totals and counts
- Setpoints

To configure the Password sub-block:

1. Press **ENTER** at the **Password** prompt, then press **ENTER** again at the **Password?** prompt. The display becomes blank to accommodate password entry.
2. Use the numeric keys to enter a password. The password can be up to eight alphanumeric characters.
3. At the **Prot Tot?** prompt, select **Y** or **N** to protect or unprotect accumulator totals.
4. At the **Prot ST?** prompt, select **Y** or **N** to protect or unprotect accumulator sub-totals.
5. At the **Prot Tr?** prompt, select **Y** or **N** to protect or permanent ID tare records.
6. At the **Prot IDn?** prompt, select **Y** or **N** to protect or unprotect all ID tare records.
7. At the **Prot ID1?** prompt, select **Y** or **N** to protect or unprotect single ID tare records.
8. At the **Prot ID_?** prompt, select **Y** or **N** to protect or unprotect open ID tare records.
9. At the **Tare Tot?** prompt, select **Y** or **N** to protect or unprotect tare totals and counts.
10. At the **Prot SP?** prompt, select **Y** or **N** to protect or unprotect the setpoint entry.

4. Dynamic Sub-block



The update rate for an analog load cell system is 20 updates per second. The rate for DigiTOL scales is between 5 and 7 updates per second.

If auto print is disabled, the operator can still print the dynamic weight manually when the weight is displayed.

The Dynamic sub-block allows accurate weighing and recording of loads that are not stable such as livestock. Dynamic weighing mode averages readings for a predetermined time interval, then displays and prints the average. Dynamic weighing can also be used with the accumulation feature.

1. Press **ENTER** at the **Dynamic** prompt to access the sub-block.
2. At the **Ena Dyn?** prompt, select **Y** or **N** to enable or disable dynamic weighing.

   If Enabled

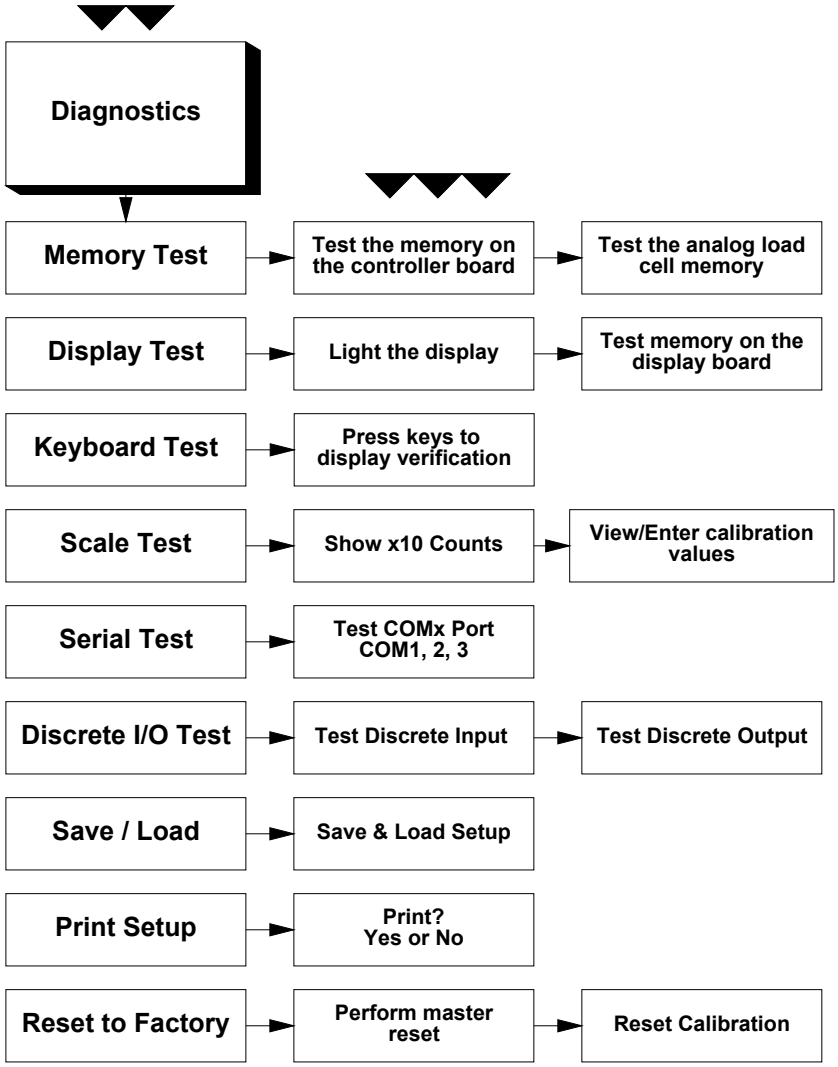
   - Press **ENTER** at the **Time Intrv** prompt, then at the **Time?** prompt enter the number of seconds to pass before the LYNX terminal displays scale weight. This is the sampling period. Values from one to 10 seconds are valid.
   - At the **Auto Prt?** prompt, select **Y** or **N** to enable or disable the auto print feature. If enabled, the LYNX terminal prints the dynamic weight at the end of the cycle. If disabled, dynamic weight is displayed only.

3. Continue to the next program block or exit setup mode.

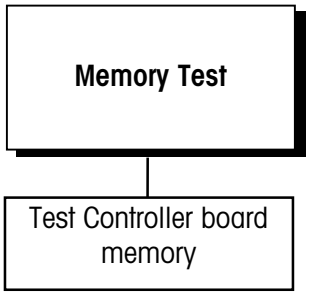
Diagnostics and Maintenance Program Block

Every LYNX industrial terminal can perform a series of diagnostic and maintenance tests. These tests detect problems if they occur and perform regular maintenance testing. The tests are done through this block while in the setup mode.

The following diagram describes this block:



1. Memory Test Sub-block



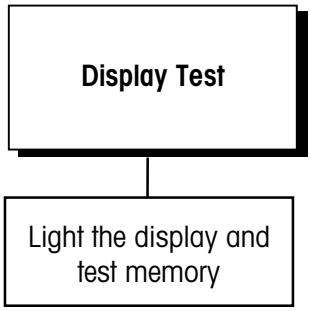
The Memory Test sub-block tests the terminal's internal memory. These diagnostics test the Flash memory, RAM, and EEPROM on the Controller board. The results of the memory tests are displayed on the terminal. To execute the memory tests:

1. Press **ENTER** at the **Memory** prompt.

   The LYNX terminal automatically tests memory on the Controller board. The terminal displays the Controller PCB software revision and part number, then tests ROM, RAM, and EEPROM. As the tests are complete, the terminal displays the results.

2. Continue to the next sub-block or exit the setup mode.

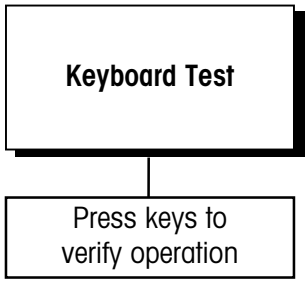
2. Display Test Sub-block



This sub-block tests the terminal's display and tests display ROM and RAM.

1. Press **ENTER** at the **Display** prompt to begin the display test. The LYNX terminal tests the display by lighting each segment for visual inspection. The terminal then displays the Display PCB software revision and part number and tests display ROM and RAM. Test results are displayed when finished.
2. When the test is finished, continue to the next sub-block or exit the setup mode.

3. Keyboard Test Sub-block



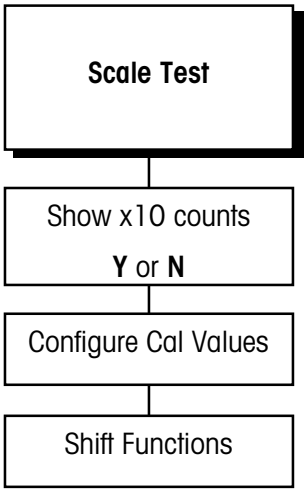
The keyboard test verifies the operation of each key on the LYNX terminal keypad.

1. Press **ENTER** at the **Keyboard** prompt to initiate the test. The terminal displays the message **Exit w/ ESC** indicating that you can press **ESCAPE** to exit the test.
2. Press each key on the LYNX terminal keypad. If the depressed key works, the key name is displayed. If the key does not work, the terminal does not respond.

   For example, to test the **MEMORY** key, press **MEMORY** on the keypad. If it works properly, the display reads **Memory**. If the **MEMORY** key is inoperative, the display remains unchanged.

3. Repeat step 2 to test as many keys as you like.
4. When finished, exit the keyboard test by pressing **ESCAPE**.

4. Scale Test Sub-block



This sub-block tests the stability of the scale with regard to the environment and calibration. Scale weight is displayed at a finer resolution than the calibrated increment resolution.

1. Press **ENTER** at the **Scale** prompt, then press **ENTER** at the **Expand Wt** prompt.
2. At the **x10 Cnts?** prompt, select **Y** or **N** to show scale resolution ten times higher than normal while performing the scale test. This higher resolution indicates the accuracy of the weight display and if calibration is needed. This procedure also tests for environmental factors affecting the accuracy.
3. If you select **Y**, continue to the next sub-block. If you select **N**, continue to Step 3 below. Press **ESCAPE** to exit the x10 mode.
4. Press **ENTER** at the **Cal Values** prompt to view or enter calibration values for the LYNX terminal. the calibration values of one scale can be applied to a new Controller PCB by manually entering the values.
5. Press **ENTER** at the **Zero Cnts** prompt to display the current calibration counts at zero. If desired, enter a zero count value.

   If Linearity Correction is Enabled:

   - Press **ENTER** at the **Mid Weight** prompt to display the last test weight used for mid weight calibration. Enter a new value if desired.
   - Press **ENTER** at the **Mid Count** prompt to display the current calibration counts at mid weight. Enter a new value if desired.
   - Press **ENTER** at the **Hi Weight** prompt to display the last test weight used for high weight calibration. Enter a new high scale weight value if desired.
   - Press **ENTER** at the **Hi Counts** prompt to display the current calibration counts at high weight. Enter a new value if desired.

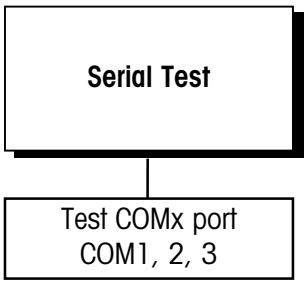
   If DigiTOL J-Box is Selected:

   - Press **ENTER** at the **Shift Cons** prompt to display the shift constants for the DigiTOL junction box. Enter a new shift constant value for each load cell (1 through 4) if desired.
6. Press **ENTER** at the **LC Counts** prompt (DigiTOL scales only) to display the raw counts value for each cell (C1 - C4).
7. Press **ENTER** at **Reset Shft** prompt to return the shift adjustment factors for a DigiTOL J-Box to 1.0. This prompt only appears if the scale selected is DigiTOL J-Box.

   At the **Sure?** prompt, select **Y** or **N** to confirm or abort the reset operation.
8. Continue to the next sub-block or exit the setup mode.

If the scale type is DigiTOL J-Box and linearity correction is enabled, Mid Weight and Mid Counts are displayed. Press **ENTER** to accept the values.

5. Serial I/O Test Sub-block



The Serial Test sub-block tests the serial I/O ports. You can transmit a test string of data out from a designated port, or you can receive a string of input data. The input data scrolls across the display as received. You may see special characters representing control characters in the test string. This serial test is useful in installation and terminal and hardware diagnostics.

1. Press **ENTER** at the **Serial I/O** prompt to test serial ports.
2. At the **Test?** prompt, press **SELECT** to choose the serial port you wish to test (COM1, COM2, or COM3).

The display reads Test COMx: until a serial input is received. When input is received, the characters are displayed. The LYNX terminal is constantly outputting the string COMx NN <CR> <LF> where x is the COM port number and NN is a transmission number beginning at 00 and counting through 99.

The serial test cannot test COM3 if it is associated with a DigiTOL scale. In this case, change the DigiTOL scale type to Analog or None through the Scale Interface program block before performing a serial test.

If a jumper wire is placed between the transmit and receive terminals on the serial port being tested, you can test both the input and output of a port and view the string of data being transmitted on the display.

<CR> is an ASCII carriage return code. <LF> is an ASCII line feed code.

The following diagram shows how to connect the output to the input for the serial ports and all types of communication. Testing COM1 using RS-485 is not possible.

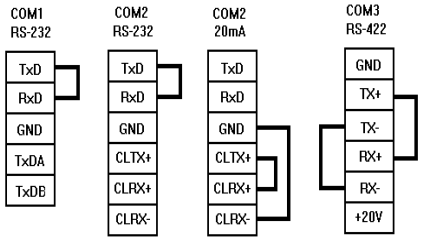
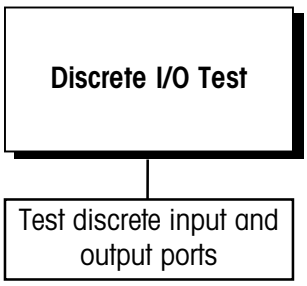


Figure 2-1 Serial Test Jumpers

3. Press **ESCAPE** to exit the serial test when you are finished.
4. Repeat steps 2 and 3 to test additional COM ports.
5. Continue to the next sub-block or exit the setup mode.

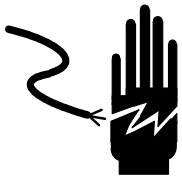
6. Discrete I/O Test Sub-block



The Discrete I/O Test sub-block tests the discrete I/O ports. The test can "turn on" each output and monitors inputs. The discrete I/O test is useful in installation and terminal and hardware diagnostics.

1. Press **ENTER** at the **Discrt I/O** prompt to access the sub-block.
2. The display will flash **"!Warning!"** four times before prompting "**Sure?N**."

3. If it is safe to proceed with a discrete output test, press **SELECT** to change the display to "**Sure?Y**" and then **ENTER** to proceed. Otherwise press **ENTER** to skip the Discrete I/O test. At the **Test?** prompt, select the desired port to test. You can press **ENTER** to test the inputs for PAR1, or the outputs at PAR2.



WARNING

THIS TEST ALLOWS YOU TO TURN THE OUTPUTS ON AND OFF FROM THE LYNX TERMINAL KEYBOARD. IT IS TOTALLY UNRELATED TO THE WEIGHT. IF ELECTRICAL EQUIPMENT IS CONNECTED TO THE OUTPUT OF THE LYNX TERMINAL DURING THIS TEST, IT MAY START AUTOMATICALLY. MAKE SURE THAT ALL APPROPRIATE PRECAUTIONS HAVE BEEN TAKEN TO PREVENT PERSONAL INJURY DURING THIS TEST. METTLER TOLEDO SUGGESTS UNPLUGGING THE DISCRETE I/O CONNECTOR FROM THE REAR OF THE LYNX TERMINAL AND USING LED'S OR A VOLT METER TO VERIFY CORRECT OPERATION OF THESE OUTPUTS.

Discrete Input

The display will read P1 = FFF indicating that the three discrete inputs are all false or "OFF." When one of the inputs is held to logic ground for 100 ms or longer, the "F" will change to a "T" to indicate a true or "ON" condition.

- When finished, press **ESCAPE** to exit the test routine for the discrete inputs.

Discrete Output

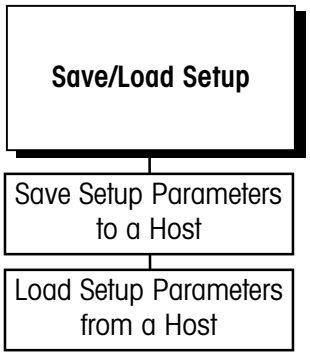
The display will read P2 = 00000] indicating that the five discrete outputs are all logic 0 or "OFF". The first digit will be blinking indicating that output 1 is the active output.

- To turn this output on, press the number "1" key. Pressing "0" returns this output to the "OFF" condition. To move to the next output (output 2), press **SELECT**. The second digit now blinks. Each of the five outputs can be turned "ON" or "OFF" using this method.
- When done, press **ESCAPE** to exit the test routine for the discrete outputs.

4. Press **ESCAPE** to exit the parallel I/O test and continue to the next sub-block, or exit the setup mode.

After testing, remember to change the scale type back to DigiTOL and verify that calibration is correct by applying weight to the scale.

7. Save / Load Setup Sub-block



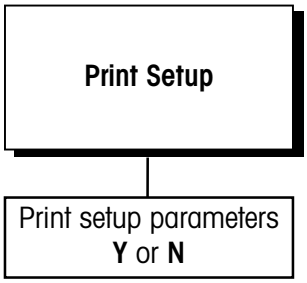
This sub-block allows saving from the LYNX terminal and loading to the LYNX terminal all setup parameters using a host device, such as a PC, connected to the LYNX terminal COM1 port. The LYNX terminal port COM1 must be configured to 2400 baud to correctly perform the "Load" function from the host (see the Serial Interface program block). The "Save" function baud rate is limited by that of the other device connected to COM1.

The Save/Load data format is ASCII text which can be transferred by the DOS *.Bat files shown below which use the file name LYNX.TXT for the setup file. Any commercially available data communication program running under DOS or Windows that supports a "text file" transfer protocol may also be used.

To save the LYNX terminal setup to a host:

1. Press **ENTER** at the **Save Setup** prompt.
2. The LYNX terminal will display **Saving...** while the data is being transferred. After the transfer is complete, the display will read **Saved xxx** with xxx representing the number of setup fields successfully transferred. Press any key to acknowledge this message and return to the save/load sub-block.
3. If using a PC running DOS, the following batch command file, save.bat, may be run from the DOS prompt:
4. MODE COM1: BAUD=2400 PARITY=E DATA=7 STOP=1 RETRY=P COPY COM1: LYNX.TXT
5. To load the LYNX terminal setup from a host:
6. Press **ENTER** at the **Load Setup** prompt.
7. The LYNX terminal will display **Loading...** while the data is being transferred. After the transfer is complete, the display will read **Loaded xxx** with xxx representing the number of setup fields successfully transferred. Press any key to acknowledge this message and return to the save/load sub-block.
8. If using a PC running DOS, the following batch command file, load.bat, may be run from the DOS prompt:
9. MODE COM1: BAUD=2400 PARITY=E DATA=7 STOP=1 RETRY=P COPY LYNX.TXT COM1:

8. Print Setup Sub-block



The Print Setup sub-block prints the terminal setup information as it is defined in the program blocks. It may be useful to have a hard copy of each terminal's setup parameters as back up. Print setup data will be sent out the port selected for demand output.

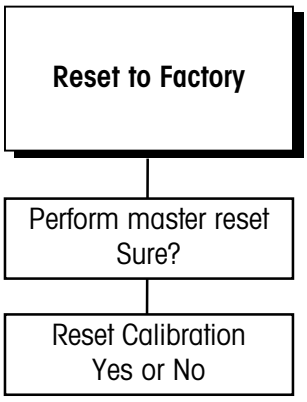
1. Press **ENTER** at the **Setup** prompt. If multiple serial ports have been programmed, the LYNX terminal prompts where to send the test data.
2. At the Use **Comx?** prompt, select one port to receive test data. Only one port can be configured as **Y**.
3. At the **Print?** prompt, select **Y** at the **Print?** prompt to print the setup parameters as defined in the program blocks. If you do not want to print the setup, press **ENTER** to select **N**.

   Setup data is printed in a 40-column format that is compatible with the METTLER TOLEDO 8857 Strip Printer. A standard 80-column printer, such as the METTLER TOLEDO model 8846, will also work. Label printers are not acceptable devices for printing this information because there are many lines of data.
4. Continue to the next sub-block or exit the setup mode.

You must have a Demand port configured to print setup.

The **Comx?** prompt appears only if multiple demand connections exist.

9. Reset to Factory Sub-block



The Reset to Factory sub-block allows you to perform a master reset which returns all parameters for all program blocks to their original settings. To perform a master reset:

1. Press **ENTER** at the **Factry Rst** prompt.
2. Select **Y** at the **Sure?** prompt to confirm your intention to reset, or select **N** to exit without resetting all parameters.

   If Y:

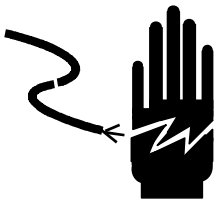
   At the **Rst Cal?** prompt, select the default **N** to reset all parameters **except** calibration. Select **Y** to reset all parameters **including** the scale calibration parameters.

   If you choose to reset the calibration values, the current scale capacity, increment size, and span and zero values will all be lost and scale recalibration will be required.

   The LYNX terminal displays the message **Resetting** and all parameters (except print templates) are returned to factory settings.
3. After resetting, the LYNX terminal will perform its normal power-up sequence.

NOTES

3 Service and Maintenance



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.

Tools and Supplies

You should keep the following items on hand for service and maintenance of the LYNX terminal. A full set of common hand tools may also be required.

- Volt-Ohm meter
- Single DigiTOL load cell simulator (PN 0917-0178) if a DigiTOL scale is used
- Analog load cell simulator PN 8245100A (variable) or PN 10086500A (10 step) if an analog load cell scale is used
- Soft, lint-free cleaning cloth
- Anti-static bags (5 in. x 8 in.) for PCBs (PN 140063 00A)
- Anti-static wrist strap and mat
- Screw driver (PN 144761 00A)
- Flat and Phillips head screw drivers
- Allen wrench (2 mm) (PN 144118 00A)

Cleaning and Regular Maintenance

You may wipe the keyboard and cover with a clean, soft cloth that has been dampened with a mild glass cleaner. Do not use any type of industrial solvent such as toluene or isopropanol (IPA) on the keyboard/display assembly of the general purpose or the panel mount unit. Solvents may damage the keyboard, display or cover finish. Do not spray cleaner directly onto the unit.

Regular maintenance inspections by a qualified service technician are recommended.

Troubleshooting

Error Codes and Actions

The following table lists the terminal's error messages with possible cause and remedy.

Error Message	Description	Probable Cause	Remedy
BRAM BAD	Battery backed RAM error.	Setup parameters in Battery Back RAM have been corrupted. Most likely causes are too long of storage for LYNX terminal, power has been removed from terminal memory too long, battery failure, or hardware failure.	Respond Y(es) to reset to factory settings. Reprogram setup parameters. If problem persists, you may have to replace battery, power supply, or controller card.
CALIBRATE ERROR	Calibration error.	Most likely cause is improper setup or calibration sequence, or a bad load cell.	Check wiring. Check with simulator. Check load cell and recalibrate. Verify calibration setup parameters.
CLEAR TARE AT ZERO	According to the scale setup parameters, the scale must be at gross zero	If you select Tare Interlock, the scale must be at gross 0 in order to clear tare.	Check Legal For Trade requirements. If you don't want this feature, turn off the Tare Interlock selection.
DLC ERR NO COMM	No communication or an intermittent communication failure to the DigiTOL load cell.	Bad DigiTOL base, inter-connect cable, or serial port.	Check voltages. Check with simulator. Verify serial output port. Check cable/cell.
DLC ERROR 2 DLC ERROR 3 DLC ERROR 5 DLC ERROR 6 DLC ERROR 7	The LYNX terminal has detected a bad protocol exchange with a DigiTOL load cell.	Noise being generated on cable between LYNX terminal and DigiTOL load cell.	Check cabling, grounding, and connections at LYNX terminal and at DigiTOL base.
DLC INVALID CHNL	DigiTOL load cell invalid channel.	Communications port assigned to the DigiTOL load cell is invalid.	Check COM port selection in setup. If setup appears correct, reset terminal to factory setup. Re-program setup parameters.
DLC PARITY ERROR	Parity error has been detected in communications between terminal and DigiTOL load cell.	Possible bad load cell, incorrect wiring, or electrical interference.	Check DigiTOL base, wiring, grounding, and power source.
EEPROM BAD	EEPROM Checksum Error. The scale calibration parameters stored on the EEPROM have been corrupted.	Hardware failure.	Press **ENTER** to accept the reset default Y response. You must recalibrate LYNX terminal scale.
ILLEGAL SCALE MODE	Zeroing scale in net mode.	User attempted to zero the scale in net mode.	Clear tare to put scale in gross mode before zeroing scale.

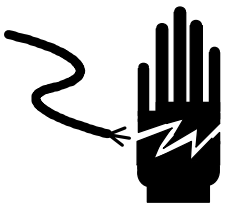
Error Message	Description	Probable Cause	Remedy
INCRM CHAIN TARE	A decreasing chain tare was attempted in a market where only incremental chain taring is permitted.	Chain taring that causes a decrease in the tare weight is not permitted in some markets in legal-for-trade applications. An incremental chain tare is a new tare on top of an existing tare value where the new tare value is greater than the old tare value.	Check the market setting in setup. Check the "tare interlock" setting in setup. Check the legal-for-trade jumper on the controller board. Verify that these are set properly.
INVALID # LOAD CELLS	The terminal has been configured with an illegal number of load cells in a DJ-Box scale.	Improper setup.	Check number of load cells configured for both scales. Correct the setup.
INVALID SCALE TYPE	Scale type definition is missing.	No scale type entered in Scale Interface menu.	Go to the "Scale Interface" setup menu and set the scale type.
KEY TARE INHIBITED	Keyboard tare disabled.	Keyboard Tare is disabled in the "Application Envn,Tare Operation" setup menu.	Change setup parameters to enable this feature.
MEM! FULL	The transaction memory buffer is full.	A host computer is not emptying the buffer as quickly as it is being filled.	Reconfigure the buffer full behavior in the Memory program block to "none" or fix the host computer.
NO CHAIN TARE	User attempted to take a second or "chain" tare after a tare was already taken.	When the tare interlock is selected in setup, chain taring is illegal in certain markets.	Check the local "legal for trade" requirements. Check the market selection and tare interlock settings in setup. The system will continue to operate properly but will not allow the chain tare.
NO SECOND UNITS	Secondary units not specified.	No secondary units selected in "Application Envn, Alt Weight Units" mode setup.	Change setup to enable the feature.
NO SERIAL CONNECTION	There is no demand print connection configured in setup.	No demand print entered in the "Config Serial, Configure Port" menu.	Change setup parameters.
NOT PRIMARY	ID/Tare not allowed.	Displaying secondary weight units.	Use the Select key to return to primary weight units.
OUT OF ZERO RANGE	Operator has attempted to zero the scale outside of the legal zeroing range.	The zeroing limits are set up in the "Application Envn, Zero Operation" menu.	Change zeroing range in setup, if necessary.
OVER RANGE	Weight on the scale exceeds the calibrated capacity of the scale by more than 5 divisions.	There is too much weight on the scale based on calibration parameters.	Reduce the weight on the scale.

Error Message	Description	Probable Cause	Remedy
PB TARE INHIBITED	Pushbutton tare disabled.	Pushbutton Tare is disabled in the "Application Envn, Tare Operation" setup menu.	Change setup to enable this feature.
PRINT NOT READY	Scale is in motion while attempting to print.	None.	None.
PRINT REQUESTED	The operator has requested a Demand Print through the control panel.	None.	None.
PRINTING	A print operation is in progress.	None.	None.
SCALE IN MOTION	Scale in motion. This is a normal occurrence and not necessarily an error.	Motion on the scale during taring or zeroing the scale.	Try mechanical methods to stabilize the scale base first. Then, try changing the filtering to a stiffer setting in setup. Then, try changing the motion stability settings to make it less sensitive.
SHIFT ADJUST ERROR	The shift adjustment factors could not be calculated.	The weight placements during the shift adjust procedure was incorrect.	Carefully re-do the shift adjustment with bigger weights.
TARE OVER CAPACITY	Tare exceeds the capacity of the scale.	The tare value cannot exceed the capacity of the scale.	Make sure that the tare value is less than the capacity of the scale.
TARE TOO SMALL	Pushbutton tare value is less than one division.	Weight on scale must be at least one division when taking pushbutton tare.	Make sure scale has at least one division of weight before taking pushbutton tare.
TARE UNDER ZERO	Attempted to take tare when scale is under zero and has an invalid weight.	Cannot take tare when scale is under zero.	Make sure scale has valid weight before taking tare.
TEMPLATE ERROR	Template error.	Error detected in template configuration.	Check template configuration. Correct it as necessary. If problem persists, use the Save/Load feature to save the current template contents then reset template to factory, and use Save/Load to reload the template.
TOO SMALL INCREMENT	Increment size is too small.	The scale increment size is too small so that you are asking for more resolution than the scale base is capable of supporting.	Choose a larger increment size parameter in setup and re-calibrate the scale.

Error Message	Description	Probable Cause	Remedy
UNDER ZERO	The scale gross weight has gone more than "n" divisions below the current zero. The default "n" is 5, but it can be adjusted in setup.	The zero value for the scale could have been reset by hitting the zero button. There could be a connection problem to the base, particularly, with an analog base.	Take all weight off the scale base and reset the zero value. Zero settings in setup determine the range of how far from the calibrated zero that you can set a new zero value. If your weighing process uses below zero weight values, you can disable the under zero by setting the zero blanking value to 99 divisions. Check the analog base wiring.
WRONG TARE INCREMENT	Keyboard Tare is not entered in a rounded value to the nearest increment.	In certain markets, the keyboard tare value must be entered in as a value rounded to the nearest increment.	Make sure the keyboard tare value is rounded to the nearest increment.
ZERO NOT CAPTURED	Tare attempted before power up zero value was captured.	Tare attempted before power up zero value captured.	Wait a few seconds after power up before attempting a tare.

Testing Operational Voltages

To test voltages on the PCB, you must first open the LYNX terminal and access the Controller PCB.



⚠ 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.

To open the desk/wall and harsh environment versions of the LYNX terminal:

1. Remove power!
2. Insert the tip of a flat head screwdriver into one of the two slots located at the bottom of the enclosure.
3. Push gently until the spring clip is released.
4. Repeat step 2 on the second slot.
5. Gently lift the front panel away. The front panel is connected by two cables to the unit. Let the front panel hinge on these two cables while you test voltages.
6. Reapply power.

To open the panel mount version of the LYNX terminal:

1. Remove power!
2. Remove the three Phillips head screws from the rear cover plate.
3. Remove the two Phillips head screws from the option cover plate.
4. Gently slide the chassis from the enclosure until you can easily access the voltage test points. Be sure not to pull the battery cable or the transformer harness from the connectors at the rear of the assembly.
5. Reapply power.

Input Voltage Test

1. Unplug the transformer harness from J10 on the Controller PCB.
2. Using the Volt-Ohm meter, check the AC voltage between the two pins. Input voltage should be 28 VAC ± 8 volts.

Regulated DC Voltage Test

The table below indicates the points to test the regulated DC voltages. Figure 3-1 illustrates the test points.

Regulated DC Voltage Test Points		
Voltage	**Measuring Point**	**Measurement**
19 VDC	Between chassis ground and the positive side D11	Between ± 2.0 VDC
8 VDC or 12 VDC	Between chassis ground and the positive side D13	Between ± 2.0 VDC
5 VDC	Between chassis ground and the positive side D10	Between ± .25 VDC
+15 VDC	Between chassis ground and U25, pin 1	Between ± .25 VDC

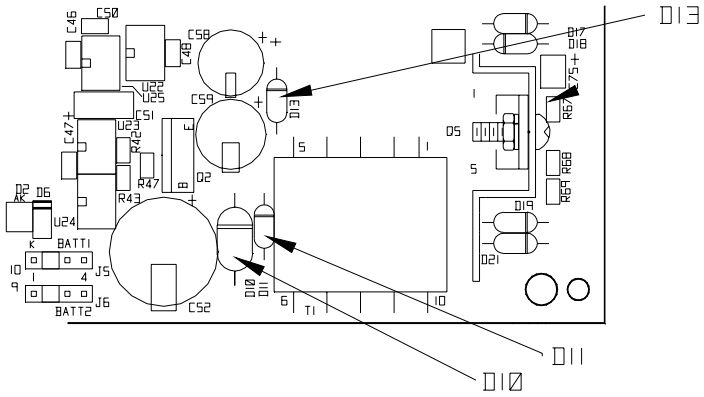


Figure 3-1 Regulated Voltages (on Controller PCB)

The 19 VDC supply provides voltage to the current loop. It is also provides voltage for analog excitation and the DigiTOL load cell.

The 8 VDC or 12 VDC supply provides voltage to the I/O port.

Early PCB assemblies which used bare PCB P/N (*)14479400A provided 8 VDC output. Later PCB assemblies based on bare PCB P/N (*)15153600A provide 12 VDC output. The bare PCB P/N is found on the solder side of the PCB assembly.

The 5 VDC supply provides voltage for all logic control points.

The ± 15 VDC supply provides voltage to the analog load cell. This voltage can also be measured between J1, pin 1 and J1, pin 7.

Battery Voltage Test

Battery voltage is tested at the battery connector (Batt 1 or Batt 2) on the Controller PCB.

Use the Volt-Ohm meter to measure voltage between Pin 1 and Pin 4. This measurement should be approximately 4.5 VDC.

If setup parameters change uncontrollably or programming is lost, check the battery voltage. Replace the battery assembly if the measured voltage is below 3.75 VDC.

Display Voltage Test

The table below indicates the points on J4 of the Controller PCB where display voltage should be tested. Figure 3-2 illustrates the test points.

Display Voltage Test Points	
Test Point	**Voltage Measurement**
Between pin 1 and pin3 of J4	5 VDC
Between pin 1 and pin 8 of J4	5 VDC

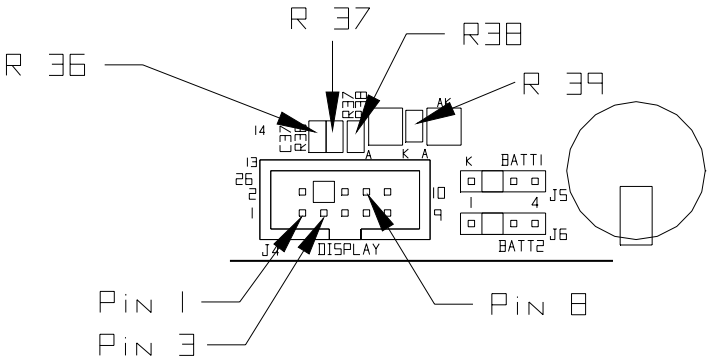


Figure 3-2 Display Voltage Test Points

You can also measure 5 VDC across R36, R37, R38, and R39.

If the display is not functioning and any of these voltages are not present, replace the Controller PCB.

Testing With Simulators

The quickest way to identify a problem with the LYNX terminal load cell(s) or scale base is to test with a load cell simulator. Both analog and DigiTOL simulators are available.

Analog

You may have to calibrate the LYNX terminal with the simulator connected to obtain a good weight display reading.

The following simulator test should be used with a 10-step analog simulator (PN 100865 00A) or an analog variable simulator (PN 082451 020).

1. With power removed, wire the analog simulator to the analog load cell on the Controller PCB.
2. If you are connecting a 10-step simulator, install a jumper between + Excitation and + Sense. Also install a jumper between – Excitation and – Sense.
3. Apply power and monitor the weight display. If the LYNX terminal operates normally (no weight drift, good linearity), the problem probably lies in the load cell(s) or scale base.

DigiTOL

The following simulator test should be used with a DigiTOL load cell simulator (PN 134460 00A). Use the CBL cable kit (PN 134460) with this simulator.

1. With power removed, plug the Dual 8 connector or harness (PN A133040 00A provided with the 134460 CBL kit) into the XX38 port of the simulator.
2. Plug the 9-pin Sub E connector of cable 130115 00A (provided with the 134460 CBL kit) into the 9-pin connector of the harness.
3. Wire the open end of cable 130115 00A to COM3 as described in Chapter 2.
4. Set the selector switch on the simulator to read "7".
5. Apply power. After the LYNX terminal goes through the power-up sequence, the "Power" and "Pass" lights on the simulator should be lit. The LYNX terminal may show a blank display or an error code.

Any calibration errors during this process may indicate a poor build, bad Controller PCB or bad simulator.

6. Step the simulator selector switch down to "1" and start calibrating, using "1" as zero and "6" as span. When calibration is complete, the LYNX terminal should respond exactly as if a scale were connected.
7. Test all LYNX terminal functions with the simulator. If problems that existed before connecting the simulator do not exist with the simulator, the problem probably lies in the scale base.

Verifying Data Transmission

You can verify data transmission through LYNX terminal's serial ports using a volt meter. The following procedures test data transmission through the 20 mA port and the RS-232 output port. The LYNX terminal serial ports can also be tested through the Diagnostics and Maintenance program block.

20 mA

A slow baud rate will cause data to transmit slowly and the meter will fluctuate longer before returning to the original 20 mA reading.

1. Configure the LYNX terminal for Demand mode if it is not already configured as such. This will ensure more accurate test readings.
2. Set the volt meter to read DC milliamps.
3. Put the black lead on the ground connector and the red lead on the CLTX+ connector. In Demand mode, the meter should read approximately 20 mA.
4. Press **ENTER** (to transmit data) and observe the meter reading. The reading should fluctuate indicating transmission, then return to the original 20 mA reading.
5. Reconfigure the LYNX terminal for Continuous mode if it was set to Demand mode for this test.

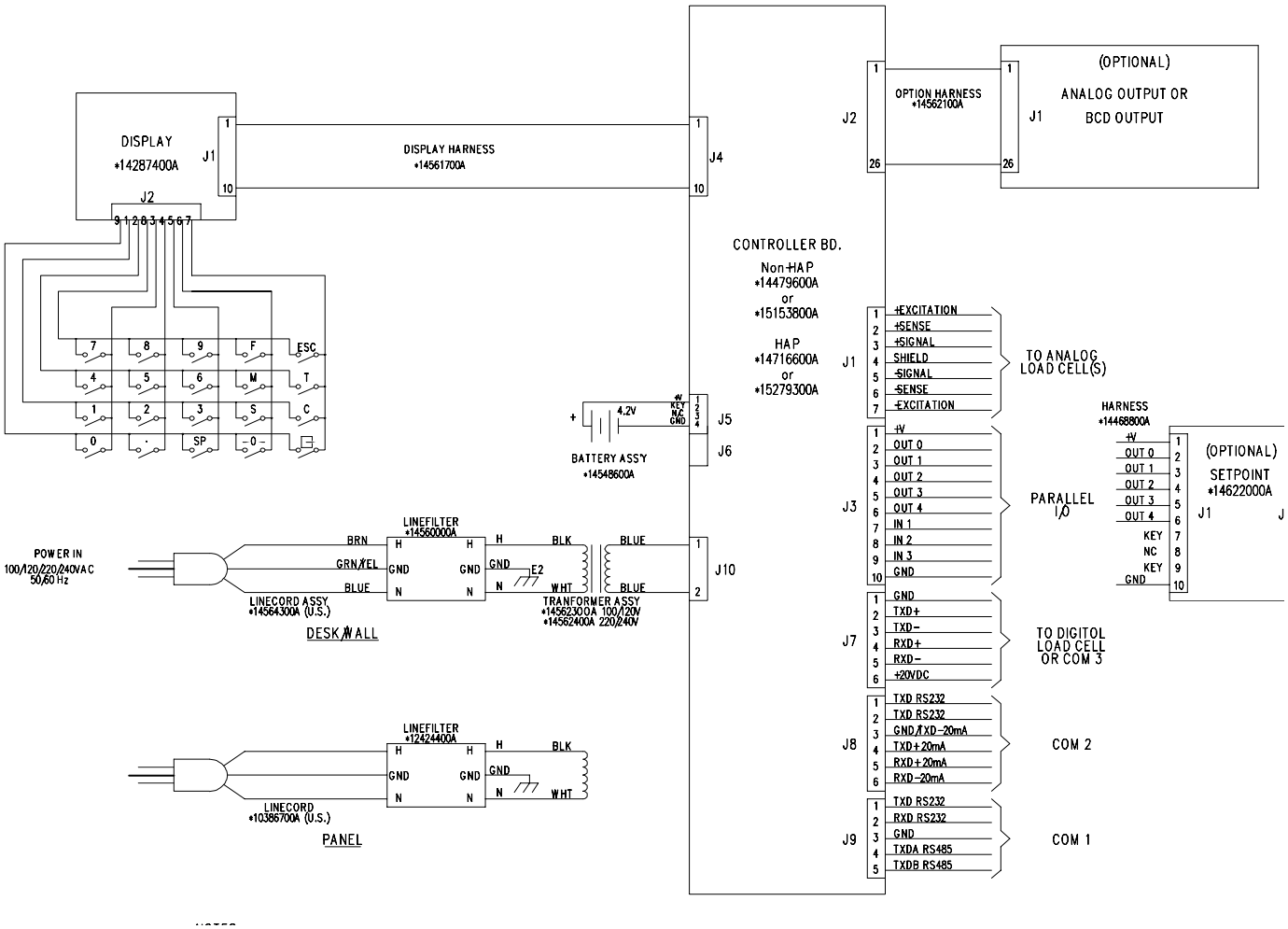
RS-232 Output

A slow baud rate will cause data to transmit slowly and the meter will fluctuate longer before returning to the original 20 mA reading.

1. Configure the LYNX terminal for Demand mode if it is not already configured as such. This will ensure more accurate test readings.
2. Set the volt meter to read DC volts.
3. Put the black lead on the ground connector and the red lead on the TDX connector. In Demand mode, the meter should read approximately –10 volts.
4. Press **ENTER** (to transmit data) and observe the meter reading. The reading should fluctuate indicating transmission, then return to the original –10 volts reading.
5. Reconfigure the LYNX terminal for Continuous mode if it was set to Demand mode for this test.

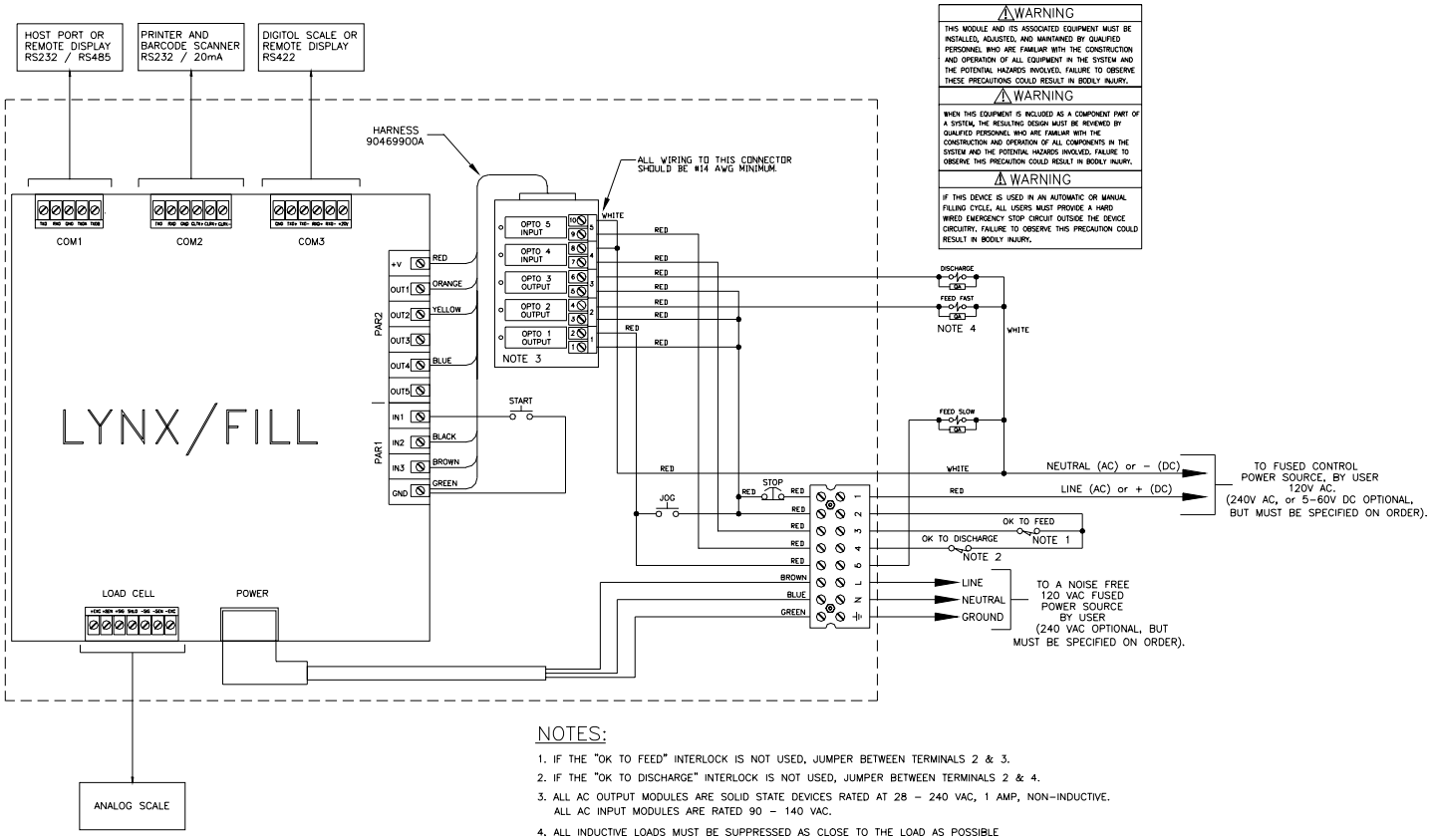
LYNX Terminal Interconnection Diagram

The following interconnect diagram describes wiring connections for the LYNX terminal.



LYNX Filling Controller Interconnect Diagram

The following interconnect diagram describes the wiring connections for the LYNX Filling Controller version.



NOTES:

1. IF THE "OK TO FEED" INTERLOCK IS NOT USED, JUMPER BETWEEN TERMINALS 2 & 3.
2. IF THE "OK TO DISCHARGE" INTERLOCK IS NOT USED, JUMPER BETWEEN TERMINALS 2 & 4.
3. ALL AC OUTPUT MODULES ARE SOLID STATE DEVICES RATED AT 28 – 240 VAC, 1 AMP, NON–INDUCTIVE. ALL AC INPUT MODULES ARE RATED 90 – 140 VAC.
4. ALL INDUCTIVE LOADS MUST BE SUPPRESSED AS CLOSE TO THE LOAD AS POSSIBLE WITH R–C TYPE SUPRESSION DEVICES. (REF. METTLER–TOLEDO PART NUMBER: 962–0034)

NOTES

4 Parts and Accessories

Refer to the following diagrams and data tables when ordering parts and accessories for the LYNX terminal.

Harsh Environment Terminal Parts

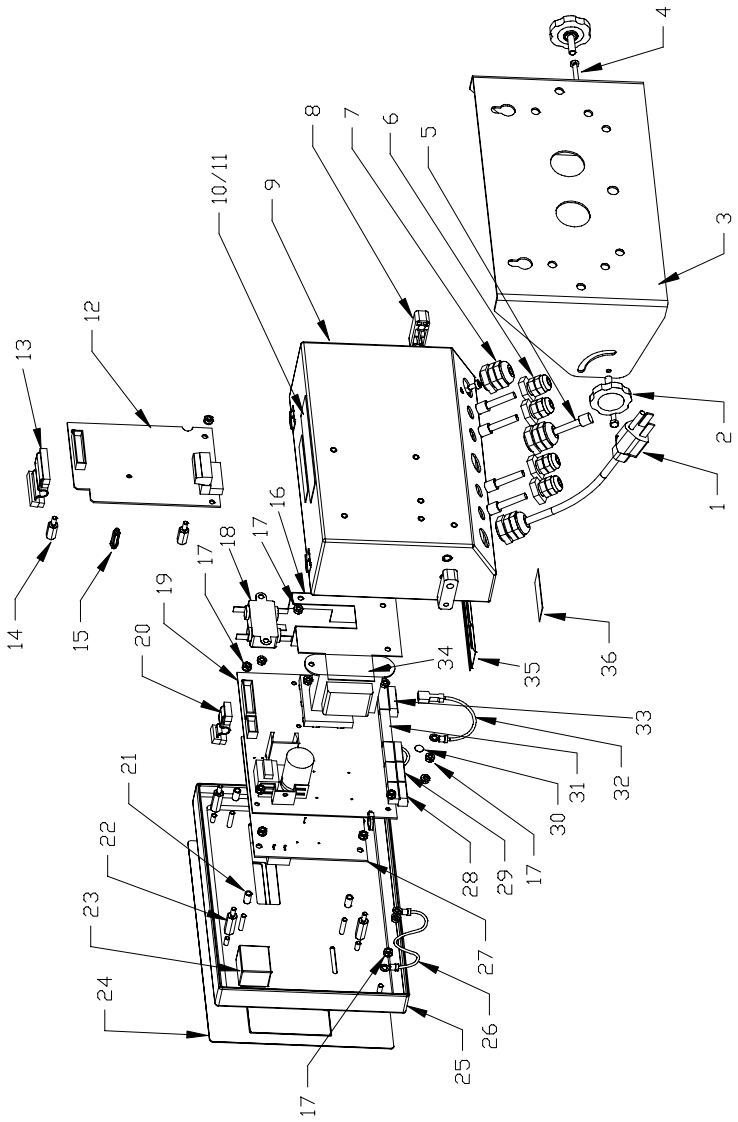


Figure 4-1 Harsh Environment Model Parts

Parts List—Harsh Environment Model			
Ref. #	**Part Number**	**Description**	**Qty**
1	145643 00A	Power Cord	1
2	14734600A	Knob	2
3	144664 00A	Mounting Bracket	1
4	R05204 00A	Screw, M4 x 8	2
5	144676 00A	Hole Plug	5
6	129018 00A	Grip Bushing, .094 - .250	4
7	130023 00A	Grip Bushing, .231 - .394	2
8	A14734500A	Spacer	2
9	(*)14465700A	Enclosure Assembly	1
10	14490500A	Data Label	1
11	14515500A	Shield, Data Label	1
12	(*)14626200A	PCB Assy., Analog Out- Panel and Desk/Wall	1
13	(*)14562100A	Option Harness - Panel and Desk/Wall	1
14	(*)14497000A	Standoff, M4 x 16 M-F - Desk/Wall	2
15	(*)14467400A	Spacer, Snap in 5/8″ - Desk/Wall	2
16	(*)14468100A	Heat Sink	1
17	R0519600A	Hex Nut, M4	19
18	14560000A	Line Filter	1
19	(*)15153800A (*)15279300A	PCB Assembly, Controller, Non-HAP PCB Assembly, Controller, HAP	1
20	(*) 14561700A	Display Harness	1
21	14465900A	Spacer, M4 x 11MM Round	4
22	14466100A	Standoff, M4 x 22mm M-F	4
23	14548600A	Battery, 4.5V Alkaline	1
24	(*) 14468300A	Keyboard Assembly	1
25	(*) 14465600A	Cover Assembly	1
26	14467500A	Tension Cable, 3″	2
27	(*) 14287400A	PCB Assembly, VF Display	1
28	14374900A	Terminal Plug, 5-Pos.	1
29	14113100A	Terminal Plug, 6-Pos.	2
30	14531400A	Label, BSI Ground	1
31	14113400A	Terminal Plug, 10-Pos.	1

Parts List—Harsh Environment Model			
Ref. #	**Part Number**	**Description**	**Qty**
32	14562200A	Ground Wire Assembly	1
33	14113200A	Terminal Plug, 7-Pos.	1
34	(*) 14562300A (*) 14562400A	Transformer, 120VAC Transformer, 220/240 VAC	1
35	(*) 14467900A	Label, Controller I/O	1
36	12699700A	Label, Power Warning	1
N/S	A14476100A	Screwdriver	1
N/S	(*) 13659500A	Label Set, Capacity	1
N/S	10839700A	Foot, Stick-On	4

Desk/Wall Option

Parts for the desk/wall option are shown in Figure 5-1. The following table describes the parts that comprise the desk/wall option.

For Analog - Out Option PCB - 0917-0225-000- Part Number 147108 00A			
Ref #	**Part Number**	**Description**	**Qty**
12	(*) 14626200A	PCB Assy, Analog Out - Panel and Desk/Wall	1
13	(*) 14562100A	Option Harness - Panel and Desk/Wall	1
14	14497000A	Standoff, M4 x 16 M-F - Desk/Wall	2
15	14467400A	Spacer, Snap - In 5/8 - Desk/Wall	1
N/S	13162500A	Terminal Strip, 6 Position - Panel	1
N/S	(*) 14465300A	I/O Plate Analog Output Assembly - Panel	1
N/S	R0511100A	Screw M4 X 10 - Panel	2
N/S	(*) 14635000A	Label, Analog Output (Packed separately for use with general purpose or panel mount model)	1

(*) May have revision level prefix

Panel Mount Parts

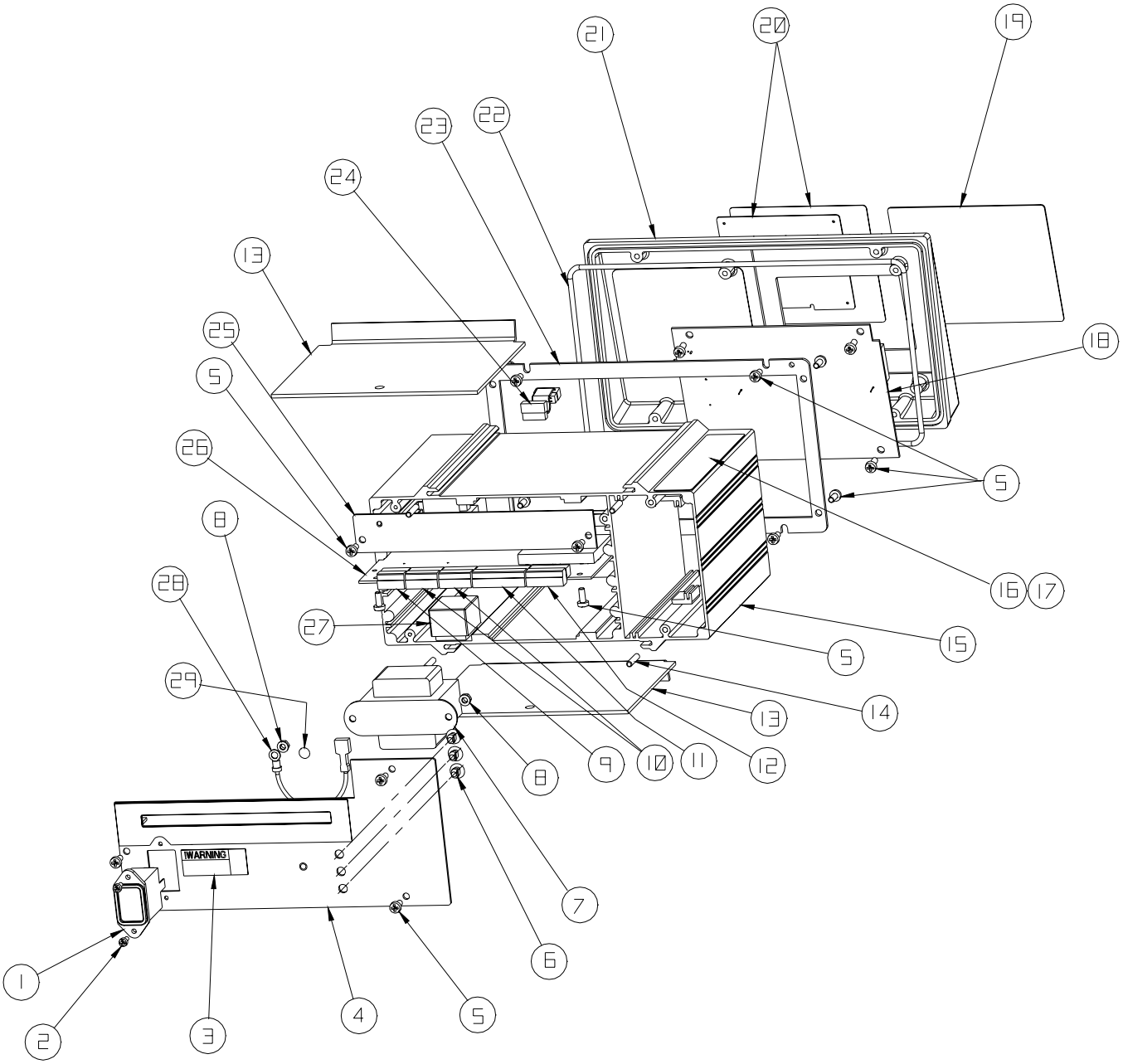


Figure 4-2 Panel Mount Model Parts

Parts List—Panel Mount Model			
Ref.	**Part Number**	**Description**	**Qty**
1	12424400A	Line Filter	1
2	R0511200A	Screw, M3 x 8	2
3	12699700A	Label, Power Warning	1
4	(*) 14465400A	Rear Panel Assembly (See Note 1)	1
5	R0511100A	Screw, M4 x 10	19
6	14469100A	Anchor, Cable Tie	3
7	(*) 14562300A (*) 14562400A	Transformer, 100/120 VAC Transformer, 220/240 VAC	1 1
8	R0519600A	Hex Nut, M4	3
9	14374900A	Terminal Plug - 5 Pos.	1
10	14113100A	Terminal Plug - 6 Pos.	2
11	14113400A	Terminal Plug - 10 Pos.	1
12	14113200A	Terminal Plug - 7 Pos.	1
13	(*) 14015 00A	Clamp Plate	2
14	R0511300A	Setscrew, M4 x 20	4
15	(*) 14464900A	Chassis	1
16	14490500A	Data Label	1
17	14515500A	Shield, Data Label	1
18	(*) 14287400A	PCB Assembly, VF Display	1
19	(*) 14466700A	Lens	1
20	(*) 14709100A	Keyboard Assembly	1
21	(*) 14464800A	Front Panel	1
22	14016100A	Seal, Front Panel	1
23	(*) 14014100A	Interface Plate	1
24	(*) 14561700A	Display Harness	1
25	14466500A	Blank Plate (No Option PCB)	1
26	(*)15153800A (*)15279300A	PCB Assembly, Controller, Non-HAP PCB Assembly, Controller, HAP	1
27	14548600A	Battery, 4.2V Alkaline	1
28	14562200A	Ground Wire	1
29	14531400A	Label, BSI Ground	1
NS	10386700A	Power Cord (115VAC)	1

Parts List—Panel Mount Model			
Ref.	**Part Number**	**Description**	**Qty**
NS	A11476100A	Screwdriver	1
NS	14411800A	Hex Key, 2MM	1
NS	(*) 13659500A	Label Set, Capacity	1
NS	R0512200A	Screw, M3 x 6 Drilled Head	2

Note 1—For Set-Point Option, use 144690 00A Rear Panel Assembly.
(*) May have revision level prefix

Panel Mount Option Kit Parts

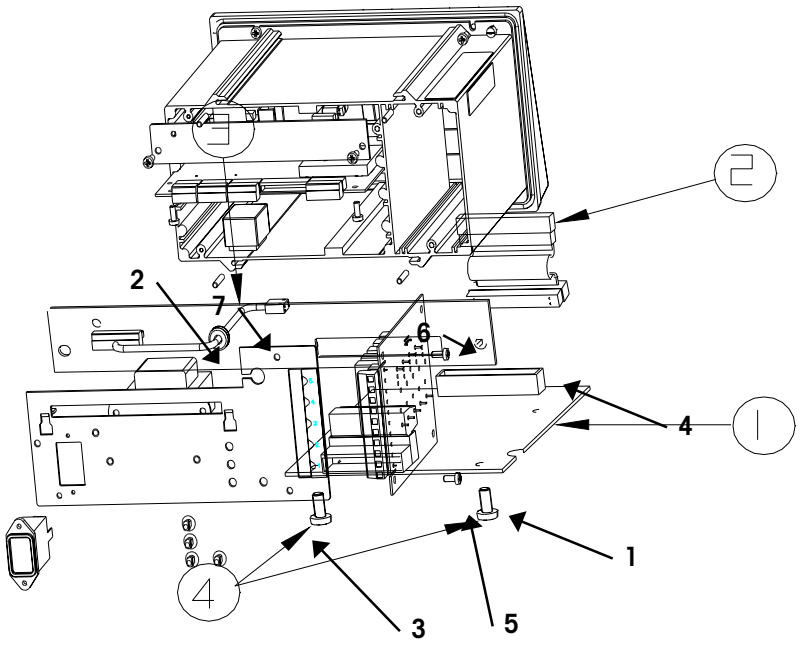


Figure 4-3

Analog Output Option Kit, Sales Number 0917-0225-000, Part Number 147108 00A			
Ref.	**Part Number**	**Description**	**Qty**
1	(*)14626200A	PCB Assembly, Analog Out - Panel and Desk/Wall	1
2	(*)14562100A	Harness - Panel and Desk/Wall	1
3	(*)14465300A	I/O Plate, Analog Out - Panel	1
4	R0511100A	Screw, M4 X 10 PH Pan HD- Panel	2
N/S	13162500A	Terminal Strip, 6 Position - Panel	1
N/S	14467400A	Spacer - Snap in - Desk/Wall	1
N/S	14497000A	Standoff - Desk/Wall	2
N/S	(*)14635000A	Label, Analog Output	1

BCD Output Option Kit, Sales Number 0917-0227-000, Part Number 147110 00A			
Ref. #	**Part Number**	**Description**	**Qty**
1	(*)14625800A	PCB Assembly, Analog Out Option	1
2	(*)14562100A	Harness	1
3	(*)1446800A	Plate Assembly, Analog Out	1
4	R0511000A	Screw, M4 X 10 PH Pan HD	2

(*) May have revision level prefix

Setpoint Output Option Kit, Sales Number 0917-0229-000, Part Number 147114 00A			
Ref. #	**Part Number**	**Description**	**Qty**
1	(*)14622000A	PCB Assembly, Setpoint Option	1
2	(*)14468800A	Harness	1
3	(*)14469000A	Rear Panel Assembly, Setpoint	1
4	R0511100A	Screw, M4 X 10 PH Pan HD	2
5	14623400A	Terminal Strip Plug	1
6	13636700A	Opto 22 Output Block	1
7	12462700A	Grommet	1
N/S	(*)14634300A	Lower Card Guide	1
N/S	(*)14634300B	Upper Card Guide	1
N/S	09591500A	Tie Wraps	2
N/S	14469100A	Anchor, Cable Tie	1

(*) May have revision level prefix

Optional Accessories

Optional Accessories		
Part Number	**Description**	**Factory Number**
14710800A	Analog Output Kit	0917-0225
14711000A	BCD Output Kit (panel mount only)	0917-0227
14711400A	Setpoint Option Kit (panel mount only)	0917-0229
10086500A	Analog Load Cell Simulator (10-step)	0917-0091
13446000A	DigiTOL Load Cell Simulator	0917-0178
082451020	Analog Load Cell Simulator (variable)	•
A11476100A	Screw Driver	•
144118 00A	Hex Key, 2MM	•
900936 00A	RS-232/20 mA Converter	•

Cables and Connectors

Cables and Connectors		
Part Number	**Description**	**Factory Number**
13011500A	DigiTOL Load Cell Cable w/DB9 Connector Attached (10')	0900-0245
13371700A	Printer Cable, RS232/20 mA (15 feet)	0900-0258
14656100A	Printer Cable, RS232 (15 feet)	0900-0309
510624370	Raw Analog Load Cell Cable, 24 gauge	—
510620370	Raw Analog Load Cell Cable, 20 gauge	—
510616370	Raw Analog Load Cell Cable, 16 gauge	—
A12581900A	DE-9 Male Load Cell Connector	0917-0117
12583900A	Connector Potting Kit (L/C end only)	0901-0194

Recommended Spare Parts

METTLER TOLEDO recommends you keep the following spare replacement parts in the quantity listed.

Recommended Spare Parts		
Part Number	**Description**	**Qty**
(*) 15153800A (*) 15279300A	PCB Assembly, Controller, Non-HAP PCB Assembly, Controller, HAP	1
(*) 14287400A	PCB Assembly, VF Display	1
(*)14468300A	Keyboard Assembly, General Purpose	1
(*)14709100A	Keyboard Assembly, Panel Mount	1
14548600A	Battery, 4.2V Alkaline	1
(*)14562300A	Transformer, 120VAC	1

(*) May have revision level prefix.

Harsh Filling Controller

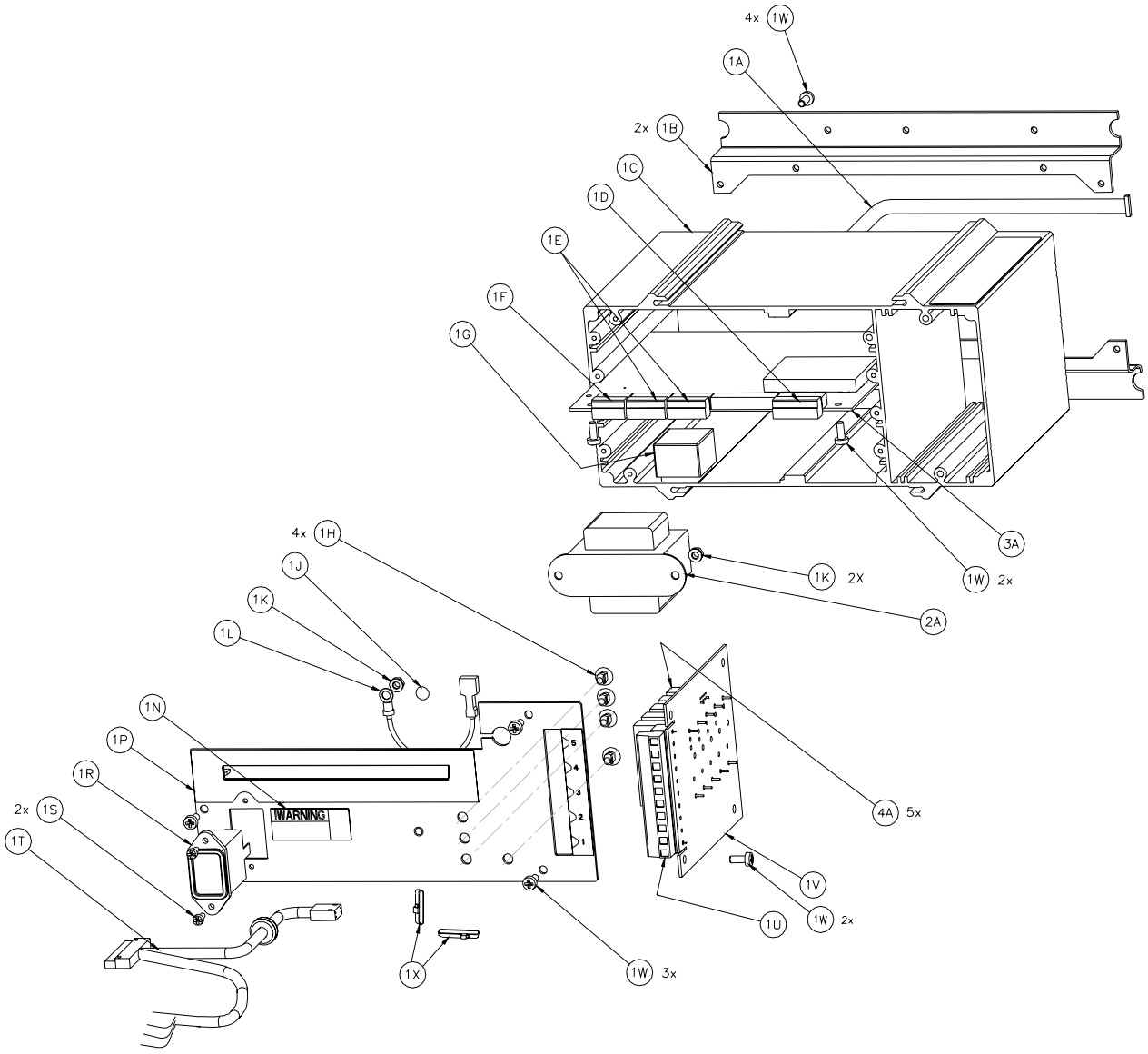


Figure 4-4

Parts List—Harsh Filling Controller Sub-Assembly			
Ref. #	**Part Number**	**Description**	**Qty**
1A	(*)90247000A	Harness, Ribbon, Display	1
1B	(*)14520200A	Mounting Bracket	2
1C	(*)14734300A	Chassis	1
1D	(*)14113200A	Terminal Plus, 7-position	1
1E	(*)14113100A	Terminal Plug, 6-position	2
1F	(*)14374900A	Terminal Plug, 5-position	1
1G	(*)14548600A	Battery, 4.2V Alkaline	1
1H	(*)14469100A	Anchor, Cable Tie	4
1J	(*)14531400A	Label, BSI Ground	1
1K	R0519600A	Nut, Hex, M4 w/Lockwasher	3
1L	(*)14562200A	Ground Wire	1
1N	(*)12699700A	Label, Power Warning	1
1P	(*)14469000A	Rear Panel	1
1R	(*)12424400A	Line Filter, Plug In	1
1S	R0500400A	Screw, M3 x 8, Ph. Pan HD	2
1T	(*)15707700A	Harness, I/O	1
1V	(*)14622000A	PCB Assembly, Setpoint	1
1W	R0511100A	Screw, M4 x 10 Ph. Taptite	1
1X	09591500A	Cable Tie, Small	2
2A	(*)14562300A	Transf. Assy, 100/120 VAC	1
	(*)14562400A	Transf. Assy, 220/240 VAC	
3A	(*)15153800A	PCB Assy, Controller, 15V Excitation	1
	(*)15279300A	PCB Assy, Controller, 5V Excitation	
4A	(*)13636300A	Relay, SS, 120 VAC Input	
	(*)13636700A	Relay, SS, 120 VAC-240V Output	
	(*)13636400A	Relay, 240 VAC, Input	

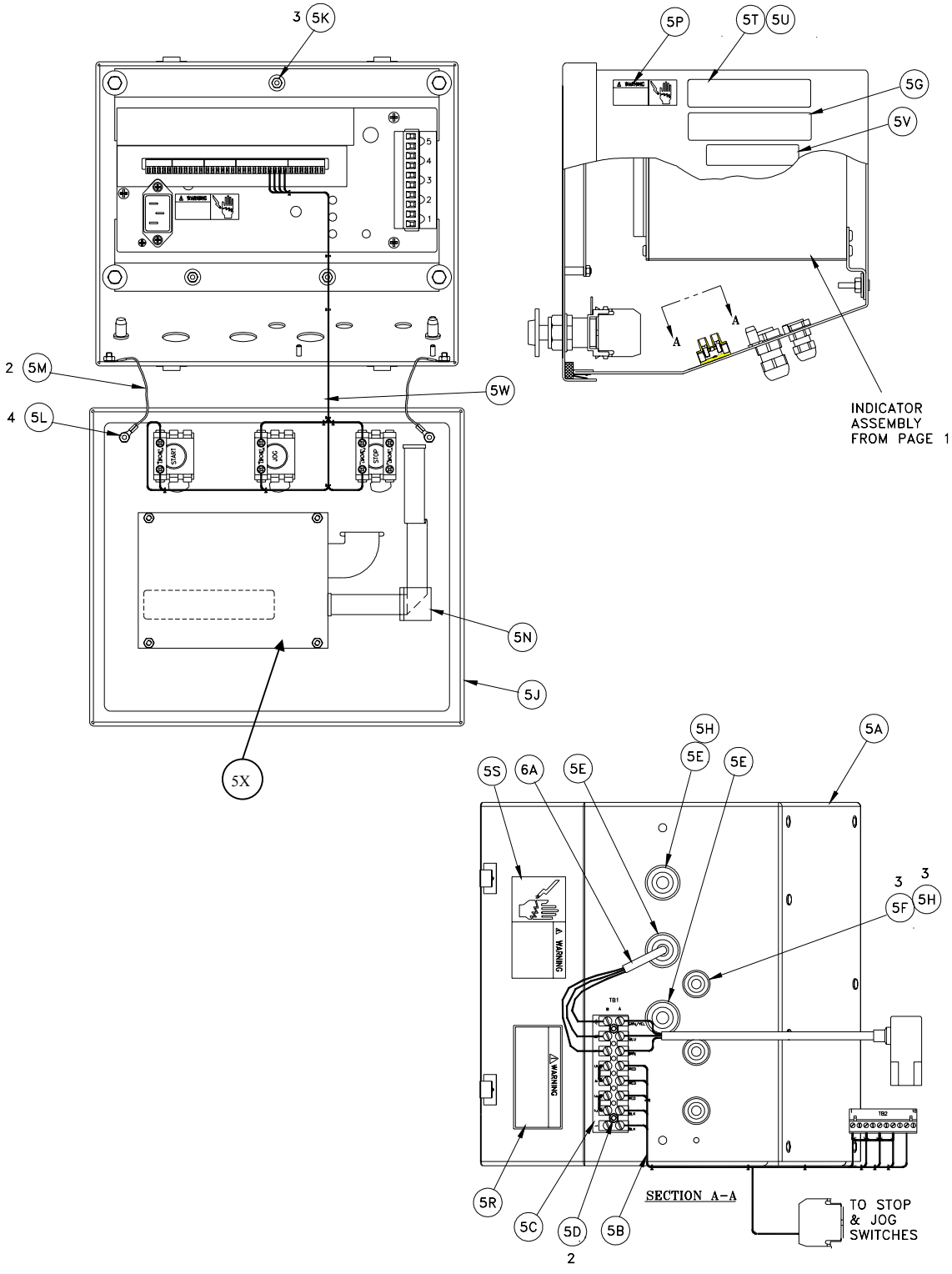

3 5K
5P
5T 5U
5G
5V
2 5M
4 5L
5W
INDICATOR ASSEMBLY FROM PAGE 1
5N
5J
5X
5H
5E
5E
5A
5S
6A
5E
3 5F
3 5H
WARNING
WARNING
5R
5C
5D
5B
2
SECTION A-A
TO STOP & JOG SWITCHES

Figure 4-5

Parts List—Harsh Filling Controller Final Assembly			
Ref. #	**Part Number**	**Description**	**Qty**
5A	(*)90245500A	Enclosure, FAB, LBHA	1
5B	(*)15707200A	Harness, AC Power	1
5C	(*)90260900A	Label, Terminal Strip	1
5D	(*) R0500400A	Nut, Hex, M3 w/Washer	2
5E	(*)15573300A	Bushing, 231 - .394 w/o Nut	3
5F	(*)12901800A	Grip Bushing, .094 - .250	3
5G	(*)14901700A	Label, Capacity, CE, Ind	1
5H	(*)14467600A	Hole Plug, .24 - .38	4
5J	(*)90245400A	Front Cover Assembly	1
5K	R0519200A	Nut, Hex, M5 w/Washer	3
5L	R0519600A	Nut, hex, M4 w/Washer	4
5M	(*)14467500A	Tension Cable 3.5"	1
5N	(*)14665400A	Clip, Harness	1
5P	(*)12699700A	Label, Warning – Power	1
5R	(*)13203500A	Label, Warning – Power	1
5S	(*)13203600A	Label, Warning – Power	1
5T	(*)148000000A	Label, Data	1
5U	(*)14801800A	Shield, Data Label	1
5V	(*)11397100A	Label, FCC Info	1
**	R0520600A	Screw, M6 x 8 Hex HD	4
**	(*)14520400A	Bracket Wall Mtg	2
**	(*)14235400A	Labels, Capacity Sheet	1
**	(*)09591500A	Cable Ties	4
**	(*)12635700A	Core, Ferrite .75 ID	1
**	(*)14476100A	Screwdriver, IT	1
**	(*)14411800A	Hex Key, 2 mm	1
**	(*)12363300A	Security Seal	2
**	R0526900A	Screw, M3x8 HD Drilled	2
**	R0510000A	Screw, M4x10 HD Drilled	4
**	(*)14341100A	Labels, Address	14
5W	(*)15707700A	Harness, I/O	1

Parts List—Harsh Filling Controller Final Assembly			
Ref. #	**Part Number**	**Description**	**Qty**
5X	(*)14287400A	PCB Assy, VF Display	1
**	(*)14724100A	Nut, Nylon, PG11	3
6A	(*)14501500A	Line Cord, N. America	1
	(*)14053200A	Line Cord, Europe	
	(*)13894700A	Line Cord, UK/Ireland	
	(*)14053000A	Line Cord, Australia	
	(*)14202800A	Line Cord, Italy	
	(*)14202600A	Line Cord, South Africa	

5 Appendices

Appendix 1: Serial Interface Reference

Three serial ports are standard on the LYNX terminal Controller PCB. They are designated COM1, COM2, and COM3.

COM1 provides both RS-232 and RS-485 interfaces. The RS-232 interface is a three-wire (TDX, RXD, and GND) with XON/XOFF flow control capabilities (handshaking). The RS-232 is used for loading LYNX software. The RS-485 interface is a two-wire multidrop. Both interfaces can be output simultaneously; however, only one input can be used.

COM2 provides both RS-232 and 20 mA current loop. The RS-232 interface is a three-wire connection with XON/XOFF handshaking capabilities. The 20 mA current loop is an active transmit and passive receive interface. Both interfaces can be output simultaneously; however, only one input can be connected.

COM3 provides a four-wire multidrop RS-422 interface with XON/XOFF handshaking capabilities. COM3 also provides the interface for a DigiTOL scale. If a DigiTOL scale is connected to COM3, that port cannot be used for any other purpose.

Character framing is programmable in the setup mode. Framing can be:

- 1 start bit
- 7 or 8 ASCII data bits (selectable)
- 0 or 1 parity bit (even, odd, [mark, space, on COM2 and COM3], or none)
- 1 stop bit (COM2 and COM3 can have one or two stop bits)

You can also configure the baud rate (from 300 to 38.4K baud) and checksum character interface parameters.

The LYNX terminal uses software handshaking to control data flow commonly referred to as XON/XOFF handshaking. When a receiving device (typically a printer) is getting information from a LYNX terminal and cannot receive any more in its buffer, it sends an ASCII XOFF (13h) telling the LYNX terminal to temporarily stop sending data until its buffer clears.

When the device can receive more data, it sends an ASCII XON (11h) telling the LYNX terminal to begin sending data again. This process can occur as often as required by receiving device.

The XON/XOFF method is the only type of handshaking that is supported by the LYNX terminal.

Hardware Connections

All connections to the serial ports on the LYNX terminal are made using terminal strips. Terminal strips provide an easy, yet more secure connection than other types of connections such as soldering. The terminal strips are removable for ease of connection or replacement of the PCB.

The harsh environment enclosure has grip bushings on the rear cover to properly secure and seal around the serial cable. The panel mount unit has loops on the rear of the panel so you can secure cables with nylon wire ties.

The standard 15-foot (4.5 meter) RS-232 printer cable is wired as shown here:

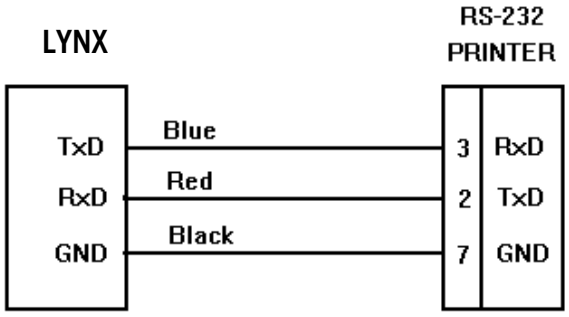


Figure 5-1 RS-232 Printer Cable Wiring

A custom cable (such as a cable to a computer) can also be used. METTLER TOLEDO recommends using either 20 or 22 gauge wire size. The maximum cable length is determined by the interface type used. As a rule, the following limitations apply:

Cable	Maximum Length
RS-232	50 feet (15.24 meters)
20 mA	1000 feet (304.8 meters)
RS-422	2000 feet (609.6 meters)
RS-485	2000 feet (609.6 meters)

Connections other than RS-232 are shown in the section entitled Serial Port Connections in Chapter 2. A custom cable to a computer (or other RS-232 device) should be configured as shown below:

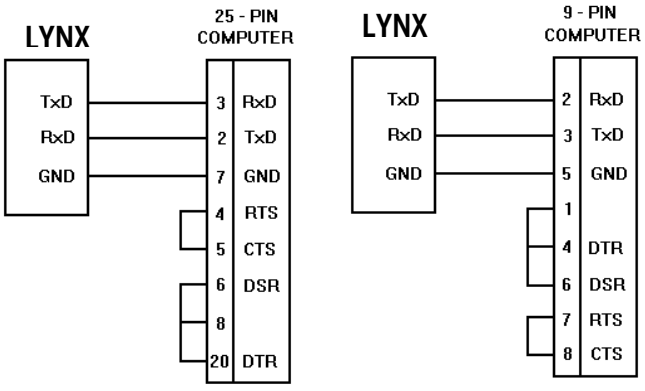


Figure 5-2 Custom Cable Configuration

Output Modes and Formats

The LYNX terminal supports two different modes of data output — demand and continuous.

The demand mode transmits data only when the LYNX terminal receives a print request. Print requests are sent to the LYNX terminal when:

- The operator presses **ENTER**.
- A discrete input is selected as print.
- An ASCII "P" is sent through a command input port
- Auto print is enabled and all conditions for auto print are met.

When triggered, data is transmitted in a string selected in the template editing portion of setup. Demand mode is used typically when sending data to a printer.

Standard continuous mode transmits a predetermined 18-byte string of data from the serial port at a selectable rate up to 20 Hz (without any request). This mode is used typically when continuous monitoring of the scale weight is required by an external device such as a computer or scoreboard.

The LYNX terminal offers four continuous mode output formats. These are selectable in setup mode and include:

- Standard Continuous Format (with standard status bytes)
- Short Continuous Format (with standard status bytes)
- Standard Continuous Format (with setpoint status bytes)
- Short Continuous Format (with setpoint status bytes)

The standard continuous format is shown below:

Standard Continuous Format																	
STX	SW A	SW B	SW C	X	X	X	X	X	X	X	X	X	X	X	X	CR	CKS
1	2 STATUS BYTES			3 GROSS / NET WEIGHT						4 TARE WEIGHT						5	6

Table Notes

1. <STX> ASCII Start of Text Character, Hex 02.
2. <SWA>, <SWB>, <SWC> Status Word Bytes A, B, and C. Refer to the Bit Identification Tables for individual bit definition.
3. Displayed weight, either Gross or Net weight. Six digits, no decimal point or sign. Non-significant leading zeros are replaced with spaces.
4. Tare weight. Six digits, no decimal point or sign.
5. <CR> ASCII Carriage Return, Hex 0d.
6. <CKS> 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, including the STX and CR.

The continuous short mode format is provided to allow continuous data output while maintaining high-speed update rates. The short form continuous output differs from the standard continuous output format in that the short format does not send the tare weight data field.

Short Form Continuous Format											
STX	SW A	SW B	SW C	MSD	-	-	-	-	LSD	CR	CKS
1	2 STATUS BYTES			3 GROSS / NET WEIGHT						4	5

Table Notes

1. <STX> ASCII Start of Text Character, Hex 02.
2. <SWA>, <SWB>, <SWC> Status Word Bytes A, B, and C. Refer to the Bit Identification Tables for individual bit definition.
3. Displayed weight. Six digits, no decimal point or sign. Non-significant leading zeros are replaced with spaces in the lb weight unit mode.
4. <CR> ASCII Carriage Return, Hex 0d.
5. <CKS> 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, including the STX and CR.

Standard Status Bytes A, B, and C

The following tables detail the standard status bytes for standard continuous output and standard continuous short output.

Bit Identification Table for Status Byte A			
Bits 0, 1 and 2			
0	**1**	**2**	**Decimal Point Location**
0	0	0	XXXX00
1	0	0	XXXXX0
0	1	0	XXXXX
1	1	0	XXXX.X
0	0	1	XXX.XX
1	0	1	XX.XXX
0	1	1	X.XXXX
1	1	1	.XXXXX
Bits 3 and 4			
3	**4**		**Build Code**
1	0		X1
0	1		X2
1	1		X5
Bit 5			Always = 1
Bit 6			Always = 0

Bit Identification Table for Status Byte B	
Status Bits	**Function**
Bit 0	Gross = 0, Net = 1
Bit 1	Sign, Positive = 0, Negative = 1
Bit 2	Out of Range = 1 (Over capacity or Under Zero)
Bit 3	Motion = 1
Bit 4	lb = 0, kg = 1 (see also Status Byte C, bits 0-2)
Bit 5	Always = 1
Bit 6	In Power Up = 1

Bit Identification Table for Status Byte C			
Bits 0, 1 and 2			**Weight Description**
0	**1**	**2**	
0	0	0	lb or kg, selected by Status Byte B, bit 4
1	0	0	grams (g)
0	1	0	metric tons (t)
1	1	0	ounces (oz)
0	0	1	troy ounces (ozt)
1	0	1	penny weight (dwt)
0	1	1	tons (ton)
1	1	1	custom units
Bit 3			Print Request = 1
Bit 4			Expand Data x 10 = 1
Bit 5			Always = 1
Bit 6			Hand Tare (Metric Only)

Continuous Setpoint Status Bytes A, B, and C

The continuous output mode format supports setpoint operation. This setpoint format is identical to the standard continuous format except for some differences in the status bytes. The following tables detail the status bytes for the setpoint status byte mode.

The status bytes reflect the two-speed or single-speed mode. If the output is configured as two-speed in the Configure Outputs sub-block of the Discrete program block , the status byte will include a fast feed and standard feed for two setpoints. If the output is configured as single-speed, the feed for setpoints 1-4 is reflected in the continuous output.

Bit Identification Table for Status Byte A			
Bits 0, 1 and 2			
0	**1**	**2**	**Decimal Point Location**
0	0	0	XXXX00
1	0	0	XXXXX0
0	1	0	XXXXXX
1	1	0	XXXXX.X
0	0	1	XXXX.XX
1	0	1	XXX.XXX
0	1	1	XX.XXXX
1	1	1	X.XXXXX
Bit 3	Setpoint 1, Feeding = 0		
Bit 4	Setpoint 2, Feeding = 0		
Bit 5	Always = 1		
Bit 6	Setpoint 3, Setpoint 1 Fast, Feeding = 0		

Bit Identification Table for Status Byte B	
Status Bits	**Function**
Bit 0	Gross = 0, Net = 1
Bit 1	Sign, Positive = 0, Negative = 1
Bit 2	Out of Range = 1 (Over capacity or Under Zero)
Bit 3	Motion = 1
Bit 4	lb = 0, kg = 1 (see also Status Byte C, bits 0-2)
Bit 5	Always = 1
Bit 6	Setpoint 1, Weight Tolerance or Zero Tolerance; In Tolerance = 0, Out Tolerance = 1

Bit Identification Table for Status Byte C			
Bits 0, 1 and 2			
0	**1**	**2**	**Weight Description**
0	0	0	lb or kg, selected by Status Byte B, bit 4
1	0	0	grams (g)
0	1	0	metric tons (t)
1	1	0	ounces (oz)
0	0	1	troy ounces (ozt)
1	0	1	penny weight (dwt)
0	1	1	tons (ton)
1	1	1	custom units
Bit 3			Print Request = 1
Bit 4			Setpoint 4, Setpoint 2 Fast, Feeding = 0
Bit 5			Always = 1
Bit 6			Setpoint 2, Weight in Tolerance 20, Out = 1

Default Template Formats

The LYNX terminal's default format templates are as follows:

Template 1

Literal #1
Literal #2
Current Time Current Date CN

GROSS WEIGHT: XX.XX lb
TARE WEIGHT: XX.XX lb
NET WEIGHT: XX.XX lb

Template 2

Literal #1
Literal #2
Current Time Current Date CN

Prompt #1 Response #1
Prompt #2 Response #2
Prompt #3 Response #3

GROSS WEIGHT: XX.XX lb
TARE WEIGHT: XX.XX lb
NET WEIGHT: XX.XX lb

Accumulation Totals Report

Literal String 9
Literal String 10
CURRENT TIME CURRENT DATE
TRANSACTIONS XXXXXXXX (units)
SUBTOTAL XXXXXXXX (units)
TOTAL XXXXXXXX (units)

ID/Tare Records Report (Temporary Registers)

TEMPORARY REGISTERS
TIME DATE

ID	RECORD ID	DESCRIPTION	WEIGHT (unit)
21	XXXXXX	XXX-XXX	XXXXX
22	XXXXXX	XXX-XXX	XXXXX
23	XXXXXX	XXX-XXX	XXXXX

ID/Tare Records Report (Permanent Registers)

PERMANENT REGISTERS
TIME DATE

ID	RECORD ID	DESCRIPTION	TARE (unit)	TOTAL (unit)	TRANS
21	XXXXXX	XXX-XXX	XXXXX	XXXXX	X
22	XXXXXX	XXX-XXX	XXXXX	XXXXX	X
23	XXXXXX	XXX-XXX	XXXXX	XXXXX	X

The LYNX terminal templates are limited to 800 characters. The total number of characters used by each template can be calculated using the following chart:

Print Field	Space Used
LYNX Data Field	7 characters
ASCII Character	1 character
Special ASCII Character	1 character
Justify a Field	2 characters + justify letter (L, R, C) + space limit (1, 2, or 3 characters)
CR/LF Characters	6 characters + quantity (1 or 2)
Repeat Character	5 characters

Consider the following example where a customer ticket has three centered literals in a 40-character wide field, and an asterisk underline. You can calculate how much of the template remains for field data as follows:

CHARLIE'S AUTO SALVAGE YARD

CASH FOR YOUR OLD WRECKS!

ANY MODEL - ANY YEAR

****

The space required for this ticket heading information is

Character Description	Character Total
Literal 1	7 (LYNX data field)
Centered (Justify in 40 character field)	2 + 1 (letter C) + 2 (two digits for quantity 40)
CR/LF	6 + 1 (one digit for quantity 1)
Total space required (each line)	19
Total for all three lines (19 x 3)	57
ASCII (*)	1 (ASCII character)
Repeat (*) 40 times	5 (repeat function)
CR/LF	6 + 1 (one digit for quantity 1)
Total space for line of asterisks	13
Grand total of characters (57 + 13)	70
Therefore 730 characters remain in this template (800-70)	

The following hints apply to template space calculation:

- Regardless of the number of characters in a LYNX terminal data field, a template uses only seven characters (the field code).
- Use the CR then the LF special ASCII characters (two characters) instead of the CR/LF combination (7 to 8 characters).
- Justification uses four to six characters that are not used if the field remains unjustified.

ASCII Characters

The charts on the following pages list the ASCII standard and control characters and ASCII special characters that are used in the LYNX terminal templates.

The character set for the Lynx terminal and the printer is the same.

The first chart below gives replacement characters for display (and printing) purposes depending on the character set selected in the Application Environment program block (see Chapter 3) and the printer setup selection.

The second chart, ASCII Standard and Control Characters, gives the ASCII character, decimal (Dec.), and hexadecimal (Hex.) value for each ASCII character from 00 to 127 decimal.

The third chart, ASCII Characters in Special Character Set, gives the ASCII character, name, and hexadecimal (Hex.) value for the characters that can be used as "special characters" in template programming. These include all of the characters not already available on the standard LYNX terminal keypad.

ASCII Character (Hexadecimal)												
Country	23h	24h	40h	5Bh	5Ch	5Dh	5Eh	60h	7Bh	7Ch	7Dh	7Eh
USA	#	$	@	[	\	]	^	`	{	|	}	~
France	#	$	à	°	ç	§	^	`	é	ù	è	¨
Germany	#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
England	£	$	@	[	\	]	^	`	{	|	}	~
Denmark-1	#	$	@	Æ	Ø	Å	^	`	æ	ø	å	~
Sweden	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
Italy	#	$	@	°	\	é	^	ù	à	ò	è	ì
Spain-1	₧	$	@	¡	Ñ	¿	^	`	¨	ñ	}	~
Japan	#	$	@	[	¥	]	^	`	{	|	}	~
Norway	#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
Denmark-2	#	$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
Spain-2	#	$	á	¡	Ñ	¿	é	`	í	ñ	ó	ú
Latin Am.	#	$	á	¡	Ñ	¿	é	ü	í	ñ	ó	ú

ASCII Standard and Control Characters

Char.	Dec.	Hex.	Char.	Dec.	Hex	Char.	Dec.	Hex.	Char.	Dec.	Hex.
NUL	0	00	SP	32	20	@	64	40	`	96	60
SOH	1	01	!	33	21	A	65	41	a	97	61
STX	2	02	″	34	22	B	66	42	b	98	62
ETX	3	03	#	35	23	C	67	43	c	99	63
EOT	4	04	$	36	24	D	68	44	d	100	64
ENQ	5	05	%	37	25	E	69	45	e	101	65
ACK	6	06	&	38	26	F	70	46	f	102	66
BEL	7	07	′	39	27	G	71	47	g	103	67
BS	8	08	(	40	28	H	72	48	h	104	68
HT	9	09	)	41	29	I	73	49	i	105	69
LF	10	0A	*	42	2A	J	74	4A	j	106	6A
VT	11	0B	+	43	2B	K	75	4B	k	107	6B
FF	12	0C	,	44	2C	L	76	4C	l	108	6C
CR	13	0D	-	45	2D	M	77	4D	m	109	6D
SO	14	0E	.	46	2E	N	78	4E	n	110	6E
SI	15	0F	/	47	2F	O	79	4F	o	111	6F
DLE	16	10	0	48	30	P	80	50	p	112	70
DC1	17	11	1	49	31	Q	81	51	q	113	71
DC2	18	12	2	50	32	R	82	52	r	114	72
DC3	19	13	3	51	33	S	83	53	s	115	73
DC4	20	14	4	52	34	T	84	54	t	116	74
NAK	21	15	5	53	35	U	85	55	u	117	75
SYN	22	16	6	54	36	V	86	56	v	118	76
ETB	23	17	7	55	37	W	87	57	w	119	77
CAN	24	18	8	56	38	X	88	58	x	120	78
EM	25	19	9	57	39	Y	89	59	y	121	79
SUB	26	1A	:	58	3A	Z	90	5A	z	122	7A
ESC	27	1B	;	59	3B	[	91	5B	{	123	7B
FS	28	1C	<	60	3C	\	92	5C	l	124	7C
GS	29	1D	=	61	3D	]	93	5D	}	125	7D
RS	30	1E	>	62	3E	^	94	5E	~	126	7E
US	31	1F	?	63	3F	_	95	5F		127	7F

ASCII Standard and Control Characters

Char.	Dec.	Hex.	Char.	Dec.	Hex	Char.	Dec.	Hex.	Char.	Dec.	Hex.
Ç	128	80	á	160	A0	lb	192	C0	°	248	F8
ü	129	81	í	161	A1		193	C1	¨	249	F9
é	130	82	ó	162	A2		194	C2	•	250	FA
ã	131	83	ú	163	A3		195	C3	§	251	FB
ä	132	84	ñ	164	A4	oz	196	C4		252	FC
à	133	85	Ñ	165	A5		197	C5		253	FD
å	134	86		166	A6		198	C6		254	FE
ç	135	87		167	A7		199	C7		255	FF
	136	88	¿	168	A8		224	E0			
ë	137	89		169	A9	ß	225	E1			
è	138	8A		170	AA		226	E2			
ï	139	8B		171	AB		227	E3			
î	140	8C		172	AC		228	E4			
ì	141	8D	¡	173	AD		229	E5			
Ä	142	8E	«	174	AE		230	E6			
Å	143	8F	»	175	AF		231	E7			
É	144	90		176	B0		232	E8			
œ	145	91		177	B1		233	E9			
Æ	146	92		178	B2		234	EA			
ô	147	93		179	B3		235	EB			
ö	148	94		180	B4		236	EC			
ò	149	95		181	B5		237	ED			
û	150	96		182	B6		238	EE			
ù	151	97		183	B7		239	EF			
ÿ	152	98		184	B8	≡	240	F0			
Ö	153	99		185	B9	±	241	F1			
Ü	154	9A		186	BA	≥	242	F2			
¢	155	9B		187	BB	≤	243	F3			
£	156	9C		188	BC	Ø	244	F4			
¥	157	9D		189	BD	ø	245	F5			
Pt	158	9E		190	BE	÷	246	F6			
ƒ	159	9F		191	BF		247	F7			

ASCII Characters in Special Character Set								
Char.	Name	Hex.	Char.	Name	Hex.	Char.	Name	Hex.
NUL	Null	00	SP	Space	20	`	Left Single Quote	60
SOH	Start of Header	01	!	Exclamation	21	a		61
STX	Start of Text	02	″	Quote	22	b		62
ETX	End of Text	03	#	Number Sign	23	c		63
EOT	End of Trans.	04	$	Dollar	24	d		64
ENQ	Enquire	05	%	Percent	25	e		65
ACK	Acknowledge	06	&	Ampersand	26	f		66
BEL	Bell	07	′	Apostrophe	27	g		67
BS	Backspace	08	(	Left Parenthesis	28	h		68
HT	Horizontal Tab	09	)	Right Parenthesis	29	i		69
LF	Line Feed	0A	*	Asterisk	2A	j		6A
VT	Vertical Tab	0B	+	Plus	2B	k		6B
FF	Form Feed	0C	,	Comma	2C	l		6C
CR	Carriage Return	0D	-	Hyphen	2D	m		6D
SO	Shift Out	0E	.	Period	2E	n		6E
SI	Shift In	0F	/	Forward Slash	2F	o		6F
DLE	Data Link Escape	10	:	Colon	3A	p		70
DC1	Device Control 1	11	;	Semicolon	3B	q		71
DC2	Device Control 2	12	<	Less Than	3C	r		72
DC3	Device Control 3	13	=	Equal	3D	s		73
DC4	Device Control 4	14	>	Greater Than	3E	t		74
NAK	Negative Ack.	15	?	Question	3F	u		75
SYN	Synchronous Idle	16	@	At	40	v		76
ETB	End Trans. Block	17	[	Left Bracket	5B	w		77
CAN	Cancel	18	\	Back Slash	5C	x		78
EM	End of Medium	19	]	Right Bracket	5D	y		79
SUB	Substitute	1A	^	Caret	5E	z		7A
ESC	Escape	1B	_	Underline	5F	{	Left Brace	7B
FS	Field Separator	1C				|	Pipe	7C
GS	Group Separator	1D				}	Right Brace	7D
RS	Record Separator	1E				~	Tilde	7E
US	Unit Separator	1F				DEL	Delete	7F

Appendix 2: Host Commands

The LYNX terminal allows selection between three host protocols for computer interfacing or high precision scale interface applications. Protocol may be configured as the METTLER TOLEDO Model 8142 protocol, the METTLER TOLEDO LYNX protocol, or the Standard Interface Command Set (SICS) used with high precision products. A complete serial port is required for a host connection.

8142 Host Protocol

Two basic types of communication can occur between the host and the LYNX terminal:

- Upload—The host requests information from the LYNX terminal. The LYNX terminal responds to the request.
- Download—The host transmits new data to the LYNX terminal.

Data Packet Format

All transmissions by the host or terminal port must be in the data packet format shown:

Port Data Packet Format							
Data	STX	ADR	DIR	FCT	Data Field	CR	CHK
Notes	1	2	3	4	5	6	7

Table Notes:
1 <STX> ASCII Start of Text Character, Hex 02.
2 <ADR> LYNX scale address selected in setup, must be from an ASCII 2 to 9.
3 <DIR> Data Direction, "U" = Upload (LYNX to Host), "D" = Download (Host to LYNX).
4 <FCT> Function code, refer to Function Code Table.
5 <Data Field> The data field is either the uploaded data from the LYNX terminal or the downloaded data from the host. Not all function codes use the data field.
6 <CR> ASCII Carriage Return, Hex 0D.
7 <CKS> 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.

Host Port Function Codes

Decimal points, weight units and descriptors are not included in data fields.

The function code in the data packet determines what operation or data is assessed in the LYNX terminal. The codes for the various functions are listed in the Function Code Table with the valid direction of the communication (upload or download) and the length of the transmitted data field.

No error detection beyond checksum is provided for downloads by the port. When critical data such as setpoint data is downloaded from the host to the LYNX terminal, it is recommended that the host device upload (read back) the data downloaded to the LYNX terminal to verify that the data was received correctly.

Function Code Description	Function Code		Direction	Data Field Length
	Hex	ASCII		
All Functions	41	A	U	188
Displayed Weight	42	B	U	7
Gross Weight	43	C	U	7
Tare Weight	44	D	U/D	7
Net Weight	45	E	U	7
Time and Date	46	F	U/D	12
Current Consecutive Number	47	G	U/D	6
Clear Oldest Transaction from Memory	48	H	U/D	0
Status Bytes	49	I	U	6
Control Bytes	4B	K	D	3
Setpoints 1,2,3,4	4C	L	U/D	24
Zero Tolerance 1,2	4D	M	U/D	12
#1 Setpoint, Dribble, Preact, Tolerance	4E	N	U/D	24
#2 Setpoint, Dribble, Preact, Tolerance	4F	O	U/D	24
Response to Prompt 1	50	P	U/D	6
Last Printed Data from Printer Port	51	Q	U	*
Clear Transaction Memory	52	R	D	0
Transactions Still Available to Read	53	S	U	4
Sub-Total Accumulator	54	T	U	10
Total Accumulator	55	U	U	10

* The field length is 45 bytes (compatible with 8142 format) when the print template ptp03 is empty. If there is a format in ptp03 then this length will vary accordingly.

Host Port Function Codes

(A) All Functions (Upload Only)

Host Transmission					
ASCII	STX	2	U	A	CR
Hex	02	32	55	41	0D

LYNX Response					
STX	2	U	A	All Functions 187 Byte Data Field	CR
02	32	55	41		0D

The All Functions Data Field consists of:

- Displayed Weight: (7 Bytes)
- Gross Weight: (7 Bytes)
- Tare Weight: (7 Bytes)
- Net Weight: (7 Bytes)
- Time/Date: (12 Bytes)
- Next Consecutive Number: (6 Bytes)
- Status Bytes: (6 Bytes)
- Setup Bytes (12 Bytes)
- Setpoints 1,2,3,4: (24 Bytes)
- Setpoint-1, Dribble-1, Preact-1, Tol-1: (24 Bytes)
- Setpoint-2, Dribble-2, Preact-2, Tol-2: (24 Bytes)
- Response to Prompt 1: (6 Bytes)
- Last Printed Data (45 Bytes Default)

The most significant digit of the weight data fields will be a space for positive weights and a minus for negative weights.

Weight data fields never contain decimal point or dummy zero.

(B) Displayed Weight (Upload Only)

Host Transmission					
ASCII	STX	2	U	B	CR
Hex	02	32	55	42	0D

LYNX Response					
STX	2	U	B	Displayed Weight 7 Byte Data Field	CR
02	32	55	42		0D

(C) Gross Weight (Upload Only)

Host Transmission					
ASCII	STX	2	U	C	CR
Hex	02	32	55	43	0D

LYNX Response					
STX	2	U	C	Gross Weight 7 Byte Data Field	CR
02	32	55	43		0D

(D) Tare Weight (Upload)

Host Transmission					
ASCII	STX	2	U	D	CR
Hex	02	32	55	44	0D

LYNX Response					
STX	2	U	D	Tare Weight 7 Byte Data Field	CR
02	32	55	44		0D

(D) Tare Weight (Download)

Host Transmission						
ASCII	STX	2	D	D	Tare Weight 7 Byte Data Field	CR
Hex	02	32	44	44		0D

(E) Net Weight (Upload Only)

Host Transmission					
ASCII	STX	2	U	E	CR
Hex	02	32	55	45	0D

LYNX Response					
STX	2	U	E	Net Weight 7 Byte Data Field	CR
02	32	55	45		0D

(F) Time/Date (Upload)

The time format to the LYNX terminal is fixed as HHMMSS. The date format is DDMMYY.

Host Transmission					
ASCII	STX	2	U	F	CR
Hex	02	32	55	46	0D

LYNX Response					
STX	2	U	F	Time and Date 12 Byte Data Field	CR
02	32	55	46		0D

(F) Time/Date (Download)

Host Transmission						
ASCII	STX	2	D	F	Time and Date 12 Byte Data Field	CR
Hex	02	32	44	46		0D

Only the six least significant digits are sent using this command. The two most significant digits are not available.

(G) Next Consecutive Number (Upload)

Host Transmission					
ASCII	STX	2	U	G	CR
Hex	02	32	55	47	0D

LYNX Response					
STX	2	U	G	Current Consecutive Number 6 Byte Data Field	CR
02	32	55	47		0D

(G) Next Consecutive Number (Download)

Host Transmission						
ASCII	STX	2	D	G	Current Consecutive Number 6 Byte Data Field	CR
Hex	02	32	44	47		0D

(H) Clear Oldest Transaction from Memory (Download or Upload)

Host Transmission					
ASCII	STX	2	D or U	H	CR
Hex	02	32	44 or 45	48	0D

(I) Status Bytes (Upload Only)

Host Transmission					
ASCII	STX	2	U	I	CR
Hex	02	32	55	49	0D

LYNX Response					
STX	2	U	I	Status Bytes 6 Byte Data Field	CR
02	32	55	49		0D

Bit Identification Table for Status Byte A			
Bits 0, 1 and 2			
0	**1**	**2**	**Decimal Point Location**
0	0	0	X.XXXXX
1	0	0	XX.XXXX
0	1	0	XXX.XXX
1	1	0	XXXX.XX
0	0	1	XXXXX.X
1	0	1	XXXXX
0	1	1	XXXXX0
1	1	1	XXXX00
Bits 3 and 4			**Build Code**
3	**4**		
1	0		X1
0	1		X2
1	1		X5
Bit 5			Always = 1
Bit 6			Always = 0

Bit Identification Table for Status Byte B	
Status Bits	**Function**
Bit 0	Gross = 0, Net = 1
Bit 1	Sign, Positive = 0, Negative = 1
Bit 2	Out of Range = 1 (Over capacity or Under zero)
Bit 3	Motion = 1
Bit 4	lb = 0, kg = 1 (see also Status Byte C, bits 0-2)
Bit 5	Always = 1
Bit 6	In Power Up = 1

Bit Identification Table for Status Byte C			
Bits 0, 1 and 2			**Weight Description**
0	**1**	**2**	
0	0	0	lb or kg, selected by status byte B, bit 4
1	0	0	grams (g)
0	1	0	metric tons (t)
1	1	0	ounces (oz)
0	0	1	troy ounces (ozt)
1	0	1	penny weight (dwt)
0	1	1	tons (ton)
1	1	1	custom units
Bit 3			Print Has Been Requested = 1
Bit 4			Always = 0
Bit 5			Always = 1
Bit 6			Hand Tare (Metric Only)

Status Byte D Bit Definitions							
Full Scale	**Bits**						
Increments	6	5	4	3	2	1	0
600		R	0	0	0	0	0
1,000		E	0	0	0	0	1
1,200		S	0	0	0	1	0
1,500		E	0	0	0	1	1
2,000		R	0	0	1	0	0
2,500		V	0	0	1	0	1
3,000		E	0	0	1	1	0
4,000	A	D	0	0	1	1	1
5,000	L		0	1	0	0	0
6,000	W		0	1	0	0	1
8,000	A	F	0	1	0	1	0
10,000	Y	O	0	1	0	1	1
12,000	S	R	0	1	1	0	0
15,000			0	1	1	0	1
16,000	A	F	0	1	1	1	0
20,000		U	0	1	1	1	1
25,000	1	T	1	0	0	0	0
30,000		U	1	0	0	0	1
32,000		R	1	0	0	1	0
35,000		E	1	0	0	1	1
40,000			1	0	1	0	0
45,000		U	1	0	1	0	1
48,000		S	1	0	1	1	0
50,000		E	1	0	1	1	1

Status Byte E Bit Definitions	
Function	**Bit**
Tolerance Mode: Zero = 0/Weight =1	0
Setpoint Mode: 4 Setpt = 0/2 Setpt = 1	1
Reserved, Always a 0	2
Reserved, Always a 0	3
Reserved, Always a 0	4
Reserved, Always a 0	5
Always a 1	6

Status Byte F Bit Definitions	
Function	**Bit**
Setpoint 1 Feeding	0
Setpoint 2 Feeding	1
Setpoint 3/Setpoint 1 Fast Feeding	2
Setpoint 4/Setpoint 2 Fast Feeding	3
Tolerance 1, In Tolerance = 1	4
Tolerance 2, In Tolerance = 2	5
Always a 1	6

(K) Control Bytes (Download)

Only 1 control byte function can be used at a time. If more than 1 control byte function is desired then repeat the control byte function once for each function desired.

Control bytes A and B are used to control the display. Control byte C is used to clear subtotal and total accumulators.

Host Transmission								
ASCII	STX	2	D	K	CBA	CBB	CBC	CR
Hex	02	32	44	4B				0D

Control Byte A (CBA) Bit Definition	
Function	**Bit**
Print Request = 1	0
Switch to main units = 1	1
Switch to second units = 1	2
Clear Tare = 1	3
Autotare = 1	4
Zero = 1	5
Always a 1	6

Control Byte B (CBB) Bit Definition	
Function	**Bit**
Reserved	0
Reserved	1
Reserved	2
Reserved	3
Reserved	4
Blank Display = 1	5
Always a 1	6

Control Byte C (CBC) Bit Definition	
Function	**Bit**
Clear Subtotal Accumulator = 1	0
Clear Total Accumulator = 1	1
Reserved	2
Reserved	3
Reserved	4
Reserved	5
Always a 1	6

(L) Setpoints 1, 2, 3, 4 (Upload)

All four setpoints must be downloaded even if only one setpoint is being changed. Each setpoint value is six numeric digits with no decimal point. Setpoint #5 (if used) is not available to the host port.

Host Transmission					
ASCII	STX	2	U	L	CR
Hex	02	32	55	4C	0D

LYNX Response					
STX	2	U	L	Setpoints 1, 2, 3, 4 Byte Field	CR
02	32	55	4C		0D

(L) Setpoints 1, 2, 3, 4 (Download)

Host Transmission						
ASCII	STX	2	D	L	Setpoints 1, 2, 3, 4 Byte Field	CR
Hex	02	32	44	4C		0D

(M) Zero Tolerance (Upload)

Zero tolerance is used only when zero tolerance is selected for setpoint 1 and setpoint is a 2-speed setpoint. The value for both zero tolerances must be downloaded. Each tolerance value is six numeric digits with no decimal point. The second tolerance value is not used but must be included.

Host Transmission					
ASCII	STX	2	U	M	CR
Hex	02	32	55	4D	0D

LYNX Response					
STX	2	U	M	Zero Tolerance 1,2 12 Byte Field	CR
02	32	55	4D		0D

() Zero Tolerance (Download)

Host Transmission						
ASCII	STX	2	D	M	Zero Tolerance 1,2 12 Byte Field	CR
Hex	02	32	44	4D		0D

(N) #1 Setpoint, Dribble, Preact, Weight Tolerance (Upload)

Setpoint, dribble, preact and tolerance values must be downloaded even if only one value is changed. Each value is six digits without decimal point.

Host Transmission					
ASCII	STX	2	U	N	CR
Hex	02	32	55	4E	0D

LYNX Response					
STX	2	U	N	#1: Setpoint, Dribble, Preact, Tolerance. 24 Byte Field	CR
02	32	55	4E		0D

(N) #1 Setpoint, Dribble, Preact, Weight Tolerance (Download)

Host Transmission						
ASCII	STX	2	D	N	#1: Setpoint, Dribble, Preact, Tolerance. 24 Byte Field	CR
Hex	02	32	44	4E		0D

(O) #2 Setpoint, Dribble, Preact, Weight Tolerance (Upload)

Setpoint, dribble, preact and tolerance values must be downloaded even if only one value is changed. Each value is six digits without decimal point. This tolerance value is used only when one 2-speed setpoint is selected and using SP2 = Y(es).

Host Transmission					
ASCII	STX	2	U	O	CR
Hex	02	32	55	4F	0D

LYNX Response					
STX	2	U	O	#2: Setpoint, Dribble, Preact, Tolerance. 24 Byte Field	CR
02	32	55	4F		0D

(O) #2 Setpoint, Dribble, Preact, Weight Tolerance (Download)

Host Transmission						
ASCII	STX	2	D	O	#2: Setpoint, Dribble, Preact, Tolerance. 24 Byte Field	CR
Hex	02	32	44	4F		0D

(P) Response to Prompt #1 (Upload)

Only the six least significant characters are available with this command.

Host Transmission					
ASCII	STX	2	U	P	CR
Hex	02	32	55	50	0D

LYNX Response					
STX	2	U	P	ID 6 Byte Field	CR
02	32	55	50		0D

(P) Numeric ID (Download)

Host Transmission						
ASCII	STX	2	D	P	ID 6 Byte Field	CR
Hex	02	32	44	50		0D

(Q) Last Printed Data (Upload)

This function code will return the last printed data in the format specified by print template ptp03. If ptp03 is cleared to a blank condition, the response from the terminal duplicates the format of the 8142. The 8142 format is shown on the next page.

Host Transmission					
ASCII	STX	2	U	Q	CR
Hex	02	32	55	51	0D

LYNX Response						
ASCII	STX	2	U	Q	Data per ptp03	CR
Hex	02	32	55	51	(default 45 bytes)	0D

Format for ptp03 when it is cleared.

Data	Length
Gross Weight	7
Tare Weight	7
Net Weight	7
Time	6
Date	6
CN	6
Spaces	6

The LYNX terminal can be configured to warn the operator and halt printing if the transaction memory buffer becomes full. Refer to the Memory Program block.

If Template ptp03 is not blank, the LYNX terminal operates in a slightly different mode. It uses approximately 4K of memory as a transaction memory buffer to store all fields programmed in ptp03 for each transaction. To retrieve the oldest transaction record, the host sends the "Q" command then an "H" command to clear this record. The host then sends another "Q" command for the next transaction then an "H" to clear that record. Using this sequence, all transactions can be retrieved from the LYNX terminal. The following is an example of this mode.

Data fields in custom template ptp03:

Data	Length
Var01 (Product)	12
Var02 (Operator)	10
Time	5
Net Weight	6

Host Transmission to Retrieve Transaction #1					
ASCII	STX	2	U	Q	CR
Hex	02	32	55	51	0D

LYNX Response with Transaction #1 Data					
STX	2	U	Q	Data from ptp03	CR
02	32	55	51	(33 bytes)	0D

Host Transmission to Clear Transaction #1					
ASCII	STX	2	U	H	CR
Hex	02	32	55	48	0D

LYNX Response to Clear Transaction #1					
ASCII	STX	2	U	H	CR
Hex	02	32	55	48	0D

Host Transmission to Retrieve Transaction #2					
ASCII	STX	2	U	Q	CR
Hex	02	32	55	51	0D

LYNX Response with Transaction #2 Data					
STX	2	U	Q	Data from ptp03	CR
02	32	55	51	(33 bytes)	0D

Host Transmission to Clear Transaction #2					
ASCII	STX	2	U	H	CR
Hex	02	32	55	48	0D

LYNX Response to Clear Transaction #2					
ASCII	STX	2	U	H	CR
Hex	02	32	55	48	0D

This sequence will be repeated until all transactions have been retrieved. After the last transaction has been retrieved and cleared, the next host request will be responded to with no data by the LYNX terminal. This indicates the transaction buffer is empty. The host can also use an "S" command to ascertain the number of available transactions.

(R) Clear Transaction Memory (Download) – Clears Total Buffer

Host Transmission					
ASCII	STX	2	D	R	CR
Hex	02	32	44	52	0D

(S) Transactions Still Available to Read (Upload)

Host Transmission					
ASCII	STX	2	U	S	CR
Hex	02	32	55	53	0D

LYNX Response					
STX	2	U	S	# of	CR
02	32	55	53	Transactions 4 Byte Data Field	0D

(T) Subtotal Accumulator (Upload Only)

Host Transmission					
ASCII	STX	2	U	T	CR
Hex	02	32	55	54	0D

LYNX Response					
STX	2	U	T	Subtotal Accumulator 10 Byte Data Field	CR
02	32	55	54		0D

(U) Total Accumulator (Upload Only)

Host Transmission					
ASCII	STX	2	U	U	CR
Hex	02	32	55	55	0D

LYNX Response					
STX	2	U	U	Total Accumulator 10 Byte Data Field	CR
02	32	55	55		0D

8530 Host Protocol Transaction

The data format used by the LYNX protocol is either a 10 or 11 bit ASCII frame which consists of:

- 1 start bit
- 7 data bits
- 1 selectable parity bit
- 1 or 2 stop bits

A selectable checksum character is provided to ensure the integrity of the data.

There are 2 basic types of communication that occur between the host and the LYNX terminal:

- Upload—The host requests information from the LYNX terminal. The LYNX terminal responds to the request.
- Download—The host transmits new data to the LYNX terminal.

Data Packet Format

All transmissions by the host or the LYNX terminal are in the format shown below.

Data	STX	ADR	DIR	FCT	Data Field	CR	CHK
Notes	A	B	C	D	E	F	G

Table Notes:
A <STX> ASCII Start of Text Character, Hex 02.
B <ADR> LYNX scale address selected in setup, must be from an ASCII 2 to 9.
C <DIR> Data Direction, "U" = Upload (8142 to Host), "D" = Download (Host to LYNX)
D <FCT> Function code, refer to Function Code Table 6-9.
E <Data Field> The data field is either the uploaded data from the 8142 or the downloaded data from the host. Not all function codes use the data field.
F <CR> ASCII Carriage Return, Hex 0D
G <CKS> 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.

Host Interface Message Format

Host Prt Function Codes

No error detection beyond checksum is provided for downloads. The LYNX terminal ignores any command it does not understand. When critical data such as setpoint data is downloaded from the host to the LYNX terminal, it is recommended that the host device upload (read back) the data downloaded to the LYNX terminal to verify that the data was received correctly.

Function Code Description	Function Code		Direction	Data Field Length
	Hex	ASCII		
Read All Functions	41	A	U	116
Displayed Weight	42	B	U	8
Gross Weight	43	C	U	8
Tare Weight	44	D	U/D	8
Net Weight	45	E	U	8
Time and Date	46	F	U/D	12
Current Consecutive Number	47	G	U/D	6
Status Bytes	49	I	U	2
Setup Bytes	4A	J	U/D	2
Control Bytes	4B	K	D	2
Setpoint 1	4C	L	U/D	7
Setpoint 2	4D	M	U/D	7
Setpoint 3	4E	N	U/D	7
Setpoint 4	4F	O	U/D	7
ID	50	P	U/D	12
Subtotal Accumulator	51	Q	U	11
Total Accumulator	52	R	U	11

(A) Read All Functions (Upload Only)

Host Transmission					
ASCII	STX	2	U	A	CR
Hex	02	32	55	41	0D

LYNX Response					
STX	2	U	A	All Functions 116 Byte Data Field	CR
02	32	55	41		0D

Weight data fields will include decimal point and sign character if necessary.

The All Functions Data Field Consists of:

- Displayed Weight: (8 Bytes)
- Gross Weight: (8 Bytes)
- Tare Weight: (8 Bytes)
- Net Weight: (8 Bytes)
- Time/Date: (12 Bytes)
- Next Consecutive Number: (6 Bytes)
- Status Bytes: (2 Bytes)
- Setup Bytes: (2 Bytes)
- Setpoint 1: (7 Bytes)
- Setpoint 2: (7 Bytes)
- Setpoint 3: (7 Bytes)
- Setpoint 4: (7 Bytes)
- ID: (12 Bytes)
- Subtotal Accumulator: (11 Bytes)
- Total Accumulator: (11 Bytes)

(B) Displayed Weight (Upload Only)

Host Transmission					
ASCII	STX	2	U	B	CR
Hex	02	32	55	42	0D

LYNX Response					
STX	2	U	B	Displayed Weight 8 Byte Data Field	CR
02	32	55	42		0D

(C) Gross Weight (Upload Only)

Host Transmission					
ASCII	STX	2	U	C	CR
Hex	02	32	55	43	0D

LYNX Response					
STX	2	U	C	Gross Weight 8 Byte Data Field	CR
02	32	55	43		0D

(D) Tare Weight (Upload)

Host Transmission					
ASCII	STX	2	U	D	CR
Hex	02	32	55	44	0D

LYNX Response					
STX	2	U	D	Tare Weight 8 Byte Data Field	CR
02	32	55	44		0D

(D) Tare Weight (Download)

Downloaded tare weight value must match the displayed increment type and size programmed into the Lynx terminal or else the downloaded value is ignored.

Host Transmission						
ASCII	STX	2	D	D	Tare Weight 8 Byte Data Field	CR
Hex	02	32	44	44		0D

(E) Net Weight (Upload Only)

Host Transmission					
ASCII	STX	2	U	E	CR
Hex	02	32	55	45	0D

Host Mode time and date format is [HHMMSSDDMMYY] HH = hours, MM = minutes, SS = seconds, DD = day, MM = month and YY = year.

LYNX Response					
STX	2	U	E	Net Weight 8 Byte Data Field	CR
02	32	55	45		0D

(F) Time/Date (Upload)

Host Transmission					
ASCII	STX	2	U	F	CR
Hex	02	32	55	46	0D

LYNX Response					
STX	2	U	F	Time and Date 12 Byte Data Field	CR
02	32	55	46		0D

(F) Time/Date (Download)

Host Transmission						
ASCII	STX	2	D	F	Time and Date 12 Byte Data Field	CR
Hex	02	32	44	46		0D

(G) Next Consecutive Number (Upload)

Host Transmission					
ASCII	STX	2	U	G	CR
Hex	02	32	55	47	0D

LYNX Response					
STX	2	U	G	Current Consecutive Number 6 Byte Data Field	CR
02	32	55	47		0D

(G) Next Consecutive Number (Download)

Host Transmission						
ASCII	STX	2	D	G	Current Consecutive Number 6 Byte Data Field	CR
Hex	02	32	44	47		0D

(I) Status Bytes (Upload Only)

Status bytes 1 and 2 provide information about the operation of the LYNX terminal.

Host Transmission					
ASCII	STX	2	U	I	CR
Hex	02	32	55	49	0D

LYNX Response						
STX	2	U	I	S	S	CR
02	32	55	49	B 1	B 2	0D

Status Byte 1 Bit Definition	
Function	**Bit**
Gross/Net, Net=1	0
Negative Weight = 1	1
Overcapacity=1	2
Motion=1	3
Lb/kg, kg=1	4
Powerup not zeroed	5
Always a 1	6

Status Byte 2 Bit Definition	
Function	**Bit**
Setpoint 1, Feeding = 1	0
Setpoint 2, Feeding = 1	1
Setpoint 3, Feeding = 1	2
Setpoint 4, Feeding = 1	3
Print Request = 1	4
Expanded Weight Display = 1	5
Always a 1	6

(K) Control Bytes

Only one control byte function can be used at a time. If more than 1 control byte function is desired then repeat the control byte function once for each function desired.

Host Transmission							
ASCII	STX	2	D	K	C B A	C B B	CR
Hex	02	32	44	4B			0D

Control Byte A Bit Definition	
Function	**Bit**
Print Request = 1	0
Switch to lb = 1	1
Switch to kg = 1	2
Clear Tare = 1	3
Autotare = 1	4
Zero = 1	5
Always = 1	6

Control Byte B Bit Definition	
Function	**Bit**
Reserved	0
Reserved	1
Reserved	2
Reserved	3
Reserved	4
Reserved	5
Always = 1	6

Control Byte A example:

Print—A @ (41, 40 hex)
Switch to lb—B @ (42, 40 hex)
Switch to kg—D @ (44, 40 hex)
Clear Tare—H @ (48, 40 hex)
Autotare—P @ (50, 40 hex)
Zero—` @ (60, 40 hex)
Clear Accumulators—@ A (40, 41 hex)
Set Default Parameters—@ B (40, 42 hex)

(L) Setpoints 1, 2, 3 and 4 (Upload/Download)

The setpoint values for setpoints 1, 2, 3 or 4, are accessed individually by function codes "L", "M", "N" or "P", (hex values 4C, 4D, 4E or 4F) for setpoints 1, 2, 3, or 4.

Host Transmission					
ASCII	STX	2	U	L	CR
Hex	02	32	55	4C	0D

LYNX Response					
STX	2	U	L	Setpoint 1 7 Byte Data Field	CR
02	32	55	4C		0D

Downloaded setpoint value must match the displayed increment type and size programmed into the Lynx terminal or else the downloaded value is ignored. It is highly recommended that you upload the setpoint data after a download to verify that the LYNX terminal has accepted the downloaded setpoint value.

(L) Setpoints 1, 2, 3, 4 (Download)

Host Transmission						
ASCII	STX	2	D	L	Setpoint 1 7 Byte Data Field	CR
Hex	02	32	44	4C		0D

(P) Numeric ID (Upload)

Host Transmission					
ASCII	STX	2	U	P	CR
Hex	02	32	55	50	0D

LYNX Response					
STX	2	U	P	ID 12 Byte Field	CR
02	32	55	50		0D

(P) Numeric ID (Download)

Host Transmission						
ASCII	STX	2	D	P	ID 12 Byte Field	CR
Hex	02	32	44	50		0D

(Q) Subtotal Accumulator (Upload Only)

Host Transmission					
ASCII	STX	2	U	Q	CR
Hex	02	32	55	51	0D

LYNX Response					
STX	2	U	Q	Subtotal Accumulator 11 Byte Data Field	CR
02	32	55	51		0D

(R) Total Accumulator (Upload Only)

Host Transmission					
ASCII	STX	2	U	R	CR
Hex	02	32	55	52	0D

LYNX Response					
STX	2	U	R	Total Accumulator 11 Byte Data Field	CR
02	32	55	52		0D

Standard Interface Command Set (SICS) Protocol

All new METTLER TOLEDO balances and instruments support the standardized command set "METTLER TOLEDO Standard Interface Command Set" (MT-SICS), which is divided into 4 levels (0, 1, 2, 3), depending on the functionality of the device. The LYNX terminal uses parts of level 0 and 1:

- MT-SICS level 0—Command set for the simplest device.
- MT-SICS level 1—Extension of the command set for standard devices.

A feature of this concept is that the commands combined in MT-SICS level 0 and 1 are identical for all devices. Both the simplest weighing device and a fully expanded weighing workstation recognize the commands of MT-SICS level 0 and 1.

MT-SICS Level 0 and 1 Command Functions

You can use the commands of MT-SICS level 0 and 1 to perform the following functions with a LYNX terminal:

- Request weighing results
- Tare the scale and preset the tare weigh
- Zero the scale
- Identify MT-SICS implementation
- Identify the device
- Reset the device

Data Interface Configuration

Setting of the interface such as baud rate, number of data bits, parity, handshake protocols and connector pin assignments are described in the Configure Serial I/O Program Block in Chapter 2.

Version number of the MT-SICS

Each level of the MT-SICS has its own version number can be requested with the command I1 from level 0. This section describes:

- MT-SICS level 0, version 2.1x
- MT-SICS level 1, version 2.1x (only partially implemented in the LYNX terminal)

Command Formats

Each command received by the scale via the data interface is acknowledged by a response of the device to the transmitter. Commands and responses are data strings with a fixed format. Commands sent to the LYNX terminal comprise one or more characters of the ASCII character set. Enter commands only in uppercase.

- The parameters of the command must be separated from one another and from the command name by a space (ASCII 32 dec., in the example below represented as _).
- Each command must be terminated by CR LF (ASCII 13 dec., 10 dec.)

The characters CR and LF, which can be inputted using the **ENTER** or **RETURN** key of most entry keypads, are not listed in this description. However, it is essential they be included for communication with the LYNX terminal.

Example

Command to tare the LYNX terminal:

"TA_20.00_lb" (The command terminator CR LF is not shown.)

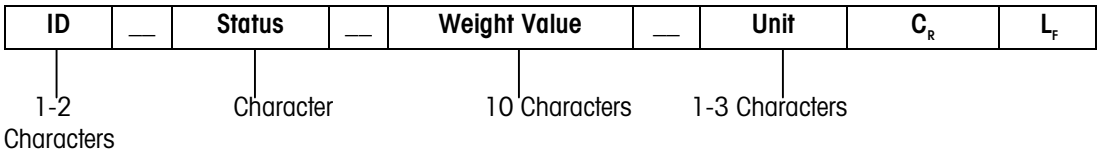
Response Formats

All responses sent by the LYNX terminal to the transmitter to acknowledge the received command have one of the following formats:

- Response with weight value
- Response without weight value
- Error message

Format of the Response with Weight Value

A general description of the response with weight value is the following:



- ID—Response identification.
- _— Space (ASCII 32 dec.)
- Status—Status of the LYNX terminal. See description of the commands and responses
- Weight Value—Weighing result: shown as number with 10 digits, including sign directly in front of the first digit. The weight value appears right justified. Preceding zeroes are suppressed with the exception of the zero to the left of the decimal point.
- Unit—Weight unit displayed.
- CR—Carriage Return (ASCII 13 dec.)
- LF—Line Feed (ASCII 10 dec.)

Comment—CR LF will not be shown in this description.

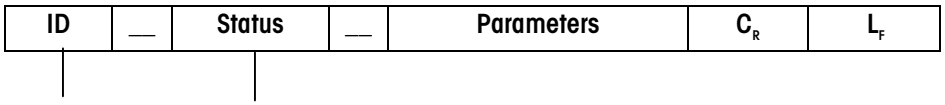
Example

Response with stable weight value of 0.256 g:

S _ S_ _ _ _ _ _ 0.256 _ g

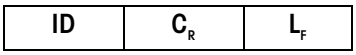
Format of the Response Without Weight Value

A general description of the response without weight value is the following:



- ID—Response identification.
- _—Space (ASCII 32 dec.)
- Status—Status of the LYNX terminal. See description of the commands and responses
- Parameters—Command-dependent response code.
- CR—Carriage Return (ASCII 13 dec.)
- LF—Line Feed (ASCII 10 dec.)

Comment—CR LF will not be shown in this description



- ID—Error Identification

There are three different error messages. The identification always comprises two characters.

- ES—Syntax error
  The LYNX terminal has not recognized the received command.
- ET—Transmission error
  The scale has received a "faulty" command, e.g. a parity error.
- EL—Logical error
  The LYNX terminal cannot execute the received command.

- CR—Carriage return (ASCII 13 dec.)
- LF—Line Feed (ASCII 10 dec.)

Comment—CR LF will not be shown in this description.

Tips for the Programmer

Command and Response

You can improve the dependability of your application software by having your program evaluate the response of the LYNX terminal to a command. The response is the acknowledgment that the LYNX terminal has received the command.

Reset

To be able to start from a determined state, when establishing the communication between the LYNX terminal and system, you should send a reset command to the LYNX terminal. When the LYNX terminal or system is switched on or off, faulty characters can be received or sent.

Quotation Marks (" ")

Quotation marks included in the command must always be entered.

Commands and Responses MT-SICS Level 0

The LYNX terminal receives commands from the system computer and acknowledges the command with an appropriate response. The following sections contain a detailed description of the command set in alphabetical order with the associated responses. Commands and responses are closed with CR and LF. These termination characters are not shown in the following description, but they must always be entered with commands or sent with responses.

The commands of MT-SICS level 0 are available with even the simplest devices, which support the METTLER TOLEDO Standard Interface Command Set. These include:

- I1 Inquiry of MT-SICS level and MT-SICS versions
- I2 Inquiry of LYNX data
- I3 Inquiry of LYNX SW version and type definition number
- I4 Inquiry of serial number
- S Send stable weight value
- SI Send weight value immediately
- SIR Send weight value immediately and repeat
- T Tare
- Z Zero
- @ Reset

The following is a detailed description of each of these Level 0 commands:

1. I1—INQUIRY OF MT-SICS LEVEL AND MT-SICS VERSIONS

Command: I1—Inquiry of MT-SICS level and MT-SICS versions

Response—I 1 _ A _ "0" _ "2.10" _ "2.10" _ " " _ " "

- 0 Level 0 fully implemented
- 2.10 Level 0, version V2.10
- 2.10 Level 1, version V2.10 (only partially implemented in LYNX)
- " No MT-SICS 2 commands
- " No MT-SICS 3 commands

Comments

- In the case of the MT-SICS level, only fully implemented levels are listed. In other words, if it is not possible to implement all commands from a certain level, the level is not specified.
- In the case of the MT-SICS version, all levels are specified even those only partially implemented.

2. I2—INQUIRY OF DATA

Command: I2—Inquiry of data.

Response: I 2 _ A _ "LYNX _ C _ Standard _100.00 lb"

Comments

- The number of characters of "text" depends on the capacity.

3. I3—INQUIRY OF SW VERSION AND TYPE DEFINITION NUMBER

Command I3: Inquiry of SW version number(s) and type definition number.

Response: I3 _ A _ "0.00 _ 0.00 _ D145828R"

- 0.00--SW version of OS (not implemented)
- 0.00--SW version of the application (not implemented)
- D145828R--Type definition number (application SW version)

Comment

- The number of characters of "text" depends on the device type.

4. I4—INQUIRY OF SERIAL NUMBER

Command: I4—Inquiry of serial number.

Response: I4 _ A _ "text"

- Serial number as "text" (content of Literal 8 in LYNX terminal)
- I4 _ I—Command understood, not executable at present.

Example

Command: I 4—Inquiry of serial number

Response: I 4 _ A _ "0123456789"

Comments

- The serial number response is the content of Literal 8 as entered in the setup.
- The serial number can be used, for example, as a device address in a network solution.
- The response to 14 appears unsolicited after switching on and after the reset command (@).

5. S—SEND STABLE WEIGHT VALUE

Command: S—Send the current stable net weight.

Response:

- S _ S _ WeightValue _ Unit—Current stable weight value.
- S _ I—Weight value is in the current displayed units.
- S _ +—LYNX in overload range.
- S _ -—LYNX in underload range.

Example

Command S—Send a stable weight value.

Response: S _ S _ _ _ _ _ 100.00 _ g.—The current, stable weight value is 100.00 g.

Comments

- The duration of the timeout depends on the device type.
- Weight value is in the current displayed units.

6. SI—SEND WEIGHT VALUE IMMEDIATELY

Command: SI—Send the current net weight value regardless of scale stability.

Response:

- S _ S _ WeightValue _ Unit—Stable weight value.
- S _ D _ WeightValue _ Unit—Non-stable (dynamic) weight value.
- S _ I—Command not executable (scale currently executing another command).
- S _ +—LYNX in overload range.
- S _ -—LYNX in underload range.

Example

Command: SI—Send current weight value.

Response: S _ D _ _ _ _ _ 129.07 _ g—The current weight value is unstable (dynamic) and is 129.07g.

Comments

- The response to the command SI is the last internal weight value (stable or dynamic) before receipt of the command SI.
- Weight value is in the current displayed units.

7. SIR—SEND WEIGHT VALUE IMMEDIATELY AND REPEAT

Command: SIR—Send the net weight values repeatedly, regardless of scale stability.

Response:

- S _ S _ WeightValue _ Unit—Stable weight value.
- S _ D _ WeightValue _ Unit—Non-stable (dynamic) weight value.
- S _ I —Command not executable (LYNX terminal is executing another command, e.g. taring).
- S _ + —LYNX in overload range.
- S _ - —LYNX in underload range.

Example

Command: SIR—Send current weight values at intervals.

Response:

- S _ D _ _ _ _ _ 129.07 _ g
- S _ D _ _ _ _ _ 129.08 _ g
- S _ D _ _ _ _ _ 129.09 _ g
- S _ D _ _ _ _ _ 129.09 _ g
- S _ D _ _ _ _ _ 114.87 _ g
- **. . .**—The scale sends stable or non-stable weight values at intervals.

Comments

- SIR is overwritten and cancelled by the commands S, SI, SIR, @ and hardware break.
- The number of weight values per second depends on the scale type.
- Weight value is in the current displayed units.

8. T—TARE

Command: T—Tare, i.e. store the next stable weight value as a new tare weight value.

Response:

- T _ S _ WeightValue _ Unit—Taring performed, i.e. stability criterion and taring range complied with. The tare weight value returned corresponds to the weight change in the first unit on the LYNX terminal since the last zero setting.
- T _ I—Taring not performed (LYNX terminal is currently executing another command, e.g. zero setting, or timeout as stability was not reached.)
- T _ + —Upper limit of taring range exceeded.
- T _ - —Lower limit of taring range exceeded.

Example

Command: T—The LYNX terminal is tared and has a value of 100.00 g in the tare memory.

Response: T _ S _ _ _ _ _ 100.00 _ g

Comments

- The tare memory is overwritten by the new tare weight value.
- The duration of the timeout depends on the scale type.
- The function of the combined tare and zero setting key corresponds to the zero setting (Z) command of the interface.
- Clearing tare memory: See command TAC (MT-SICS level 1).
- First unit is the weight unit displayed after the LYNX terminal has been switched on.

9. Z—ZERO

Command: Z—Zero the scale.

Response

- Z _ A—The following then holds:
  - Gross = net + tare = 0
  - Zero setting performed, i.e. stability criterion and zero setting range complied with.
- Z _ I—Zero setting not performed (LYNX terminal is currently executing another command, e.g. taring, or timeout as stability was not reached.)
- Z _ + —Upper limit of zero setting range exceeded.
- Z _ - —Lower limit of zero setting range exceeded.

Example

Command: Z—Zero.

Response: Z _ A—Zero setting performed.

Comments

- The tare memory is cleared during zero setting.
- The zero point determined during switching on is not influenced by this command, i.e. the measurement ranges remain unchanged.
- The duration of the timeout depends on the scale type.

10. @—RESET

Command: @—Reset the scale to the condition found after switching on, but without a zero setting being performed.

Response:

- I 4 _ A _ "text"—Serial number of the scale, the scale is ready for operation.

Example

Command: @

Response: I4 _ A _ "0123456789"—The LYNX terminal is reset and sends the serial number.

Comments

- All commands awaiting responses are canceled.
- The tare memory is reset to zero.
- The "reset" command is always executed.
- A reset command received by the LYNX terminal during the calibration and test procedure cannot be processed.

Commands and Responses MT-SICS Level 1

Only the listed Level 1 commands are available.

The following commands of MT-SICS level 1 are available:

- SR—Send weight value on weight change (Send and Repeat)
- TA—Set tare value
- TAC—Clear tare value
- TI—Tare Immediately

1. SR—SEND WEIGHT VALUE ON WEIGHT CHANGE (SEND AND REPEAT)

Command: SR

- S R _ PresetValue _ Unit—Send the current stable weight value and then continuously after every weight change greater or equal to the preset value a non-stable (dynamic) value followed by the next stable value, range = 1d to max. load.
- SR—If no preset value is entered, the weight change must be at least 12.5% of the last stable weight value, minimum = 30d.

Response:

- S _ S _ WeightValue _ Unit—Current, stable weight value. Weight change.
- S _ D _ WeightValue _ Unit—Dynamic weight value.
- S _ S _ WeightValue _ Unit—Next stable weight value.
- S _ I—Command not executable (the LYNX terminal is currently executing another command, e.g. taring, or timeout as stability was not reached.)
- S _ L —Command understood, parameter wrong.
- S _ + —LYNX in overload range.
- S _ - —LYNX in underload range.

Example

Command: S R _ 10.00 _ g—Send the current stable weight value followed by every load change $\geq$ 10g.

Response:

- S _ S _ _ _ _ _100.00 _ g—Scale stable.
- S _ D _ _ _ _ _115.23 _ g—100.00 g loaded.
- S _ S _ _ _ _ _200.00 _ g—Scale again stable.

Comments

- SR is overwritten and cancelled by the commands S, SI, SIR, @ and hardware break.
- If, following a non-stable (dynamic) weight value, stability has not been reached within the timeout interval, the response "S _ I " is sent and then a non-stable weight value. Timeout then starts again form the beginning.
- The preset value must be entered in the first unit, that is the weight unit displayed after the LYNX terminal has been switched on.

2. TA - INQUIRE/ENTER TARE VALUE

Inquiry of Tare Weight Value

Command: TA—Inquiry of tare weight value *or* TA _ Tare Preset Value _ Unit—Entry of a tare value.

Response:

- T A _ A _ TareWeightValue _ Unit—Current Tare weight value.
- T A _ I—Current Tare weight value cannot be transferred (the LYNX terminal is currently executing another command, e.g. zero setting).
- T A _ L—Command understood, parameter wrong.

Example

Command: T A _ 100.00 _ g—Tare.

Response: T A _ A _ _ _ _ _100.00_ g—The LYNX has 100.00 g in the tare memory.

Comments

- The tare memory will be overwritten by the preset tare weight value.
- The LYNX terminal will automatically round the inputted tare value to the current readability.
- The preset value must be entered in the current units.

3. TAC - CLEAR TARE VALUE

Command: TAC—Clear tare value.

Response:

- TAC _ A—Tare value cleared, 0 is in the tare memory.
- TAC _ I—Command not executable (the LYNX terminal is currently executing another command, e.g. zero setting, or timeout as stability was not reached).

4. TI - TARE IMMEDIATELY

Command: TI—Tare immediately, i.e. store the current weight value, which can be stable or non-stable (dynamic), as tare weight value.

Response:

- T I _ S _ WeightValue _ Unit—Taring performed, stable tare value. Taring range complied with. The new tare value corresponds to the weight change on the scale since the last zero setting.
- T I _ D _ WeightValue _ Unit—Taring performed, non-stable (dynamic) tare value. Taring range complied with.
- T I _ I—Taring not performed (the LYNX terminal is currently executing another command, e.g. zero setting.)
- T I _ L—The command is not executable.
- T I _ + —Upper limit of taring range exceeded.
- T I _ - —Lower limit of taring range exceeded.

Example

Command: TI—Tare.

Response: T I _ D _ _ _ _ _117.57 _ g—The tare memory holds a non-stable (dynamic) weight value.

Comments

- The tare memory will be overwritten by the new tare weight value.
- After a non-stable (dynamic) stored tare weight value, a stable weight value can be determined. However, the absolute value of the stable weight value determined in this manner is not accurate.
- The stored tare weight value is sent in the current units.

Appendix 3: Analog Output Option

Analog Output Option Wiring

The Analog Output Option provides output ranges of 4 to 20 mA, 0 to 5 VDC or 0 to 0 VDC, plus a discrete alarm output. This output uses a 16-bit D/A converter for a very precise output. The alarm output is an optically isolated, open collector type with a 30 volt maximum limit. The analog output option can be installed at the factory or in the field in the harsh environment, filling and panel-mount enclosures. The field installation kit (0917-0225) includes detailed instructions for installing the kit. The following diagram illustrates the analog output wiring:

Analog Output J1

6	+5 V	Power Supply
5	Alarm	Alarm Output
4	0-10 V	0-10 V Analog Output
3	0-5 V	0 – 5 V Analog Output
2	GND	Signal Ground
1	4 – 20 mA	4 – 20 mA Analog Output

The recommended wiring for the analog output is 2 conductor, 20 GA available from METTELR TOLEDO After Market (part number 510220190). It is equivalent to Belden #8762. The following table shows the recommended load resistance for the input device and the recommended maximum cable length.

Output	Input Device Resistance	Maximum Cable Length
0 – 5 VDC	100kΩ Minimum	50 feet (15 meters)
0 – 10 VDC	100kΩ Minimum	50 feet (15 meters)
4-20 mA	500kΩ Maximum	1000 feet (300 meters)

Analog Output Option's Functions Under Zero and Over Capacity

How the analog option's output functions under zero and over capacity is determined in part by the selection for the weight field represented – gross or displayed weight. The charts below provide the detail on how the analog output reacts below zero and over capacity during these conditions.

Note that the alarm output is turned "on" only when the display shows **[Under Zero]** or **[Over Capacity]**. The weight at which the display shows these conditions is programmable as the "zero blanking value" and the "full scale capacity" in the setup of the LYNX terminal.

Analog Output Selected for "Gross Weight"

0-5 VDC Output	
Under Zero	When the gross weight drops below zero, the analog signal continues below zero with a negative voltage. When the display blanking point is reached, the analog output immediately switches to approximately –1.2 VDC and the alarm output turns on.
Over Capacity	When the gross weight exceeds capacity, the analog signal continues to increase. When the display blanking point is reached, the analog output immediately switches to approximately 6.2 VDC and the alarm output turns on.

0-10 VDC	
Under Zero	When the gross weight drops below zero, the analog signal continues below zero with a negative voltage. When the display blanking point is reached, the analog output immediately switches to approximately –2.4 VDC and the alarm output turns on.
Over Capacity	When the gross weight exceeds capacity, the analog signal continues to increase. When the display blanking point is reached, the analog output immediately switches to approximately 12.5 VDC and the alarm output turns on.

4-20 mA Output	
Under Zero	When the gross weight drops below zero, the analog signal continues below 4 mA. When the display blanking point is reached the analog output immediately drops to approximately o mA and the alarm output turns on.
Over Capacity	When the gross weight exceeds capacity, the analog signal continues to increase. When the display blanking point is reached, the analog output immediately switches to approximately 24 mA and the alarm output turns on.

Analog Output Selected for "Displayed Weight"

0-5 VDC Output	
Under Zero	When the weight (gross or net) drops below zero, the analog signal begins to increase again. The output reflects the absolute value of the displayed weight. When the display blanking point is reached, the analog output immediately switches to approximately –1.2 VDC and the alarm output turns on.
Over Capacity	When the displayed weight exceeds capacity, the analog signal continues to increase. When the display blanking point is reached, the analog output immediately switches to approximately 6.2 VDC and the alarm output turns on.

0-10 VDC Output	
Under Zero	When the weight (gross or net) drops below zero, the analog signal begins to increase again. The output reflects the absolute value of the displayed weight. When the display blanking point is reached, the analog output immediately switches to approximately –2.4 VDC and the alarm output turns on.
Over Capacity	When the displayed weight exceeds capacity he analog signal continues to increase. When the display blanking point is reached, the analog output immediately switches to approximately 12.5 VDC and the alarm output turns on.

4-20 mA Output	
Under Zero	When the weight (gross or net) drops below zero, the analog signal begins to increase again. The output reflects the absolute value of the displayed weight. When the display blanking point is reached, the analog output immediately drops to approximately 0 mA and the alarm output turns on.
Over Capacity	When the displayed weight exceeds capacity, the analog signal continues to increase. When the display blanking point is reached, the analog output immediately switches to approximately 24 mA and the alarm output turns on.

Appendix 4: Discrete I/O Reference

The LYNX terminal has a discrete I/O port with three programmable inputs and five programmable outputs.

Inputs

Inputs can be programmed as various commands including tare, clear tare, zero scale, print, switch units or blank display.

The inputs are TTL compatible and are capable of handling from 5 to 24 volt DC signals. To initiate one of the inputs, you must ground the input terminal for the desired function. Some input functions are edge triggered and must be held at logic ground level for at least 100 ms. Other input functions are level triggered and are active as long as the input is held at logic ground. The following table defines the available functions:

FUNCTION NAME	TYPE	DESCRIPTION OF ACTION
Tare	Edge	Tares the Scale to a Net Mode
Clear	Edge	Clears the Scale to a Gross Mode
Zero	Edge	Zeros the Scale
Print	Edge	Initiates a Print
Switch Units	Edge	Switches the Scale Weight Units
Blank Display	Level	Blanks the Weight Display
Dynamic	Edge	Initiates Dynamic Weighing
Inhibit Keypad	Level	Inhibits Use of the LYNX Keypad
X10 Weight	Level	Causes the Weight to be Display X10 Precision
Accumulator Total	Edge	Recall the Accumulator Total to the Display
None	N/A	Input Not Assigned
OK to Feed	Level	Enables Feed In Prompt Mode
OK to Discharge	Level	Enables Discharge in Prompt Mode
Advance Prompt	Edge	Advances to Next Prompt or From the Normal Weighing mode to the first prompt

It is not necessary to supply any voltage to the inputs when not triggering. Internally, a 5-volt power supply with a pull-up resistor keeps the inputs in the "OFF" condition.

Because the signals are low level, the maximum recommended distance between the terminal and the device triggering the input (a switch or relay contact) is 10 feet or less.

The LYNX terminal has an internal diagnostic test to verify that each input is functional. See the section entitled Diagnostics and Maintenance Program Block in Chapter 3 of this manual for more information.

The following diagram shows a typical wiring scheme.

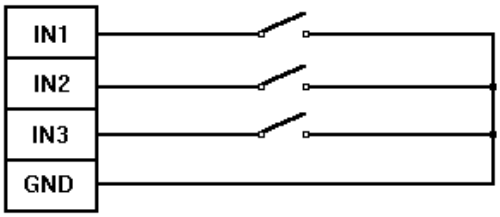


Figure 5-3 Standard Input Wiring

Outputs

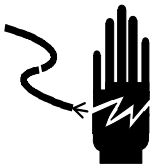
Outputs can be programmed for various indications including setpoints, gross/net mode, center of zero, scale in motion, over-capacity, or under zero.

The outputs are TTL compatible, current-sinking components which can handle from 5 to 24 volt DC signals at a maximum of 35 mA current. A solid-state relay or OPTO 22 is typically connected to buffer the LYNX terminal outputs to a 120 or 220 volt AC signal. The following output functions are available:

FUNCTION NAME	DESCRIPTION
Setpoint	Single Speed Coincidence Setpoint
Net	Scale in Net Mode Indication
Zero	Scale at Center of Zero
Motion	Scale in Motion
Over Capacity	Scale Over Capacity
Under Zero	Scale Negative
None	Output Not Assigned

An output terminal supplies a 5-volt DC supply for reference to the setpoint outputs. Because the supply is rated at 115 mA of DC current, it is important to make sure that the total current draw from the devices you are using (relays or optos) does not exceed this limit. If the calculated current draw exceeds 115 mA, an external power supply is required. External power supplies are available from the METTLER TOLEDO or through your local authorized METTLER TOLEDO representative.

The setpoint outputs are negative true and "ON" when the scale weight is below the setpoint coincidence value. The setpoints operate on the absolute value of the scale weight so they can be used for both weigh-in and weigh-out processes. The source for the setpoint weight can be gross weight, displayed weight, or net weight. If net weight is selected, the output does not "turn on" until tare as been taken.



WARNING!

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

WARNING!

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

The LYNX terminal has an internal diagnostic test to verify that each output is functional. See the section entitled Diagnostics and Maintenance Program Block in Chapter 3 of this manual for more information.

The W2 jumper must be installed between pins 1 and 2 for +5 VDC power for Opto 22 blocks.

The following diagram shows a typical wiring scheme.

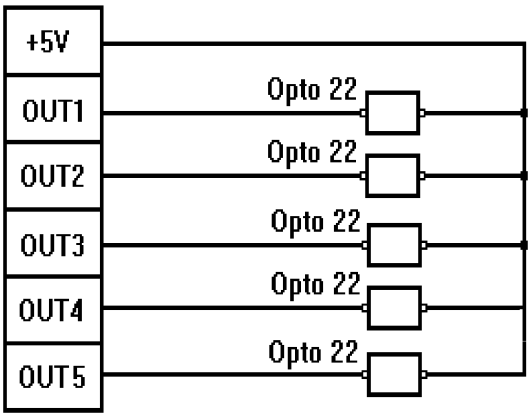


Figure 5-4 Standard Output Wiring

Automatic Filling System Control

The LYNX terminal may be used to control an automatic, single material filling system. Filling sequence logic is implemented within a LYNX prompt list by programming the required sequence as a list of commands in the prompt list. The LYNX terminal has the following features for filling:

- Single or Two-Speed Material Feeder Control
- Single-Speed Discharge Control
- Preact for Material In-Flight Compensation
- Material In-Tolerance Output
- Weigh-In or Weigh-Out Operation
- Net or Gross Weight Setpoints
- OK to Feed Input (Discharge Gate Closed)
- OK to Discharge Input (Downstream Ready)
- Remote Start/Continue Input (Advance Prompt Input)

Filling System Configuration

Configuration of the LYNX terminal for filling begins with an understanding of the material handling system that will be controlled. Following are several of the typical system configurations:

- **Single-Speed Feed, No Discharge** – the container to be filled is placed on the scale then filled automatically to a net or gross amount.

- **Two-Speed Feed, No Discharge** – the container to be filled is placed on the scale then filled automatically to a net amount where two speed feed offers an improvement in filling accuracy.
- **Single-Speed Feed, Discharge** – the scale is a tank or hopper that is filled to a net amount then discharged to zero to deliver the material to a downstream process.
- **Two-Speed Feed, Discharge** – the scale is a tank or hopper that is filled to a net amount then discharged to zero to deliver the material to a downstream process where two speed feed offers an improvement in filling accuracy.
- **Automatic Tank or Hopper Refill Control** – the scale is a tank or hopper that must be refilled to a gross amount once its level drops below a refill setpoint.

Input Assignments

The LYNX terminal has three standard inputs that are programmable, but when feeder control or discharge control is used, there are some mandatory assignments. These assignments are made in setup in the Discrete Program Block. Refer to chapter 2 for details on how to make these assignments. These are the mandatory assignments:

- **OK to Feed** - If feeder control is used, one input must be assigned to OK to Feed. The OK to Feed input is typically wired to the discharge valve closed or discharge gate closed limit switch or a sensor that indicates that a container is in place. The input must be wired in series with a normally closed emergency stop switch.
- **OK to Discharge** - If discharge control is used, one input must be assigned to OK to Discharge. The OK to Discharge input is typically wired to downstream equipment to indicate that material handing equipment is operational to accept the material. The input must be wired in series with a normally closed emergency stop switch.
- **Advance Prompt** – In many applications, it is desirable to use an industrial operator in place of the LYNX terminal's keypad for initiating a feed or discharge sequence. This can be accomplished by assigning one of the inputs to Advance Prompt. This causes the LYNX terminal to monitor the input and jump to the first prompt from the normal weighing mode or to advance to the next prompt step if the input turns on. Typically, this would be used to advance from an A/N prompt, with a length of zero, that tells the operator what is expected (such as PUSH START) followed by the feed or discharge prompt step.

Unused inputs may be assigned to any of the standard input functions.

Input Wiring

The LYNX filling controller model (LTFA) provides pre-configured and pre-wired push buttons and I/O for a filling application.

The inputs on the LYNX terminal controller board are low level so the wiring to them must not extend beyond ten feet. If the wiring must extend further, you must use high level input buffer relays. Solid-state relays, such as those manufactured by OPTO22, are commonly used. If all of the relays on the LYNX High Level Setpoint Output Option are not used for outputs, you can insert input modules and wire these relays to the LYNX terminal PAR1 inputs. Otherwise, an external high-level relay board is required. Some typical wiring diagrams for using the LYNX terminal for a filling system follow later in this appendix.

Output Assignments

The LYNX terminal has five standard outputs that are programmable but when feeder control or discharge control is used, there are some mandatory assignments. These assignments are made in setup in the Discrete Program Block. These are the mandatory assignments:

Setpoint Configuration – Use the following table to determine the appropriate configuration of the outputs:

System Configuration		Parameter Settings	
Feeder	**Discharge**	**#-2 Speed Setpoints**	**Use Setpoint 2**
1 Speed	None	0	N/A
1 Speed	1 Speed	0	N/A
2 Speed	None	1	No
2 Speed	1 Speed	1	Yes
2 Speed	2 Speed	2	N/A

Feed - If feeder control is used, output one must be assigned to setpoint 1 (SP1) and must be configured as "Feed." Setpoint 1 will act as the material feed cutoff and may have a dribble and preact associated with it.

Use a LYNX filling controller if self-contained controller is preferred.

Discharge - If discharge control is used, output two must be assigned to setpoint 2 (SP2) and must be configured as "Dsch." Setpoint 2 will act as the discharge cutoff. It may also have a dribble and preact associated with it.

Unused outputs may be assigned to any of the standard output functions.

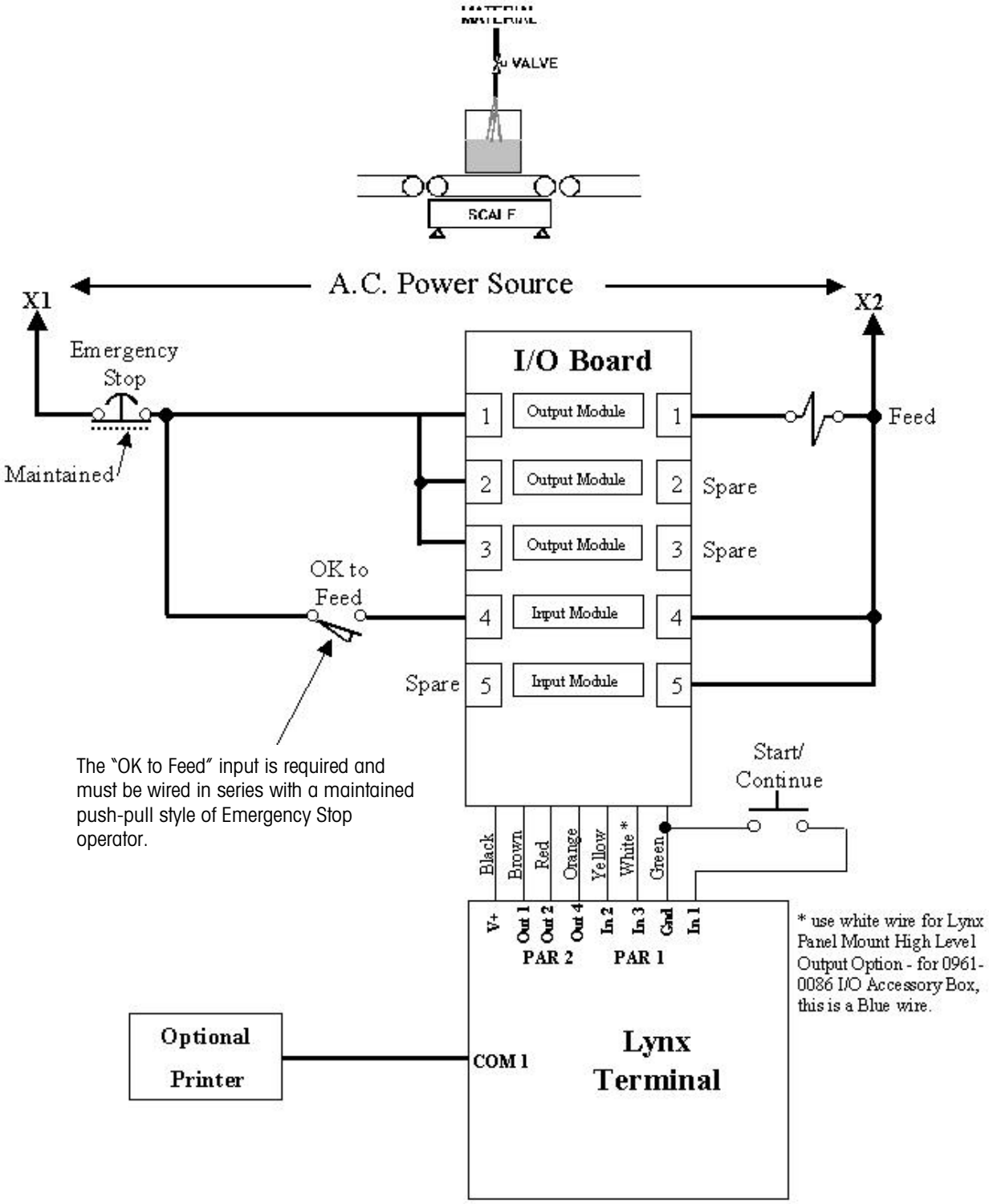
Output Wiring

The outputs on the controller board are low level so they are not appropriate to drive external devices, such as motor starters or solenoids. It is necessary to buffer these low level signals to a higher level. The LYNX High Level Setpoint Output Option is ideal for buffering the outputs to a high level. Otherwise, an external high level relay board is required such as the solid-state relay products manufactured by OPTO 22. Some typical wiring diagrams for using a LYNX terminal for a filling system follow.

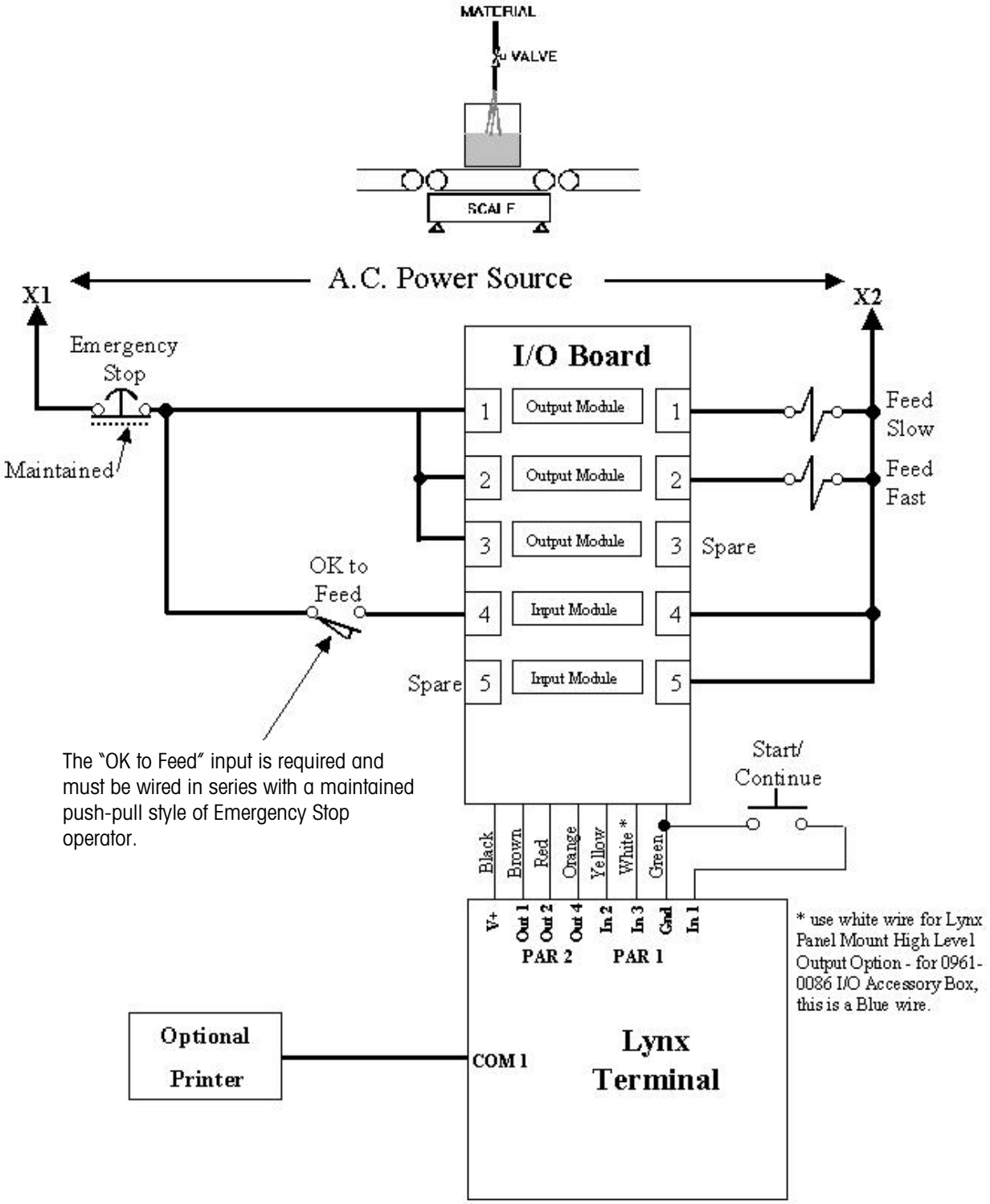
Typical LYNX Filling System Wiring Diagrams

The hardware and software of the LYNX terminal provide for flexibility in wiring and configuring a LYNX terminal for filling system control. The following diagrams illustrate some common wiring diagrams for various filling system application configurations of the LYNX terminal. These diagrams are applicable to both the panel mount and harsh environment models of the LYNX terminal. The I/O Board shown is the LYNX High Level Output Option. The 0961-0086 I/O Accessory Box could also be used.

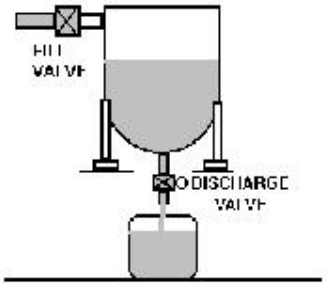
Lynx Filling System - Typical Wiring Diagram
Single Speed Feed, No Discharge

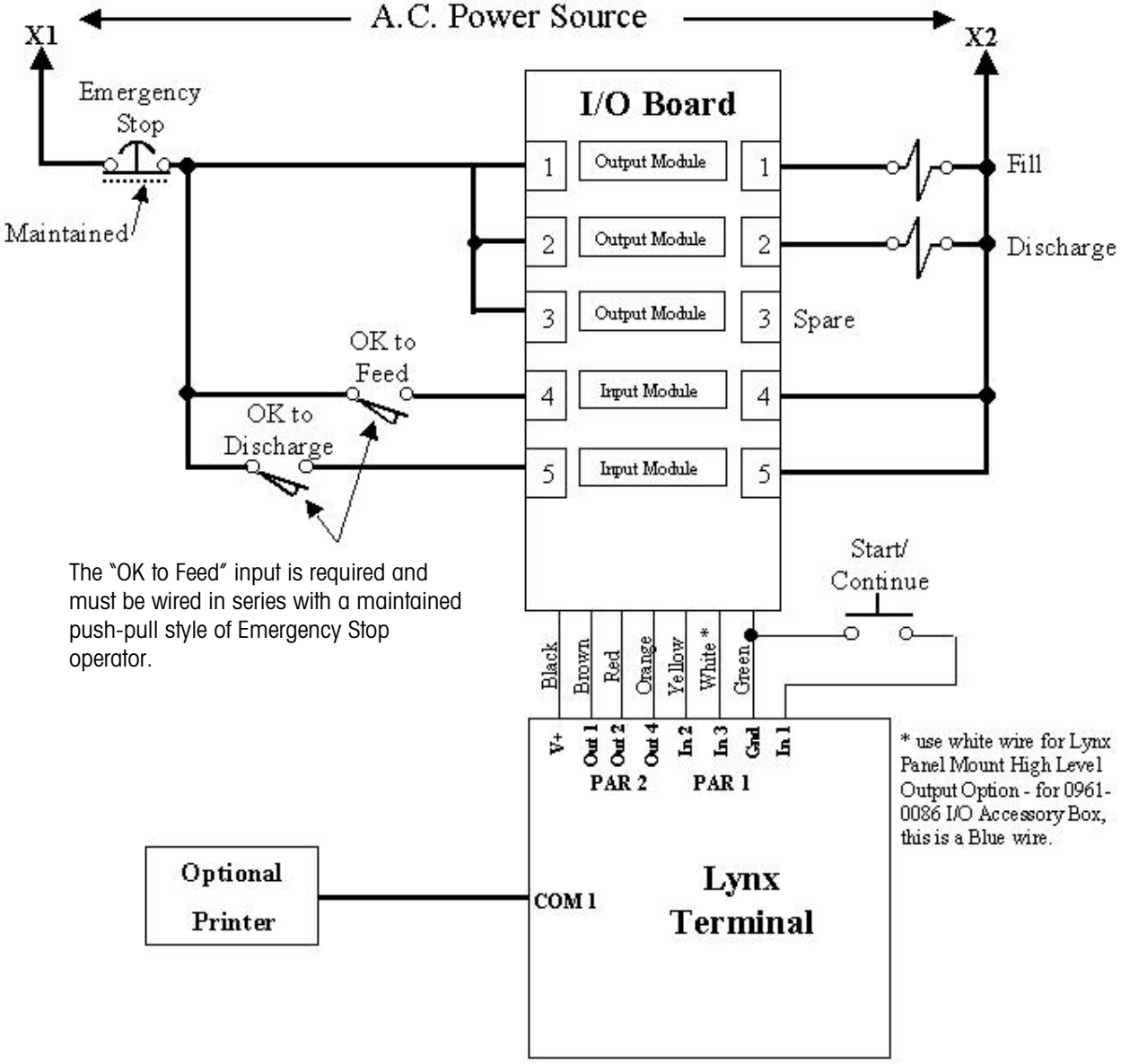


Lynx Filling System - Typical Wiring Diagram
Two Speed Feed, No Discharge



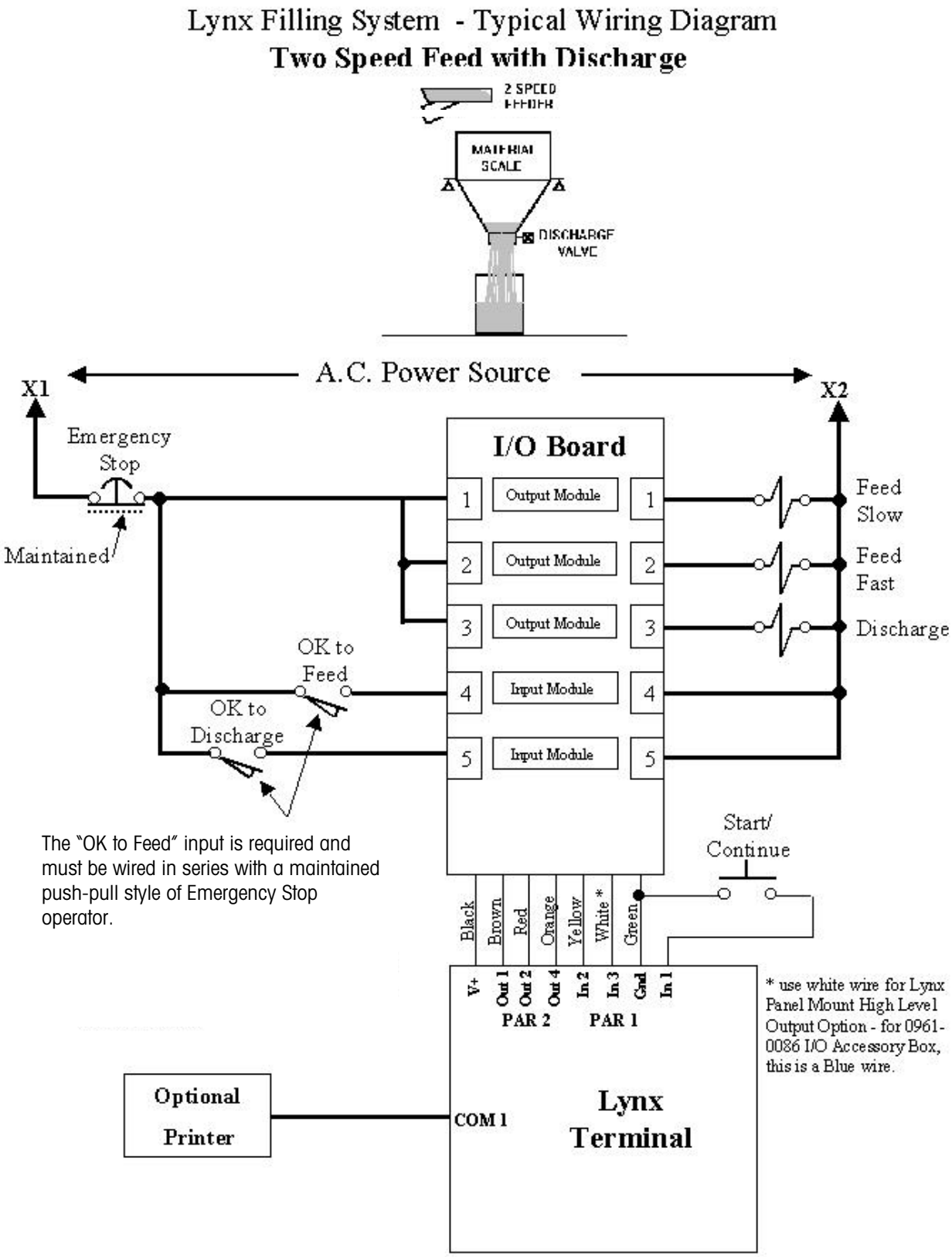
Lynx Filling System - Typical Wiring Diagram
Single Speed Feed with Discharge





The "OK to Feed" input is required and must be wired in series with a maintained push-pull style of Emergency Stop operator.

* use white wire for Lynx Panel Mount High Level Output Option - for 0961-0086 I/O Accessory Box, this is a Blue wire.


Lynx Filling System - Typical Wiring Diagram
Two Speed Feed with Discharge
2 SPEED FEEDER
MATERIAL SCALE
DISCHARGE VALVE
A.C. Power Source
X1
X2
Emergency Stop
Maintained
I/O Board
1 Output Module 1
2 Output Module 2
3 Output Module 3
4 Input Module 4
5 Input Module 5
Feed Slow
Feed Fast
Discharge
OK to Feed
OK to Discharge
Start/ Continue
The "OK to Feed" input is required and must be wired in series with a maintained push-pull style of Emergency Stop operator.
Black
Brown
Red
Orange
Yellow
White *
Green
V+
Out 1
Out 2
Out 4
In 2
In 3
Gnd
In 1
PAR 2
PAR 1
* use white wire for Lynx Panel Mount High Level Output Option - for 0961-0086 I/O Accessory Box, this is a Blue wire.
Optional Printer
COM 1
Lynx Terminal

Appendix 5: Loading LYNX Software

The LYNX terminal is designed to allow easy software installation and upgrade. Using METTLER TOLEDO's "Flashpro" installation program from a personal computer, you can load the latest version of LYNX software and burn it into the terminal's flash memory. Upgrade software is available from METTLER TOLEDO as enhancements are made.

Flash the Software

Do not perform the file download from within the Windows environment. Exit Windows and perform the following steps from the DOS prompt.

The first step is to extract the new LYNX terminal files from the floppy disk onto the personal computer. To extract the files:

1. Create a directory and go to the directory on the PC where the new files will be stored. Use the DOS MD command if you need to create a new directory to hold the LYNX files, and the CD command to change directories.
2. Insert the diskette with the new software files into the floppy disk drive A or B. The files on this diskette are compressed into a single file named LYNX_X.EXE where "X" represents the revision.
3. At the DOS prompt, type **A:LYNX_X** or **B:LYNX_X** depending on where you inserted the diskette, then press **ENTER**.

   The compressed files will automatically extract themselves from LYNX_X.EXE into the designated directory on the computer. The extracted files require approximately 1.3 MEG of storage space on the PC's hard drive.
4. Edit the FP.BAT file using the DOS text editor or another and verify the new software name and serial port are correct. The FP.BAT file resembles the example below. Edit only the -t and -com elements.

Example:

flashpro -tD145828R -b115.2 -com1 -pe -d7 -s1

where:

-t is followed by the file name to be flashed such as D145828R.

-b is the baud rate (in kbaud). The software is transferred at 115.2 kbaud. DO NOT CHANGE THIS PARAMETER.

-com is the serial COM port on the personal computer that will be used to transfer the new software to the LYNX terminal.

-p is the parity. The parity is set to even. DO NOT CHANGE THIS PARAMETER.

-d is the number of data bits used. Data bits are set to seven. DO NOT CHANGE THIS PARAMETER.

-s is the number of stop bits used. Stop bits are set to one. DO NOT CHANGE THIS PARAMETER.

You are now ready to use the flashpro batch file (FP.BAT) to load the software into the LYNX terminal's flash memory.

If another device is connected to COM1, be sure to disconnect all wires prior to connecting the RS-232 cable.

To load LYNX software:

1. Disconnect power to the LYNX terminal.
2. Open the harsh environment (desk/wall) model, or remove the Controller PCB from the panel mount model. Turn Switch 1-3 ON.
3. Connect a bi-directional RS-232 cable from a personal computer to the LYNX terminal's COM1 serial port. Wire the cable as follows:

LYNX COM1	9-pin COM	25-pin COM
TxD	2	3
RxD	3	2
Gnd	5	7

4. Carefully reinstall the front panel of the desk/wall unit or reinstall the Controller PCB for the panel mount model.
5. Apply power to the LYNX terminal and wait until the unit has completed its power-up sequence and displays the **Download** prompt.
6. With the cursor in the directory containing the LYNX terminal program files, type FP at the DOS prompt, and press **ENTER** to execute the command.

   The computer monitor flashes the message **Wake Up** three times, then **Acknowledge** before a framed box scrolling a string of A's appears on the computer monitor indicating the installation has begun.

   The box will continue to scroll A's until the installation procedure is complete. This process will continue with brief pauses occasionally for about 5 to 7 minutes depending on your computer. If the box with A's does not appear, press **ESCAPE** on the computer and remove power from the LYNX terminal. Repeat steps 4 through 6.

   If the new software was downloaded successfully, the message FILE SUCCESSFULLY TRANSFERRED is displayed in the framed box on the computer monitor. The LYNX terminal then displays **SW1-3 ON?**

   During the power-up sequence, the storage locations for setup parameters and memory fields are checked. If any have been moved or added in the new version of software, the LYNX terminal responds with the following error messages:

   BRAM Bad
   EEPROM Bad

7. Press **ENTER** to acknowledge the messages. In this case, the LYNX terminal automatically resets the configuration data to factory defaults.
8. Disconnect power from the LYNX terminal, then open the desk/wall unit or remove the Controller PCB from the panel mount model. Turn Switch 1-3 OFF, then carefully close the desk/wall unit or replace the Controller PCB for the panel mount model.

Appendix 6: Geo Values

The values for gravity adjustment **[Geo Val?XX]** are a series of numbers in the range 0 to 31, as shown in the Table.

Geo Value Table	**Height above sea level in meters**										
	0	325	650	975	1300	1625	1950	2275	2600	2925	3250
North or south latitude	**Height above sea level in feet**										
in degrees and minutes	0	1060	2130	3200	4260	5330	6400	7460	8530	9600	10660
0° 0′ - 5° 46′	5	4	4	3	3	2	2	1	1	0	0
5° 46′ - 9° 52′	5	5	4	4	3	3	2	2	1	1	0
9° 52′ - 12° 44′	6	5	5	4	4	3	3	2	2	1	1
12° 44′ - 15° 6′	6	6	5	5	4	4	3	3	2	2	1
15° 6′ - 17° 10′	7	6	6	5	5	4	4	3	3	2	2
17° 10′ - 19° 2′	7	7	6	6	5	5	4	4	3	3	2
19° 2′ - 20° 45′	8	7	7	6	6	5	5	4	4	3	3
20° 45′ - 22° 22′	8	8	7	7	6	6	5	5	4	4	3
22° 22′ - 23° 54′	9	8	8	7	7	6	6	5	5	4	4
23° 54′ - 25° 21′	9	9	8	8	7	7	6	6	5	5	4
25° 21′ - 26° 45′	10	9	9	8	8	7	7	6	6	5	5
26° 45′ - 28° 6′	10	10	9	9	8	8	7	7	6	6	5
28° 6′ - 29° 25′	11	10	10	9	9	8	8	7	7	6	6
29° 25′ - 30° 41′	11	11	10	10	9	9	8	8	7	7	6
30° 41′ - 31° 56′	12	11	11	10	10	9	9	8	8	7	7
31° 56′ - 33° 9′	12	12	11	11	10	10	9	9	8	8	7
33° 9′ - 34° 21′	13	12	12	11	11	10	10	9	9	8	8
34° 21′ - 35° 31′	13	13	12	12	11	11	10	10	9	9	8
35° 31′ - 36° 41′	14	13	13	12	12	11	11	10	10	9	9
36° 41′ - 37° 50′	14	14	13	13	12	12	11	11	10	10	9
37° 50′ - 38° 58′	15	14	14	13	13	12	12	11	11	10	10
38° 58′ - 40° 5′	15	15	14	14	13	13	12	12	11	11	10
40° 5′ - 41° 12′	16	15	15	14	14	13	13	12	12	11	11
41° 12′ - 42° 19′	16	16	15	15	14	14	13	13	12	12	11
42° 19′ - 43° 26′	17	16	16	15	15	14	14	13	13	12	12
43° 26′ - 44° 32′	17	17	16	16	15	15	14	14	13	13	12
44° 32′ - 45° 38′	18	17	17	16	16	15	15	14	14	13	13
45° 38′ - 46° 45′	18	18	17	17	16	16	15	15	14	14	13
46° 45′ - 47° 51′	19	18	18	17	17	16	16	15	15	14	14
47° 51′ - 48° 58′	19	19	18	18	17	17	16	16	15	15	14
48° 58′ - 50° 6′	20	19	19	18	18	17	17	16	16	15	15
50° 6′ - 51° 13′	20	20	19	19	18	18	17	17	16	16	15
51° 13′ - 52° 22′	21	20	20	19	19	18	18	17	17	16	16
52° 22′ - 53° 31′	21	21	20	20	19	19	18	18	17	17	16
53° 31′ - 54° 41′	22	21	21	20	20	19	19	18	18	17	17
54° 41′ - 55° 52′	22	22	21	21	20	20	19	19	18	18	17
55° 52′ - 57° 4′	23	22	22	21	21	20	20	19	19	18	18
57° 4′ - 58° 17′	23	23	22	22	21	21	20	20	19	19	18
58° 17′ - 59° 32′	24	23	23	22	22	21	21	20	20	19	19
59° 32′ - 60° 49′	24	24	23	23	22	22	21	21	20	20	19
60° 49′ - 62° 9′	25	24	24	23	23	22	22	21	21	20	20
62° 9′ - 63° 30′	25	25	24	24	23	23	22	22	21	21	20
63° 30′ - 64° 55′	26	25	25	24	24	23	23	22	22	21	21
64° 55′ - 66° 24′	26	26	25	25	24	24	23	23	22	22	21
66° 24′ - 67° 57′	27	26	26	25	25	24	24	23	23	22	22
67° 57′ - 69° 35′	27	27	26	26	25	25	24	24	23	23	22
69° 35′ - 71° 21′	28	27	27	26	26	25	25	24	24	23	23
71° 21′ - 73° 16′	28	28	27	27	26	26	25	25	24	24	23
73° 16′ - 75° 24′	29	28	28	27	27	26	26	25	25	24	24
75° 24′ - 77° 52′	29	29	28	28	27	27	26	26	25	25	24
77° 52′ - 80° 56′	30	29	29	28	28	27	27	26	26	25	25
80° 56′ - 85° 45′	30	30	29	29	28	28	27	27	26	26	25
85° 45′ - 90° 0′	31	30	30	29	29	28	28	27	27	26	26

Appendix 7: Market Destination

Use the following table to determine the finish code for a particular market destination.

FINISH CODE	DESTINATION MARKET	PREFERRED LANGUAGE	ALTERNATE LANGUAGE	VOLTAGE & FREQUENCY	PWR CORD CONFIG	WEIGHT UNIT	RETAIL CURRENCY	CURRENCY ABBREV
000	UNITED STATES	ENGLISH	ENGLISH	120/60	A	LB	DOLLAR	$
001	UNITED STATES	ENGLISH	ENGLISH	220/60	K	LB	DOLLAR	$
002	DENMARK	DANISH	SWED/NORW	230/50	B	KG	DAN KRONE	Kr
003	UK	ENGLISH	ENGLISH	240/50	C	KG	POUND ST	£
004	ITALY	ITALIAN	ENGLISH	230/50	B	KG	LIRE (LIT)	L
005	SWITZERLAND	GERMAN	ENGLISH	230/50	B	KG	SWISS FRC	Fr
006	SWITZERLAND	ITALIAN	ENGLISH	230/50	B	KG	SWISS FRC	Fr
007	SWITZERLAND	FRENCH	ENGLISH	230/50	B	KG	SWISS FRC	Fr
008	AMER. SAMOA	ENGLISH	ENGLISH	120/60	A	LB	DOLLAR	$
009	ARGENTINA	SPANISH	ENGLISH	220/50	D	KG	PESO	$
010	AUSTRALIA	ENGLISH	ENGLISH	240/50	D	KG	AUS DOLLAR	$
011	AUSTRIA	GERMAN	—	230/50	B	KG	SCHILLING	S
012	BARBADOS	ENGLISH	ENGLISH	120/50	A	KG	B ' DOS $	$
013	BELGIUM	FLEMISH	DUTCH	230/50	B	KG	BEL.FRANC	Fr
014	BELGIUM	FRENCH	ENGLISH	230/50	B	KG	BEL. FRANC	fr
015	BERMUDA	ENGLISH	ENGLISH	115/60	A	LB	DOLLAR	$
016	BERMUDA	ENGLISH	ENGLISH	115/60	A	KG	DOLLAR	$
017	BRAZIL	PORTUG.	ENGLISH	120/60	A	KG	REAL $	R$
018	BRAZIL	PORTUG.	ENGLISH	220/60	A	KG	REAL $	R$
019	CANADA	ENGLISH	ENGLISH	120/60	A	LB	CAN DOLLAR	$
020	CANADA	FRENCH	ENGLISH	120/60	A	KG	CAN DOLLAR	$
021	CZECH REP.	CZECH	ENGLISH	230/50	B	KG	KORUNA	Kcs **
022	CHILE	SPANISH	ENGLISH	220/50	E	KG	CHILE PESO	$
023	CHINA	CHINESE	ENGLISH	220/50	F	KG	RENMIMBI	RMB
024	COLOMBIA	SPANISH	ENGLISH	120/60	A	KG	PESO	$
025	COSTA RICA	SPANISH	ENGLISH	120/60	A	KG	COLON	›
026	CURACAO	DUTCH	ENGLISH	120/50	A	KG	GUILDER	ANG
027	DOM. REPUBLIC	SPANISH	ENGLISH	120/60	A	LB	RD DOLLAR	RD$
028	DOM. REPUBLIC	SPANISH	ENGLISH	120/60	A	KG	RD DOLLAR	RD$
029	ECUADOR	SPANISH	ENGLISH	120/60	A	KG	SUCRE	SI.
030	EGYPT	ARABIC	ENGLISH	220/50	F	KG	POUNDS	£
031	EL SALVADOR	SPANISH	ENGLISH	120/60	A	LB	COLON	›
032	EL SALVADOR	SPANISH	ENGLISH	120/60	A	KG	COLON	›
033	FINLAND	FINNISH	ENGLISH	230/50	B	KG	MARRKA	MK
034	FRANCE	FRENCH	—	230/50	B	KG	FR. FRANC	F
035	GERMANY	GERMAN	—	230/50	B	KG	D. MARKS	DM
036	GREECE	GREEK	ENGLISH	230/50	B	KG	DRACHMA	Dr
037	GUATEMALA	SPANISH	ENGLISH	120/60	A	SPAN. LB	QUETZALES	Q

FINISH CODE	DESTINATION MARKET	PREFERRED LANGUAGE	ALTERNATE LANGUAGE	VOLTAGE & FREQUENCY	PWR CORD CONFIG	WEIGHT UNIT	RETAIL CURRENCY	CURRENCY ABBREV
038	GUATEMALA	SPANISH	ENGLISH	120/60	A	KG	QUETZALES	Q
039	HONDURAS	SPANISH	ENGLISH	120/60	A	LB	LEMPIRAS	L
040	HONDURAS	SPANISH	ENGLISH	120/60	A	KG	LEMPIRAS	L
041	HONG KONG	CHINESE	ENGLISH*	200/50	C	KG	HK DOLLAR	$
042	HUNGARY	ENGLISH	—	230/50	B	KG	FORINT	F
043	ICELAND	ENGLISH	ENGLISH	230/50	B	KG	KRONA	Kr.
044	INDIA	—	ENGLISH*	240/50	G	KG	RUPEE	Re
045	INDONESIA	—	ENGLISH*	220/50	F	KG	RUPIAH	Rp
046	IRELAND	ENGLISH	ENGLISH	230/50	C	KG	PUNT	£
047	ISRAEL	HEBREW	ENGLISH	230/50	H	KG	SHEKEL	NIS
048	JAMAICA	ENGLISH	ENGLISH	110/50	A	LB	JAM DOLLAR	$
049	JAMAICA	ENGLISH	ENGLISH	110/50	A	KG	JAM DOLLAR	$
050	JAPAN	JAPANESE	—	100/50,60	I	KG	YEN	¥
051	JORDAN	ARABIC	ENGLISH*	220/50	C	KG	JD	JD
052	LEBANON	ARABIC	ENGLISH*	110/50	F	KG	L POUND	L£
053	MALAYSIA	MALAY	ENGLISH*	240/50	C	KG	RINGGIT	M$
054	MEXICO	SPANISH	ENGLISH	120/60	A	KG	PESO	N$
055	MOROCCO	ARABIC	—	230/50	B	KG	DIRHAM	***
056	NETHERLANDS	DUTCH	GERMAN	230/50	B	KG	D. GUILDER	G
057	NEW ZEALAND	ENGLISH	ENGLISH	230/50	D	KG	NZ DOLLAR	$
058	NICARAGUA	SPANISH	ENGLISH	120/60	A	KG	NIO	C$
059	NORWAY	NORWEIG	SWED/DAN	230/50	B	KG	KRONE	Kr
060	PAKISTAN	PAKISTANI	ENGLISH*	240/50	G	KG	RUPEE	PRe
061	PANAMA	SPANISH	ENGLISH	120/60	A	KG	DOLLAR	$
062	PARAGUAY	SPANISH	PORTUGUESE	220/50	A	KG	GUARANI	G.
063	PERU	SPANISH	ENGLISH	220/60	A	KG	NUEVOS SOLES	S/.
064	PHILIPPINES	FILIPINO	ENGLISH*	115/60	A	KG	PESO	PP
065	POLAND	POLISH	GERMAN	230/50	B	KG	ZLOTY	Z
066	PORTUGAL	PORTUG.	SPANISH	230/50	B	KG	ESCUDO	$
067	PUERTO RICO	ENGLISH	SPANISH	120/60	A	LB	DOLLAR	$
068	PUERTO RICO	ENGLISH	SPANISH	120/60	A	KG	DOLLAR	$
069	RUSSIA (CIS)	RUSSIAN	ENGLISH	230/50	B	KG	RUBLE	R
070	SAUDI ARABIA	ARABIC	ENGLISH*	127/60	A	KG	SR	SR
071	SINGAPORE	CHINESE	ENGLISH*	230/50	F,C	KG	S DOLLAR	S$
072	SLOVAK REP.	GERMAN	ENGLISH	230/50	B	KG	KORUNA	Kcs **
073	SOUTH AFRICA	ENGLISH	ENGLISH	220/50	G	KG	RAND	R
074	SOUTH KOREA	KOREAN	ENGLISH	110/60	A	KG	WON	W****
075	SPAIN	SPANISH	ENGLISH	230/50	B	KG	PESETAS	Pta
076	SWEDEN	SWEDISH	NORW/DAN	230/50	B	KG	KRONER	Kr
077	TAIWAN	CHINESE	ENGLISH*	110/60	A	KG	NEW TAI DOLLAR	NT$
078	THAILAND	THAI	ENGLISH*	220/50	F	KG	BAHT	B
079	TRINIDAD	ENGLISH	ENGLISH	120/60	A	KG	$	$
080	TURKEY	ARABIC	—	230/50	B	KG	LIRA	£
081	TURKEY	TURKISH	—	230/50	B	KG	LIRA	£

FINISH CODE	DESTINATION MARKET	PREFERRED LANGUAGE	ALTERNATE LANGUAGE	VOLTAGE & FREQUENCY	PWR CORD CONFIG	WEIGHT UNIT	RETAIL CURRENCY	CURRENCY ABBREV
082	URUGUAY	SPANISH	ENGLISH	220/50	D	KG	PESO	$
083	VENEZUELA	SPANISH	ENGLISH	120/60	A	KG	BOLIVARES	Bs.
084	VIRGIN ISLANDS	ENGLISH	ENGLISH	120/60	A	LB	DOLLAR	$
085	VIRGIN ISLANDS	ENGLISH	ENGLISH	120/60	A	KG	DOLLAR	$
086	UK	ENGLISH	ENGLISH	120/50	C	KG	POUND ST	£
90	ROMANIA	ROMANIAN	ENGLISH	220/50	B	KG	LEU	ROL
91	BOLIVIA	SPANISH	ENGLISH	220/50	A	KG	BOLIVIANO	BOB
92	LATIVA	ENGLISH	ENGLISH	230/50	B	KG	LATAS	Lv
93	LITHUANIA	ENGLISH	ENGLISH	230/50	B	KG	LITAS	Lt
94	CROATIA	ENGLISH	ENGLISH	230/50	B	KG	KUNA	kn
999	W/O FINISH	NONE	NONE	NONE	NONE	NONE	NONE	NONE

TABLE NOTES

* - ENGLISH OKAY FOR TECHNICAL DOCUMENTATION

** - Kcs HAS A SMALL "v" ABOVE THE LETTER "c".

*** - CURRENCY ABBREVIATION IS NOT KNOWN - NO RETAIL MARKET.

**** - THE LETTER "W" FOR WON HAS A DOUBLE LINE (=) THROUGH THE MIDDLE.

PREFERRED LANGUAGE - Language that is normally accepted in that region.

ALTERNATE LANGUAGE - Language (Eng, Span, Fren, Germ) that is also acceptable.

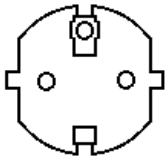
PWR CORD CONFIG - The "one" configuration most accepted in that region. See configurations below.

RETAIL CURRENCY - The full official name of the currency used.

CURRENCY ABBREV - The currency abbreviation that should appear on keys and displays.

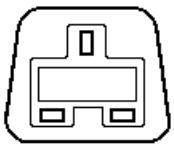
Configuration A

U.S./Canada



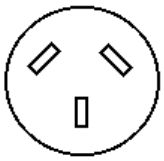
Configuration B

"SCHUKO" Continental Europe (CEE7)



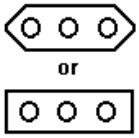
Configuration C

United Kingdom
Fuse is required.



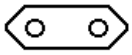
Configuration D

Australia



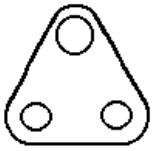
Configuration E

Italy and Chile
Old style Italy. Use SCHUKO (B) for new designs.



Configuration F

Europlug (CEE7/16)
Use for grounded equipment only if separate ground connection is provided.



Configuration G

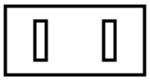
India (Old British)

Configuration H

Israel

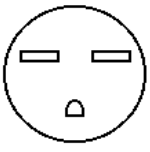
Configuration I

Japan (J1S 8303 spec)



Configuration J

Flat Blade – Undergrounded
Use for grounded equipment only if separate ground connection is provided.

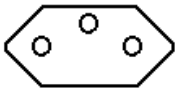


Configuration K

U.S./Canada (220 V)

Configuration L

Old Denmark (Use "N")



Configuration M

Switzerland (Use "B")

Configuration N

Denmark

Appendix 8: LYNX Default Values

The following lists the factory default values for each program block. Use the As Configured column to record your actual setup configuration.

Scale Interface Program Block			
Default	**As Configured**	**Default**	**As Configured**
Market		**Linearity Correction**	
USA		No	
Scale Type		**Shift Adjustment**	
Type - Analog		Zero counts - 74000	
Number of load cells - 4		Mid weight - 100.000	
Cell #1 - Shift Factor - 1.000000		Mid counts - 1040600	
Cell #2 - Shift Factor - 1.000000		High weight - 100.000	
Cell #3 - Shift Factor - 1.000000		High counts - 1040600	
Cell #4 - Shift Factor - 1.000000		**Calibration**	
		No defaults	
Calibration Unit		**Zero Adjustment**	
Pounds (lb)		No defaults	
Capacity		**Span Adjustment**	
100.00		No defaults	
Increment Size		**Geo Value**	
0.01		16	

Application Environment Program Block			
Default	**As Configured**	**Default**	**As Configured**
Character Set		Key Time-Out – 0 seconds	
USA		Select Key Assignment - None	
Time/Date Format		**Zero Operations**	
Time Separator - :		Power-up Zero	
Time Format - None		Positive Range - 0%	
Date Separator - (-)		Negative Range - 0%	
Date Format - None		Pushbutton Zero	
Weight Units		Positive Range - 2%	
Enable Second Units - No		Negative Range - 2%	
Second Display Units - kg		Under Zero Blanking - 5 divisions	
Custom Units Factor - 1.0		Auto Zero Maintenance	
Custom Units Name - ***		Range - 0.5 divisions	
Power-up Operations		AZM Enabled in Net Mode - No	
Power-up Timer - 0 min.		Zero Indication - Gross	
Tare Operations		**Stability Detection**	
Enable Tare - Yes		Stability Range - 1.0 divisions	
Tare Interlock - No		Stability Interval - 0.4 seconds	
Pushbutton Tare – Yes		**Vibration Rejection**	
Keyboard Tare – Yes		Low Pass Filter	
Tare Recall – Yes		Frequency - 2.0 Hz	
Gross Recall - No		Poles - 8	
Auto Tare - No		Notch Filter Frequency - 30.0 Hz	
Tare Threshold - 5		Noise Filter - No	
Reset Threshold - 0.5			
Check Motion - No			
Auto Clear Tare - No			
After Print - No			
Threshold - 0.5			
Net Sign Correction - No			

Serial I/O Program Block			
Default	**As Configured**	**Default**	**As Configured**
Configure Port		Output Mode - None	
COM1		Input Mode - None	
Port Parameters		COM3	
Baud Rate - 9600		Port Parameters	
Data Bits - 7		Baud Rate - 9600	
Stop Bits - 1		Data Bits - 7	
Parity - Even		Stop Bits - 2	
Flow Control - None		Parity - Even	
Checksum - No		Flow Control - None	
Output Mode - Demand		Checksum - No	
Decimal Point/Comma - DP		Output Mode - None	
Format - /ptp01		Input Mode - None	
Input Mode - Command		**Printer Control**	
COM2		Minimum Print - No	
Port Parameters		Print Interlock - No	
Baud Rate - 9600		Auto Print - No	
Data Bits - 7		Print Threshold - 5	
Stop Bits - 2		Reset Threshold - 0.5	
Parity - Even		Check Motion - No	
Flow Control - None			
Checksum - No			

Configure Template Program Block	
Default	**As Configured**
Defaults given in Appendix 1	

Discrete I/O Program Block			
Default	**As Configured**	**Default**	**As Configured**
Discrete Inputs		**Discrete Outputs**	
Input Point 1 - Tare		Output Points 1 through 5 - None	
Input Point 2 - Clear			
Input Point 3 - Print			

Memory Program Block			
Default	**As Configured**	**Default**	**As Configured**
Configure Literals		Prompt #2	
Literal #1 - The LYNX terminal		Type - Numeric	
Literal #2 - From METTLER TOLEDO		Length - 8	
Literals #3-10 - Blank		Prompt - PART NO?	
Literal #11 - GROSS		CLR Data - Yes	
Literal #12 - TARE		Prompt #3	
Literal #13 - NET		Type - Numeric	
Literal #14 - TIME		Length - 8	
Literal #15 - DATE		Prompt - LOCATION?	
Literal #16 - CNV. FACTOR		CLR Data - Yes	
Literal #17 - NUMBER		Prompts #4 through 10 - Blank	
Literal #18 - WEIGHT		**Configure CN**	
Literal #19 - SUBTOTAL		Enable CN - Yes	
Literal #20 - TOTAL		Start At - 0	
Configure Prompts		Enable Reset - Yes	
Prompt Steps - 0		Enable Preset - Yes	
Prompt #1			
Type - Numeric			
Length - 8			
Prompt - OPERATOR?			
CLR Data - Yes			

Operational Program Block			
Default	**As Configured**	**Default**	**As Configured**
Options		Auto Assign Quick ID - Yes	
Analog Output		Inbound Auto Print - No	
Data Source - Displayed Wt.		Outbound Auto Print - Yes	
Zero Weight 0.00		Prompt for Description - None	
Full Scale Weight - 100.00		Execute Prompt List - None	
BCD Output		Report Configuration	
Data Source - Displayed Wt.		Print ID - Yes	
Accumulation		Print Record ID - Yes	
Source - None		Print Description - No	
Auto Clear Total - No		Print Tare - Yes	
Enable Subtotal - Yes		Print Accumulator - Yes	
Auto Clear Subtotal - No		Print Transaction Number - Yes	
Convert Weight Units - Yes		**Passwords**	
Report Configuration		Passwords 1234	
Print Literal #9 - Yes		Protect Clear Totals - No	
Print Literal #10 - Yes		Protect Clear Subtotals - No	
Print Time - Yes		Protect Permanent Tares - No	
Print Date - Yes		Protect All Ids - No	
Print CN - Yes		Protect Single Ids - No	
Print Subtotal - Yes		Protect Open Ids - No	
ID/Tare Accumulation		Protect ID Totals/Subtotals - No	
Enable ID/Tare - No		Protect Setpoint Entry - No	
Manual Entry - No		**Dynamic Weighing**	
Auto Clear - No		Enable Dynamic - No	
Trigger - No		Time Interval - 5.0 seconds	
# of Transactions - No		Auto Print - No	

Diagnostics and Maintenance Program Block			
Default	**As Configured**	**Default**	**As Configured**
Memory Test - No defaults		**Serial Test - No default**	
Display Test - No defaults		**Discrete I/O Test - No default**	
Keyboard Test - No defaults		**Print Setup - No defaults**	
Scale Test - No defaults			

NOTES

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