# LynxBatch®

# Industrial Controller
## Technical Manual

## Revision D Software

Click on the blue box to go
to the Table of Contents.

C14894000A
3/99

# Declaration of conformity
## Konformitätserklärung
## Déclaration de conformité
## Declaración de Conformidad
## Verklaring de overeenstemming
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USA

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Model/Type: LynxBatch

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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 Emissions / Funkstörungen
EN50081-1 Immunity
73/23/EU Low Voltage / Niederspannung / basse tension
EN61010-1 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
November, 1996

according to EN45014

## FCC NOTICE

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

## 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.

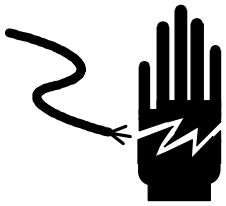
METTLER TOLEDO RESERVES THE RIGHT TO MAKE REFINEMENTS OR CHANGES WITHOUT NOTICE.



This manual describes the operation and functionality of the LynxBatch controller with Revision D software. The software number is displayed during the power-up sequence.

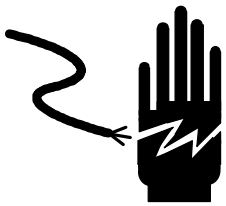
## PRECAUTIONS

- **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.

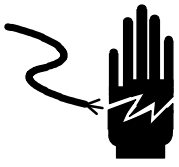


**WARNING**

ONLY PERMIT QUALIFIED PERSONNEL TO PROGRAM METTLER TOLEDO EQUIPMENT. EXERCISE CARE WHEN CREATING PROGRAMS OR MAKIGN PROGRAM CHAGNES WHEN OUTPUTS ARE CONNECTED TO EXTERNAL EQUIPMENT. FAILING TO OBSERVE THESE PRECAUTIONS CAN RESULT IN BODILY HARM AND/OR PROPERTY DAMAGE.

**CAUTION**

OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.



**WARNING**

REMOVE POWER FROM THE UNIT AND WAIT A MINIMUM OF 30 SECONDS BEFORE CONNECTING OR DISCONNECTING ANY CABLES FROM PCBs OR LOAD CELLS AS DAMAGE MAY RESULT.

## ⚠ WARNING!

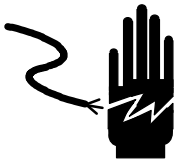
THE LYNXBATCH CONTROLLER IS NOT INTRINSICALLY SAFE! DO NOT USE IN AREAS CLASSIFIED AS HAZARDOUS BY THE NATIONAL ELECTRIC CODE (NEC) BECAUSE OF COMBUSTIBLE OR EXPLOSIVE ATMOSPHERES.

## ⚠ CAUTION

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

## ⚠ CAUTION

DO NOT ATTACH AN ANALOG LOAD CELL TO THE DIGITOL SCALE INPUT ON THE CONTROLLER PCB COM3. DO NOT ATTACH A DIGITOL SCALE TO THE ANALOG LOAD CELL INPUT ON THE CONTROLLER PCB. DOING SO MAY RESULT IN DAMAGE TO THE LOAD CELL OR PCB.



## ⚠ WARNING

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

## ⚠ CAUTION

USE CAUTION WHEN RESETTING THE CALIBRATION VALUES. ALL CALIBRATION VALUES AND BATCHING DATA WILL BE LOST AND MUST BE RE-ENTERED.

Click on the blue boxes to go to the desired chapters.

# CONTENTS

# 1

# Introduction

The LYNXBATCH industrial controller is a simple-to-operate batching controller designed for use in the toughest production environments in the chemical, pharmaceutical, food, and other industries. By changing a few setup parameters, it can grow from a simple manual batching or filling controller to a powerful automatic batching system. It is easy to use, easy to maintain, and flexible enough to meet many factory automation needs.

This manual describes how to install, configure, and operate the LYNXBATCH controller. If you discover a problem with this documentation, please complete and return the **Publication Problem Report** found in the back. For problems not covered in this manual, please contact your authorized Mettler Toledo dealer.

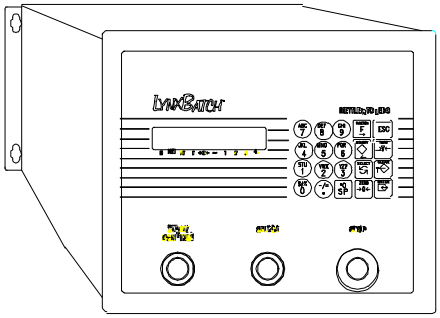


Figure 1 – 1: Harsh Environment Version

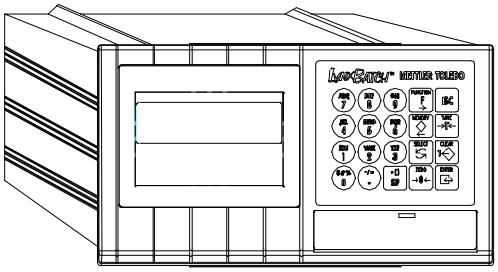


Figure 1 – 2: Panel Mount Version

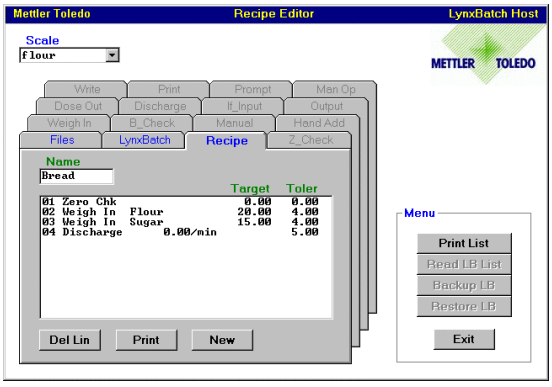
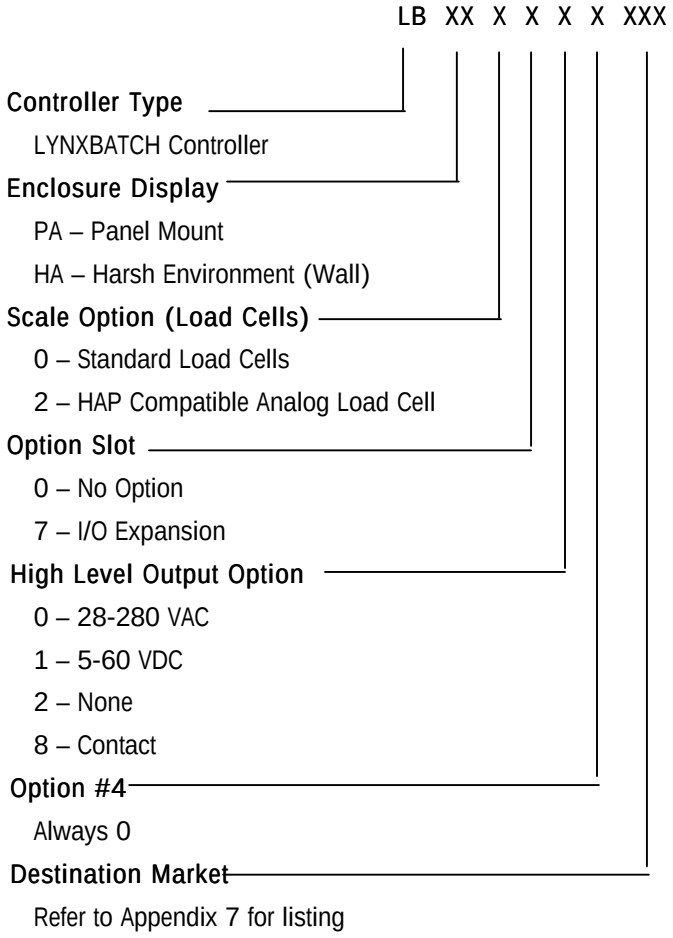



Figure 1 – 3: Optional DataVault PC Data Manager

# Model Number

The LYNXBATCH controller is available in panel mount and harsh environment versions. An x-purged hazardous area enclosure is also available. (See page 1-4.) The appropriate power supply is determined by the destination market and installed when the unit it ordered.

Use the following chart to verify the model number of the LYNXBATCH controller with which you are working or to order additional units. The model number is found on the unit's serial tag label.




**Example: LBPA-0000-000**

**LB** refers to the controller type – LYNXBATCH controller.

**PA** refers to the enclosure type – Panel mount.

The first **0** means standard load cells supported.

The second **0** means no option installed in the option slot.

The third **0** means that the high level outputs are 28-280 volts AC.

The next figure is always **0**.

The **000** at the end refers to the destination market – United States.

# Physical Dimensions

## Panel Mount Enclosure (PA)

Two integral brackets are used to mount the unit through a flat panel. The front panel and associated panel clamping mechanism provide a NEMA 4 (IP65) seal and accommodate a panel thickness from 16 to 11 gauge (1.5 to 3 mm.)

- 10.05 in. (25.5 cm) × 5.6 in. (14 cm) at the front of the controller
- 9.5 in. (24 cm) × 4.91 in. (12.5 cm) at the rear
- 6.46 in. (16.4 cm) deep behind the panel

Refer to the cutout diagram below when installing the panel mount version.

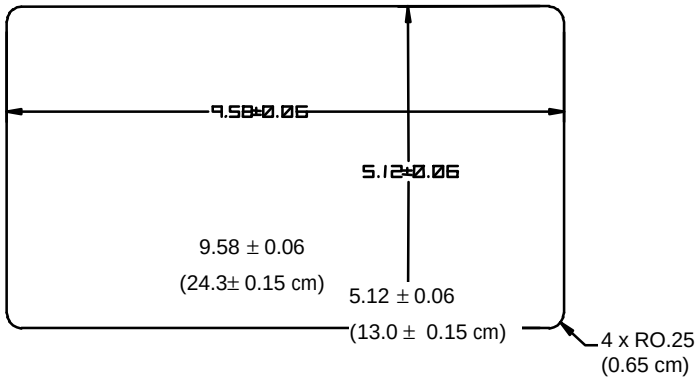



Figure 1-4: Cutout Diagram

## Harsh Environment Enclosure

This enclosure is designed to provide NEMA 4X (IP65) protection. It is a fabricated stainless steel box with a removable cover. The unique latching design provides a secure seal and sleek appearance. The unit can be mounted to a wall or to the DigiTOL extruded aluminum column. The bottom of the enclosure contains grip bushings to seal all cables entering the enclosure.

- 11.12 in. (28.3 cm) × 9.42 in. (23.9 cm) at the front of the controller
- 9.62 in. (24.4 cm) deep (including mounting brackets)
- 11.62 (29.5 cm) x 5.75 (14.6 cm) mounting holes (using brackets)

## X-Purged Hazardous Area Enclosure (XA)

The LYNXBATCH controller is available mounted in an x-purged enclosure per NFPA 496. This LYNXBATCH controller has been modified to have a hardened front panel. This optional enclosure is suitable for mounting in hazardous areas rated Class I, Group C, D, or Class II, Group E, F, or G. The temperature range of operation for X-purged enclosures is 40°F to 104°F (5°C to 40°C). It can be wall mounted with the supplied brackets. The bottom of the enclosure contains grip bushings to seal all cables entering the enclosure.

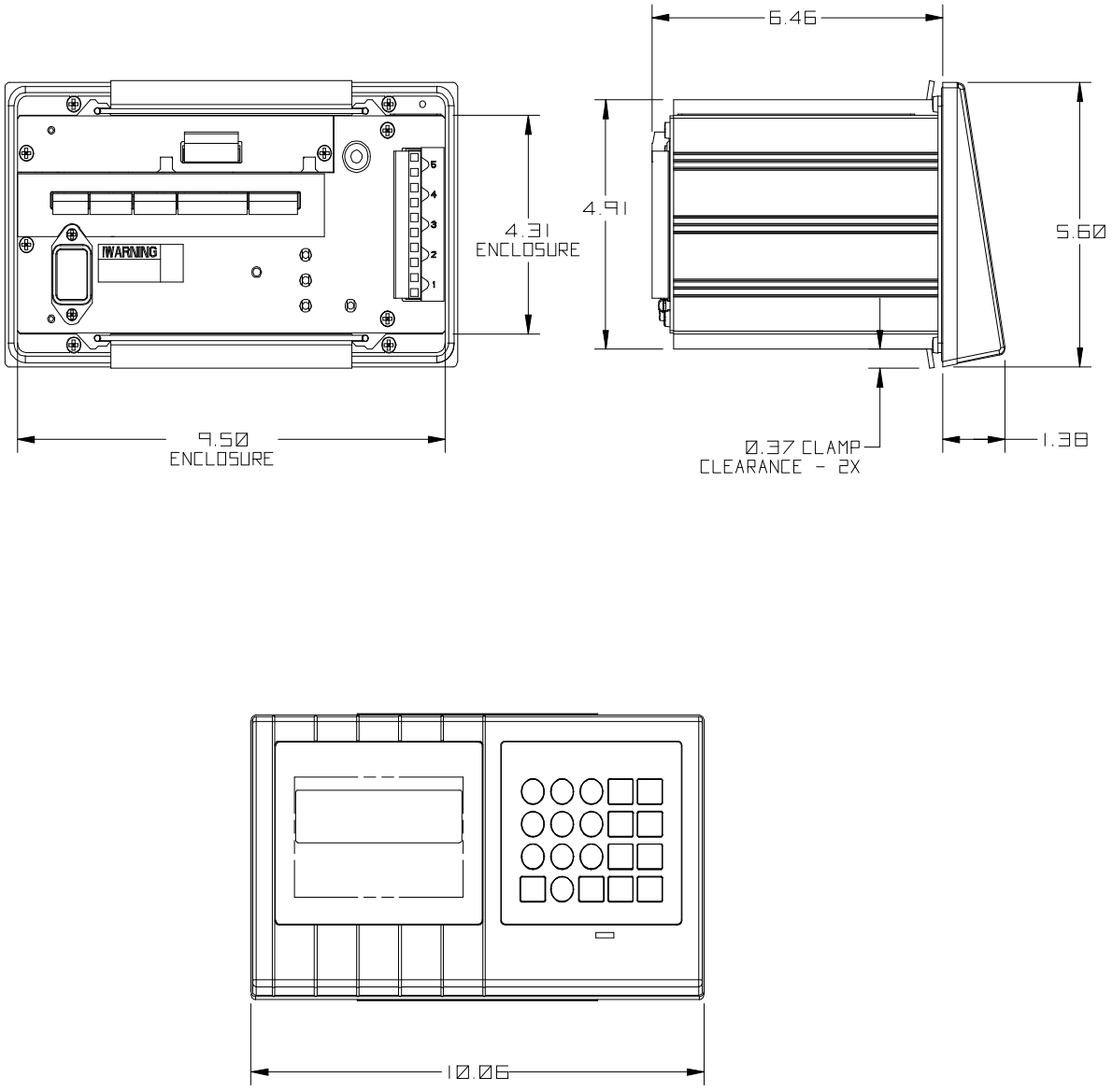



Figure 1-5: LYNXBATCH Panel Mount Dimensions

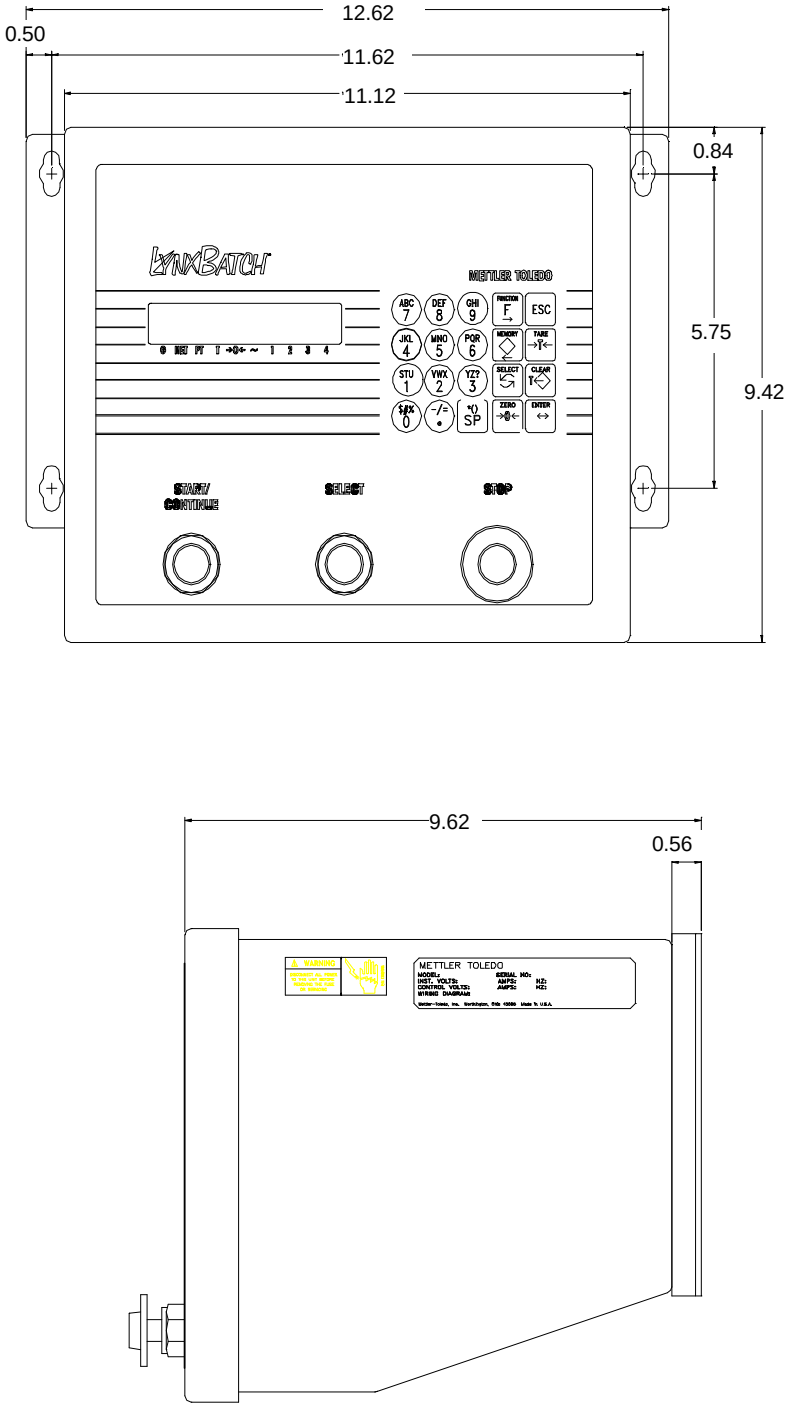



Figure 1-6: LynxBatch Harsh Environment Dimensions

# Specifications

| Model | Harsh Environment Enclosure | Panel Mount Enclosure |
|---|---|---|
| Dimensions | • 11.12 in (282 mm) x 9.42 in. (239 mm) at the front of the controller<br>• 9.62 (244 mm) deep including wall mount brackets | • 10.06 in. (255 mm) × 5.6 in. (14.2 mm) at front<br>• 9.5 in. (241 mm) × 4.91 in. (125 mm) at rear<br>• 6.46 in. (164 mm) behind panel |
| Construction | NEMA4x, IP65 brushed stainless steel (type 304 | NEMA4, IP65 front panel; NEMA1, IP30 behind panel |
| Shipping Weight | 21 lb (9.4 kg) | 11 lb (4.9 kg) |
| Power | 120 VAC or 220/240VAC 15 watts | |
| Operating Temperature | 14°F to 113°F (-10°C to 45°C); 10-95% relative humidity, non-condensing | |
| Display | 10-characters, alphanumeric, vacuum florescent, 0.44 in (11mm) high | |
| Keypad | 20-key, numeric, function, and alphanumeric input, polyester | |
| Operators | START, SELECT, and EMERGENCY STOP push buttons | |
| Scale Performance | • 500 to 100,000 scale divisions capacity<br>• 2 million internal counts for analog load cell scales<br>• 0.00001 to 200 division size<br>• 9 calibration engineering units of measure | • Count-by 1, 2 or 5 units<br>• 9 secondary engineering units of measure and custom units<br>• Push button, preset, stored, and automatic tare |
| Scale Interface | • DigiTOL® load cell scales and junction box<br>• Safe area analog load cells, maximum 8 x 350Ω | • 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<br>• Analog and DigiTOL low pass and stability filters | • Analog notch filter<br>• Automatic filter tuning algorithm |
| Discrete Outputs | • 5 high level AC or DC internal outputs standard (28-240VAC, 5-60VDC, contact)<br>• 8 low level DC internal outputs optional (high level buffer relays available) | • Programmable as: (8) Feed, (8) Fast Feed, Common Fast Feed, Alarm, Discharge, Fast Discharge, Under Tolerance, OK Tolerance, Over Tolerance, Ready to Start, Recipe Controlled |
| Discrete Inputs | • 8 Low level DC internal inputs optional (high level buffer relays available) | • Programmable as: Feed OK, Discharge OK, Remote Start, Recipe Select 1 or 2, Recipe Monitored |
| Serial Interface | • Continuous, Demand (print) and Bi-directional Host Protocols<br>• 300-38.4k baud, 7 or 8 data bits, 1 or 2 (COM2 and 3) stop bits | • Selectable parity, checksum, Xon/Xoff flow control<br>• COM1 – RS-233 and RS-485<br>• COM2 – RS-232 and 20mA Current Loop<br>• COM3 – RS-422 and DigiTOL Load Cell |

| Model | Harsh Environment Enclosure | Panel Mount Enclosure |
|---|---|---|
| Memory | • Flash downloadable program memory<br>• Removable EEROM for calibration data<br>• Battery-backed RAM | • 99 recipes or 1000 recipe lines<br>• 50 materials |
| Approvals | • UL (Underwriters Laboratories) per UL1950<br>• cUL (Canadian) per CSA 22.2 #950<br>• European Low Voltage Directive | • U.S. Weights and Measures Class III and IIIL per Lynx Certificate of Conformance Number 95-085<br>• CE (European, OIML) Weights and Measures approval for up to 7500e, Approval Number T2206<br>• Approvals for other markets available on request |
| Reports | • Standard reports: Batch Summary, Recipe Detail, Material Detail, Production Detail, Production Totals, Material Inventory | • Custom reports: Programmable header and footer; Two custom templates<br>• Printed from recipe or on operator command |
| Options | • Expanded I/O board with 8 inputs and 8 outputs<br>• External high level buffer relay enclosures<br>• Hazardous area analog load cell barrier | • X-purged enclosure model for hazardous areas<br>• DataVault PC software for recipe and material file maintenance |

## Power Supply

The power supply operates from 85 to 132 VAC or 180 to 264 VAC, depending on destination market, and with a line frequency of 49 to 63 Hz. Power consumption is 12 Watts maximum. Power is applied through a modular power plug line cord (panel mount ) or a power cord connected to a terminal strip (harsh environment.)

## Controller PCB

**COM1** serial port -- RS-232 or RS-485. Both are available for transmitting simultaneously. However, only one can receive data at a time.

**COM2** serial port -- RS-232 or 20 mA current loop active transmit. Both are available for transmitting simultaneously. Only one can receive data at a time.

**COM3** serial port -- standard RS-422 serial port or communications port to Mettler Toledo's DigiTOL® scales. Only one function can be selected.

Connections to the Controller PCB are made using five removable terminal strips with a wire size range of 23 to 16 AWG. The Controller PCB stores setup, configuration, and batching data such as formulas and materials in battery-backed RAM. Scale calibration and metrological data are stored in a removable EEPROM.

## Display and Keypad

### Display

The LYNXBATCH controller display is a 10-character, 5 x 7 dot matrix, 0.44 in. (11.2 mm) vacuum fluorescent alpha-numeric display that can indicate weight values in standard use or batching functions and prompts in batching mode. Each digit has a decimal point/comma and an annunciator associated with it.

The annunciators point to labels in the legend below the display area and indicate gross or net weights, preset tare value, actual tare, center of zero, motion, or discrete output 1 through 4 active. (See Chapter 4.)

The panel mount model lens is polycarbonate. The harsh environment model lens is polyester. Lenses on both models have hardcoating to resist damage. The harsh environment enclosure has a one-piece overlay/lens assembly designed to seal the keyboard and lens areas to NEMA 4X (IP65) specifications.

### Keypad and Pushbuttons

The keypad consists of a flat membrane switch covered with a domed polyester overlay. It contains numbers 0-9 and letters A-Z. Function keys include Escape, Memory, Tare, Select, Clear, space, decimal point, Zero, Enter, and Function.

The harsh environment model has three large pushbuttons that make it easier to perform batching operations in harsh industrial settings where heavy gloves may be required. The **ENTER** and **SELECT** pushbuttons operate as the **ENTER** and **SELECT** keys on the keypad. The **STOP** pushbutton is an emergency stopping mechanism and has no comparable key on the keypad.

## HAP Compatible Analog Load Cell Option

An optional HAP (Hazardous Area Protection) compatible analog load cell interface, when used with a Mettler Toledo protective load cell barrier, allows the LYNXBATCH controller to be operated with analog load cells in an area classified as hazardous by the National Electrical Code. The excitation voltage is lowered to 5 volts for this option. A Mettler Toledo Hazardous Area Protection (HAP) module is required. Purged enclosures are available from Mettler Toledo if the LYNXBATCH controller must be located inside the hazardous area. (See the warning on the next page regarding hazardous areas.)

## Temperature and Humidity

**Operating temperatures:** 14°F to 113°F (–10°C to 45°C) at 10% to 95% relative humidity, noncondensing.

**Storage temperatures:** –40°F to 140 °F (–40°C to 60 °C) at 10% to 95% relative humidity, noncondensing.

## Environmental Protection

The harsh environment model is designed to meet NEMA 4X (IP65) requirements for a dust-tight and splash-proof enclosure. The keypad/display enclosure for the panel mount version meets NEMA 4 (IP65) requirements for dust-tight and splash-proof

applications when properly installed in an appropriate enclosure. The rest of the panel mount enclosure meets NEMA 1 (IP30) requirements and provides no protection against dust or water ingress.

## Hazardous Areas

The LYNXBATCH controller is not intrinsically safe. Contact your METTLER TOLEDO representative for information about hazardous area applications.

**⚠ WARNING!**

**The LYNXBATCH controller is NOT intrinsically safe! DO NOT use in areas classified as HAZARDOUS by the National Electric Code (NEC) because of combustible or explosive atmospheres.**

# Standards Compliance

The following compliance standards apply to the LYNXBATCH controller.

## UL and cUL Listing

The LYNXBATCH controller is UL and cUL approved.

## Conducted and Radiated Emissions (RFI)

The LYNXBATCH controller meets or exceeds FCC docket 80-284 for conducted and radiated emissions requirements as a Class A digital device.

## Radio Frequency Interference Susceptibility

The LYNXBATCH controller meets USA, Canadian, and EC requirements for RFI susceptibility as listed in the table on the next page with a maximum of one display increment of change when calibrated for recommended builds.

| RFI Susceptibility | | | |
|---|---|---|---|
| | U.S.A. | Canadian | EC |
| Radio Interference Frequency | Field Strength | Transmitted Power at Specified Distance | Field Strength |
| 27 MHz | 3 volts/meter | 4 Watts at 2 meters | N/A |
| 169 MHz | 3 volts/meter | N/A | N/A |
| 464 MHz | 3 volts/meter | 4 Watts at 2 meters | N/A |
| 27-1000 MHz | N/A | N/A | 3 volts/meter |

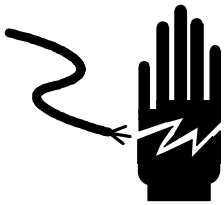
## AC Power Line Voltage Variation

The LYNXBATCH controller meets NIST H-44, Canadian Gazette Part 1, and OIML-SP7/SP2 line voltage variation specifications as listed in this table:

| AC Power Line Voltages | | | | | | |
|---|---|---|---|---|---|---|
| Specification | AC Line Voltage | | | Line Frequency in Hz | | |
| Line Voltage Variation | Minimum | Nominal | Maximum | Minimum | Nominal | Maximum |
| NIST H-44 | 100 | 120 | 130 | 59.5 | 60 | 60.5 |
| Canadian | 108 | 120 | 132 | 58.8 | 60 | 61.2 |
| OIML-SP7/SP2 | 102<br>187<br>204 | 120<br>220<br>240 | 132<br>242<br>264 | 58.8<br>49.0<br>49.0 | 60<br>50<br>50 | 61.2<br>51<br>51 |

# 2 Installation

Please read this chapter thoroughly before beginning installation.



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## Environment

The first step is to identify the best location for the LYNXBATCH controller. The proper environment will enhance its operation and longevity. Choose a location based on the environmental specifications in Chapter 1.

## Unpacking/Inspection

If you dispose of the package, please recycle the materials.

If the package containing the LYNXBATCH controller was damaged, check for internal damage and file a freight claim with the carrier if necessary. If it was not damaged, make sure all components are included and inspect each for damage. If it is necessary to ship the LYNXBATCH controller, use the original shipping container if possible. The LYNXBATCH controller must be packed correctly to ensure its safe transportation.

The LYNXBATCH controller package includes:

- LYNXBATCH controller
- Screwdriver
- 2 mm allen wrench
- Power cord (panel mount)
- Two wall-mounting brackets (harsh environment)
- Set of terminal connectors
- Ferrite coil
- Screwdriver
- Capacity labels

## Opening the Harsh Environment Model

1. Disconnect power.
2. Locate the two slots on the bottom lip of the front of the enclosure.
3. Gently insert the blade of a slotted screwdriver into one of the slots and press inward (toward the enclosure).
4. Repeat steps 2 and 3 for the other slots.
5. Remove the front panel. It is connected to the rear of the enclosure by two restraints to allow two-hand use while working on the unit.

## Connecting the Harsh Environment Model

1. Pass the cables that enter the enclosure through an appropriately sized cable grip **before** connecting the wires.
2. Tighten the cable grip sufficiently to provide a water-tight seal around the cable **after** connecting the wires to their appropriate terminals. This will permit you to allow sufficient internal cable slack.

## Installing the Harsh Environment Model

1. Locate the two mounting brackets that came in the original package.
2. Mount the brackets using the four stainless steel screws supplied. Refer to Figure 2-1. The slotted holes must protrude beyond the enclosure as shown.

* Shown with wall mount brackets (included with enclosure) installed.

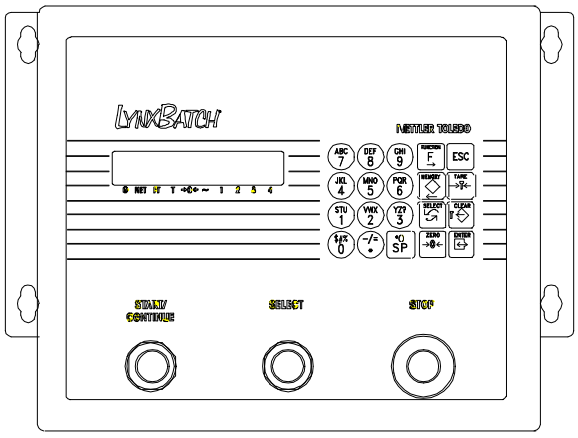



Figure 2-1

3. Tighten the brackets to the back of the enclosure (torque 25 inch pounds).

4. Using the dimensions given in Figure 2-2, prepare the mounting surface to accept the enclosure. The mounting surface and fasteners must be able to support a total of 45 lb (20 kg).
5. Place the enclosure on the mounting surface and secure with the appropriate fasteners.

## Installing the Panel Mount Model

1. Cut an opening 9.54 in. (24. 3 cm) wide × 5.08 in. (13.0 cm) high to accommodate the controller. The tolerance for the panel cutout is ± 0.06 in. (0.15 cm).
2. Using the Allen wrench included with the unit, remove the four retaining set screws (A) located at the rear of the enclosure in the top and bottom mounting plate grooves.

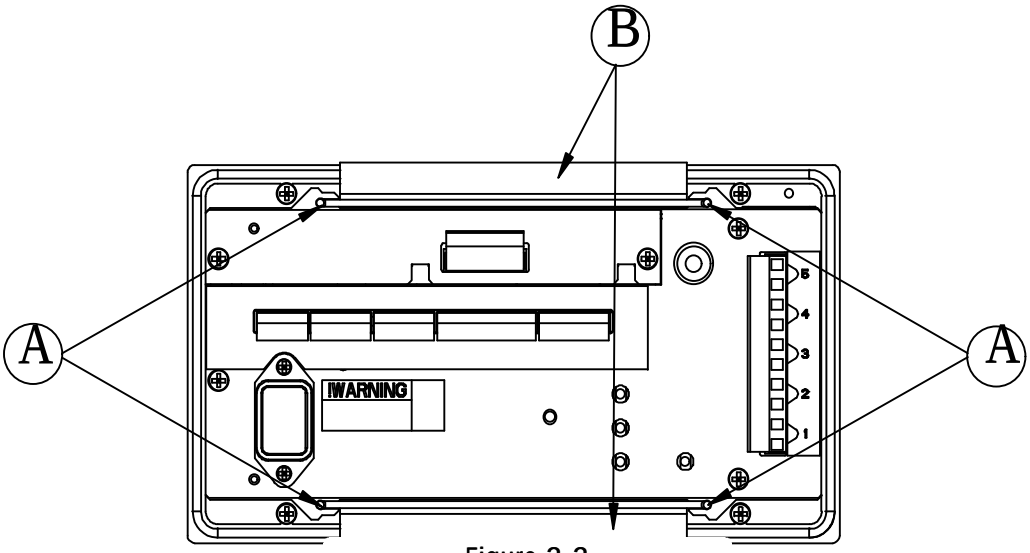
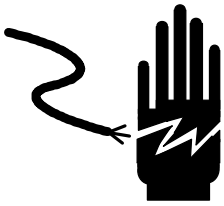



Figure 2-2

3. Remove both mounting plates (B).
4. Insert the controller through the panel opening from the front until it is flush against the panel. Confirm that the controller is installed right side up.
5. Slide the top and bottom mounting plates back in the grooves and push them flush against the panel from the back. The flared end of the plate should contact the back of the panel.
6. Holding the unit in place, replace the four set screws and tighten them until the unit is secured and the front panel gasket is compressed. Do not over-tighten the set screws.
7. Inspect the front of the LYNXBATCH controller for a good seal to the front of the enclosure.

# Electrical Connections

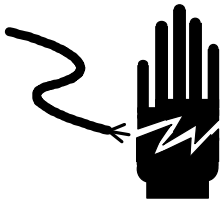


**⚠ WARNING**

ONLY PERMIT QUALIFIED PERSONNEL TO PROGRAM METTLER TOLEDO EQUIPMENT. EXERCISE CARE WHEN CREATING PROGRAMS OR MAKING PROGRAM CHANGES WHEN OUTPUTS ARE CONNECTED TO EXTERNAL EQUIPMENT. FAILURE TO OBSERVE THESE PRECAUTIONS CAN RESULT IN BODILY HARM AND/OR PROPERTY DAMAGE.

## Connect the Load Cell

After installing the LYNXBATCH controller, you should make the appropriate connection to the Controller PCB for analog or DigiTOL load cells.



**⚠ WARNING**

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.

**⚠ CAUTION**

DO NOT ATTACH AN ANALOG LOAD CELL TO THE DIGITOL SCALE INPUT ON THE CONTROLLER PCB COM3. DO NOT ATTACH A DIGITOL SCALE TO THE ANALOG LOAD CELL INPUT ON THE CONTROLLER PCB. DOING SO MAY RESULT IN DAMAGE TO THE LOAD CELL OR PCB.

### Analog Load Cell Connections

The maximum cable length for analog load cell connections to the LYNXBATCH controller depends on the total scale resistance (TSR) of the scale base. To calculate TSR:

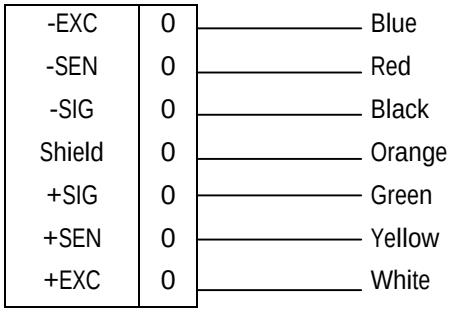
$$TSR = \frac{\text{Load Cell Input Resistance (Ohms)}}{\text{Number of Load Cells}}$$

This chart gives recommended cable lengths based on TSR and cable gauge. The LYNXBATCH controller can power up to eight 350 Ohm analog load cells.

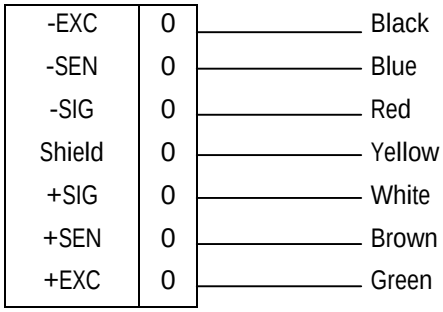
| Recommended Maximum Cable Length | | | |
|---|---|---|---|
| TSR (Ohms) | 24 Gauge (feet) | 20 Gauge (feet) | 16 Gauge (feet) |
| 350 | 800 | 2000 | 4000 |
| 87 | 200 | 600 | 1000 |

The following diagrams describe analog load cell terminal strip wiring for standard six-wire, Masstron six-wire, and standard four-wire cable.

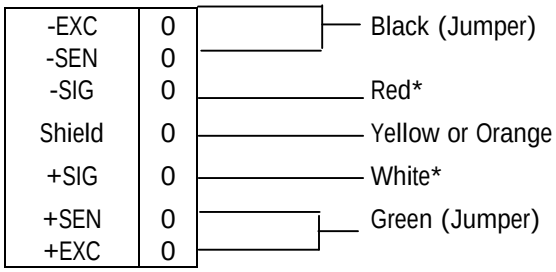
### Standard Six-wire Cable




### Masstron Six-wire Cable




### Four-wire Cable

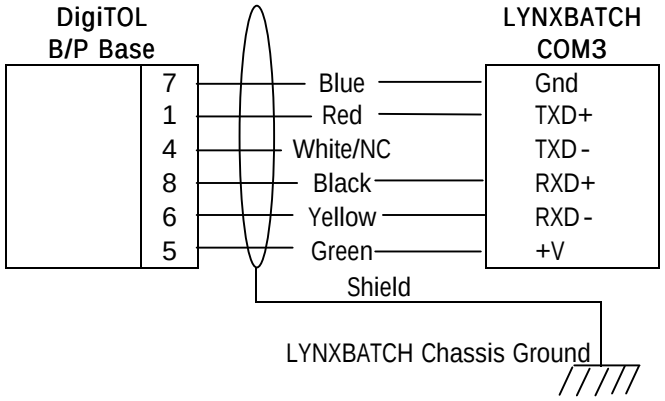



*If an increase in load results in a decrease in weight display, reverse the signal wires (+SIG and –SIG).

## DigiTOL Load Cell Connections

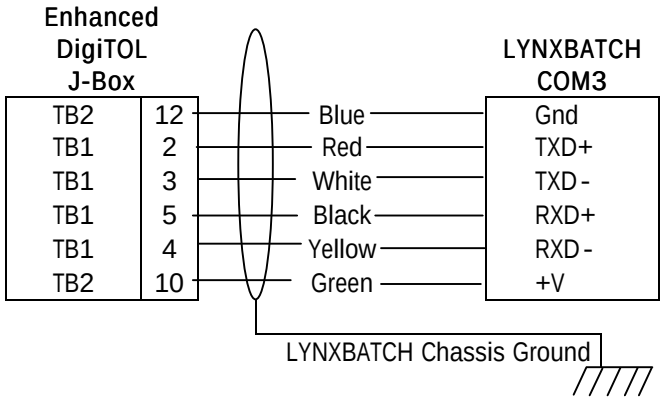
The maximum recommended cable length for all DigiTOL bases is 50 feet. The following diagram describes DigiTOL load cell terminal strip wiring.

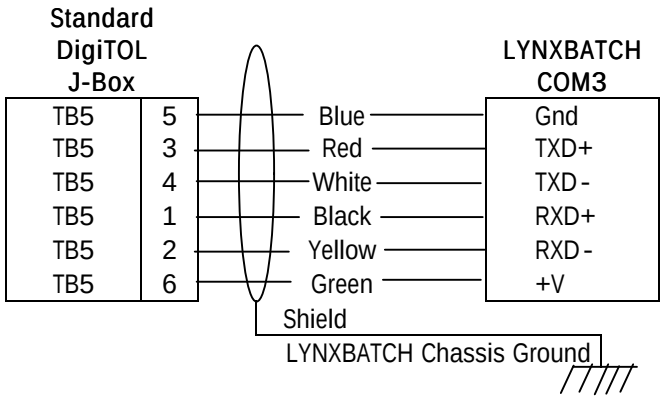
A ferrite ring must be added when connecting a DigiTOL base. Refer to Figure 2-3.




## DigiTOL J-Box Connections

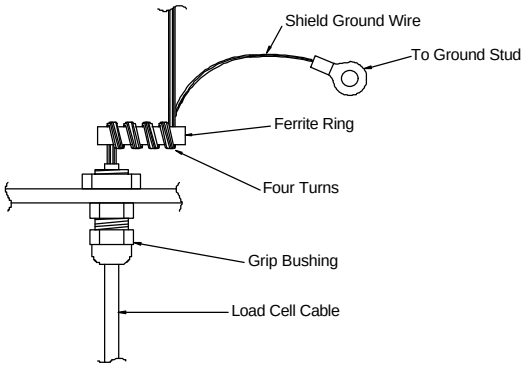
The maximum recommended cable length for all DigiTOL J-Box scales is 300 feet. The following diagrams describe DigiTOL terminal strip wiring.



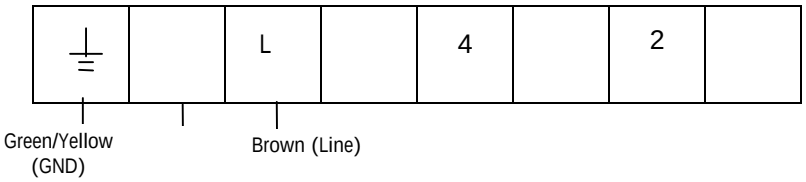

When installing a DigiTOL base or J-Box, the ferrite ring (P/N 12635700A) must be installed to prevent RF energy from entering the load cell through the load cell cable. The ferrite ring should be installed inside the harsh environment enclosure or as close as possible to the connector on the panel mount

enclosure. Wrap the load cell cable conductors (including the shield ground wire) around the ferrite ring four times. Keep the ferrite ring as close as possible to the point where the cable enters the enclosure.




## Connect the Power Cable

A power cord is provided with the harsh environment model. If you choose not to use the power cord, remove it, and then wire permanent wiring according to local electrical codes to the terminal strip in the bottom of the enclosure according to the following diagram.




Connection to the panel mount model must be made at installation with the supplied power cord. The AC power connection must be plugged in as follows for the panel mount models:

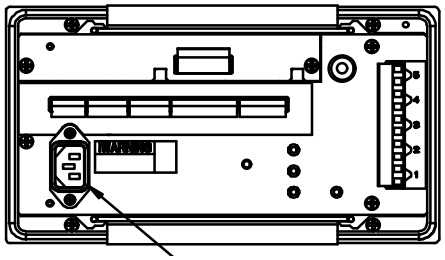
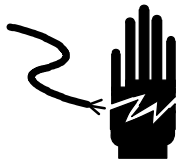


Figure 2-4: Power Connections—Panel Mount Model



**WARNING**

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

**Note**: The integrity of the power ground for equipment is important for both safety and dependable operation of the LYNXBATCH controller. A poor ground can result in an unsafe condition if an electrical short develops in the equipment. A good ground connection is needed to minimize extraneous noise pulses. It is important that equipment does not share power liens with noise-generating equipment like heavy load switching, RF thermal heaters, and others.

To confirm ground integrity, a commercial branch circuit analyzer like an ICE model SureTest ST-1D (or equivalent) is recommended. It measures the voltage from the neutral wire to the ground connection and will provide an assessment of the line loading. Instructions with the instrument give guidelines about limits that assure good connections. Visual inspections and a query of the user will provide information about equipment sharing the power line.

The LYNXBATCH controller power line must not be shared with equipment such as motors, relays, or heaters that generate line noise. If adverse power conditions exist, a dedicated power circuit or power line conditioner may be required.

## Serial Port Connections

The COM1 serial port can be either RS-232 or RS-485. Both transmitters are available simultaneously; however, only one receiver can be used.

The following diagrams show proper cable connections to COM1, COM2, and COM3 on the Controller board. The COM port terminal strips accommodate wire sizes ranging from 23 to 16 AWG. The terminal strips may be removed to facilitate wiring and to make it easier to view the terminal designations.

### COM1 RS-232

The following diagram and table describe COM1 pin-to-pin cable connections using an RS-232 cable. The maximum recommended cable length is 50 feet.

| LYNXBATCH COM1 | | |
|---|---|---|
| O | TXD | RS-232 Transmit |
| O | RXD | RS-232 Receive |
| O | GND | Signal Ground |
| O | TXDA | |
| O | TXDB | |

| Pin Connection for Mettler Toledo Devices Using COM1 RS-232 | | | | |
|---|---|---|---|---|
| LYNXBATCH COM1 | 8806<br>8807<br>8845 | 8855***<br>8856<br>8860** | 8861<br>8865 | 8617-TB2<br>9323-TB2<br>9325-TB2 |
| TXD | 3* | | | 2 |
| RXD | — | | | — |
| GND | 7* | | | 3 |
| TXDA | — | | | — |
| TXDB | — | | | — |

*Each of these devices uses this connection.

**Pinout shown is for use without Plug In Adapter (P/N 128019 00A).

***The 8855 using RS-232 must have the 129618 00A Interface PCB. The baud rate for LYNXBATCH controller must be set to 300. If the interface PCB is part number

123654 00A or 137651 00A, the LYNXBATCH controller TXDA terminal must be connected to Pin 2 of the 8855 Interface PCB. In this case, set the baud rate to 1200.

### COM1 RS-485

The following diagram describes COM1 pin-to pin cable connections using RS-485. The maximum recommended total distance for RS-485 is 2000 feet.

| LYNXBATCH COM1 | | |
|---|---|---|
| O | TXD | |
| O | RXD | |
| O | GND | |
| O | TXDA | RS-485 Transmit + |
| O | TXDB | RS-485 Transmit – |

### COM2 RS-232

The following diagram and table describe COM2 pin-to-pin cable connections using an RS-232 cable. The maximum recommended cable length is 50 feet.

| LYNXBATCH COM2 | | |
|---|---|---|
| O | TXD | RS-232 Transmit |
| O | RXD | RS-232 Receive |
| O | GND | Signal Ground |
| O | CLTX+ | |
| O | CLRX+ | |
| O | CLRX- | |

The COM2 serial port can be either RS-232 or 20 mA current loop active transmit. Both transmitters are available simultaneously; however, only one receiver can be used.

| Pin Connection for Mettler Toledo Devices Using COM2 RS-232 | | | |
|---|---|---|---|
| LYNXBATCH COM2 | 8806 8807 8845 | 8855*** 8856 8860** | 8861 8865 | 8617-TB2 9323-TB2 9325-TB2 |
| TXDA | 3* | | | 2 |
| RXDA | — | | | — |
| GND | 7* | | | 3 |
| CLTX+ | | | | |
| CLRX– | — | | | — |
| CLRX– | — | | | — |

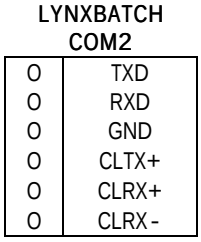
*Each of these devices uses this connection.

**Pinout shown is for use **without** Plug In Adapter (P/N 128019 00A).

***The 8855 using RS-232 must have the 129618 00A Interface PCB. The LYNXBATCH controller must be set to 300 baud. If the interface PCB is part number 123654 00A or 137651 00A, the TXDA terminal must be connected to Pin 2 of the 8855 Interface PCB. In this case, the LYNXBATCH controller must be set to 1200 baud.

### COM2 20 mA Current Loop

The following diagram and table describe COM2 pin-to-pin cable connections using a 20 mA loop. The maximum recommended cable length is 1000 feet.




Signal Ground (Active Current Loop Transmit -)
Active Current Loop Transmit +
Current Loop Passive Receive +
Current Loop Passive Receive -

| Compatible Mettler Toledo Serial Devices | | | | | | |
|---|---|---|---|---|---|---|
| LYNXBATCH COM2 | 8806 8860* | 8855 | 8845 8856 ** | 8623 8624 | 8614 8616 8619 | 8617 9323 9325 |
| TXDA | — | — | — | — | — | — |
| RXDA | — | — | — | — | — | — |
| GND | 18 | 22 | 23 | 10 | 12 | 9 |
| CLTX+ | 16 | 3 | 25 | 8 | 11 | 8 |
| CLRX+ | — | — | — | — | — | — |
| CLRX– | — | — | — | — | — | — |

* Pinout shown is for use with Plug In Adapter (P/N 128019 00A).

** The 8856 requires the optional 20 mA to RS-232 Adapter (P/N 900936 00A) for 20 mA loop applications.

### COM3 RS-422

The COM3 serial port consists of RS-422 signal levels for point-to-point wiring for devices that support RS-422. This port is also used to support a DigiTOL scale or DigiTOL J-Box interface (I/O capabilities not available). The following diagram and table describe COM 3 pin-to-pin cable connections using RS-422 transmit only. The maximum recommended cable length is 2000 feet.

The LYNXBATCH supports DigiTOL scales and junction boxes but not DigiTOL vehicle (POWERCELL™) scales.

LYNXBATCH
**COM3**

| | | |
|---|---|---|
| O | GND | Signal Ground |
| O | TXD+ | RS-422 Transmit+ |
| O | TXD– | RS-422 Transmit– |
| O | RXD+ | RS-422 Receive+ |
| O | RXD– | RS-422 Receive– |
| O | +20V | Power Supply |

**Pin Connection for Mettler Toledo Devices Using COM1 RS-422**

| LYNXBATCH COM3 | 8861 | 8865 | 8617 8623 8624 |
|---|---|---|---|
| GND | — | — | — |
| TXD+ | 18 | 18 | TB2, Pin 6 |
| TXD– | 19 | 19 | TB2, Pin 7 |
| RXD+ | — | — | — |
| RXD– | — | — | — |
| +20V | — | — | — |

## Discrete Wiring

The Controller PCB contains three discrete input and five discrete output connections. The inputs are at PAR1 and the outputs at PAR2.

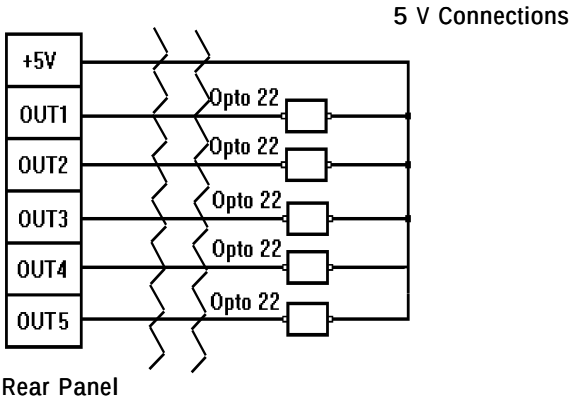
### Input Connections

The input connections are factory-set for the Start/Continue, Select, and Stop pushbuttons. To ensure proper operation and safe operation, the input connections cannot be changed. Refer to the external wiring diagram located at the end of Chapter 6.

### Output Connections

The PAR2 outputs are factory-wired to internally mounted OPTO 22* high level outputs. All connections to external devices should be made to the high level I/O terminal block, not to the PAR 2 connector.

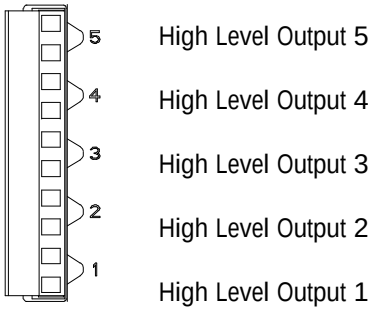
For your reference, the following diagram illustrates the internal, low level connections between PAR 2 and the OPTO 22* board.




**Note:** For a schematic diagram showing a typical electrical connection to external devices, refer to the diagram on page 2-13.

## LYNXBATCH Controller High Level Output Wiring

The LYNXBATCH controller high-level outputs provide high level AC interfacing (28 to 280 VAC, 1 AMP) for the units control outputs. Five output modules are factory-installed in the output board. AC connections are made via a ten-position terminal strip on the back panel. Other types of output modules (DC or contact) are available from Mettler Toledo for installation in the Output Board to control DC voltages rather than AC voltage. The following diagram illustrates the High Level Output writing. Use the two cable ties (P/N 09591500A) supplied to secure and provide strain relief for the wires.




NOTE: *OPTO 22 is a trademark of OPTO 22.

The functional assignments of the outputs are flexible, and are made in setup in the Batching Program Block under the Configure System Sub-block.

# Expansion I/O Option Board

The LYNXBATCH controller can accommodate an Expansion I/O Option board that adds eight additional inputs and eight additional outputs. This option is available factory installed or as a field installation kit (must use revision D or higher software). The inputs are PAR 3 and the outputs are PAR 4. The functionality of each input and output is individually configured in software in the LYNXBATCH setup mode. Refer to Chapter 3 for configuration instructions.

## Input Connections

The PAR 3 inputs are terminated via a removable terminal strip and are labeled 4 through 11. The input terminal strip also includes a logic ground terminal (GND) and a +5VDC (+V) terminal at 250 mA current maximum. This is sufficient to power a 16 I/O solid state relay board such as manufactured by OPTO 22. A standard dual inline 50-pin ribbon cable connector is also available on the board for ribbon cable termination to an OPTO 22 style I/O board. Inputs are pulled up to +5VDC and are logic true at ground.

The cable used for the input connections should not exceed 10 feet. Care must be taken not to route this cable with high voltage wiring. A solid-state buffer relay is recommended if the device triggering the input is not located in the same enclosure as the LYNXBATCH controller.

## Output Connections

The PAR 4 outputs are terminated via a removable terminal strip and are labeled 6 through 13. A standard dual inline 50-pin ribbon cable connector is also available on the board for ribbon cable termination to an OPTO 22 style I/O board. The outputs are capable of sinking up to 35mA of current at 30VDC maximum. The outputs are typically referenced to the +5VDC supply on the Expansion I/O Option beard as illustrated for the PAR 2 outputs.

The cable used for the output connections should not exceed 10 feet and care must be taken not to route this cable with high voltage wiring. A solid state buffer relay, such as manufactured by OPTO 22, is required to drive external devices, such as solenoid valves, motor starters or feeder contactors.

## External High Level I/O

I/O board and enclosures are available from Mettler Toledo for buffering the Expansion I/O Option board signals to a higher voltage and current to be compatible with other industrial, electrical control devices. The following configurations are available:

### Panel Mounted Relay Boards

- 8 I/O OPTO 22 Type Relay Board with Cable
- 16 I/O OPTO 22 Relay Board with Cable

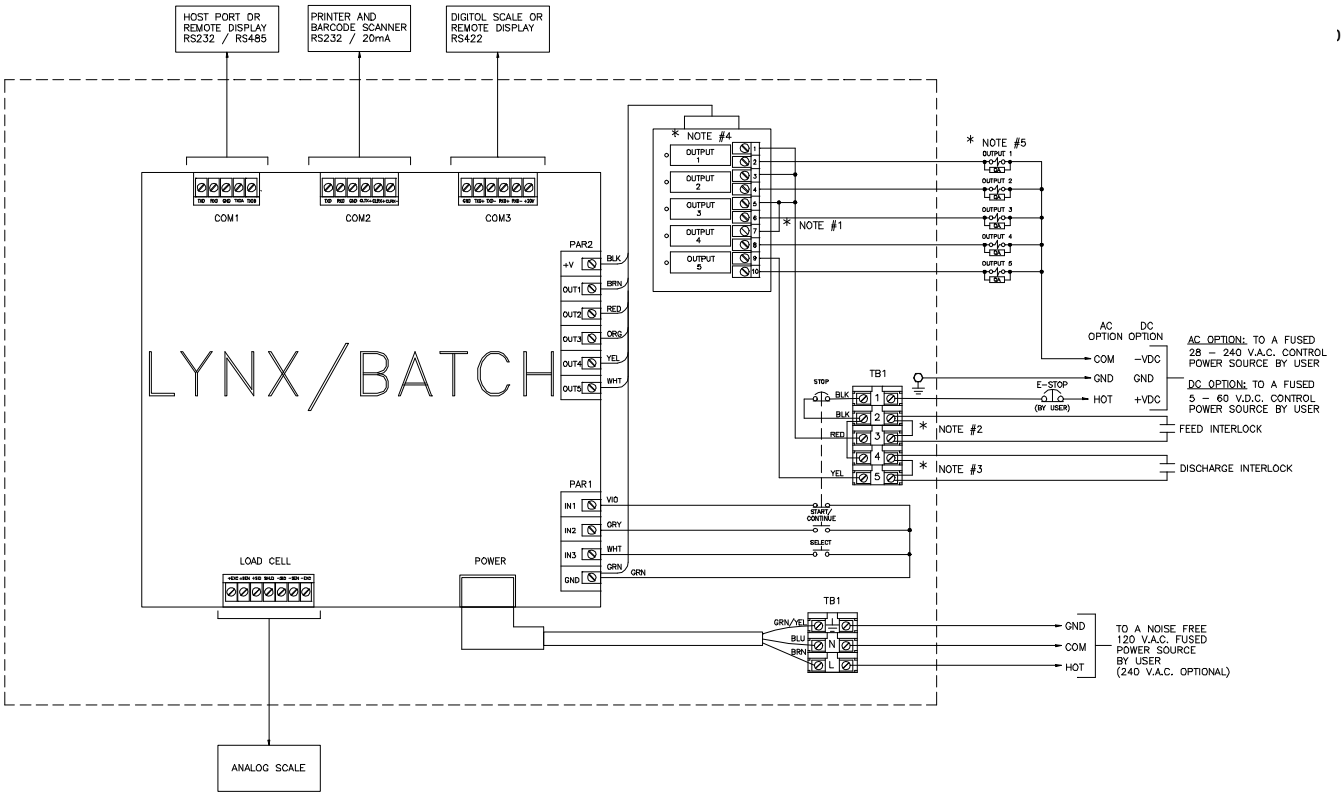
### NEMA4x/IP65 External High Level I/O Enclosures:

- Fiberglass Enclosure with 5 I/O relays
- Stainless Steel Enclosure with 8 I/O relays

- Stainless Steel Enclosure with 16 I/O relays

Contact your local Mettler Toledo sales office or authorized distributor for more information on these External High-Level I/O options.

# External Wiring Diagram




Note 1: If output #4 is used for fast discharge, remove the jumper between I/O terminals 5 and 7 and place it between I/O terminals 7 and 9.

Note 2: If the feed interlock is used, remove the jumper between TB1 terminals 2 and 3, and wire in a dry contact for the feed interlock.

Note 3: If the discharge interlock is used, remove the jumper between TB1 terminals 4 and 5, and wire in a dry contact for the discharge interlock.

Note 4: AC Option - All output modules are Opto 22 generation 4 solid state devices rated at 28 - 240 VAC, 1 amp, non-inductive.
DC Option - All output modules are Opto 22 generation 4 solid state devices rated at 5 - 60 VDC, 1 amp, non-inductive.

Note 5: All inductive loads must be suppressed as close to the load as possible with R-C type suppression devices (ref. Mettler Toledo part no. 962-0034).

# Jumper and Switch Settings

## Controller

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

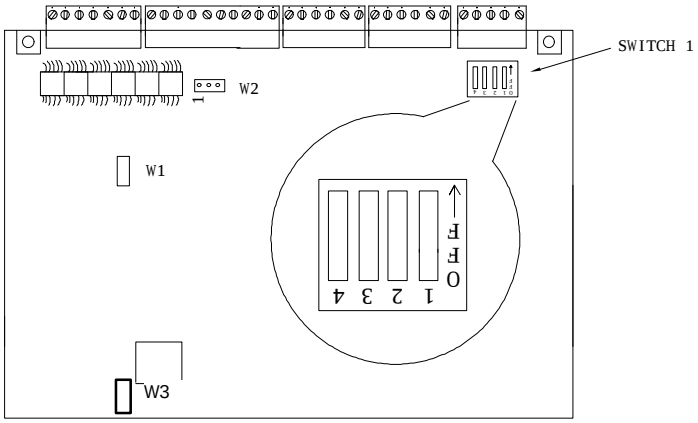



Figure 2-5: Controller PCB

- **W1** jumper should be removed for 3 mV/V, installed for 2 mV/V analog load cell inputs. Default = ON.
- **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 12 volts. Default = 1-2.
- **W3** jumper controls the on-board watchdog timer. It must be installed (enabled) except during testing at the factory. Default = ON.
- **W4-W7** (not shown) bypasses the protective resistors to protect the Controller PCB against miswiring 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 off for all DigiTOL bases and most other applications. Default = OFF.
- **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.

Jumper status is denoted as:
ON = jumper in
OFF = jumper out

- **SW1-1** is the setup enable switch. It should be ON to access all setup parameters. Default = ON.
- **SW1-2** is the legal-for-trade switch and should always be OFF. Default = OFF.
- **SW1-3** is the flash enable switch. SW1-3 must be ON when downloading new software. It must be OFF during normal operation. Default = OFF.
- **SW1-4** is always OFF.

Please note the direction of the OFF selection for Switch 1 settings. These are shown in the blown up section of Figure 2-5.

## Apply Power

Visually inspect the unit to verify that these steps have been properly carried out, then apply power.

**⚠ WARNING**

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

On harsh environment models, power is applied by connecting a line cord from the terminal strip 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 AND/OR PROPERTY DAMAGE.

## Power-up Sequence

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

1. All segments of the display window are lit to verify their operation.
2. The display reads “METTLER” then “TOLEDO” then “LYNXBATCH controller.” The LYNXBATCH controller performs internal power-up tests and verifies the material and recipe files.
3. After a delay, the controller displays the software part number.
4. Next, the controller tests communication with the load cell. The controller displays weight when successful communication is established. If the LYNXBATCH controller is unable to establish communication, an error is displayed.
5. If enabled, the LYNXBATCH controller power-up timer counts the minutes and seconds remaining before the unit advances to normal operating mode. Power-up timer configuration is discussed in Chapter 3.

# Scale Build Determination

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

## Minimum Increment Size for Bench and Portable Single DLC Scale Bases

The table below lists the minimum increment sizes for the DigiTOL Bench and Portable single DLC scale base models. Find the base being connected to the LYNXBATCH controller and compare the desired increment size to minimum increment size.

The minimum increment sizes listed 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<br>1997-0001 | 30 kg | 0.0005 | 0.0005 |
| 1996-0002 | 60 kg | 0.001 | 0.0005 |
| 1997-0002<br>2096-0003<br>2097-0001 | 100 kg | 0.002 | 0.001 |
| 1996-0003<br>2096-0001 | 140 kg | 0.005 | 0.002 |
| 2096-0002<br>2096-0004<br>2097-0002 | 300 kg | 0.01 | 0.005 |
| 2196-0001<br>2196-0003<br>2197-0001 | 500 kg | 0.01 | 0.005 |
| 2196-0002<br>2196-0004<br>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.
2. $$\mu V \text{ per Increment} = \frac{\text{Increment Size} \times \text{cell output} \times \text{excitation voltage (15)} \times 1000}{\text{Load Cell Capacity} \times \text{Number of Cells or Lever Ratio}}$$

   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 variables are listed in kg units, multiply by 2.2046 to convert to lb units.

   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 microvolt build table on the next page 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 | |
| | | 2mV/V | 3m/V/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 LYNXBATCH controller should never be programmed for less than 0.5 µV per increment when used with single load cell applications or less than 0.1 µV per increment with multiple load cell applications. It **CANNOT** be calibrated for builds exceeding 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, *Minimum Increment Size for Analog Scale Input* , to calculate the μV per increment.

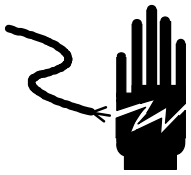
$$\frac{0.5\ \text{lb} \times 2\ \text{mV/V} \times 15 \times 1000}{2500\ \text{lb} \times 4\ \text{load cells}} = 1.5\ \mu\text{V per Increment}$$

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

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

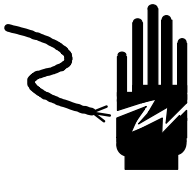
4. Check the microvolt build table to see that the 1.5 μV per increment build is within the acceptable range for 10,000 increments. It is, so this is an acceptable build.

# 3 Programming and Calibration



**WARNING**

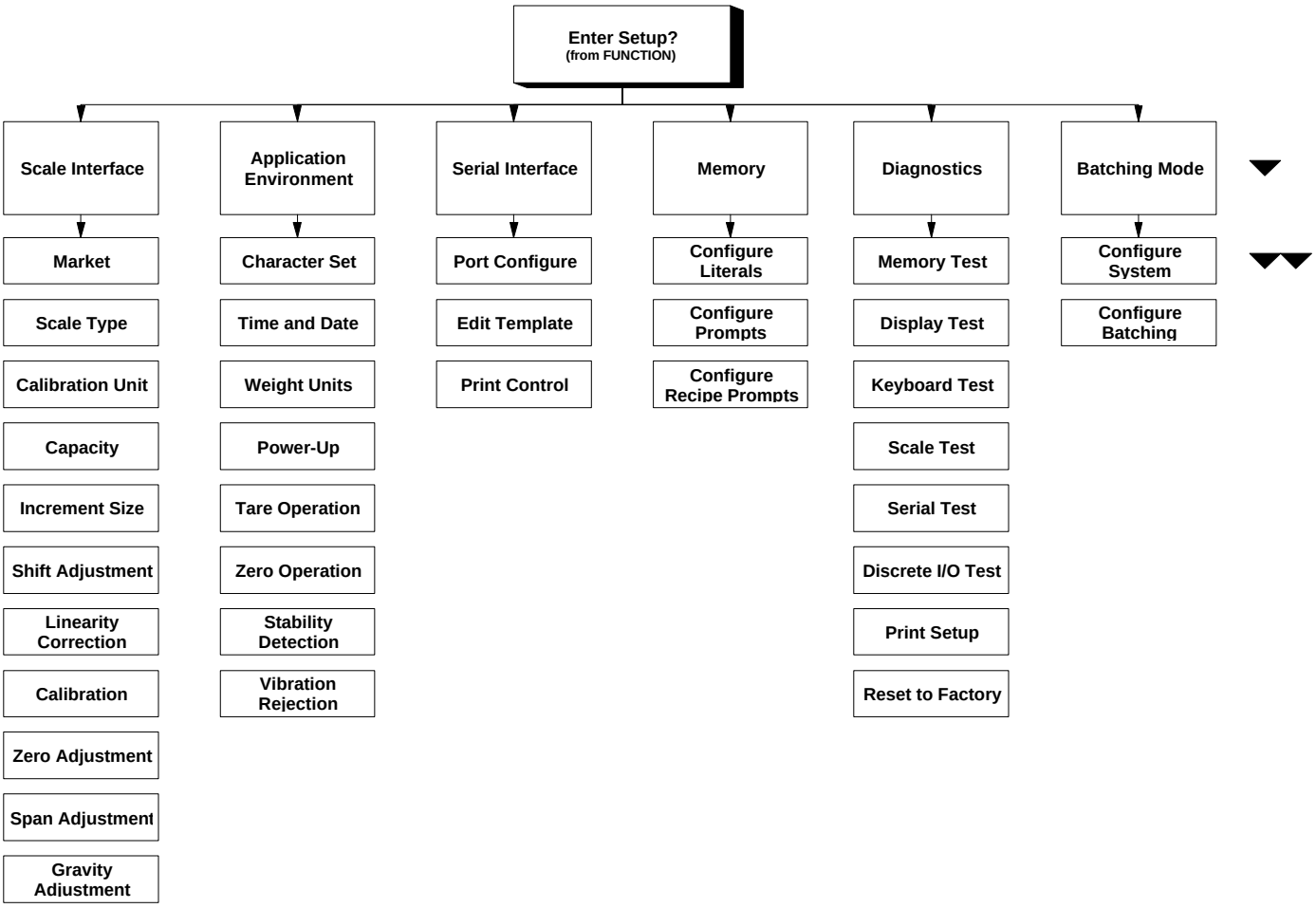
ONLY PERMIT QUALIFIED PERSONNEL TO SERVICE THIS EQUIPMENT. EXERCISE CARE WHEN MAKING CHECKS, TESTS AND ADJUSTMENTS THAT MUST BE MADE WITH POWER ON. FAILING TO OBSERVE THESE PRECAUTIONS CAN RESULT IN BODILY HARM.



**WARNING**

ONLY PERMIT QUALIFIED PERSONNEL TO PROGRAM METTLER TOLEDO EQUIPMENT. EXERCISE CARE WHEN CREATING PROGRAMS OR MAKING PROGRAM CHANGES WHEN OUTPUTS ARE CONNECTED TO EXTERNAL EQUIPMENT. FAILURE TO OBSERVE THESE PRECAUTIONS CAN RESULT IN BODILY HARM AND/OR PROPERTY DAMAGE.

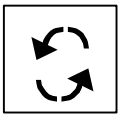
The setup parameters are divided into six program blocks as shown on the next page. Each is divided into sub-blocks in which you select and configure individual operating parameters.


Enter Setup?
(from FUNCTION)
Scale Interface
Market
Scale Type
Calibration Unit
Capacity
Increment Size
Shift Adjustment
Linearity Correction
Calibration
Zero Adjustment
Span Adjustment
Gravity Adjustment
Application Environment
Character Set
Time and Date
Weight Units
Power-Up
Tare Operation
Zero Operation
Stability Detection
Vibration Rejection
Serial Interface
Port Configure
Edit Template
Print Control
Memory
Configure Literals
Configure Prompts
Configure Recipe Prompts
Diagnostics
Memory Test
Display Test
Keyboard Test
Scale Test
Serial Test
Discrete I/O Test
Print Setup
Reset to Factory
Batching Mode
Configure System
Configure Batching

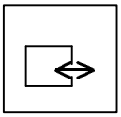
# General Information

## Keystroke Functions

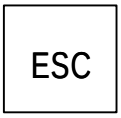

**Numeric Keys** input numeric entries such as threshold values and scale capacity. These keys are also used for alphanumeric entries.



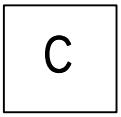
SELECT scrolls forward through a list of choices. Programming items appear in the display area. **The SELECT pushbutton performs the same function.**



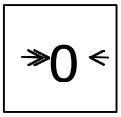
ENTER completes a response. Press **ENTER** after you have used the numeric keys to input data or the **SELECT** key to display an option. **The same function is performed by the START/CONTINUE pushbutton.**



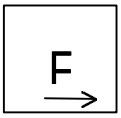

**ESCAPE** exits the current location, and the parameters previously configured are saved. Each time you press **ESCAPE**, you go back to the previous setup level.




**CLEAR** clears the current entry and allows you to key the response again.

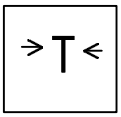



**ZERO** allows you to back up in the current program block and return to the previous step if you are in the first two setup levels.




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




**TARE**

## Program Block Access

To set program block parameters, you must enter the setup mode.

1. Press the **FUNCTION** key.
2. Press **SELECT** until the prompt **Setup?** is displayed, then press **ENTER**. If the **Setup?** prompt is not displayed, try the following:
   - Remove AC power.
   - Turn SW1-1 (on the Controller PCB) to the ON position
   - Power the controller and repeat steps 1 and 2.

3. At the **Pass?** prompt, enter your password. The first program block, Scale Interface (Scale I/F), should be displayed. Press **ENTER** to open this block or **SELECT** to choose another block.

## Navigation

Press **SELECT** or **ZERO** to scroll through the program blocks. When the desired block is displayed, press **ENTER** to open it.

Program blocks contain sub-blocks that handle specific functions. **SELECT** and **ENTER** toggle and confirm parameter option selection. After you configure one sub-block, the LYNXBATCH controller proceeds to the next. When you finish the last sub-block, the LYNXBATCH controller proceeds to the next program block. Press **ESCAPE** any time to exit.

**Note:** Cursors under the display indicate position within a program block.

| Arrows | Block Position |
|---|---|
| 1 Arrow ▼ | You are in setup mode top level |
| 2 Arrows ▼▼ | You are in a program block |
| 3 Arrows ▼▼▼ | You are in a sub-block |
| 4 Arrows ▼▼▼▼ | You are configuring an element within a sub-block |

## Exit Setup Mode

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.

To return to normal operation, press **ESCAPE** until **Exit?** is displayed. Press **ENTER** to confirm. The LYNXBATCH controller may go through the power-up sequence before returning to normal operation. To protect the setup parameters from being changed by an operator, turn SW1-1 to OFF. If the legal-for-trade switch (SW1-2) is ON, the LYNXBATCH controller prompts **SW1-1 ON?** when exiting setup as a reminder to turn SW1-1 OFF for legal-for-trade applications.

## Reset to Factory

See Appendix 7 for default values.

The *Diagnostics and Maintenance* block has a Master Reset option that lets you reset **all parameters in all blocks**. To reset the program block parameters:

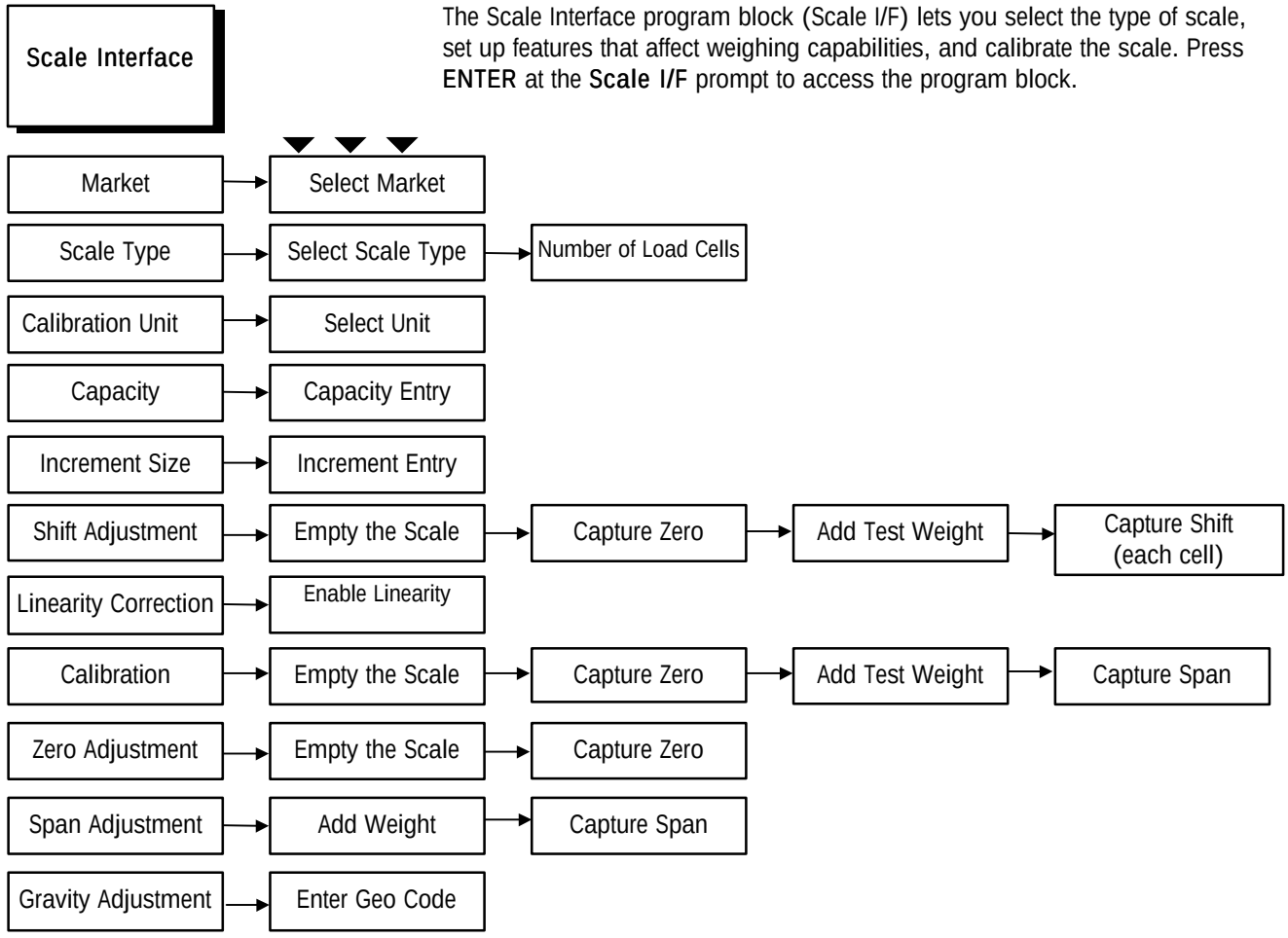
1. Press **ENTER** at the **Factory Reset** prompt.
2. At the **Sure?** prompt, select Y(es) or N(o) to continue with the reset operation, then press **ENTER**. The controller responds with the prompts **Reset Recipes?, Reset Materials?,** and **Reset Calibration?**
3. At each prompt, press **SELECT** to display Y(es) or N(o) to include or exclude the recipe list, material list, and calibration parameters. The message **Resetting** is displayed while the parameters are reset. The LYNXBATCH controller goes through its power-up sequence and returns to normal operating mode.

The **Pass?** prompt appears only if you have previously enabled password protection.

**⚠ CAUTION**

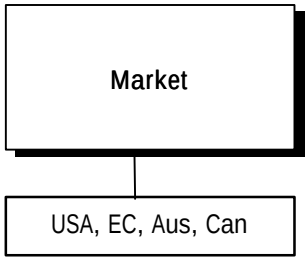
USE CAUTION WHEN RESETTING THE CALIBRATION VALUES. ALL CALIBRATION VALUES AND BATCHING DATA WILL BE LOST AND MUST BE RE-ENTERED.

# Scale Interface Program Block




The Scale Interface program block (Scale I/F) lets you select the type of scale, set up features that affect weighing capabilities, and calibrate the scale. Press **ENTER** at the **Scale I/F** prompt to access the program block.

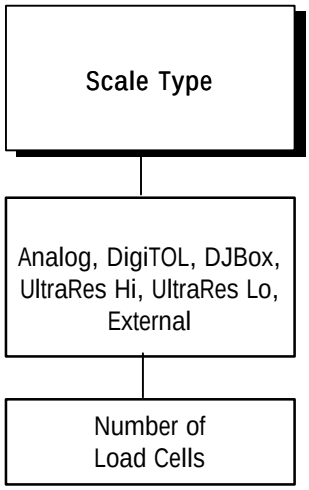
## Market Sub-block




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.
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 LYNXBATCH controller automatically continues to the next sub-block. Or, you can press **ESCAPE** twice to exit the setup mode.

## Scale Type Sub-block




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

1. Press **ENTER** at the **Scale Type** prompt.
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 (UBs, xx97**)
   - UltraResLo (UBs, xx97**)

   ***If DigiTOL J-Box is Selected**

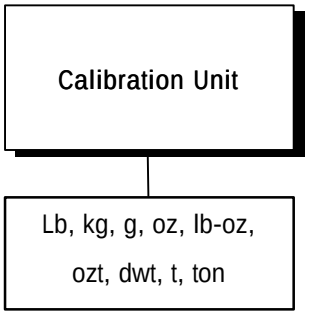
   At the **Cells?** prompt, press **SELECT** to choose the number of load cells connected to the DigiTOL J-Box (2-4). Press **ENTER**.

   If the scale type is changed, the LYNXBATCH controller displays the message **PleaseWait** as it exits setup mode and goes through the power-up sequence. You must reenter setup mode to continue configuring the program blocks.
3. Continue to the next sub-block or exit the setup mode.

*Produced prior to 5/98

**Produced after 4/98

## Calibration Unit Sub-block



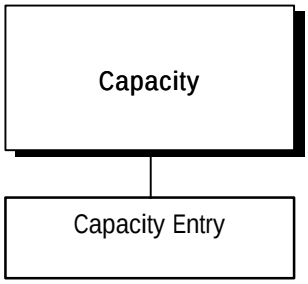

This sub-block lets you enter the units of measure to use when calibrating the scale and setting capacity and increment size. **If you change the calibration unit, you must recalibrate the scale.**

1. Press **ENTER** at the **Calib Unit** prompt.
2. At the **Unit?** prompt, press **SELECT** until the desired calibration unit is displayed, then press **ENTER**. Calibration units include:

   | | | |
   |---|---|---|
   | Pounds (lb) | Kilograms (kg) | Pound/Ounces (lb-oz) |
   | Ounces (oz) | Avoirdupois Tons (ton) | Pennyweight (dwt) |
   | Grams (g) | Metric Tons (t) | Troy Ounces (ozt) |

   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, to calibrate a 100 lb capacity scale with 0.5 ounce increments, enter 1600 for capacity and 0.5 for increment size. The LYNXBATCH controller always uses the primary (calibration) unit when in batching mode.
3. Continue to the next sub-block or press **ESCAPE** to exit the setup mode.

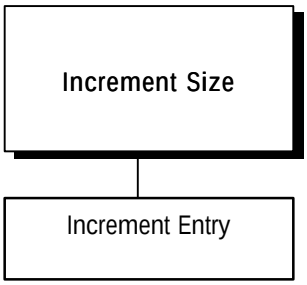
## Capacity Sub-block




This sub-block lets you enter the maximum scale capacity. During operation, the weight display will indicate **OVER RANGE** at 5 increments above this weight.

1. Press **ENTER** at the **Capacity** prompt. The LYNXBATCH controller displays the current scale capacity in the calibration units selected in the previous sub-block.
2. Key the desired scale capacity using the numeric keys.
3. Press **ENTER** to set the capacity.
4. Continue to the next sub-block or exit the setup mode.

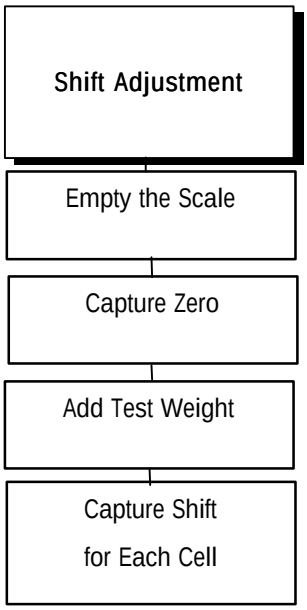
## Increment Size Sub-block




This sub-block lets you specify increment size, which is the smallest change in weight value the LYNXBATCH controller can 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 controller to display 0.1, 0.2, 0.3 and so on. Increment size also determines the smallest increment size for entering target weights and setpoints.

1. Press **ENTER** at the **Increment** prompt. The LYNXBATCH controller displays the current increment size.
2. Key the desired increment value, then press **ENTER** to set the increment.
3. Continue to the next sub-block or exit the setup mode.

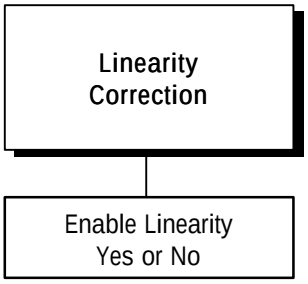
## Shift Adjustment Sub-block




The Shift Adjustment prompt appears only if you selected **DigiTOL J-Box** as the scale type. When using a DigiTOL J-Box, each load cell's output must be adjusted so that it is equal to that of 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.
2. At **EmptyScale**, remove all weight from the platform then press **ENTER**. The display reads **Cal Zero** as the controller captures zero.
3. At the **Load On N** prompt, place a test weight equaling approximately 50% of the scale's capacity on the platform. The LYNXBATCH controller automatically shift adjusts the scale for the current load cell as the display reads **Cap Cell N**.
4. Repeat steps 2 and 3 for each load cell connected to the DigiTOL J-Box.
5. When all load cells are shift adjusted, the controller indicates **Shift Done**. Continue to the next sub-block or exit the setup mode.

## Linearity Correction Sub-block

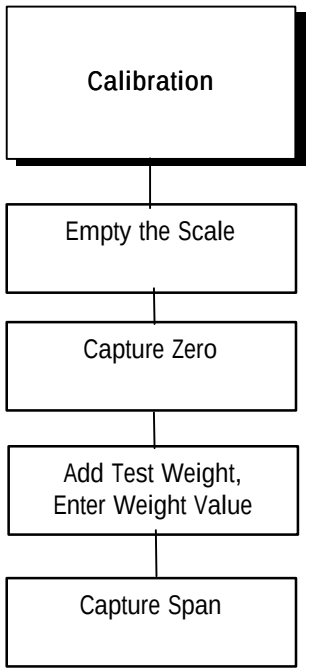



Linearity correction compensates for the non-linear performance of a load cell or weighing system. The LYNXBATCH controller must be calibrated or recalibrated **after** you enable linearity correction.

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

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

## Calibration Sub-block




Calibration involves emptying the scale, placing a known test weight on the empty platform, and allowing the LYNXBATCH controller to capture values for zero and span. You can calibrate a scale with or without linearity correction.

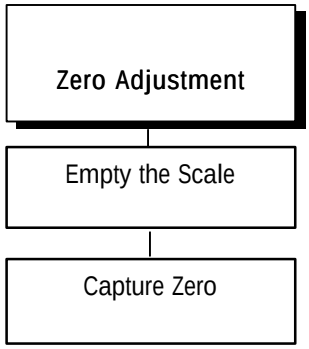
### Without Linearity Correction

1. Press **ENTER** at the Calibrate prompt.
1. At the **Empty Scale** prompt, remove all weight from the platform and press **ENTER**. The controller captures zero while the display reads **Cal Zero**. The cursor moves across the display, indicating the operation is in progress.
2. At the **Add Weight** prompt, place a weight equaling the scale's capacity (Mettler Toledo recommends 60% to 100%) on the platform. Press **ENTER**. A calibration error may result if insufficient weight is used.
3. Key in the weight added. Press **ENTER**. The LYNXBATCH controller captures span while the display reads **Cal Span**. A cursor moves across the bottom of the display, indicating the operation is in progress.
4. The display indicates **Calib Done**, then continues to the next sub-block.

### With Linearity Correction Enabled

1. Press **ENTER** at the **Calibrate** prompt.
2. At the **Empty Scale** prompt, remove all weight from the platform and press **ENTER**. The LYNXBATCH controller 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 weight on the platform equaling between 35% and 65% of the scale's capacity. Press **ENTER**.
4. Key in the weight added. Press **ENTER**. The controller 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 weight, then press **ENTER**. The controller captures full scale while the display reads **Cal Full**. The cursor moves across the lower display, indicating the operation is in progress.
7. The controller indicates **Cal Done**, then continues to the next sub-block.

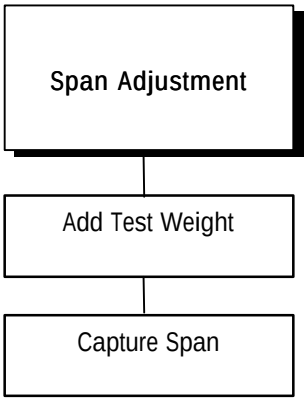
## Zero Adjustment Sub-block




The Zero value is the LYNXBATCH controller's reference for when the scale platform is empty. The Zero Adjustment sub-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.
2. At the **Empty Scale** prompt, remove all weight from the platform. Press **ENTER**. The LYNXBATCH controller captures zero while the display reads **Cal Zero**. The cursor moves across the display, indicating the operation is in progress.
3. The display indicates **Zero Done**, then continues to the next sub-block.

## Span Adjustment Sub-block

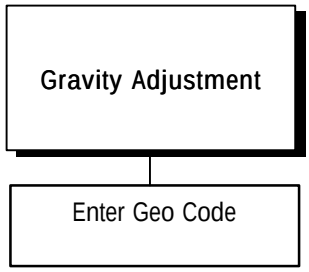



Span Adjustment lets you make minor span adjustments without recalibrating.

1. Press **ENTER** at the **Span Adj.** prompt.
2. At the **Add Weight** prompt, place a test weight on the platform.
3. Key in the weight placed on the platform in step 2, then press **ENTER**. The display reads **Cal Span** while the controller captures the new span. The cursor moves across the display, indicating the operation is in progress .

**Note:** The display indicates **Span Done**, then continues to the next sub-block. If linearity correction is enabled, you cannot do a span adjustment.

## Gravity Adjustment Sub-block

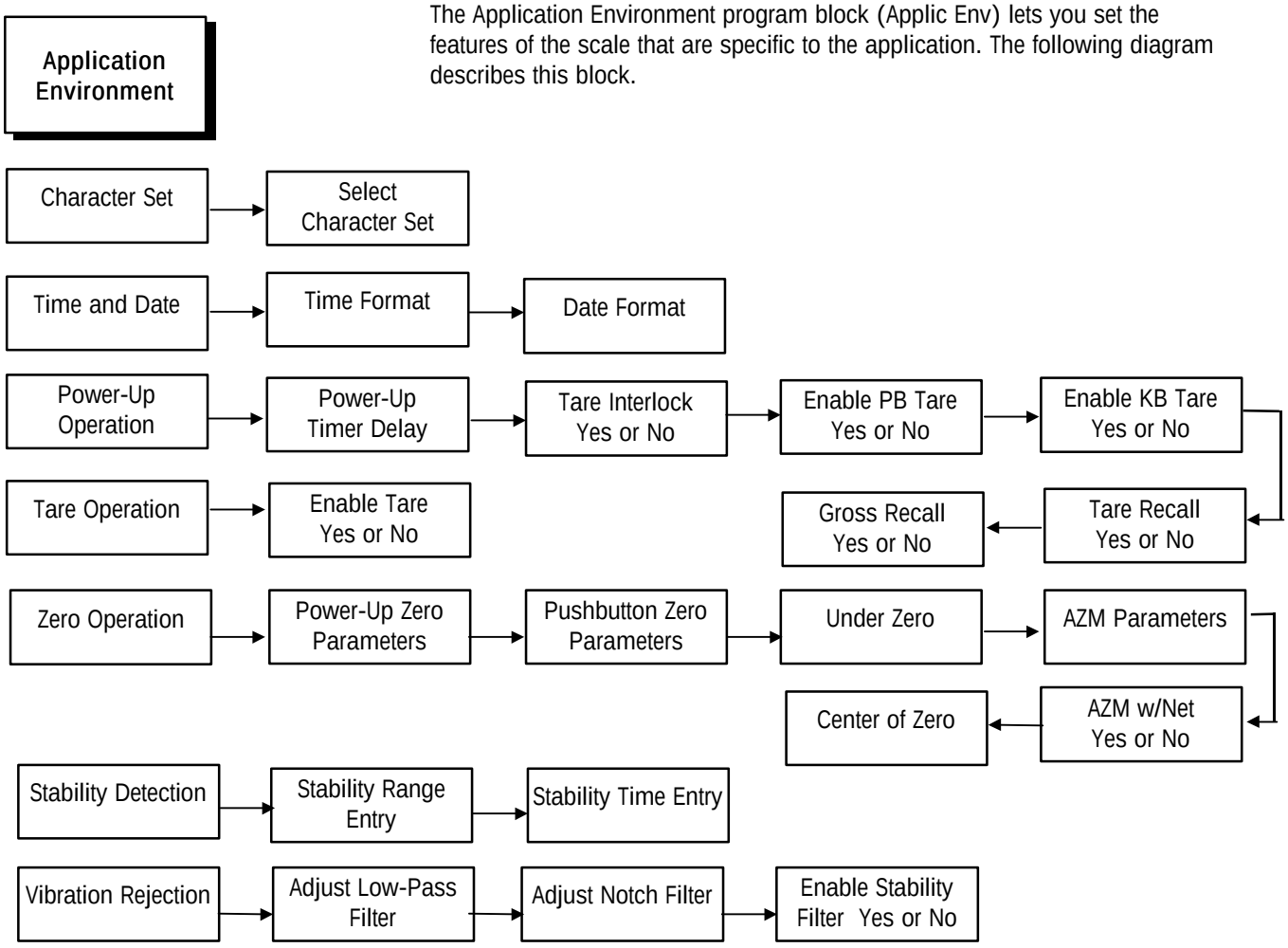



When a scale is calibrated in one location then moved to another, the Geo Code can compensate for differences in the acceleration of gravity due to latitude and elevation. Values from 00 to 31 are accepted. The default is 16 (U.S.).

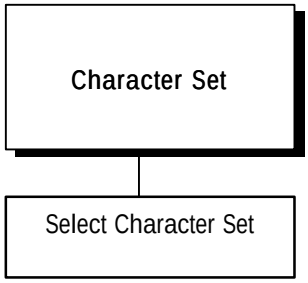
1. Press **ENTER** at the **Gravity** prompt to open the sub-block. The display reads **GeoVal?** and shows the current adjustment value.
2. Press **ENTER** to accept the current Geo Code or enter a new code. See Appendix 5 for a list of Geo Codes.
3. Continue to the next program block, or exit the setup 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 application. The following diagram describes this block.



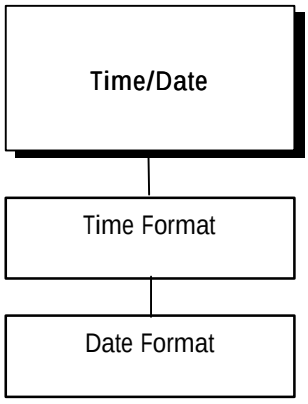
## Character Set Sub-block




This sub-block lets you select the character set 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.
2. Press **SELECT** to choose the character set. Options include:
   - USA • Spain-1 • Italy • Norway • Sweden
   - France • Latin America • England • Denmark-1
   - Germany • Spain 2 • Japan • Denmark-2
3. Press **ENTER** to use the character set displayed. Appendix 2 lists the ASCII characters that will be replaced.

## Time and Date Sub-block

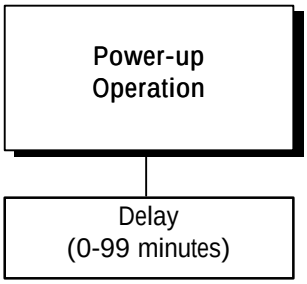



This sub-block lets you set the time and date format.

1. Press **ENTER** at **Time/Date**. Press **ENTER** at the **Time Fmt?** prompt.
2. At **Separ.?**, select a character to separate hour, minutes, and seconds.
   - (:) colon • (.) period • (sp) space • (-) dash
3. Select the desired time format.
   - 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.
   - (:) colon • (.) period • (/) slash
   - (-) dash • (sp) space
6. 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. Continue to the next sub-block or exit the setup mode.

Note: The LYNXBATCH has been confirmed as year 2000 compliant.

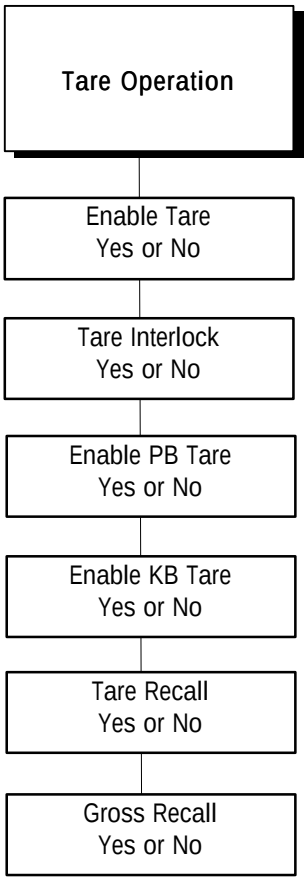
## Power-up Operation Sub-block




The Power-up sub-block lets you specify a time delay before the scale is operational. The LYNXBATCH controller displays a countdown clock indicating the time remaining in the specified warm-up period.

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 LYNXBATCH controller will delay before indicating weight in normal operating mode. Press **ENTER**.
3. Continue to the next sub-block or exit the setup mode.

## Tare Operation Sub-block



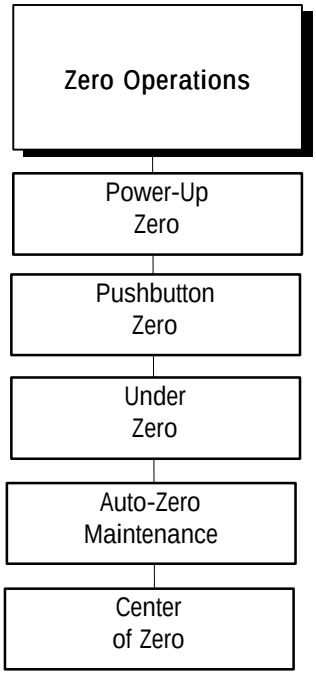

The Tare Operation sub-block lets you enable or disable tare options.

- **Pushbutton Tare** — If enabled, pushbutton tare subtracts the weight of an empty container on the scale when the TARE key is pressed. The LYNXBATCH controller displays the net weight when material is placed in the container.
- **Keyboard Tare** — If enabled, you can enter the known tare weight of a filled container, press **ENTER** to subtract that weight from the gross weight, and display the net weight of the sample (preset tare.)
- **Tare Interlock** — If 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.
2. At the **Tare Ena?** prompt, select Y(es) or N(o) to enable or disable tare. If you select N, the controller proceeds to the Zero Operation sub-block. Access to other tare features is not possible.
3. At the **Tr Intlk?** prompt, select Y(es) or N(o) to enable or disable tare interlock .
4. At the **PB Tare?** prompt, select Y(es) or N(o) to enable or disable pushbutton tare.
5. At the **KB Tare?** prompt, select Y(es) or N(o) to enable or disable keyboard tare.
6. At the **T Recall?** prompt, select Y(es) or N(o) to enable or disable the tare recall feature. If enabled, the controller displays the tare value when you press FUNCTION in normal operating mode.
7. At the **G Recall?** prompt, select Y(es) or N(o) to enable or disable the recall gross weight feature. If enabled, the controller displays the gross value when you press the FUNCTION key in normal operating mode.
8. Continue to the next sub-block or exit the setup mode.

## Zero Operation Sub-block




Set the zero reference parameters by configuring any of these options:

- **Power-up Zero** — Automatically zeros the controller at power-up if the weight on the scale is within a given range. Beyond this range, the display will not read zero until the weight falls within the range.
- **Pushbutton Zero** — Manually compensates for material build-up on the scale and recaptures zero.
- **Under Zero Blanking** — Determines when the display will go blank if the weight falls below gross zero (in scale divisions).
- **Auto Zero Maintenance (AZM)** — 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.

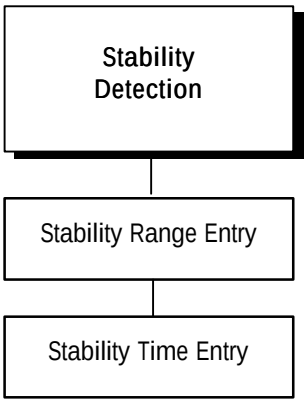
To configure the sub-block:

1. Press **ENTER** at the **Zero Oper.** prompt. Press **ENTER** at the **PwrUp Zr?** prompt to configure the power-up zero option.
2. At the **+ Range** prompt, enter a numeric value (0 to 99 indicating a percent of scale capacity) for the positive range of zero capture.
3. At the **– Range** prompt, enter a numeric value from 0 to 99 indicating a percent of scale capacity for the negative range of zero capture.
4. Press **ENTER** at the **PB Zero?** prompt to access pushbutton zero parameters.
5. At the **+ Range** prompt, enter a numeric value (0-99 indicating a percent of scale capacity) for the positive capture range.
6. At the **– Range** prompt, enter a numeric value for the negative capture range. This value is a percent of scale capacity (0 to 99).
7. At the **Under Zero?** prompt, press **ENTER** to set how far below gross zero the LYNXBATCH controller will continue to display weight.
8. At the **Blank?** prompt, enter 0 to 99 to specify the display divisions below gross zero before the display shows **Under Zero**. The default is 5 divisions. This value should be set higher if the scale typically goes negative, such as when a scale hopper is discharged.
9. Press **ENTER** at the **AutoZrMain** prompt.
10. At the **Rng?** prompt, enter a range (in divisions 0.01 to 99.99) within which the LYNXBATCH controller adjusts for small changes in zero. Adjustments are made at a rate of 0.03 increments per second.
11. At the **AZM Net?** prompt, select Y(es) to correct gross zero in net and gross weight modes. Select N(o) for gross mode only.
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. Continue to the next sub-block or exit the setup mode.

METTLER TOLEDO recommends that the Auto Zero Maintenance be disabled by setting the range parameter to zero for scales such as tanks or hoppers to prevent automatic zeroing of material build-up.

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.

## Stability Detection Sub-block

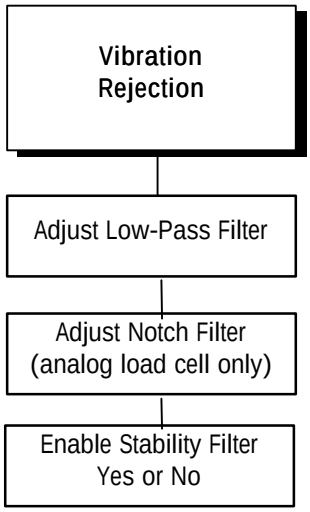



Stability detection determines when a no-motion condition exists on the weighing platform and occurs over a predefined period of time. The acceptable amount of motion is the range. The period of time is the interval.

1. Press **ENTER** at the **Stability** prompt. 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 9.9) 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.

**Note:** To disable motion detection, set range to 99.9; seconds to 0.1.

## Vibration Rejection Sub-block




The Vibration Rejection sub-block lets you configure the TraxDSP filters for optimum vibration/disturbance rejection and to program values including:

- **Low-pass Filter Frequency** — The frequency above which all disturbances are filtered out. The lower the frequency, the longer the settling time required.
- **Poles** — The number of poles determines the slope of the filtering cutoff. For most applications, 8 (analog load cell) or 4 (DigiTOL load cell) is acceptable. For analog load cells, do not enter a value lower than 4.
- **Notch Filter Frequency (Analog Only)** —Enables setting the low-pass filter higher to filter out all but one frequency and obtains a faster settling time.
- **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. Use only for static weighing applications.

To configure the sub-block:

1. Press **ENTER** at the **Vibration** prompt.
2. At the **Autotune?** prompt, select N(o) to bypass autotune or Y(es) to tune the low-pass and notch filters. If Y(es), the display reads **Measure 1** then **Adjust 1.** Repeat up to six times. When the vibration adjustment is made, the LYNXBATCH controller indicates **Auto Tune Completed** or **Auto Tune Failed**.
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 0.0 to 9.9.
5. At the **Poles?** prompt, enter the number of poles (0 to 10).
6. Press **ENTER** at the **Notch?** prompt to configure 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(es) or N(o) to enable or disable the stability filter. Use this for static weighing applications only.

Only if you are configuring an analog load cell. If configuring a DigiTOL load cell, the LYNXBATCH proceeds to step 7.

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

**Note**: If you find that the weight display is still unstable, try the following:

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 variation at each setting. When you see a noticeable improvement in 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.

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 fluctuating too much, repeat step b. Reduce the low-pass filter setting until the display is acceptable.

## Serial Interface Program Block

The Serial Interface program block (Serial I/F) lets you set parameters controlling data flow across the LYNXBATCH controller'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.

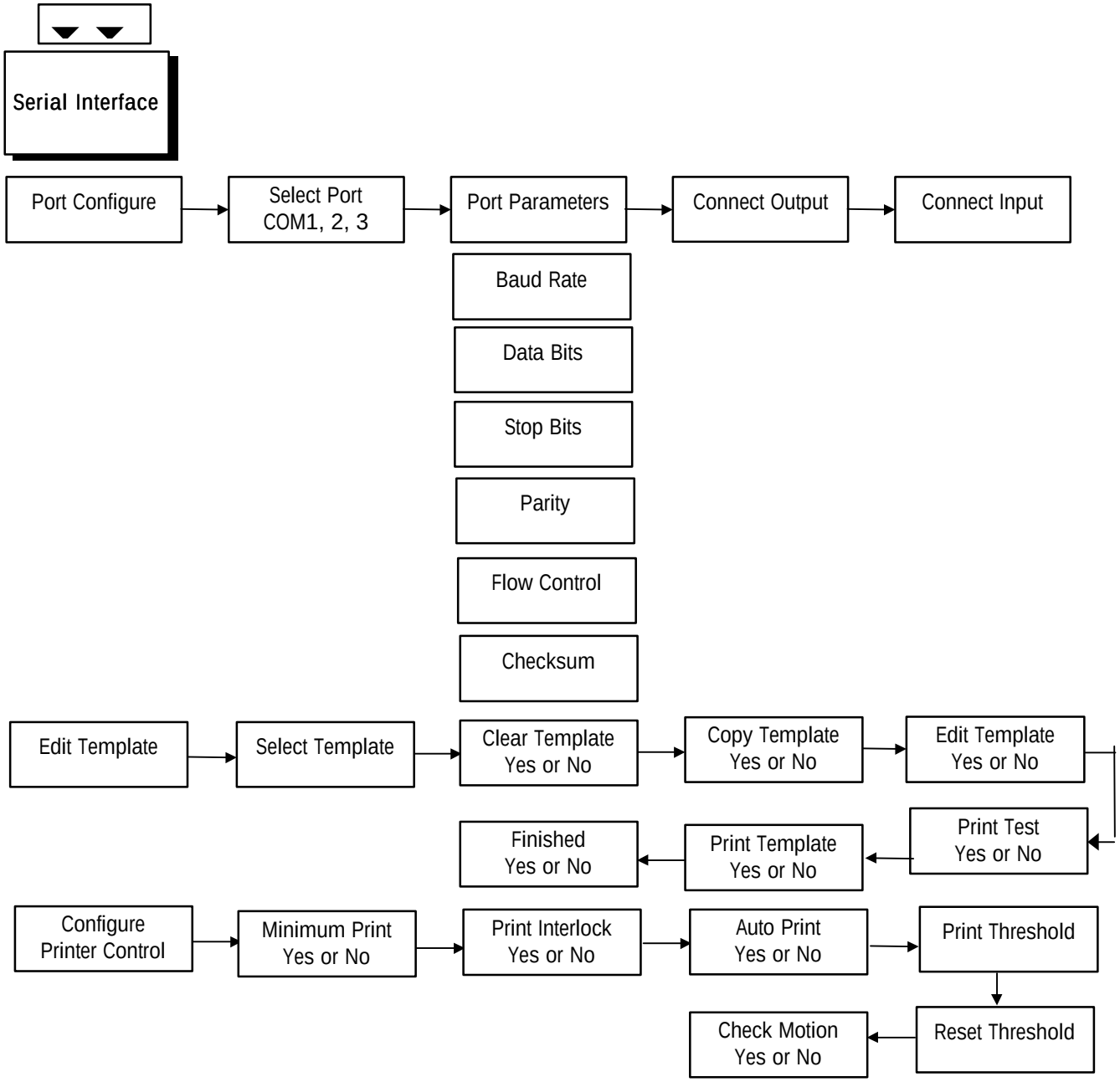
The LYNXBATCH controller has three serial I/F ports (COM1, COM2, and COM3). While one port might be used to support a DigiTOL type scale, others can be used for data input/output as needed.

If a DigiTOL scale or DigiTOL J-Box is configured through the Scale Interface block, COM3 will be unavailable. If a DigiTOL scale or DigiTOL J-Box is selected, the serial port is automatically setup by the LYNXBATCH controller for communications to a DigiTOL base.

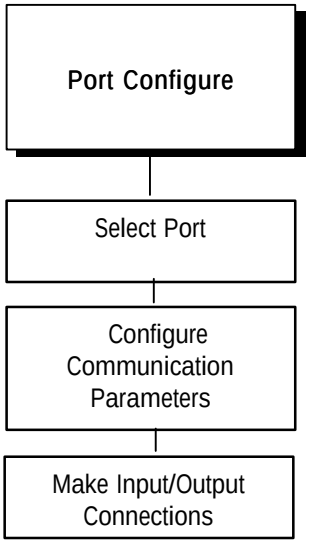
The Serial Interface program block lets you:

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

The diagram on the following page describes the Serial Interface program block.


Serial Interface
Port Configure
Select Port
COM1, 2, 3
Port Parameters
Connect Output
Connect Input
Baud Rate
Data Bits
Stop Bits
Parity
Flow Control
Checksum
Edit Template
Select Template
Clear Template
Yes or No
Copy Template
Yes or No
Edit Template
Yes or No
Print Test
Yes or No
Print Template
Yes or No
Finished
Yes or No
Configure
Printer Control
Minimum Print
Yes or No
Print Interlock
Yes or No
Auto Print
Yes or No
Print Threshold
Reset Threshold
Check Motion
Yes or No

## Port Configure Sub-block




This sub-block lets you configure the serial ports on your controller for data exchange. You can configure only those ports that are physically available. For example, if a DigiTOL scale is connected. The COM3 port will not be available for configuration. To configure the program block:

1. Press **ENTER** at the **Serial I/F** prompt and again at the **Port Confg** prompt.
2. At the **Port?** prompt, select COM1, COM2, or COM3 to configure.
3. Press **ENTER** at the **Parameters** prompt. Configure these parameters.

- **Baud Rate** - Press **ENTER** at the **Baud** prompt, then select the desired rate for the selected port. Baud rates include:
  - 300 • 1200 •4800 • 19.2k
  - 600 • 2400 • 9600 • 38.4k
- **Data Bits** - Press **ENTER** at the Data Bits? prompt. Select 7 or 8 data bits.
- **Stop Bits** - The number of stop bits to be transmitted for each ASCII character can be selected for COM2 and COM3. (COM1 = 1 always).
- **Parity** - Press **ENTER** at the **Parity** prompt, then select the desired option.
  - **Even** — The controller 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 controller 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.
  - **None** — For use with eight data bits.

XON/XOFF requires character input. It will work only 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 LYNXBATCH controller monitors the XON/XOFF characters and controls data flow to help eliminate buffer overflow problems.
  - Press **ENTER** at the **Flow Ctrl** prompt.
  - At the **Xon/Xoff?** prompt, select Y(es) to enable the handshake or N(o) to disable the handshake. If enabled, the LYNXBATCH controller stops transmission on receipt of the XOFF character (13h) and resumes on receipt of the XON character (11h).
- **Checksum** - Checksum is selectable for demand and continuous output modes. 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(es) or N(o) to enable or disable the transmission of the checksum character.

### Output/Input Connections

The LYNXBATCH controller is factory-programmed for a demand output and command input for COM1. If ENQ continuous mode is selected, both input and output are required. (The input prompt does not appear.) If Demand or other

continuous output is selected, a separate input mode can be configured for that port.

### Configure Output Connection

1. Press **ENTER** at the **Connection** prompt.
2. Press **ENTER** at **Output?** to configure the output 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 or None.

Demand Output is serial data sent on initiation from the operator or from within a batch. This is commonly used for output to a printer.

Continuous Output is serial data sent periodically at selected frequency or as commanded by receipt of a serial ENQ character.

### If Demand

- 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, or both). Templates are custom output formats configured in the Edit Template sub-block.
- Continue to "Configure Input Connection."

### If Continuous

- Press **ENTER** at the **Format** prompt to select a format for the continuous output. Select either standard or short form. (See Appendix 1.)
- 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, 10 Hz for DigiTOL load cells).
  - ENQ Synchronized (each time an ASCII ENQ is received). At the **Port?** prompt, select the COM port where the ENQ will be received to initiate the transmission.
  - User Rate (selectable from 0 to 99.9 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.

### If Host

- At the Address? Prompt, enter a number (2-9) representing the drop address for this LYNXBATCH. Each LYNXBATCH controller connected to one host must have a unique address number. Refer to Appendix 1 for an explanation of the protocol used in the LYNXBATCH host mode.

### Configure Input Connection

1. Press **ENTER** at the **Connection** prompt.
2. Press **SELECT** to display the **Input?** prompt, then press **ENTER** to configure the input mode for the COM port.
3. Select the input mode for the COM port: Command, String, or None.

### If Command

No other parameters need to be configured. The command input mode performs functions based on ASCII characters received through the serial port. ASCII characters and the LYNXBATCH controller 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.

### If String

String input is used to input data to the LYNXBATCH controller from another serial device such as a bar code reader. Data can be responses to operator prompts or used as a tare value when the LYNXBATCH controller is in normal operating mode.

- Press **ENTER** at the **Terminator** prompt. String input can be terminated by timing out between characters or on receipt of a specific character.
- At the **Timeout** prompt, select Y(es) or N(o) to enable or disable the timeout parameter for string termination.

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.

#### 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 before terminating the string.
- Press **ENTER** at **First char**. At **char#?**, enter the string position representing the first character to be used as the prompt input.

Prompting is configured in the Memory Program Block.

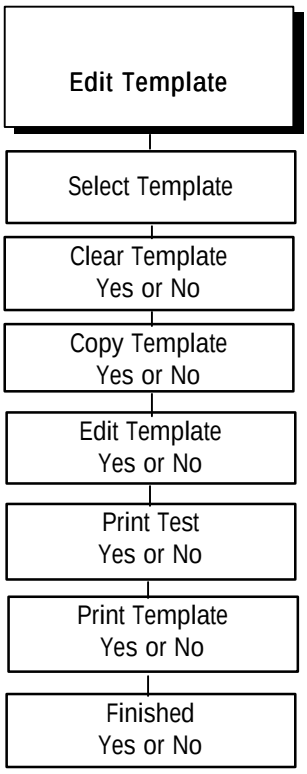
The LYNXBATCH controller recognizes the last character according to length of the string as determined in the Configure Prompts sub-block of the Memory program block.

#### If Timeout is Disabled

- At the **char?** prompt, press **SELECT** to choose an ASCII character from a list which includes control characters as well as printable characters, or enter a number, character, or uppercase letter.
- 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.

  The LYNXBATCH controller recognizes the last character according to the length of the string as determined in the Configure Prompts sub-block of the Memory program.
- At the COM1? prompt, configure another serial port or press **ESCAPE** to continue.

## Edit Template Sub-block




Templates are preconfigured output strings that are transmitted when a print operation is requested. You can use the default templates 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 printer control.

Each template can store up to 800 format characters. Test-print occasionally so the LYNXBATCH controller will "compile" the template and determine if space remains for more elements. If you overfill the template space, the LYNXBATCH controller responds with **Template Overflow**. The data that exceeds the 800-character limit will be lost.

1. Press **ENTER** at the **Edit Templ** prompt. At the **Tpl?** prompt, select the template you wish to edit or create (ptp01 = Template 1 or ptp02 = Template 2).
2. Select Clear, Copy, or Edit Template.

**Note:** You must respond Y(es) or N(o) to the prompt for each action.

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

**Copy Template.** Select Y or N at the **Copy?** prompt. If Y(es), select Other or Default, then you must confirm your selection at the **Sure?** prompt. The current template will be cleared before the new template is copied.

**Edit Template**. Select Y or N at the Edit? prompt. If Y(es), you can edit, insert, or delete template components. The *LYNXBATCH* controller displays Elem # 001 (element number 001) to indicate the first element of the template, then the actual data for element 001 is displayed. If End of Template is displayed, the template is empty.

- Press **SELECT** to display the next element or **ZERO** for the previous one. You can also enter the number of the desired element. After entering the first digit, the display reads **Element? x** where "x" is the digit just entered. When the complete number has been entered, press **ENTER**.
- Press **ENTER** to begin editing the displayed element. You can also begin editing at the end of template position. When the **Action?** prompt is displayed, 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 current element. All elements are moved down one number.
  - **DELETE** deletes the current element and moves each remaining element up one element number.
  - **DEL END** deletes all remaining elements from the current position to the end of the template.
- If you are editing or inserting, select a data type: field information, printable ASCII characters, or special characters. Field refers to actual data fields available through the LYNXBATCH controller such as time, date, prompts, literals, and weight data. Although the Field Code table

shows codes in lower case, the LYNXBATCH controller accepts field codes entered in upper or lower case.

| LYNXBATCH DATA FIELD | FIELD CODE | LENGTH |
|---|---|---|
| Tare Source Description | ws109 | 2 A/N "<space> <space>", "T<space>", or "PT" |
| Time of Print | jag20 | 11 A/N |
| Date of Print | jag19 | 11 A/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 |
| Current Recipe | bat02 | 2 N |
| Current Batch Size (so far) | bat03 | 10 A/N |
| Number of Batches | bat04 | 2 N |
| Batches Complete (so far) | bat05 | 2 N |
| Current Recipe Name | bat09 | 10 A/N |
| Current Recipe Batch No. | bat10 | 4 N |
| Current Recipe Target Batch Size | bat11 | 10 A/N |
| Current Dose # | bat16 | 2 N |

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

| 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 |

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

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

- **DEFAULT** prints data as defined by Mettler Toledo default.
- **LEFT** prints data left justified within the field. At the **Width?** prompt, enter the number of characters to define the field width.
- **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.

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

The following examples illustrate the displayed data format.

**Example 1** **/wt101 L 15** where:

**/** indicates a LYNXBATCH controller Data Field.

**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.

**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 create a signature line.

**CHAR** refers to normal printable ASCII characters on the keypad and CR/LF (carriage return and line feed) characters which make terminating a printed line faster than selecting each character individually, and allows quick addition of multiple lines to advance to the end of the page or to position a line on a page.

To choose CR/LF, press **SELECT** at the **Char?** prompt.

- At the **Quant?** prompt, enter the number of the character to print.
- **SPEC CHAR** refers to control characters not on the keypad or non-printable ASCII characters that can be used for printer control.
- At the **Spec?** prompt, use **SELECT** and ZERO to scroll through the list of these characters.
- At the **Quant?** prompt, enter the number of the character to print.

**SPEC CHAR** refers to "special" characters that are not on the LYNXBATCH controller keypad or non-printable ASCII characters such as ASCII SO (shift out - OE hex) which may be used for printer control. Special characters also include lowercase letters and various punctuation not available on the LYNXBATCH controller keypad. Use the LYNXBATCH controller's **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 ASCII character 0-255.

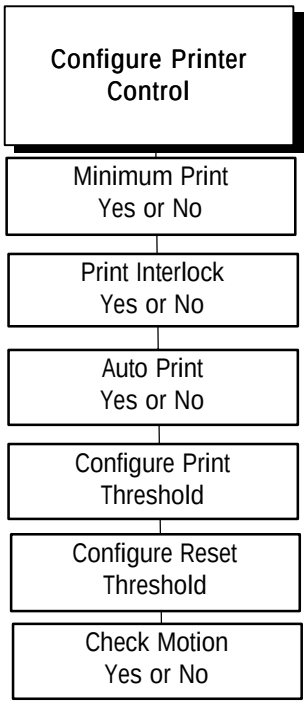
- At the **Quant?** prompt, enter the number of the selected character to print.

3. Press **ESCAPE** when finished or if you want to “compile” the template.
4. At the **Prt Test?** prompt, select Y(es) or N(o) to initiate or skip a test print. If Y(es), the data defined by the template will print. If more than one port is programmed for Demand printing, the LYNXBATCH controller may prompt you to select a specific port for output.

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

5. At the **Prt Temp?** prompt, select Y(es) or N(o). If Y(es), template elements are printed in the shortened format described above. If more than one port has been programmed to print this specific template, the LYNXBATCH controller may prompt you to select a specific port for output.
6. At the **Finished?** prompt, select Y(es) if you are finished or N(o) to return and continue editing this template.
7. Continue to the next sub-block or exit setup mode.

## Configure Printer Control Sub-block




This sub-block lets you configure general parameters that control when and how data is output to a printing device.

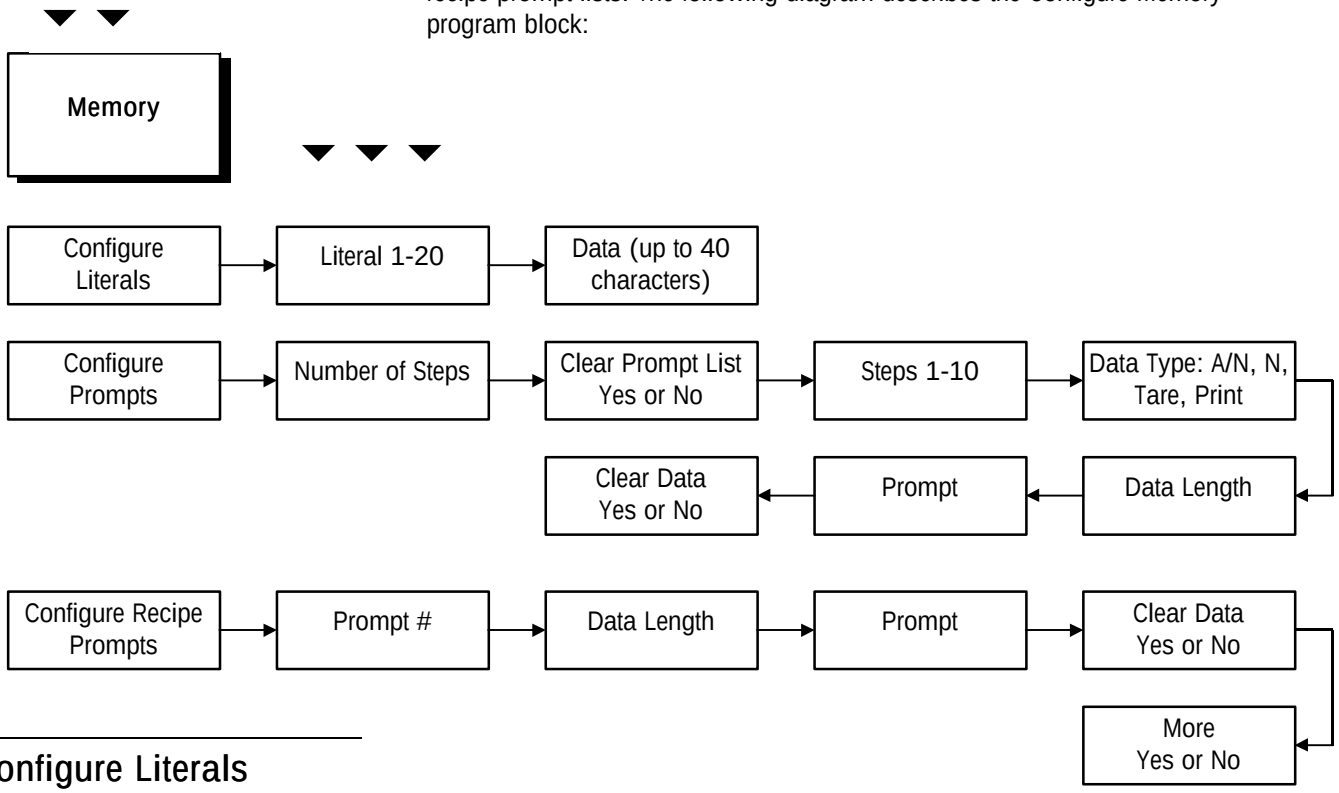
1. Press **ENTER** at the **Print Ctrl** prompt.
2. At the **Min. Prt?** prompt, select Y(es) or N(o) to enable or disable minimum print. If enabled, printing is possible only when scale weight exceeds a minimum value. If the weight exceeds threshold value, multiple prints are possible. The LYNXBATCH controller prompts you for minimum print threshold value.
3. At the **Prt I/L?** prompt, select Y(es) or N(o) to enable or disable print interlock. If enabled, print interlock disallows printing until the weight on the scale exceeds a threshold value. Multiple prints are disabled until scale weight falls below, then exceeds, the threshold value again. The LYNXBATCH controller prompts you for the print interlock threshold and reset values.
4. At the **Auto Prt?** prompt, select Y(es) or N(o) 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 LYNXBATCH controller prompts you for auto-print threshold and reset values.

**If Enabled**

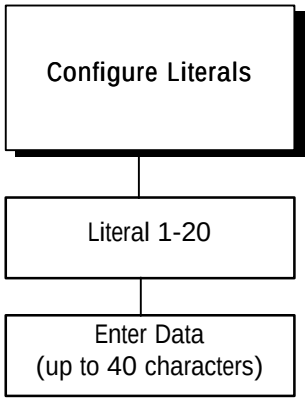
- Press **ENTER** at the **Prt Thres?** prompt, then enter a weight value. The LYNXBATCH controller automatically prints when the weight on the scale exceeds this threshold value.
- Press **ENTER** at the **Rst Thres?** prompt, then enter a weight value. The LYNXBATCH controller resets when weight on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

# Memory Program Block

This program block lets you configure literals, standard Lynx prompt lists and recipe prompt lists. The following diagram describes the Configure Memory program block:



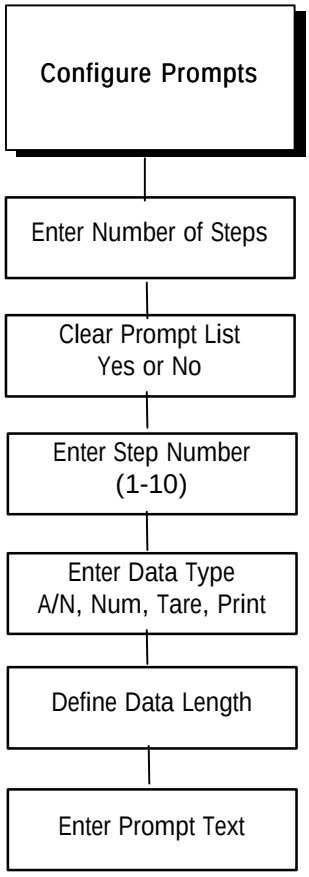

## Configure Literals Sub-block




Literals are text strings that can be printed in a template. They can be up to 40 characters long and are referenced by a field code. You can program up to 20 literals.

1. Press **ENTER** at the **Literals** prompt.
2. At the **Literal?** prompt, enter a number for the literal you are creating or editing (1 to 20).
3. At the **L01 (or current literal number)** prompt, enter the text for the literal. (Refer to entitled *Alphabetical/ Special 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.

## Configure Prompts Sub-block




If configured, the input to prompts and recipe prompts my be serial data from a device such as a bar code scanner. Refer to the Serial Interface program block discussed earlier in this chapter.

You can define up to10 prompts in a list that is presented prior to starting a batch or from the Memory key. The operator's responses can be printed in a template. The LYNXBATCH controller has three preprogrammed prompts that may be used or edited as needed:

- Prompt 1: OPERATOR?
- Prompt 2: PART NO?
- Prompt 3: LOCATION?

1. Press **ENTER** at the **Prompts** prompt.
2. Press **ENTER** at the **# Steps** display. This number tells you how many steps (how many prompts) are in the current prompt list.
3. At the **Clr List?** prompt, select Y(es) if you want to clear the existing prompt list and reset the step number to 0. Select N(o) if you want to edit or add steps in the existing prompt list.

   If **Y(es)**, at the **Sure?** prompt, select Y(es) or N(o) to clear or keep the current prompt list. If **N(o),** 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.
4. At the **Type?** prompt, select the type of data that will be entered by the operator in response to the prompt. Choices include:

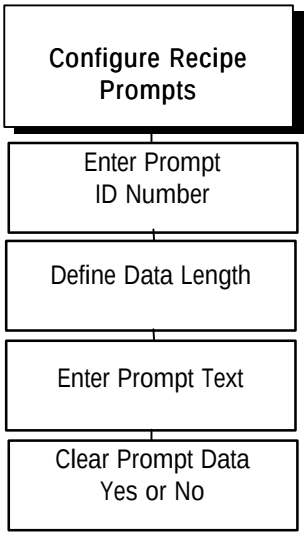
| Option | Data Type | Max. Length |
|---|---|---|
| A/N | Alphanumeric | 40 characters |
| Num | Numeric Only | 8 numbers |
| Tare | Tare Weight | N/A |
| Prnt | Print | N/A |

   Numeric data type prohibits the operator from entering anything other than numbers or a decimal point. Tare data type allows a preset or pushbutton tare entry. Print data type initiates a demand output in the prompt sequence.

5. At the **Length?** prompt, enter the maximum number of characters that the operator will enter in response to the prompt according to the type of data selected above.
6. Press **ENTER** at the **Prompt?** prompt, then edit or enter the actual text for the operator prompt (up to 20 characters). Press **ENTER** to accept the text.
7. At the **Clr Data?** prompt, select Y(es) or N(o) to enable or disable the clear previous data feature. If enabled, previous response data (for this prompt line only) is cleared at the next prompt list sequence. If disabled, the LYNXBATCH controller retains previously entered response data from this prompt line.
8. At the **More?** prompt, select Y(es) or N(o) if more steps will be entered in the prompt list. If Y(es), the controller automatically increments to the next step. Repeat steps 4 through 8 for each step in the prompt list.

9. Continue to the next sub-block or press **ESCAPE** to exit setup mode.

## Configure Recipe Prompts Sub-block

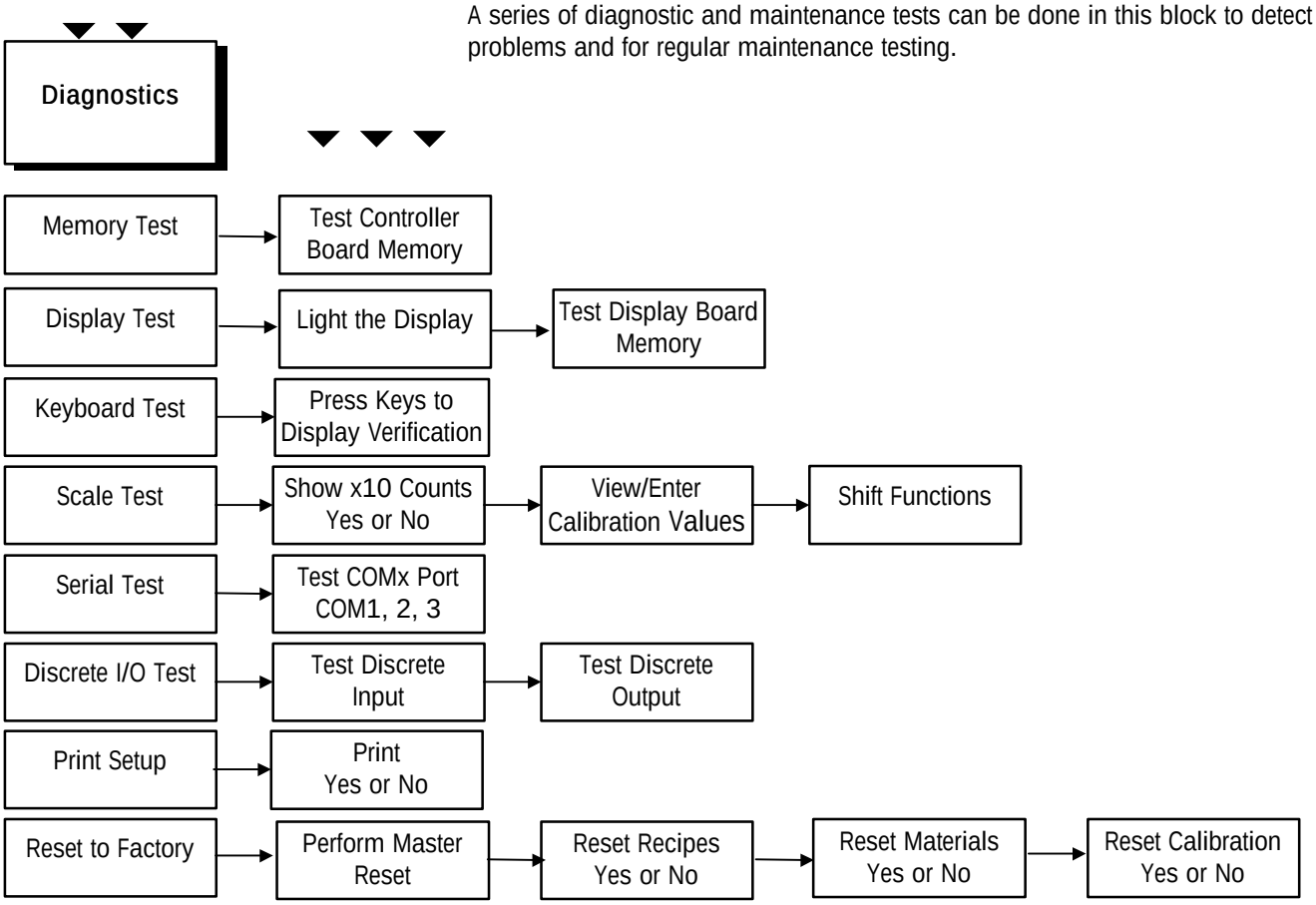



The LYNXBATCH controller uses numbers 11-20 for recipe prompts which are used by the "PrmptID" action code in a recipe to prompt the operator for data input.

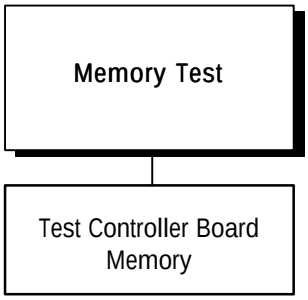
1. Press **ENTER** at the **RecpPrmpts** prompt.
2. At the **PrmptNo?** prompt, enter an ID number (11-20) for the recipe prompt.
3. At the **Length?** prompt, enter the maximum number of characters that the operator will enter in response to the prompt.
4. Press **ENTER** at **Prompt?**, then enter or edit the actual text for the prompt (20 characters maximum). Press **ENTER** to accept the text.
5. At **Clr Data?**, select Y(es) or N(o) to enable or disable the clear previous data feature. At **More?**, select Y(es) or N(o) to indicate if more steps will be entered. If Y(es), the controller automatically increments to the next step. Repeat steps 2-5 for each step.
6. Press **ENTER** to continue to the next sub-block or press **ESCAPE** to exit the Configure Memory program block.

# Diagnostics and Maintenance

A series of diagnostic and maintenance tests can be done in this block to detect problems and for regular maintenance testing.



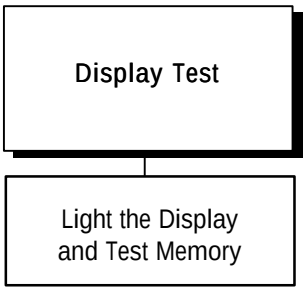

## Memory Test Sub-block




The Memory Test sub-block tests the Flash memory, RAM, and EEPROM on the Controller board. The results are displayed on the controller.

1. Press **ENTER** at the **Memory** prompt. The controller displays the Controller PCB software revision and part number, then tests ROM, RAM, and EEPROM. As the tests are complete, the controller displays the results.
2. Continue to the next sub-block or exit the setup mode.

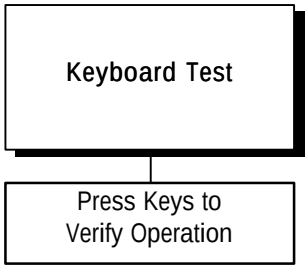
## Display Test Sub-block




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

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

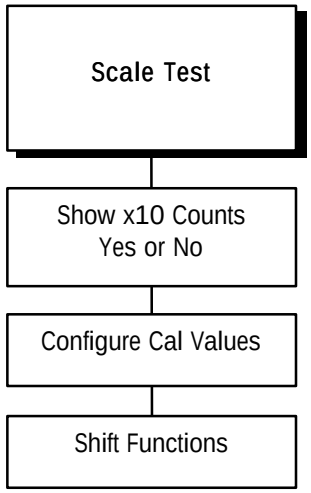
## Keyboard Test Sub-block




This test verifies the operation of each key on the LYNXBATCH controller keypad.

1. Press **ENTER** at the **Keyboard** prompt. The LYNXBATCH controller displays the message **Exit w/ ESC** indicating that you can press **ESCAPE** to exit the test.
2. Press each key on the keypad. If a key works, the key name is displayed. If it respond. For example, to test the **MEMORY** key, press **MEMORY** on the does not work, the controller does not keypad. If it works properly, the display reads **Memory**. If it 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**.

## Scale Test Sub-block




This sub-block tests the stability of the scale with regard to environment and calibration.

1. Press **ENTER** at the **Scale** prompt.
2. At the **x10 Cnts?** prompt, select Y(es) or N(o) to show scale resolution 10 times higher than normal. The higher resolution indicates the stability of the weight signal input. Press **ESCAPE** to exit the x10 mode.
3. At the **Cal Vals?** prompt, select Y(es) or N(o) to view or enter calibration values. The calibration values of one scale can be applied to a new Controller PCB by manually entering the values. If Y(es), 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 Wt?** prompt to display the last test weight used for mid weight calibration. Press **ENTER** to continue or enter a new value.
- Press **ENTER** at the **Mid Cnts?** prompt to display the current calibration counts at mid weight. Press **ENTER** to continue or enter a new value.
- Press **ENTER** at the **Hi Wt?** prompt to display the last test weight used for high weight calibration. Press **ENTER** to continue or enter a new high scale weight value.
- Press **ENTER** at the **Hi Cnts?** prompt to display the current calibration counts at high weight. Press **ENTER** to continue or enter a new value.

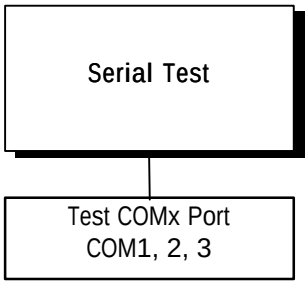
**Note:** If Linearity is not enabled, only **Hi Wt?** and **Hi Cnts?** are displayed.

If DigiTOL or DigiTOL J-Box is Selected:

- Press **ENTER** at **Shift Cons** to display the shift constants for the DigiTOL junction box. Enter a new shift constant value for each load cell (1 to 8).
- Press **ENTER** at **LC Counts** (DigiTOL scales only) to display the raw counts value for each cell (C1 - C8).
- Press **ENTER** at **Reset Shft** to return the shift adjustment factors to 1.0. This prompt appears only if the scale selected is DigiTOL J-Box.
- At the **Sure?** prompt, select Y(es) or N(o) to confirm or abort the shift reset operation.

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

## 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 from a designated port or receive a string of input data.

1. Press **ENTER** at the **Serial I/O** prompt.
2. At the **Test?** prompt, press **SELECT** to choose the serial port. The display reads **Test COM?:** until serial input is received. Characters are then displayed. The LYNXBATCH controller 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. Change the DigiTOL scale type to Analog or None through the Scale Interface program block before performing a serial test.

This diagram shows how to connect the output to the input for the serial ports and all types of serial physical communications.

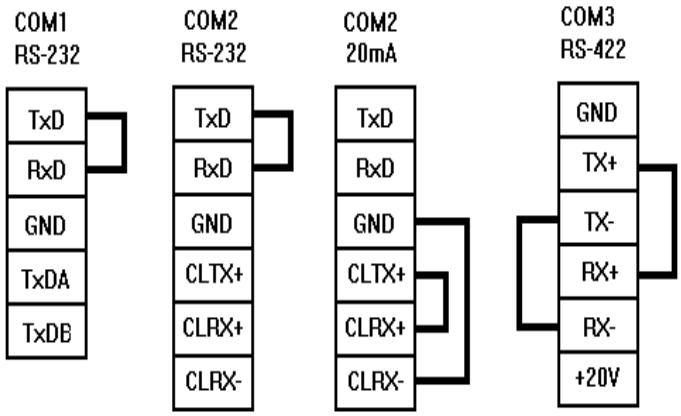
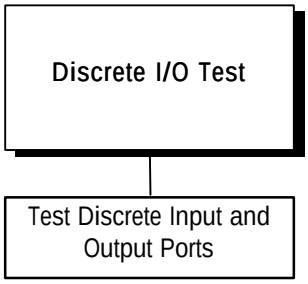



Figure 3-1: Serial Test Jumpers

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.

## 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 monitor inputs. The discrete I/O test is useful in installation and controller and hardware diagnostics.

1. Press **ENTER** at the **Discrt I/O** prompt.
2. The display flashes **!WARNING!** to let you know that the test could cause electrical equipment connected to the LYNXBATCH controller to start up.

**⚠WARNING**

**This test allows you to turn the outputs ON and OFF from the LYNXBATCH controller keypad. It is totally unrelated to the weight. If electrical equipment is connected to the output of the LYNXBATCH controller during this test, it may start automatically. Make sure all appropriate precautions have been taken to prevent personal injury during the test. Mettler Toledo suggests unplugging the Discrete I/O connector from the rear of the LYNXBATCH controller and using LEDs or a volt meter to verify correct operation of outputs.**

3. At the **Sure?** prompt, select Y(es) or N(o) to indicate if you want to continue with the Discrete I/O Test. If Y(es), the **Test?** prompt will appear. Select PAR1 to test inputs or PAR2 to test outputs on the Controller Board or

PAR3 to test inputs or PAR4 to test outputs on the Expansion I/O Option Board.

**Discrete Input**

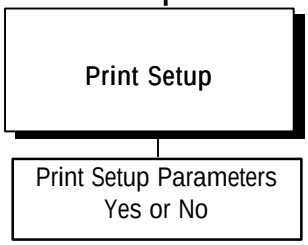
The display will read 1:FFF indicating that the three discrete inputs are all false or "OFF". When one of the inputs is held to logic ground for 100 ms or longer, the "F" will change to a "T" to indicate a true or "ON" condition. When done, press **ESCAPE** to exit the test for the discrete inputs.

**Discrete Output**

The display reads 2: 00000, indicating the five discrete outputs are all logic 0 or "OFF". The first digit will blink to indicate output 1 is the active output. Press the number "1" to turn it on. Pressing "0" returns this output to "OFF". To move to the next output (output 2), press **SELECT**. The second digit blinks. Press **ESCAPE** to exit the test. All of the outputs will turn off.

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

## Print Setup Sub-block



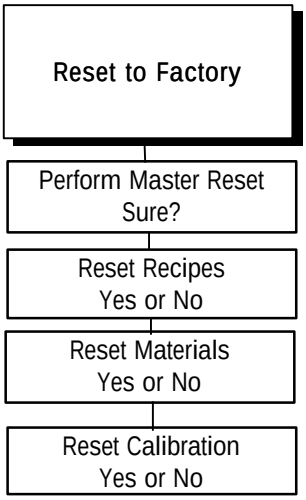

If the printer is "over-run," slow the baud rate or enable ON/OFF flow control for both the LYNXBATCH and printer. (Requires transmit and receive physical connections.)

The Print Setup sub-block prints the controller setup information as it is defined in the program blocks. Print setup data will be sent out to the port that has been selected for demand output.

1. Press **ENTER** at the **Prnt Setup** prompt.
2. If multiple serial ports have been programmed for Demand Output at the Use **Comx?** prompt select one port to receive test data. If only one port is configured, the LYNXBATCH controller skips this step.
3. At the **Print?** prompt, select Y(es) to print the setup parameters defined in the program blocks. Or, press **ENTER** to select N(o) to not print.

   Setup data is printed in a 40-column format compatible with the Mettler Toledo 8856 Strip Printer. A standard 80-column printer such as Mettler Toledo 8845, will also work. Label printers are not acceptable.
4. Continue to the next sub-block or exit the setup mode.

## Reset to Factory Sub-block

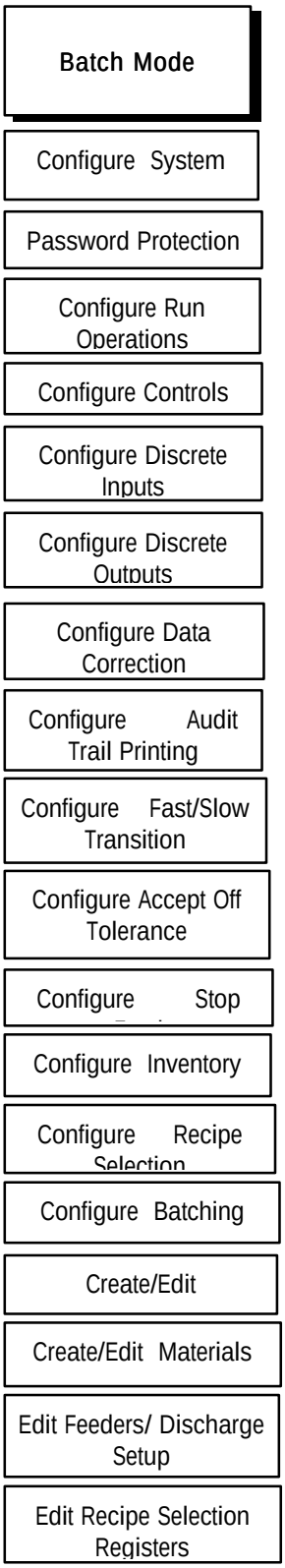



The Reset to Factory sub-block allows you to return the parameters for all program blocks to their original settings.

1. Press **ENTER** at the **Factry Rst** prompt.
2. At the **Sure?** prompt, select Y(es) to confirm your intention to reset or N(o) to exit without resetting all parameters. If **Y(es):**
   - At the **Recipes?** prompt, select Y(es) to reset the recipe file or N(o) to keep the recipes. If Y(es), all recipes are deleted and you must reenter them.
   - At the **Materials?** prompt, select Y(es) to reset the material list or N(o) to keep the material list. If Y(es), all materials are deleted and you must reenter them.
   - At the **Rst Cal?** prompt, select the default N(o) to reset all parameters **except** calibration. Select Y(es) to reset all parameters **including** the scale calibration parameters. If you reset the calibration values, you will need to recalibrate the scale.

The LYNXBATCH controller displays the message **Resetting** and all program block parameters (except print templates) are returned to factory settings. Recipes, materials, and calibration parameters are reset as requested above. After resetting, the LYNXBATCH controller will perform its normal power-up sequence.

# Batch Mode Program Block

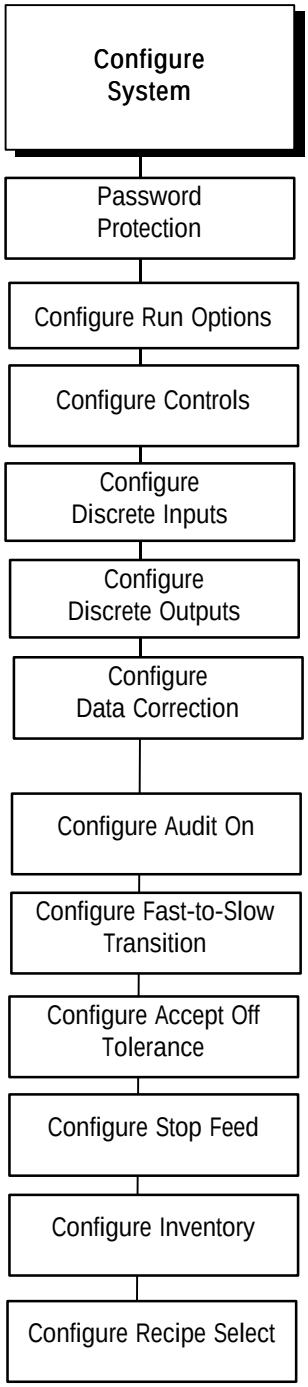



The Batch Mode program block has two sub-blocks:

- **Configure System** lets you set up the behavior of the LYNXBATCH controller according to the requirements of the application. It is important that you review and configure all of the parameters in this sub-block before setting up materials or recipes.
- **Configure Batching** lets you define the materials that will be handled in the system, feeder operation, and recipes that will be needed.

Note: Refer to Appendix 2 prior to beginning setup.

## Configure System Mode Sub-block




Learn mode automates the setting of the preact and/or dribble values for the material by exercising the material feed and observing the behavior of the material flow. Refer to Appendix 4 for an explanation of learn mode.

The Configure System Mode sub-block lets you configure the material handling parameters for your system. Press **ENTER** at the **Batching** prompt to access the program block, then press **ENTER** at the **Confg Sys** prompt.

### Change Password

1. Press **ENTER** at the **Passw Prot** prompt. At the **Chng PW?** prompt, select Y(es) to change or N(o) to maintain the existing password. If Y(es), **Pass?** is displayed and you enter a password at step 2. If N(o), the LYNXBATCH controller goes to step 3. Press **ESCAPE** any time to quit password protection.
2. Enter a password (up to eight characters). When a new character is entered, the previous character shifts left and changes to an asterisk (*) so only the most recently entered character in the password is shown. Press **ENTER** to accept the entered new password. Press **ESCAPE** to abort password entry and continue to Configure Batch Mode.
3. At the **Setup?** prompt, select Y(es) to enable or N(o) to disable password protection. If enabled, you will be prompted to enter the password each time you enter the setup mode.
4. At the **Recipes**? prompt, select Y(es) to enable or N(o) to disable password protection of User Recipe Editing from the **MEMORY** key. User Recipe Editing must also be enabled in the Run Options program sub-block.
5. At the **Clr Tot?** prompt, select Y(es) to enable or N(o) to disable password protection for clearing totals. If enabled, you will be prompted to enter the password each time you clear the report accumulator totals.
6. At the **Mtl Vrfy?** prompt, select Y(es) to enable or N(o) to disable password protection for material verification. If enabled, you will be prompted to enter the password each time you bypass material verification in the manual batch mode.

### Configure Run Options

1. Press **ENTER** at the **Run Option** prompt. At the **User Rcp?** prompt, select Y(es) to enable or N(o) to disable User Recipe Editing from the **MEMORY** key. This limits access to editing of recipes and materials without exposing the rest of the setup sections.
2. At the **User Adj?** prompt, select Y(es) to enable user adjustment of the material target values, by pressing the **MEMORY** key, when running a batch in Semi-Automatic mode. Select N(o) to disable user adjustment of the values.
3. At the **Vrfy Mat?** prompt, select Y(es) to require material verification for Manual Weighments or Hand Adds (M_Weigh or H_Add action codes) prior to adding the material. Material verification requires a material name to be received serially that matches the material name programmed in the LYNXBATCH controller. This is frequently accomplished with a bar code scanner. Select N(o) to disable material verification. To set the

communication parameters for the bar code reader serial port, refer to the serial port confirmation sub-block.

4. At the **Lrn Mod?** prompt enter a percentage value from 0 to 50 to indicate how the LYNXBATCH controller will perform learning of Preact and Dribble values. If zero is entered, learn mode is disable. A value from 1 to 50 tells the LYNXBATCH controller what percentage of material to feed prior to stopping to learn the behavior of the material handling equipment. The learn mode will operate only when the preact and/or dribble value is zero or it will learn the preact value each time if the Weigh Learn action code is used in a recipe.
5. At the Bat Pace? prompt, enter a value from 0-9 for the number of seconds the LYNXBATCH controller should pause between each batch when running more than a single batch. Multiple batches may be requested if the number of batches options in data correction is enabled.

### Configure Controls

It is recommended that you enable only the control modes method. This will simplify the operator's experience of the LYNXBATCH.

1. Press **ENTER** at the **Controls** prompt.
2. At the **Man Ctl?** prompt, select Y(es) to enable manual control of material feeders outside of recipe execution or N(o) to disable manual control. If enabled, Manual Control will permit the operator to select the desired output then turn the output on by pressing and holding the **START/CONTINUE** push button.
3. At the **Semi Ctl?** prompt, select Y(es) to enable semi-automatic control of recipe execution. Semi-automatic recipe execution is equivalent to a "single-step" mode of operation whereby the operator must initiate each line of the recipe prior to execution of the Action Codes in the recipe.
4. At the **Auto Ctl?** prompt, select Y(es) to enable automatic control of recipe execution. Automatic recipe execution provides for execution of a recipe from its beginning through to its end according to the Action Codes that are programmed in the recipe.

If an output is to be used to control a mixer or other external device that is not listed as an option, set the corresponding output to "None."

When an output is set to "None," you can use the OUTPUT action code to turn outputs on or off from within a recipe.

### Configure Discrete Inputs

If your LYNXBATCH controller has an Expanded I/O option installed, press **ENTER** at the Disc In prompt to configure the discrete inputs on the board.

Next you will be prompted to configure each of the discrete inputs for monitoring external signals such as limit switches, push buttons or outputs from external logic devices such as a PLC. You will configure the inputs according to the physical connections that will be made to them. The inputs are designated In 4 through In 11 as labeled on the Expansion I/O Option board terminal strip. Inputs In 1 through In 3, on the controller board, cannot be re-assigned.

At the In 4 through In 11 prompt, press **SELECT** followed by **ENTER** to choose one of the following input options:

- None (Inputs set to None can be monitored by the If Input action code in a recipe)
- FdOK (Feed OK – usually connected to a discharge closed limit switch or a container in-place sensor)
- DsOK (Discharge OK – usually connected to a downstream sensor or logic to indicate that it is OK to discharge the scale)

- RmtS (Remote Start – if the LYNXBATCH is ready to remotely start executing a recipe, this input will cause it to start)
- RS_1 (Recipe Selection Bit 1 – may be used with RS_2 to remotely select one of four recipe IDs (0,1,2,3) to be run)
- RS_2 (Recipe Selection Bit 2 – may be used with RS_1 to remotely select one of four recipe IDs (0,1,2,3) to be run)

## Configure Discrete Outputs

Press **ENTER** at the Disc Out prompt to configure the discrete outputs on the high level output board and, if installed, on an Expanded I/O Option board.

Refer to Appendix 2 for an explanation of how to wire and configure LYNXBATCH inputs and outputs for a variety of application configurations.

Next you will be prompted to configure each of the discrete outputs for control of feeders, valves, discharge gates, or other external devices. You may also use outputs to send a status signal to logic devices such as a PLC. You will configure the outputs according to the physical connections that will be made to them. The outputs on the high-level output board are designated 1 through 5 and correspond to the controller board outputs Out 1 through Out 5. The Expanded I/O Option board outputs are designated Out 6 through Out 13 as labeled on the Expansion I/O Option board terminal strip. The LYNXBATCH automatically senses the presence of an Expansion I/O Option and prompts for output assignments accordingly.

At the **Out 1** through **Out 5** (or Out 13) prompt, press **SELECT** followed by **ENTER** to choose one of the following output options:

- None (Outputs set to None can be controlled by the Output action code in a recipe)
- F1 to F4 (Feeder 1 to 4 Output)
- F1F to F4F (Fast Feeder 1 to 4 Output)
- FF (Common Fast Feed Output for All Feeders)
- Alrm (Alarm Output for Events Like Off Tolerance)
- Dis (Discharge or Dose Out Output)
- Fdis (Fast Discharge or Fast Dose Out Output)
- Undr (Under Tolerance Output for Manual Weigh Action Code)
- OK (OK in Tolerance Output for Manual Weigh Action Code)
- Over (Over Tolerance Output for Manual Weigh Action Code)

If an Expansion I/O option is installed you can also choose:

- F5 to F8 (Feeder 5 to 8 Output)
- F5F to F8F (Fast Feeder 5 to 8 Output)
- RmOK (OK to Start Using Remote Start Input)
- RmEr (Error in remote Start Due to Recipe Selection Error)

## Configure Data Correction

Selecting the number of batches also permits the operator to request that the selected recipe run continuously until halted.

The following functions can be individually enabled or disabled. If enabled, the operator is prompted to enter additional operational parameters before a

batching sequence is executed. Disabling unneeded functions simplifies and speeds operation. Enable only those functions needed for an application.

Press **ENTER** at the **Data Corr** prompt, then enable or disable the functions needed in your application.

1. At the **#ofBatch?** prompt, select Y(es) if the operator should be prompted to enter the number of batches to be produced, or N(o) if the operator should not be prompted for this data.
2. At **Bat Size?**, select Y(es) if the operator should be prompted for batch size adjustment. Batch size is entered as a total batch weight in the weight unit. Each target weight is adjusted accordingly. Batch size is active for one batch (if **#ofBatch?** disabled) or the number requested in the number of batches.
3. At the **Corr Tgt?** prompt, select Y(es) if the operator should be prompted to enter corrections or make adjustments to material target values in the selected recipe, or N(o) if the operator should not be prompted. The values entered are active for one batch (if **#ofBatch?** is disabled) or used for the number of batches requested.

### Configure Audit On

1. Press **ENTER** at the **Audit On** prompt. Select Y(es) to enable or N(o) to disable audit trail printing as recipes are executed. If Y(es), you must place one or more **Print On** action code recipe lines within your recipe to control when audit trail printing is active. You can also use **Print Off** action codes if you want to exclude some recipe lines from printing. Print On and Off action codes also control what data is stored for printing in the Batch Summary report.

### Configure Fast/Slow Transition

1. Press **ENTER** at the **F/S Trans** prompt, then select one of the following:
   - **OvrlapFeed**—Fast and slow speed outputs are ON for fast feed.
   - **Split Feed**—Slow feed output will follow fast feed output.
   - **Regul Feed**—The feed output is used to turn on air pressure, and the fast feed output is used to close an exhaust valve for some special pneumatically controlled valves.
2. At the **S/F/S?** prompt, select Y(es) to enable or N(o) to disable slow/fast/slow feed operation.

If Slow/Fast/Slow operation is selected, you will be prompted to enter a percentage value for the first slow feed cycle when designating a material in an action code.

### Configure Accept Off Tolerance

1. Press **ENTER** at the **AccOffTol** prompt.
2. Select Y(es) if the operator can accept off-tolerance conditions during a weigh cycle, or N(o) if the operator cannot accept off-tolerance conditions.

### Configure Material Feed Action for Rate Slow Condition

1. Press **ENTER** at the **Stop Feed** prompt.
2. Select Y(es) at the **StopFeed?** prompt if you want the LYNXBATCH controller to stop the material feed and proceed with recipe execution when a Rate Slow condition occurs during a Dose Out operation and material is in tolerance.

### Configure Rate Slow Initial Delay

Since the material feed rate does not instantaneously reach its operating speed, enter a value from 0-9 seconds at the **Init Dly?** prompt to tell the LYNXBATCH how long to delay after the feed output is turned on prior to first checking the flow rate for a rate slow alarm. Set this parameter to 0 to disable rate slow alarms.

You must adjust inventory on-hand amounts in setup under Batching/Config Batching/Edit Materials.

### Configure Inventory

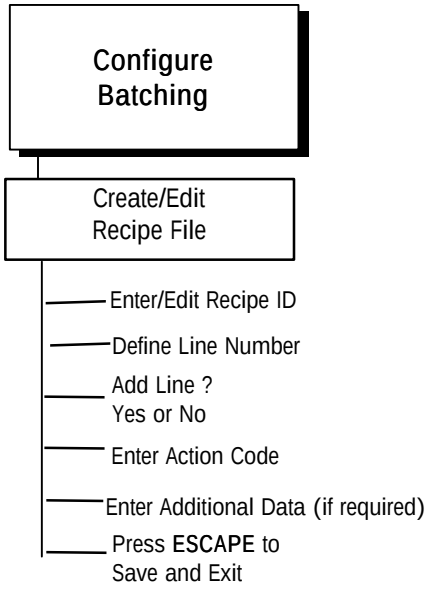
1. Press **ENTER** at the **Inventory** prompt.
2. Select Y(es) to check the inventory register for adequate material before executing the recipe and enable material usage accumulators. Select N(o) to disable the inventory check and material usage accumulators. If a recipe is run with a different batch size (entered at **Bat Size?** prompt), the inventory is checked and adjusted according to the material used, based on batch size entered.

### Configure Recipe Selection

1. Press **ENTER** at the **RecpSelect** prompt.
2. Press **SELECT** at the **RS?** prompt to choose Keybd, Remote or Quick as the method for selecting the recipe that will run next.
   - The Keyboard selection allows the operator to select the recipe by the number or by scrolling through the available recipes using the **SELECT** key or pushbutton.
   - If Remote is chosen, the recipe is selected using the remote recipe selection discrete inputs (configure RS_1 and RS_2 in the Batching/Configure System/Discrete Inputs sub-block).
   - Selecting Quick allows the operator to make one batch of the recipe loaded into Recipe Select Register 1 (defaulted to recipe 1). In Quick Recipe Selection mode, the Batch Count data correction option is disabled.

When you have configured the Recipe Selection parameter, the LYNXBATCH returns to the **Chng Passw** prompt. Press **ESCAPE** to continue.

## Configure Batching Mode Sub-block




Refer to the section entitled "Alphabetical/Special Character Entry" in Chapter 4 to see how to enter an alphabetical recipe name.

The Configure Batching sub-block lets you enter or edit a list of materials used in your recipes and the parameters associated with each material. It also allows you to create, edit, or delete your recipes, and configure the behavior of feeders (including discharge).

The LYNXBATCH controller can store up to 50 materials and 99 recipes. Recipes are limited to a maximum of 99 lines each. Recipe lengths may vary as long as the total number of lines for all recipes is less than 999.

### Create/Add Recipes to the Recipe File

1. Press **ENTER** at the **Config Bat** prompt, then press **ENTER** at the **Edit Recp** prompt to access the recipe editor.
2. At the **Recp ID?** prompt, enter the two-digit ID (1 to 99) for the new recipe. Press **SELECT** to view a list of current recipe names. When you press **ENTER**, the LYNXBATCH controller searches for the ID. If it exists, the LYNXBATCH controller responds with options for the recipe (continue to step 2 under "Edit the Recipe File").

   If the ID is **Not Found!**, press **ENTER**. At the **Add New?** prompt, select Y(es) to add a new recipe. Continue to step 4.
3. Press **ENTER** at the **Recp Name?** prompt. The LYNXBATCH controller displays the default name (Recipe xx). Edit the recipe name if desired. You can use up to 10 characters.

> **⚠ CAUTION**
>
> It is a recommended practice to review your new or edited recipe for correctness prior to running it. To do so, refer to the section that follows (Edit the Recipe File) or print it. You should also test the recipe by running it prior to placing it into production.

4. At the **Line #? YY** prompt, YY is the first available recipe line. Press **ENTER** to enter the recipe from the beginning. The LYNXBATCH controller searches to see if the line number you entered already exists. If it is found, the LYNXBATCH controller responds with editing options (continue to step 2 under "Edit the Recipe File"). If it is not found, continue to step 5 below.
5. The LYNXBATCH controller will prompt with **Add Line?**. Select (Y)es to add a new recipe line or (N)o to exit. At the **xx/Wgh_In** prompt, press **SELECT** to display the desired action code for the line you are configuring, then press **ENTER**.
6. At the data prompt(s), enter additional information that may be required for the action code. You may be prompted for up to four additional pieces of information. When you press **ENTER** after the last additional data has been entered, the LYNXBATCH controller automatically continues to the next line number (or increments the line number by one when you are adding a new recipe).

7. Repeat steps 5-7 for each line you wish to add. When the recipe is complete, press **ESCAPE**. The LYNXBATCH controller automatically saves the recipe.

**Action Codes for Recipe Setup**

**(See Appendix 3 for More Details)**

| Command | Description | 1. Data | 2. Data | 3. Data | 4. Data |
|---|---|---|---|---|---|
| Wgh_In | Weigh In | Matl ID?XX | † S/F/S%?XX | SP?XXXXXXX | TolXXXXXXX |
| Disch | Discharge | Rate?XXXXX | TolXXXXXXX | | |
| Z_Check | Check empty container | SP?XXXXXXX | TolXXXXXXX | | |
| Print | Print | Report? (Press **SELECT**) | | | |
| Output | Turn output on or off | Output XX (Press **SELECT**) | Output On/Off (Press **SELECT**) | Time?XXXXX | Wait? Y/N (Press **SELECT**) |
| DoseOut | Dose out sequence | Rate?XXXXX | Doses?XX | SP?XXXXXXX | TolXXXXXXX |
| PrmptID | Prompt for operator input | Prompt ?XX | | | |
| M_Weigh | Manual weigh | Matl ID?XX | SP?XXXXXXX | TolXXXXXX | |
| H_Add | Hand add | Matl ID?XX | WgtXXXXXXX | | |
| Write | Write message to display | Message? ********** | Time?XXXXX | | |
| B_Check | Check batch | Matl ID?XX | SP?XXXXXXX | TolXXXXXXX | |
| Man_Op | Manual operation | Type? (Press **SELECT**) | | | |
| If Input | Monitor status of a discrete input | Input XX (Press **SELECT**) | Input On/Off (Press **SELECT**) | Lines?XX | |
| Wgh_Lrn | Weigh In and Learn each time | Matl ID?xx | † S/F/S%?XX | SP?XXXXXXX | TolXXXXXXX |

* = Alphanumeric data  X = Numeric data  † = When slow/fast/slow feed operation has been enabled

### Edit the Recipe File

1. Press **ENTER** at the **Edit Recp?** prompt to access the recipe editor.
2. At the **Recp ID?** prompt, enter the two-digit numeric ID (1 to 99) for the recipe to edit. Press **SELECT** to view a list of recipe names. When you press **ENTER**, the LYNXBATCH controller searches for the ID. If found, the LYNXBATCH controller responds with the **Recipe Edt** prompt. Press **ENTER**.
3. Press **ENTER** at the **Recp Name?** prompt, then use the keypad to edit the existing name of the recipe (if desired). You can use up to10 characters.
4. At the **Line#?** prompt, enter the number of the line you wish to edit or use the **SELECT** and **ZERO** keys to scroll through the existing recipe lines. Press **ENTER** when you have selected the correct one.
5. Press **SELECT** to display one of three line editing options:
   - **L-xx Edit** lets you edit the selected line. Press **ENTER** and continue.

- **L-xx Del** lets you delete the selected line. Press **ENTER**. At the **You Sure?** prompt, select Y to confirm the deletion or N to not delete.
- **L-xx Ins** lets you insert a new (recipe) line before the selected line. Press **ENTER** and continue.

- At the **xx/Wgh_In** (action code) prompt, press **SELECT** to change the action code for the line (if desired).
- At the data prompt(s), enter additional information required for the action code. When you press **ENTER** after the last data has been entered, the LYNXBATCH controller continues to the next line number.
- Repeat this procedure for additional lines. When you finish editing, press **ESCAPE**. The LYNXBATCH controller saves the changes.

Copying recipes then editing the new recipe is a quick way to create new recipes form existing ones without a lot of re-entry.

### Copy Recipes in the Recipe File

1. Press **ENTER** at the **Config Bat** prompt, then press **ENTER** at the **Edit Recp** prompt to access the recipe editor.
2. Enter the two-digit recipe ID or press **SELECT** to display the name of the recipe you wish to copy, followed by **ENTER**.
3. At the **Recipe Edt** prompt, press **SELECT** to display **Recipe Cpy** then press **ENTER**.
4. At the **New ID?** prompt, enter the two-digit recipe ID for the new recipe then continue to edit the recipe as describe din the proceeding section entitled Edit the Recipe. If you choose an ID for the new recipe that already exists, the error message **ID Exists!** will be displayed. You cannot copy a recipe over an existing recipe.

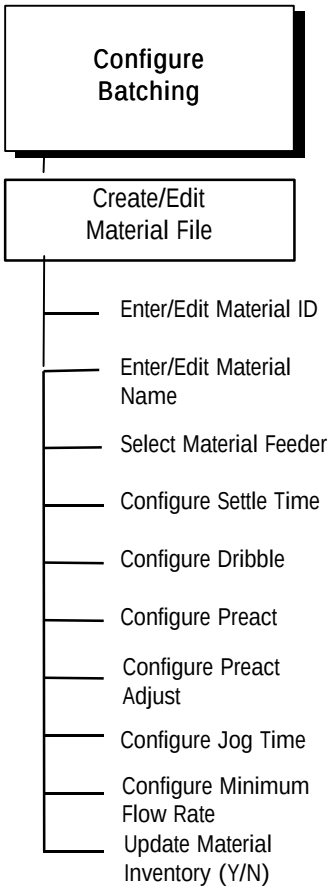
You can also print all recipes by using the MEMORY key when the LYNXBATCH is displaying the normal weight display (not in batching mode.)

### Delete Recipes in the Recipe File

1. Press **ENTER** at the **Config Bat** prompt, then press **ENTER** at the **Edit Recp** prompt to access the recipe editor.
2. Enter the two-digit recipe ID or press **SELECT** to display the name of the recipe you wish to delete, followed by **ENTER**.
3. At the **Recipe Edt** prompt, press **SELECT** to display **Recipe Del** then press **ENTER**.
4. At the **You Sure?** prompt, select Y(es) to delete the selected recipe or N(o) to abort the deletion.

### Print Selected Recipes in the Recipe File

1. Press **ENTER** at the **Config Bat** prompt, then press **ENTER** at the **Edit Recp** prompt to access the recipe editor.
2. Enter the two-digit recipe ID or press **SELECT** to display the name of the recipe you wish to delete, followed by **ENTER**.
3. At the **Recipe Edt** prompt, press **SELECT** to display **Recipe Prt** then press **ENTER**. The selected recipe will be printed.




Note that any material may be designated for any recipe action code. This allows you to automatically feed a material in one batch and manually feed or hand add it in others.

Note that units set in minimum flow refer to whole calibration units (not increments). For example, a scale calibrated 1000.0 x 0.1 has whole calibration unit of 1.0.

### Create/Add Materials to the Material File

1. Press **SELECT** to display the **Config Bat** prompt, then press **ENTER**.
2. Press **ENTER** at the **Edit Matl** prompt to access the material file.
3. At the **Matl ID?** prompt, enter the two-digit numeric ID (1- 50) for the material to be added or edited. Or, press **SELECT** to scroll through the names of available materials. Press **ENTER**. If the ID exists, the LYNXBATCH controller responds with the **Del Matl?** prompt, allowing you to delete the material. If it is new, it can be added.
4. Press **ENTER** at the **Matl Name?** prompt then edit the material name if desired. You can use up to 10 alphanumeric characters. It does not have to be unique.
5. At the **Feeder?** prompt, press **SELECT** to enter the material feeder designation (1-8, Man). Press **ENTER** to continue. Select **Man** for a material not assigned to an automatic feeder.
6. At the **Setl Tm?** prompt, enter the time period (0 to 9.9 seconds) needed to allow the material to settle on the scale after the cutoff is reached and before the final weight is captured. Go to Step 12 if MAN material selected.
7. At the **Dri** prompt, enter the dribble value for the material. The dribble value determines when the feeder will switch from fast to slow feed.
8. At **Pre**, enter the preact value which determines the point at which the material feed will stop. Preact allows the LYNXBATCH controller to compensate for material delivered to the scale after the feeder is shut off.

   **Example:** Target Weight: 100 lb
   Preact Value: 7 lb
   Dribble Value: 5 lb

   The LYNXBATCH controller will switch from fast to slow at 88 lb (100 - 7 - 5) and will stop feeding material at 93 lb (100 - 7).
9. At the **Pre Adj?** prompt, enter the preact adjustment value (0 to 60%). This enables automatic adjustment to the preact value. Enter “0” to disable.

   **Example:** Target weight: 100 lb
   Preact value: 10 lb
   Actual cutoff weight is 90 lb (100 - 10).
   Assumption: Actual weight after batch 1 is completed: 115 lb
   With
   Preact value: 10 lb
   Preact Adjust value: 20%
   The new preact value is adjusted by 0.2 x 15 lb = 3
   (20% of 115 - 100)
   The cutoff for the next batch (batch 2) will be 100-10-3 = 87 lb
   The new preact value is 13 lb (10 + 3)

10. At the **Jog Tm?** prompt, enter the jog interval (0.1- 9.9 seconds). If the material delivered is short of the target by more than the tolerance amount, the LYNXBATCH controller adds material by turning on the feeder for the job interval then rechecking the tolerance. The Job/Tolerance check cycle will repeat until the material is within tolerance.
11. At **MnFlw?**, enter the minimum flow rate for the material (0-9999 units/minute). This feature displays a **Rate Slow** message and turns the

alarm output ON (if assigned) when the material flow falls below the minimum flow rate value. The minimum flow rate unit is the calibration unit selected in the Scale Interface program block. Enter 0 to disable this feature.

12. Press ENTER at the **Matl Inv?** Prompt. Press ENTER again to accept the current amount of material shown in inventory. You may need to enter a new inventory amount if you refilled a material supply and want to include the added amount in the material inventory.
13. Repeat this procedure for each material you want to add. When finished, press ESCAPE. The LYNXBATCH controller saves the new materials.

### Edit the Material File

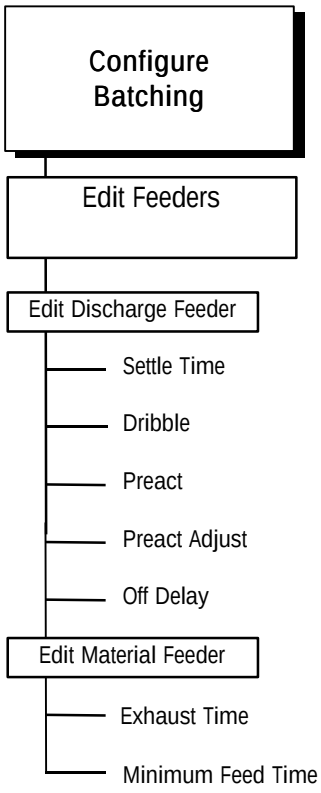
1. Press ENTER at the **Edit Matl** prompt.
2. At the **Matl ID?** prompt, enter the material ID or press SELECT to view a list of material names to edit. Press ENTER. The LYNXBATCH controller searches for the ID. If found, it responds with the **Del Matl?** prompt.
3. At the **Del Matl?** prompt, select Y(es) to delete the displayed material, or N(o) to edit it. If Y(es), the LYNXBATCH controller responds with a **You Sure?** prompt. Select Y(es) to confirm or N(o) to return to the **Matl ID?** prompt.

See Create/Add Materials for examples on Dribble, Preact, and Automatic Preact Adjustment.

4. Press ENTER at **Matl Name?** to display the material name in an editing field, then make any desired changes to the material name.
5. At the **Feeder?** prompt, press SELECT to edit the material feeder designation (1 to 8, Man). Press ENTER.
6. At the **Setl Tm?** prompt, edit the time period (0 to 9.9 seconds) allowed for material to settle on the scale after cutoff if reached and before weight is captured. If Man selected, proceed to step 12.
7. At the **Dri** prompt, edit the dribble value which indicates when the feeder will switch from fast to slow feed.
8. At the **Pre** prompt, edit the preact value which represents the amount of material discharged from the feeder after the feed output has been turned off but has not yet arrived on the scale.

You can use up to 10 alphanumeric characters for a material name. The material name does not have to be unique.

9. At **Pre Adj?**, edit the preact adjustment value (0 to 60%) to allow automatic adjustment of current preact value. Enter “0” to disable.
10. At the **Jog Tm?** prompt, edit the jog interval (0- 9.9 seconds). If the material delivered is short of the target by more than the tolerance amount, the LYNXBATCH controller adds material and rechecks the tolerance.
11. At the **MnFlw?** prompt, edit the minimum flow rate for the material (0 to 9999 units/minute). This feature displays a **Rate Slow** message and turns the alarm output ON (if assigned) when the material flow falls below the minimum flow rate value. The minimum flow rate unit is the calibration unit selected in the Scale Interface program block.
12. Press ENTER at **Matl Inv?**. Press ENTER again to accept the current amount of material shown in inventory, or enter a new amount. You may need to enter a new inventory amount if you recently refilled a material supply and want to include that in the material inventory.
13. Repeat this procedure for each material you wish to edit. When finished, press ESCAPE. The LYNXBATCH controller automatically saves the changes.




### Edit the Feeders

1. Press SELECT to display the **Config Bat** prompt, then press ENTER.
2. Press SELECT to display the **Edit Feedr** prompt, then press ENTER to access the feeder file.
3. At the **Feeder?** prompt, press SELECT to display a feeder assignment (Dis or 1-8), then press ENTER to edit the file.

   Feeders 1-8 are only displayed if you previously selected "**Regul Feed**" under the Configure Fast/Slow Transition Sub-block.

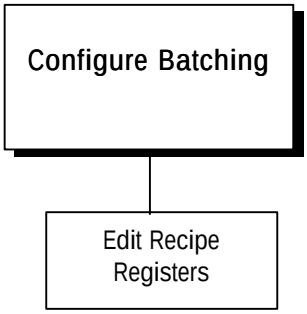
   **Dis** is selected for material that is discharged or dosed out as specified by the "Discharge" (Disch) and "Dose Out" (DoseOut) action codes. If you select Discharge, continue to **Edit the Discharge Feeder** below.
4. At the **ExhstT?** prompt, enter a time period (0 to 2.50 seconds) for which the supply valve will be closed and the exhaust valve opened to bleed air pressure to close the regulated flow valve for the fast/slow transition at the dribble point.
5. At the **Min FT?** prompt, enter a minimum feed time (0 to 2.50 seconds) needed for the supply valve to provide sufficient air to open the regulated flow valve for slow feed from a closed condition. Once entered, the display returns to the **Feeder?** prompt, where you can select another feeder to edit. If the discharge feeder is selected, continue to step below.

### Edit the Discharge Feeder

1. At the **Setl Tm?** prompt, enter the time period (0 to 9.9 seconds) needed to allow the material to settle on the scale before the final material weight is captured.
2. At the **Dri** prompt, enter the dribble value for two-speed dose-out operations. The dribble value determines when the discharge feeder will switch from fast feed to slow feed.
3. At the **Pre** prompt, enter the preact value for discharge. The preact value determines the point at which the discharge feed will stop. Preact allows the LYNXBATCH controller to compensate for material in transit after the feeder or valve output is turned off. If the preact is set to 0.0, continue to step 5.
4. At the **Pre Adj?** prompt, enter the preact adjustment value (0 to 60%). This allows automatic adjustment to the current preact value. Enter "0" to disable the preact adjustment.
5. At the **Off Dly?** prompt, enter a time period (0 to 9.9 seconds) for which feeder closing will be delayed after the output has reached the preact cutoff point. Setting the discharge off delay timer to any number other than 0.0 will disable the preact adjustment feature.

## Recommendations on Setting the Parameters for Discharge Feeder Control

| Application | Recommended Settings | Comments |
|---|---|---|
| No discharge or dosing action codes used in any recipes | Use the default settings for discharge | Default settings for discharge Dribble, Preact, Preact Adjust, and Off Delay are all zero; Settling Time defaults to 2.0 seconds. |
| Discharge Action Code used but Dosing Action Code not used in recipes. | Use the default settings for discharge. | If using the default parameters doe snot allow the scale to discharge to zero, set the discharge react to a value that will allow the scale to fully discharge. If zero still cannot be achieved, set the OFF Delay to a time value long enough to fully discharge the scale. |
| Discharge Action Code not used but Dosing Action Code is used in recipes. | Set the discharge Dribble, Preact, and Preact Adjust values as appropriate to achieve desired Dosing cutoff accuracy and repeatability and set Off Delay to zero. | Setting these parameters is analogous to setting the same parameters in material setup for Weigh-In use. |
| Discharge and Dosing Action Codes both used in recipes. | Set the discharge Dribble, Preact, Preact Adjust values as appropriate to achieve desired Dosing cutoff accuracy and repeatability and set Off Delay to zero. | If setting the parameters as appropriate for achieving the desired Dosing cutoff accuracy does not allow the scale to discharge to zero, set the Off Delay to a time value long enough to fully discharge the scale. |




### Edit Recipe Selection Registers

The recipe Select Registers are used to determine which recipe is started when using the Quick or Remote Recipe Selection. Quick recipe selection always uses the recipe referenced in Recipe Selection Register 1. The two Remote Recipe Selection Bits (RS_1 and RS_2) can be also used to select one of the four registers.

Press **SELECT** to display the **Config Bat** prompt, then press **ENTER**.

Press **SELECT** to display the **Edit R Reg** prompt, then press **ENTER** to edit the four register selection registers

At the **Rcp Reg?** prompt, press **SELECT** to choose register 1, 2, 3 or 4 then press **ENTER**.

At the **Recipe?** prompt, press **SELECT** to scroll through the available recipe names and press **ENTER** to select the displayed recipe for that register or enter the recipe number followed by **ENTER**.

Repeat steps 3 and 4 until finished editing Recipe Registers.

# 4 Scale Operations

This chapter provides general instructions for operating the LYNXBATCH controller. Chapter 5 describes functions specific to the LYNXBATCH controller's batching operation.

## Display Area

The LYNXBATCH controller has a single alphanumeric display where scale data and operational messages are presented (see Figure 4-1).

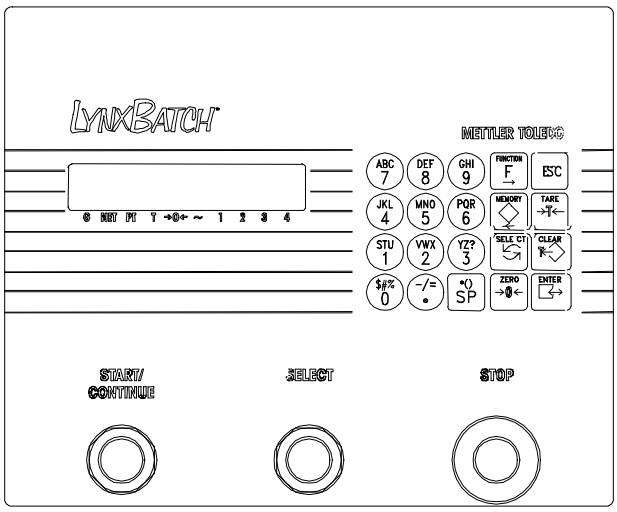
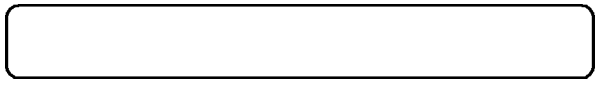



**Figure 4-1: LYNXBATCH Harsh Enclosure**

It can display letters and numbers. (Please note that the correct keypad for the LYNXBATCH controller is shown on the next page.) Each character also has a comma and decimal point associated with it. The display indicates scale weight unless you are in setup mode programming the LYNXBATCH controller or using the batching functions. Error messages are displayed as they occur.

Annunciators point to labels in the legend directly below the display area.



G NET PT T > 0 < ~ 1 2

The annunciators indicate:

- **Weighing mode** (Gross or NET)
  The LYNXBATCH controller is in net mode when a tare is active. Tare can be entered as a Preset Tare value, automatically acquired when you press **TARE**, or entered through an interface. If no tare is active, the LYNXBATCH controller is in gross mode.

- **Type of tare ( PT** for **P**reset **T**are or **T**are**)**
  The preset tare (PT) annunciator indicates a preset tare has been recalled and displayed. Preset tare is entered manually using the numeric keys on the keypad. It is also referred to as keyboard tare or manual tare. The Tare (T) annunciator indicates that a pushbutton tare or automatic tare has been recalled and displayed. You can perform a pushbutton tare by pressing **TARE**.
- **Center-of-zero** (→0←)
  The center-of-zero annunciator indicates that the scale is within ± 1/4 increment of gross zero.
- **Scale instability** (~)
  The scale instability annunciator indicates that the scale is in motion. It will turn off when the scale is stable. The sensitivity of motion detection is adjustable in setup.

## LYNXBATCH Keypad

The LYNXBATCH controller is equipped with a 20-key keypad as shown in Figure 4-2:

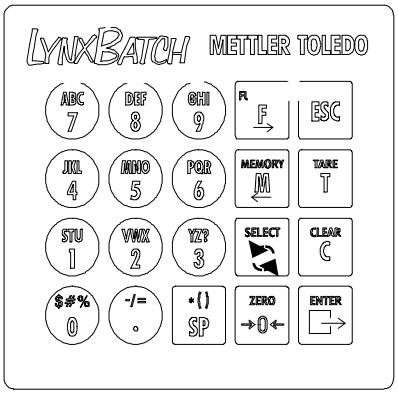



**Figure 4-2**

The keypad consists of numeric keys 0 through 9, decimal point, space, and eight function keys. The keys perform the following functions:

- **NUMERIC** keys are used to input numbers. They are also used to enter alphabet characters and the symbols that appear on the specific keys.
- **DECIMAL POINT (.)** inserts a decimal point as necessary. It is also used to enter the symbols “–”, “/”, and “=”.
- **SPACE (SP)** inserts a space where necessary. It is also used to enter the symbols “*”, “(”, and “)”.
- **FUNCTION (F)** accesses various functions depending on the LYNXBATCH controller's setup configuration including:
  - **Recall Tare—**If enabled and the controller is in net mode, recall tare allows the tare value to be recalled in the display.
  - **Recall Gross—**If enabled and the controller is in net mode, recall gross allows the gross weight value to be recalled on the weight display.

  - **Enter Setup**—If configured, you may use the **FUNCTION** and **SELECT** keys to enter setup and configure the program blocks in setup mode.
  - **Edit**—When editing a text string, the **FUNCTION** key acts as a right arrow, moving the cursor one position to the right with each keystroke.
- **MEMORY (M)** accesses various memory functions, depending on the LYNXBATCH controller's setup configuration including:

  **Reports?**—The LYNXBATCH controller can generate and print several batch-related and system-related reports.
  Recipes? – If enabled, this selection will permit the operator to edit Recipes, Materials, feeders or Recipe Registers.
  - **Time**—If enabled, the time feature displays the clock and allows adjustment of the time.
  - **Date**—If enabled, the date feature displays the date and allows adjustment of the date.
  - **Edit**—When editing a text string, the **MEMORY** key acts as a left arrow, moving the cursor one position to the left with each keystroke.
- **SELECT** (S) scrolls through and displays items in option lists. It is also used to start batching. The **SELECT** pushbutton performs the same functions as the key on the keypad.
- **ZERO** (→0←) zeroes the scale.
- **ESCAPE** (ESC) exits an operating mode.
- **TARE** (T) performs a pushbutton tare function if enabled in setup.
- **CLEAR** (C) clears a tare value and returns the scale to gross mode. **CLEAR** also functions as backspace/delete when entering data from the keypad.
- **ENTER** acknowledges a prompt and accepts data entered from the keypad. **ENTER** also initiates a demand print output.

## Alphabetical/Special Character Entry

In some cases, you may be able to enter only numeric characters.

To enter an alphabet character:

1. Press the numeric key with the desired letter. The number is displayed.
2. Press **SELECT** one or more times until the desired letter appears.
3. Press the key that contains the next character you wish to enter, then press **SELECT** until the desired letter appears.
4. When you have finished entering all letters and numbers, press **ENTER**. The data is accepted when **ENTER** is pressed.

For example, to enter the name "TOM" :

| Key Press | Display Shows |
|---|---|
|  | 1 |
|  | S |
|  | T |
|  | T5 |
|  | TM |
|  | TN |
|  | TO |
|  | TO5 |
|  | TOM |
|  | Varies depending on situation |

## Editing Data

When a text string of characters is shown on the display, the **CLEAR, ESCAPE, FUNCTION**, and **MEMORY** keys can be used to edit the character string.

**CLEAR**—deletes the last character at the right of the display. If **CLEAR** is pressed when a string is first displayed, the entire string is deleted.

**ESCAPE**—returns the original data to the display if it has been edited.

**FUNCTION**—moves the cursor across the display to the right.

**MEMORY**—moves the cursor across the display to the left.

The position at the far right of the display is the active edit position. From here you can insert a character and not delete the existing character in that position.

For example, to change the name “TOM” to “TIM”:

| Key Press | Action | Display Shows |
|---|---|---|
| | | TOM |
|  | Moves edit position left | TO |
|  | Deletes letter O | TM |
|  | Moves edit position left | T |
|  | Inserts character | T9 |
|  | Changes character | TG |
|  | Changes character | TH |
|  | Changes character | TI |
|  | Moves edit position right | TIM |
|  | | Varies depending on situation |

## Power-up Sequence

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

1. All segments of the display window are lit to verify their operation.
2. The display reads “METTLER” then “TOLEDO” then “LYNXBATCH.” The LYNXBATCH controller performs internal power-up tests and verifies the material and recipe files.
3. After a delay, the controller displays the software part number.
4. The controller tests communication with the load cell then displays weight when successful communication is established. If the LYNXBATCH controller is unable to establish communication, an error is displayed.
5. Finally, if enabled, the LYNXBATCH controller power-up timer counts the minutes and seconds remaining before the unit advances to normal operating mode.

# Operator Functions

## Zero the Scale

If Pushbutton ZERO is enabled, you can press ZERO to establish a new zero center of reference for the scale when in gross mode. This is done as follows:

1. Press the ZERO key. One of the following situations occurs:

| CONDITION | DISPLAY READS |
|---|---|
| Pushbutton zero disabled. | OUT OF ZERO RANGE and returns to normal mode. |
| Pushbutton zero enabled. Residual weight on scale less than pushbutton zero range*. | Scale is zeroed. |
| Pushbutton zero enabled. Residual weight on scale greater than pushbutton zero range*. | OUT OF ZERO RANGE and returns to normal mode. |
| Pushbutton zero enabled. Scale in net mode. | ILLEGAL SCALE MODE and returns to normal mode. |
| Pushbutton Zero enabled. Scale in motion. | SCALE IN MOTION and returns to normal mode. |

* Pushbutton zero range is configured in setup.

## Tare Operations

### Pushbutton Tare

Pushbutton tare compensates for weight (usually an unknown quantity such as an empty box or other container) on the weighing platform with a single keystroke and switches the controller to net mode.

If Pushbutton Tare is Enabled:

1. Place a load to be tared on the scale platform and press the TARE key The display area reads 0.0 with the NET annunciator illuminated.
2. Place the load to be weighed on the platform. The net weight is displayed.
3. Clear tare by pressing CLEAR. The controller returns to gross mode and displays the weight on the platform.

   Example: Pushbutton Tare
   The operator places an empty container on the scale and the display shows 12.3 lb with the Gross annunciator lit. The operator presses TARE and the display shows 0.0 lb with the NET annunciator lit. The operator then fills the container with 50 pounds of material. The controller displays the net weight of the load in the container as 50.0 lb with the NET annunciator lit.

   When the filled container is removed, the display shows the negative tare value as –12.3 lb with the NET annunciator lit. The operator presses CLEAR, and the LYNXBATCH controller returns to gross zero.

### Preset (Keyboard) Tare

Preset tare compensates for a known tare weight on the scale. It is used when the net weight of the contents of a filled container must be determined and tare weight is known.

If Preset (KB) Tare is Enabled:

1. Place the load on the platform. The display shows the gross weight. Know the weight of the portion to be compensated for by preset tare.
2. Use the numeric keys to enter the known tare weight, then press **ENTER**. The net weight of the load is shown with an annunciator indicating NET.
3. Clear tare by pressing **CLEAR**. The controller returns to gross mode and displays the gross weight on the platform.

   **Example: Preset Tare Enabled**
   A loaded truck (80,000 pounds) is driven onto a weigh station platform and the operator enters the known weight of the truck (17,500 pounds). The LYNXBATCH controller displays the net weight of the truck's contents as **62,500 lb** with the **NET** annunciator lit. When the truck is driven off the platform, the operator presses **CLEAR** to clear the tare value and return the controller to gross zero.

### Recall Tare

The LYNXBATCH controller allows you to recall and display the tare while in net mode. Tare recall is accessed through the **FUNCTION** key.

### Recall Gross

The LYNXBATCH controller allows you to recall and display the gross weight while in net mode. Gross weight recall is accessed through the **FUNCTION** key.

### Tare Interlock

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

## Print Operations

The LYNXBATCH controller supports the following print operations:

- Demand Print
- Minimum Print
- Print Interlock
- Auto Print
- Continuous Output

Any or all of the print operations can be enabled or disabled in setup. The print output format and destination port are also determined in setup. Output can be directed through one or more local serial ports (COM1, COM2, or COM3).

### Demand Print

If a demand mode connection is configured, demand printing is initiated when an operator presses the **ENTER** key in normal operating mode or through an external interface such as a discrete input port or an ASCII input command. If no conditions exist to inhibit printing, output will be sent to the connected printer and the controller displays the message **PRINTING**.

If a demand mode connection is not configured, the controller displays **PRINT INHIBITED**. If a demand print is requested while weight on the scale is unstable, LYNXBATCH controller waits until motion stops, then prints. If no demand mode

connection is selected but a continuous connection exists, the display reads **PRINT REQUESTED** and the respective connections reflect the request.

### Minimum Print

The minimum print parameter prohibits data output if gross weight on the scale is below a threshold value configured in setup. If you press **ENTER** to initiate printing with scale weight below the threshold value, the controller displays **PRINT NOT READY**.

### Print Interlock

Print interlock prevents multiple print requests for a single weighing transaction. Print threshold and reset values determine operation of print interlock. Additionally, a check motion before reset parameter can be enabled. If print interlock is enabled and conditions of print interlock are not satisfied, the controller displays **PRINT NOT READY**.

### Auto Print

Auto print allows printing to occur without operator action. The controller automatically initiates data output when gross weight on the scale settles above the print threshold value. Auto print is "rearmed" when the weight falls below the reset threshold value. A check motion before reset parameter can also be configured for auto print.

### Continuous Output

Serial ports can be configured to output data continuously. In continuous mode, weight data is transmitted up to 20 times per second in a fixed format. A status bit in the fixed format changes state when a demand print request is received.

## MEMORY Key Operations

The **MEMORY** key is used to perform the following operations:

- Print reports
- Set LYNXBATCH controller system time and date

Memory operations are enabled or disabled in setup.

### Reports? (always enabled, see Appendix 2 for sample reports).

The LYNXBATCH controller provides several batch-related default reports that let you track your batching operations. Default reports include:

- **Batch Summary**—prints detailed information for the most recent batch. Information includes recipe identification, batch number, time and date, batch size, material target and actual charge values, batch weight deviation, and total batch weight. Two batch summary reports are associated with the LYNXBATCH controller:

  **Default**—prints the batch summary report using LYNXBATCH controller's default header and footer information. This version is printed when you select Batch Summary.

  **Custom**—prints a custom batch summary report using the header and footer information defined in Templates 1 and 2. This version is printed when you select Custom.

  The main body of the report (material, target and actual weight for each recipe line) is controlled by the PRINT ON/OFF recipe line command. A PRINT ON must be present in the recipe if any individual material weighments are to be printed. Portions of the recipe may be selectively printed using these commands.

- **Production Totals**—prints a summary of all batches run for all recipes. Information includes time and date, recipe identification, count (number of batches), and total weight of product produced. You can clear the Production Total register after print.
- **Production Detail**—prints the details of a particular batch including target and actual values and deviation from target.
- **Inventory**—prints the values in the material inventory accumulators. You can clear the Inventory register after print if desired.
- **Material List**—prints a summary of all materials, their setup parameters, and the current usage and inventory accumulator totals.
- **Recipe List**—prints a summary of all recipes. Information includes recipe ID, recipe name, production details, and a listing of the recipe.
- **Template 1**—prints the text as you have it configured for Template 1.
- **Template 2**—prints the text as you have it configured for Template 2.
- **Custom**—prints the Batch Summary report with Template 1 as the header and Template 2 as the footer.

To print batch reports:

1. Press **MEMORY**, then press **ENTER** at the **Reports** prompt.
2. Press **SELECT** to display the report name. Press **ENTER** to print. If you are printing a report that uses accumulators (Production Totals or Inventory), at the **Clr Tot?** prompt, select Y(es) or N(o) to clear the accumulator register. If Y(es), at the **Sure?** prompt, select Y(es) or N(o) to confirm.
3. Repeat step 2 for each report to print.
4. Press **ESCAPE** to return to normal operating mode.

## Recipes?

If User recipe Editing is enabled in Setup/Batching/Configure System/Run Options, the **MEMORY** key may be used to access the Edit Recipes, Edit Materials, Edit Feeders and Edit Recipe Registers section of Setup. To access these functions:

1. Press **MEMORY** then **SELECT** until **Recipes?** is displayed, then press **ENTER**.
2. If recipes password protection is enabled, enter the password followed by **ENTER**.
3. Press **SELECT** to choose the desired edit function.

## Set Time

The LYNXBATCH controller's internal battery-backed time can be viewed or set using the **MEMORY** key. Configuration of the time format is done through the setup mode. Disable the time format through the program block. To view or reset the time:

1. Press **MEMORY**, then press **SELECT** until the time is displayed.
2. Press **ESCAPE** to accept the current time and exit, or press **ENTER** to set the clock. If you are setting the clock:
   - At the **Hour?** prompt, enter the correct hour of day using the selected time format. Press **ENTER**.
   - At the **Minutes?** prompt, enter the correct minutes, then press **ENTER**.
   - If the selected format supports seconds, enter the correct value at the **Seconds?** prompt. Press **ENTER**.
   - If a 12-hour format is selected, press **SELECT** at the **Am/Pm?** prompt followed by **ENTER** when the desired designation is displayed.

### Set Date

The LYNXBATCH controller has a battery-backed date function. Configuration of the date format is done through the LYNXBATCH controller's setup mode. You can disable the date function through the same program block. To view or reset the current date:

1. Press **MEMORY**, then press **SELECT** until the date is displayed.
2. Press **ESCAPE** to accept the current date and exit. Or, press **ENTER** to set the date, completing the date fields as prompted. You must press **ENTER** after each field to continue. The order of prompting is determined by the selected date format.
3. Press **ENTER** after the last date prompt to exit.

## FUNCTION Key Operations

The LYNXBATCH controller supports several **FUNCTION** key operations including:

- Tare weight recall
- Gross weight recall
- Setup access

### Tare Recall

Tare recall allows the current tare value to be displayed. **You must be in net mode.** To recall tare:

The recalled tare value is a "snapshot" of the actual weight. It is not an active weight.

1. Press **FUNCTION** then press **SELECT** until the **Rcl Tare?** prompt is displayed.
2. Press **ENTER**. The LYNXBATCH controller displays the recalled tare value.
3. Press **ESCAPE** to return the display to net weight.

### Gross Recall

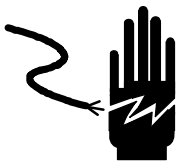
Gross recall allows you to view a snapshot of the current gross weight when it is undesirable to clear the tare value. You must be in net mode. To recall gross:

The recalled gross value is a "snapshot" of the actual weight. It is not an active weight.

1. Press **FUNCTION** then press **SELECT** until the **Rcl Gross**? prompt is displayed.
2. Press **ENTER**. The LYNXBATCH controller displays the recalled gross weight value.
3. Press **ESCAPE** to return the display to net weight.

### Enter Setup

You can access the LYNXBATCH controller's setup programming blocks only if the controller is used in non legal-for-trade applications and is configured to allow access to setup parameters.



**⚠ 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.

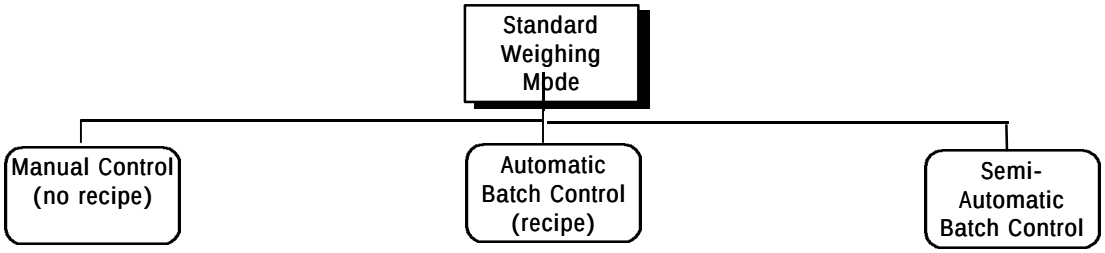
To enter setup, press **FUNCTION. P**ress **SELECT** to display the **Setup?** prompt. Press **ENTER**. If Password Protection for Setup is enabled, enter the proper password at the **PASS?** prompt to enter setup.

# 5 Batching Mode Operating Instructions

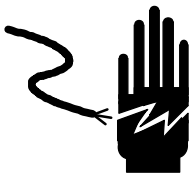
## Batching and Manual Controls

The LYNXBATCH controller can be set up for automatic, semi-automatic, and manual controls. Each of these control modes may be enabled or disabled in setup as required by the application. These functions are provided by each of these control modes:

- **Automatic Batch Control** - Executes a selected recipe from beginning to end, pausing only as indicated by the action codes programmed in the recipe.
- **Semi-Automatic Batch Control** - Executes a selected recipe form beginning to end, pausing before each recipe line until the operator initiates its execution and as indicated by the action codes programmed in the recipe.
- **Manual Control** - Provides for operator control of a selected output. The output is turned on as long as the operator holds the **START/CONTINUE** push button.




## Automatic Batch Control



**WARNING**

ONLY PERMIT QUALIFIED PERSONNEL TO PROGRAM METTLER TOLEDO EQUIPMENT. EXERCISE CARE WHEN CREATING PROGRAMS OR MAKING PROGRAM CHANGES WHEN OUTPUTS ARE CONNECTED TO EXTERNAL EQUIPMENT. FAILURE TO OBSERVE THESE PRECAUTIONS CAN RESULT IN BODILY HARM AND/OR PROPERTY DAMAGE.

To perform an automatic batch control sequence:

1. From the Standard Weighing Mode, press **SELECT** until **Automatic** is displayed. Then press **ENTER** or **START**.
2. An **Rxx yyyyy** prompt will be displayed (**Rxx** is the current recipe number and **yyyyy** is the gross weight currently on the scale). Press **ENTER** or **START** to accept the recipe number that is displayed or select another recipe via Remote Select Inputs or the keyboard if enabled. If Keyboard Select is enabled, or press **SELECT** to choose another recipe. When you press **SELECT**, the **Recp ID?** prompt will be displayed.

Quick Recipe Selection inhibits operator selection of a recipe to run, thereby making operation much easier for simple applications.

Enter an existing two-digit recipe ID, or press **SELECT** to scroll through existing recipe names. When the desired recipe ID or name is displayed, press **ENTER** or **START**. If the **Quick** Recipe Select option is enabled, you may use the **SELECT** key or button to view the recipe name, but you must press **ESCAPE** to return to the **Rxx yyyyy** prompt for a start of the batch.

3. If you included user prompts (in the Memory/Configure Prompts Sub-block), enter the requested information at each prompt. You can use the keypad or a serial input device such as a bar code reader.

4. If enabled, you can change the number of batches and batch size parameters configured for this recipe.

- At the **Bat Cnt?** prompt, select Y(es) to view or modify the number of batches to run with the settings for this recipe (batch size and target values). At the **Count?** prompt, use the numeric keys to enter the desired number of batches, then press **ENTER**. (**Bat Cnt?** is not available if Quick Recipe Selection is enabled.)
- You have the option of running the batch continuously. With Y(es) displayed at the **Bat Cnt?** prompt, press **ZERO**. Press **ENTER** at the **Continuous** prompt. The LYNXBATCH will run the recipe until you press **ZERO** to pause at the end of the batch that is currently running. Pressing **ENTER** or **START** will resume continuous batching.
- At the **Bat Size?** prompt, select Y(es) to view or modify the current batch size. At the **BS?** prompt, press **ENTER** to accept the current batch size or use the numeric keys to enter a new total batch size. Press **ENTER** to continue. Material, preact, dribble, and tolerance are not affected if the batch size is changed. The material setpoints will be adjusted as recipe target weights are scaled.

5. If enabled, you can change the material target values for this recipe. At the **Mat Tgts?** prompt, select Y(es) then:

If you have not configured user prompts, the LYNXBATCH automatically continues to step 4.

- At the **nn cccccc** prompt, press **SELECT** to display the line number and weighing command to be edited. Press **ENTER**. Changing a value at this prompt affects only the setpoints of the "weigh-in," "hand-add," "manual-weigh," and "dose-out" action codes.

Changing batch values at this time affects only the current batch. The recipe is not affected.

- At the **SP?** prompt, enter a new setpoint value for the displayed command.
- At the **Doses?** prompt, enter a new dose count for the dose-out command.
- Repeat this procedure until you are finished editing the recipe commands.
- Press **SELECT** until the **Edit Done** prompt is displayed. Press **ENTER** to continue.

6. If any of the data corrections (**Bat Cnt?**, **Bat Size?**, or **Mat Tgt?**) have been entered, the LYNXBATCH controller will stop at the **Rxx # yy/zz** prompt. Press **ENTER** or **START** to begin the batch sequence (**Rxx** is the recipe number, **yy** is the current batch number, and **zz** is the number of batches if more than one batch was selected at the **Bat Cnt?** prompt).

If the **Corr Tgt?** parameter is disabled in the Configure System sub-block, LYNXBATCH does not display the **Mat Tgts?** prompt. Continue to step 6.

Changing target values at this time affects only the current batch. The recipe is not affected.

If a single batch is called for without data corrections, the **Rxx # 1** prompt appears for one second before the batch begins. The same prompt is used in continuous batching, but **ENTER** or **START** input must be used to start the first batch. Subsequent batches will run with a one-second pause to display either **Rxx # yy/zz** for a selected batch count or **Rxx #yyyyy** for continuous.

As the batch sequence progresses, the LYNXBATCH controller displays each action as it is carried out. When the current batch is finished, the LYNXBATCH controller continues with the next batch until all are processed.

You can press ZERO during a batch to schedule a hold at the end of the batch currently running rather than to pause for one second. Pressing ENTER or START will resume batching. A prompted hold may be placed at the beginning of a new batch. Simply insert a WRITE command as the first recipe line. The next batch will start after a one-second pause and will display any message you require, holding the batch until START is pressed. When all batches have been processed, the LYNXBATCH controller returns to the **Rxx yyyyy** prompt.

You can cancel a batch in progress by pressing ESCAPE or STOP. The LYNXBATCH controller offers four options to handle aborted batches:

If a material is Off Tolerance, you can press the SELECT key or button to recheck tolerance or ADD/REMOVE material in manual weigh.

- **Resume?**: Batch is resumed and completed as configured.
- **Save Bat?**: Complete batch status is saved. The operator may leave the batching mode completely. The batch can be completed any time after reentering the automatic batching mode (press SELECT in weighing mode, ENTER in Automatic,).
- **AbortLin?**: Current recipe line is aborted and operator can continue with the remainder of the recipe.
- **Abort Bat?**: Batch is aborted.

7. Whenever the display prompts for a **Start** input before the next recipe step and you are ready to continue, press ENTER or START to execute the next line of the recipe.

In manual mode, the inventory is not updated for a material.

8. Repeat step 6 for additional lines of the recipe as needed.
9. When all batches using this recipe are completed, the LYNXBATCH controller returns to the **Rxx yyyyy** prompt. From there the operator can start a new batch, select a new recipe, or press ESCAPE to return to the Standard Weighing Mode.

## Semi-Automatic Batch Control

To perform a Semi-Automatic Batch Control sequence:

- From the Standard Weighing Mode, press SELECT until **Semi-Auto** is displayed. Then press ENTER or START. Operation continues as previously described in the Automatic Batch Control sequence, beginning at step 2, except that the operator will be prompted prior to execution of each recipe line. This mode is useful for testing a new recipe or for production of products that require careful scrutiny throughout the batch process.

## Manual Control

Manual operation is available when Manual Control is selected in the Controls Setup Sub-block (see Chapter 3). Unlike automatic and manual batching, this function does not use a recipe. It simply operates the feeders and other outputs when the operator calls for them.

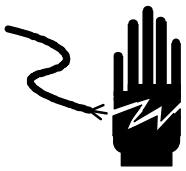
To use manual operations:

1. From the Standard Weighing Mode, press SELECT (key or button) until the **Manual** prompt is displayed. Then press the ENTER key or START button. The LYNXBATCH controller displays the first output as it is configured in setup, and the live gross or net weight.

The TARE and CLEAR (Gross) keys are active in Manual Control Mode to allow the operator to display a net weight.

2. Press **SELECT** (key or button) to display the output that is configured for the material, discharge, alarm, etc., that you wish to activate.
3. With the desired output displayed, press **and hold** the **START** pushbutton to turn on that output. The **ENTER** key does not turn on the output.
4. Release the **START** pushbutton to turn off the output.
5. Repeat the procedure as needed, starting from step 2, or press **ESCAPE** to return to the Standard Weighing Mode.

# 6 Service and Maintenance



**⚠ WARNING**

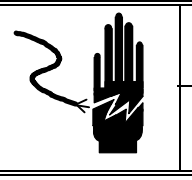
ONLY PERMIT QUALIFIED PERSONNEL TO SERVICE THIS EQUIPMENT. EXERCISE CARE WHEN MAKING CHECKS, TESTS AND ADJUSTMENTS THAT MUST BE MADE WITH POWER ON. FAILING TO OBSERVE THESE PRECAUTIONS CAN RESULT IN BODILY HARM.

## Tools and Supplies

Keep the following items on hand for service and maintenance of the LYNXBATCH controller. A full set of common hand tools may also be required.

- Volt-Ohm meter
- Single DigiTOL load cell simulator (PN 0917-0178) if DigiTOL scale used.
- Analog load cell simulator (PN 82451 00A (variable) or PN 100865 00A (10 step) if 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.
- Screwdriver (PN 144761 00A).
- Flat and Phillips head screwdrivers.
- Allen wrench (2 mm) (PN 144118 00A).

## Cleaning and Regular Maintenance



**⚠ WARNING**

DO NOT SPRAY OR WASH DOWN. HAZARD OF ELECTRICAL SHOCK OR BURN.

Wipe the keypad and covers 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 acetone on the keyboard/display assembly of either LYNXBATCH controller model. Solvents may damage the keyboard/display or cover finish. Do not spray cleaner directly on the unit. Regular maintenance inspections by a qualified service technician are also recommended.

# Troubleshooting

If problems occur, do not attempt repairs before determining the source of the problem. Begin by performing the diagnostic tests described in Chapter 3. If the problem persists, use the error codes table below to help identify the problem.

## Error Codes and Actions

Note: Prompts preceded by "*" appear only during batch execution.

| Error Message | Description | Possible Cause | Remedy |
|---|---|---|---|
| *BadCommand | System error. | Electrical noise. Logic failure | Cycle power. Attempt to resume batch. Abort batch. Replace main PCB. |
| *InvalMatl | An attempt was made to use a material not in the material file. | Material not found in material file. | Add material to material file. Correct the recipe. Correct spelling of material. |
| *Low Matl | User is in Weighout mode, and there is not enough material for the next dose. | Not enough material in scale for next dose. | Make another batch. |
| *Outp Used | An attempt was made to use a previously assigned output. | User tried to assign an output that had already been assigned. | Change the existing output assignments. |
| *Rate Slow | Material feed rate has dropped below minimum preset value. | Defective feeder. Out of material. Plugged system. | Fix defective feeder. Refill material. Unplug feeder. Change slow preset rate. |
| *RecpError | System error. | Previous recipe data not cleared at end of batch. | Select recipe again. |
| 256 KB BAD | RAM failed diagnostic test. | Checksum error. | Enter setup data again. |
| 4 Kbit BAD | EEPROM failed diagnostic test. | Checksum error. | Calibrate scale again. |
| 512 KB BAD | Flash failed diagnostic test. | Checksum error. | Flash program again. |
| ALC NO RESPONSE | No response from analog load cell. | Internal error. Wiring problem. Load cell bad. | Check with a load cell simulator. Replace load cell or main PCB. Correct wiring. |
| BAD ENTRY! | Error during template edit. | Incorrect field code entered. | Enter field code again. |
| BRAM BAD | Battery-backed memory has been corrupted. | New software just loaded. Possible static or power problems. Bad battery. Bad controller PCB. | Reset to factory defaults. Check battery. Replace controller PCB. |

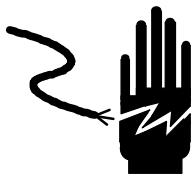
| Error Message | Description | Possible Cause | Remedy |
|---|---|---|---|
| CALIBRATE ERROR | Calibration error. | Incorrect wiring, broken wire, defective load cell or J-box PCB. Incorrect build. Improper setup. | Calibrate on simulator. Check setup and wiring. If problem persists, replace load cell or controller PCB as required. |
| COMM ERROR | Communication port experiencing an internal problem. | Parameters selecting in communicating units do not match. Controller PCB defective. | Perform diagnostics tests. Test port for proper communication. Replace controller PCB. |
| DLC COMM FAILURE | Unable to communicate with a DigiTOL load cell. | Bad wiring. Poor connections. | Use simulator to verify that indicator works. Replace DLC or controller PCB. |
| DLC ERROR X (X=1 through 8) | Various DigiTOL load cell errors. | Load cell failure. Wiring errors. | Check connections and wiring. Use simulator to check LYNXBATCH. Replace DLC. |
| EEPROM BAD | Calibration data corrupt. Checksum error. | Bad controller PCB. Loss of power during calibration. | Recalibarte the scale. Replace controller PCB. |
| FUNCT KEY INHIBITED | FUNCTION key does not work. | SW1-1 is OFF. | Set SW1-1 to ON. |
| ILLEGAL LOAD CELLS | A LYNXBATCH using a DigiTOL J-box configured with less than two or more than four load cells. | Incorrect setup. | Check number of load cells used. A minimum of two and maximum of four load cells are permitted. |
| ILLEGAL SCALE MODE | User tried to zero LYNXBATCH when it was in net mode. | User tried to zero LYNXBATCH when it was in net mode. | Clear tare before zeroing the indicator. |
| ILLEGAL SCALE TYPE | An analog load cell has been connected but DigiTOL type selected, or vice versa. | Wrong type of load cell was selected in setup. | Select proper load cell type. |
| INVALID DATE | Invalid date entered. | Entry error. | Enter a valid date. |
| INVALID PASSWORD | Entry does not match password. | Incorrect password entered. | Enter correct password. Use backdoor password. |
| INVALID SCALE TYPE | Analog/DigiTOL scale type selection is wrong. | Wrong scale type entered in Scale Interface menu. | Select proper scale type in Scale Interface setup menu. |
| JAGMSG ALLOC ERROR | Program error. | Not enough “heap” memory. | Cycle power. If problem persists, contact Technical Support at 1-800-786-0040. |
| KEY TARE INHIBITED | Keyboard tare not allowed. | Keyboard tare entry disabled in setup. | Enable keyboard tare entry in setup. |
| MATERL BAD | Material file is corrupted. | Material file is corrupted. | Cycle power. Clear material file then enter materials again. |

| Error Message | Description | Possible Cause | Remedy |
|---|---|---|---|
| MEM ALLOC ERROR | Program error. | Service required. | Cycle power. If problem persists, contact Technical Support at 1-800-786-0040. |
| NO CONNECT | No serial port configured. | Setup error. | Configure serial port in setup. |
| NO DEMAND PRINT CON | No demand printer connection has been configured. | Setup error. | Select COM port and configure connection. |
| LowMatl | Inventory check failure. | Not enough material in inventory for this batch. | Increase inventory of selected material. |
| No Recipe! | Selected recipe does not exist. | Recipe was not entered. | Enter recipe. |
| NO SECOND UNITS | No secondary weight units specified. | No alternative weight unit was specified. | Select a secondary weight unit in Application Environment. |
| NO SERIAL CONNECTION | No port assigned to requested function. | Tried to use host, continuous, or demand data with no port assigned to that function. | Assign the function to a port. |
| OFF TOL | Off tolerance. | Weight on the scale is outside the tolerance range and the OffTolAc parameter is disabled. | Remove or add enough weight to bring the weighment into tolerance range or configure the AccOffTol prompt to Yes. |
| OUT OF ZERO RANGE | Displayed weight is outside zero capture range. | Wrong zero limit selected in setup. | Change the zero range in setup. Zero the scale again. |
| OUT RANGE | User data entry is outside range for specified variable. | Number entered is either to large or too small. | Enter correct value for the selected field. |
| OVER RANGE | Weight on scale is more than five graduations above the calibrated span. | Too much weight on scale. Bad wiring. Defective load cell. Problem with scale base. | Use load cell simulator to verify LYNXBATCH is okay. Check scale and wiring. Replace load cell. |
| PB TARE INHIBITED | Pushbutton tare disabled. | Pushbutton tare disabled in setup. | Enable pushbutton tare in setup. |
| PRINT NOT READY | Print request not executed. | Scale is sensing motion. | Wait until scale settles. |
| RAM BAD | RAM memory failed test. | Checksum error. Low battery. Bad controller PCB. | Check battery. Enter materials again. |
| RECIPE BAD | Recipe file is corrupted. | Checksum error. | Enter all recipes again. |
| SCALE IN MOTION | Weight display has not settled. Normal occurrence, not usually an error. | Motion on scale while trying to tare or zero. | Wait until scale settles. Change filtering parameters in setup. |
| SHIFT ADJUST ERROR | LYNXBATCH is connected to a DigiTOL J-box and is unable to complete the shift adjustment. | Incorrect programming or defective wiring. Bad load cell or J-box. Weight placed over wrong load cell. | Verify wiring and cell location. Check programming and press CLEAR to try again. Replace defective part(s). |

| Error Message | Description | Possible Cause | Remedy |
|---|---|---|---|
| TARE ABOVE LIMIT | User started batch with weight equal to more than calibrated capacity but less that 105% calibrated capacity in hopper. | Too much material on scale at beginning of the batch. | Remove material until gross weight remaining PLUS weight of batch to be made does not exceed scale's calibrated capacity. |
| TARE OVER CAPACITY | User started batch with weight equal to more than 105% of calibrated capacity already in the weigh hopper. | Too much material in the scale at beginning of the batch. | Remove material until gross weight remaining PLUS weight of the batch to be made does not exceed calibrated capacity of scale. |
| TARE UNDER ZERO | User tried to tare the indicator with a negative weight larger than under-zero blanking value. | Negative weights greater than the under-zero blanking value cannot be tared. | Make sure the displayed weight is smaller than the under-zero blanking setting. |
| TEMPLATE ERROR | Template error. | Corrupted template. | Check template. Use Save/Load feature to save the template contents, then reset. |
| TOO SMALL INCREMENT | Increment size is too small. | The selected graduation results in more increments than the scale is capable of. | Select a larger graduation and recalibrate. |
| TPL FULL! | Template is full. | Template exceeded maximum 800 formatted characters. | Delete unnecessary characters or fields. |
| TplCORRUPT | Template has been corrupted. | A field was stored incorrectly. | Clear template. Enter it again. Reset to factory defaults. |
| UNDER ZERO | Indicator is more than five increments below “under zero” as specified in Zero Operation sub-block. | Not enough weight on scale. Bad wiring. Defective load cell. Problem with scale base. | Use simulator to check indicator. Recalibrate or rezero scale. Change “under zero” setting. Replace load cell. |
| Use less! | Too large a number has been entered for one of the “CAL VAL” entries during Diagnostics. | Incorrect value for zero or span counts has been entered. | Recalibrate scale using test weights rather than previously recorded “counts.” |
| Wrong Matl | Scanned material is not in current recipe. (Bar code input). | Wrong material scanned or in recipe. Bad barcode label. | Scan material barcode. Check recipe. Check material file. |
| WRONG PCB! | Wrong main PCB installed. | Main PCB has Lynx EEROM installed rather than LYNXBATCH EEROM. | Replace main PCB with the correct LynnxBatch PCB. |
| WRONG TARE INCREMENT | Keyboard tare entered is not a multiple of the scale increment. | Keyboard tare must be entered using the scale increment. | Enter keyboard tare using scale increment. |
| ZERO NOT CAPTURED | User tried to tare unit before powerup zero was captured. | Powerup zero must be captured before unit tared. | Wait until powerup complete before entering a tare. |

# Testing Operational Voltages

To test voltages on the PCB, open the controller 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 harsh environment model:

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 retained by two cables. Let the front panel hinge on these cables while you troubleshoot voltages.

To open the panel mount model:

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. Slide the chassis from the enclosure until you can access the voltage test points. Do not to pull the battery cable or the transformer harness from the connectors at the rear of the assembly.

## Input Voltage Test

1. Unplug a 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 6-1 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 |
| 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 ± 0.25 VDC |
| +15 VDC | Between chassis ground and U25, pin 1 | Between ± 0.25 VDC |

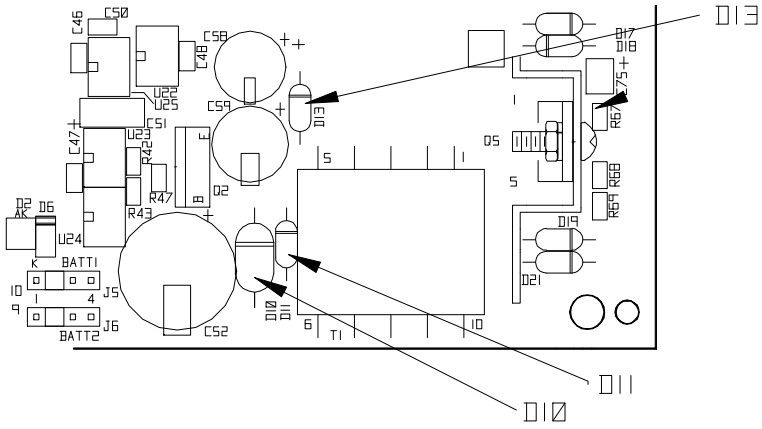



**Figure 6-1: Regulated Voltages (on Controller PCB)**

The 19 VDC powers the 20 mA communications current loop. It also provides power for analog load cell excitation and powers the DigiTOL load cell.

The 12 VDC supply provides voltage to the I/O port. The 5 VDC supply provides voltage for all logic. The ±15 VDC supply provides excitation for analog load cells and can be measured between J1, pin 1 and J1, pin 7.

## Battery Voltage Test

Check battery voltage at the battery connector (Batt 1) on the Controller PCB. The voltage between Pins 1 and 4 should not be less than 3.75.

If setup parameters are changing uncontrollably or if 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 6-2 illustrates the test points.

| Display Voltage Test Points | |
|---|---|
| Test Point | Voltage Measurement |
| Between pins 1 and 3 of J4 | 5 VDC |
| Between pins 1 and 8 of J4 | 5 VDC |

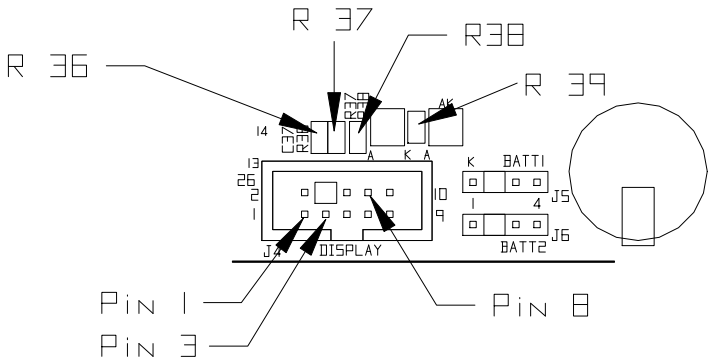



Figure 6-2: Display Voltage Test Points

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

You should 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 LYNXBATCH controller load cell(s) or scale base is to test with a load cell simulator. Both analog and DigiTOL simulators are available.

## Analog

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 input on the back panel.
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 watch the weight display. If the LYNXBATCH controller operates normally (no weight drift, good linearity), the problem probably is external, in the load cell(s), scale base, or home run load cell cable.

## 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.

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. 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.
4. Set the selector switch on the simulator to read "7".
5. Apply power. After LYNXBATCH controller goes through the power-up sequence, the "Power" and "Pass" lights on the simulator should be lit. LYNXBATCH controller may show a blank display or an error code.
6. Step the simulator selector switch down to "1" and start calibrating, using "1" as zero and "6" as span. When calibration is complete, LYNXBATCH controller should respond exactly as if a scale were connected.
7. Test all LYNXBATCH controller functions with the simulator. If problems that existed before connecting the simulator are no longer present, the problem probably lies in the scale base or home run cable.

# Verifying Data Transmission

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

You can verify if there is any transmission from the LYNXBATCH controller'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 LYNXBATCH controller serial ports can also be tested through the Diagnostics and Maintenance program block.

## 20 mA

1. Configure the LYNXBATCH controller for Demand mode at 300 baud if it is not already configured as such. This will make the meter reading changes easier to see.
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 to indicate transmission, then return to the original 20 mA reading.
5. Reconfigure the LYNXBATCH controller for Continuous mode at the desired baud rate if it was set to Demand mode for this test.

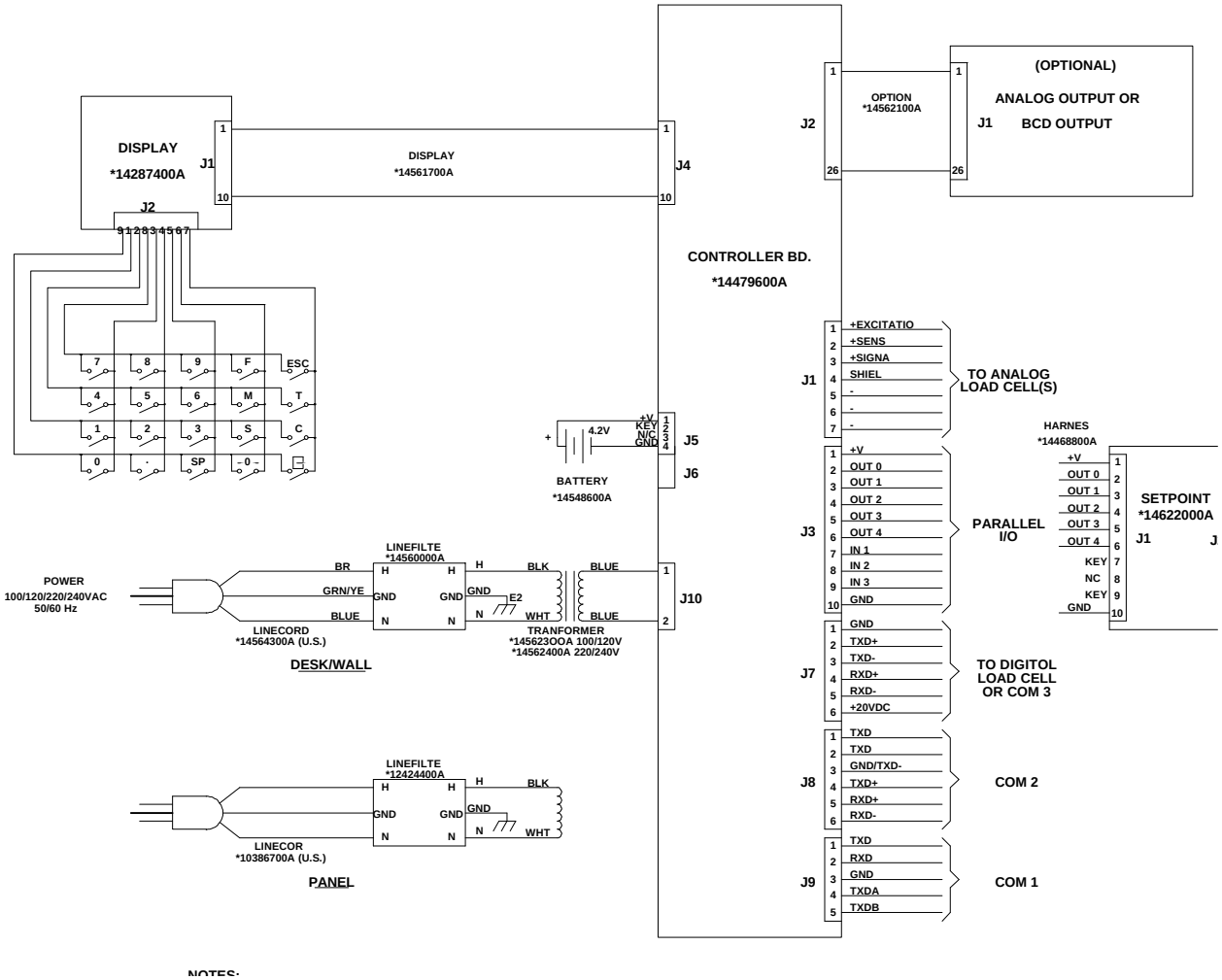
## RS-232 Output

1. Configure the LYNXBATCH controller for Demand mode at 300 baud if it is not already configured as such. This will make the meter reading changes easier to see.

A slow baud rate will cause data to transmit slowly and the meter will fluctuate longer before returning to the original -10 volts reading.

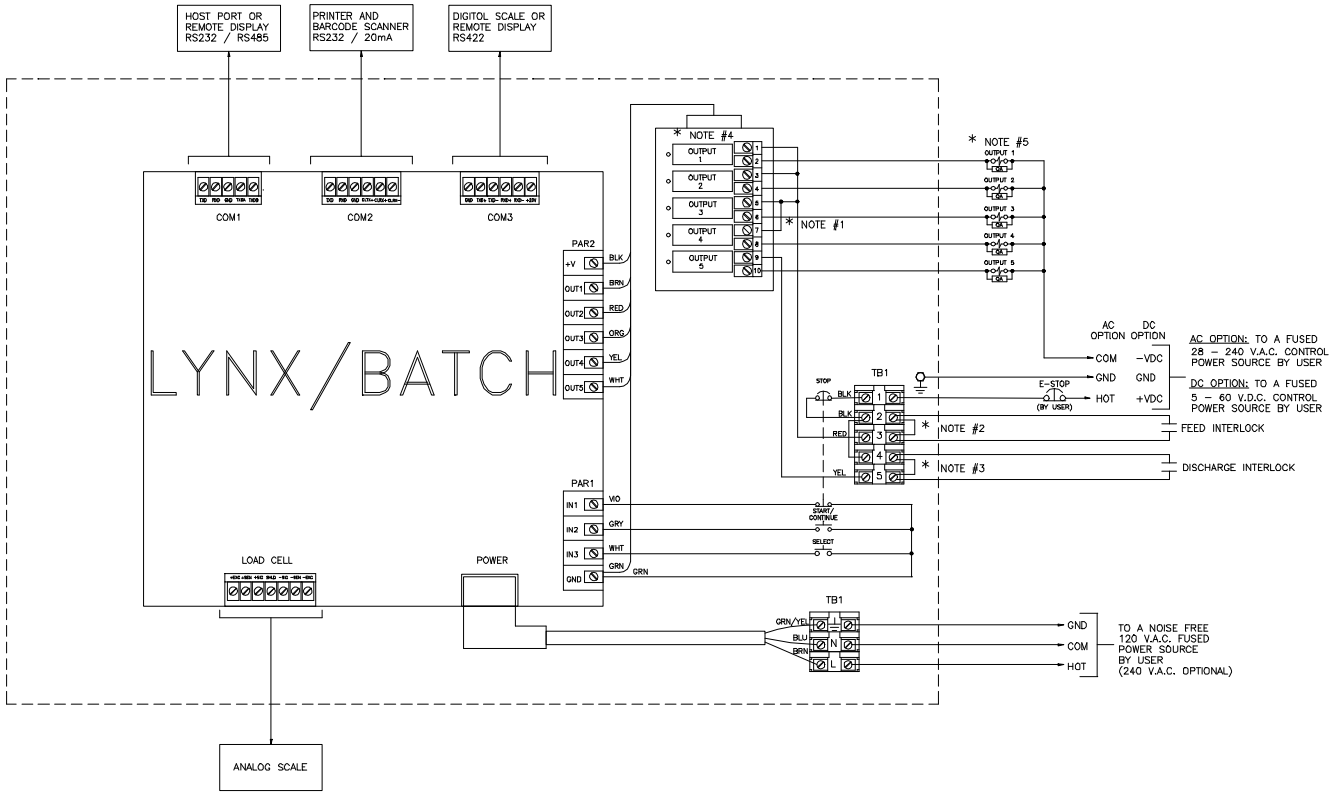
2. Set the volt meter to read DC volts.
3. Put the black lead on the ground connector, the red lead on the TDX connector. In Demand mode, the meter should read approximately –10 volts.
4. Press **ENTER** (to transmit data) and observe the meter reading. The reading should fluctuate to indicate transmission, then return to the original –10 volts reading.
5. Reconfigure the LYNXBATCH controller for Continuous mode at the desired baud rate if it was set to Demand mode for this test.

# Internal Wiring Diagram




NOTES:

# External Wiring Diagram




Note 1: If output #4 is used for fast discharge, remove the jumper between I/O terminals 5 and 7 and place it between I/O terminals 7 and 9.

Note 2: If the feed interlock is used, remove the jumper between TB1 terminals 2 and 3, and wire in a dry contact for the feed interlock.

Note 3: If the discharge interlock is used, remove the jumper between TB1 terminals 4 and 5, and wire in a dry contact for the discharge interlock.

Note 4: AC Option - All output modules are Opto 22 generation 4 solid state devices rated at 28 - 240 VAC, 1 amp, non-inductive.
DC Option - All output modules are Opto 22 generation 4 solid state devices rated at 5 - 60 VDC, 1 amp, non-inductive.

Note 5: All AC inductive loads must be suppressed as close to the load as possible with R-C type suppression devices (ref. Mettler Toledo part no. 962-0034). All DC inductive loads must be suppressed as close to the load as possible with a diode with a PIV rating at least two times the DC voltage be used.

# 7 Parts and Accessories

## Harsh Environment Model Parts

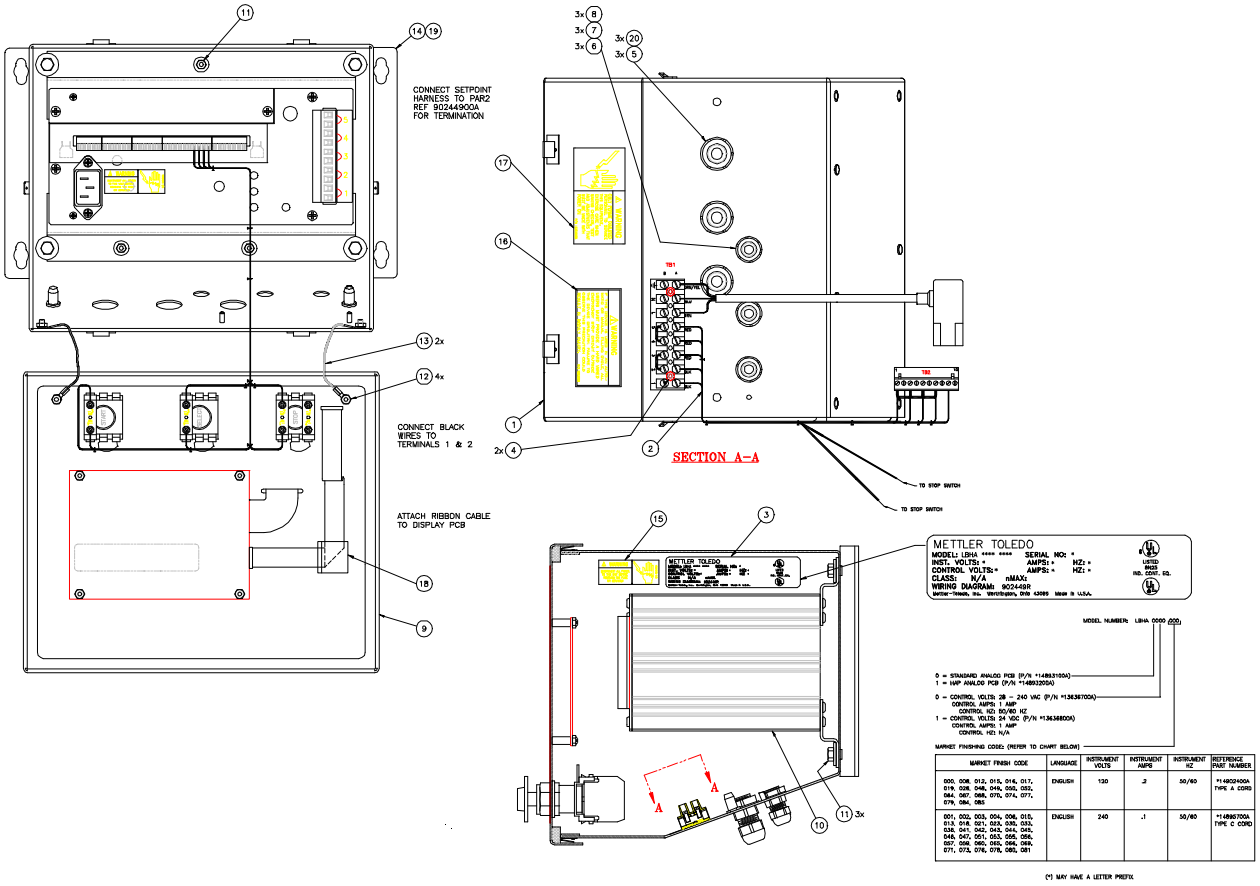



Figure 7-1: Harsh Environment Model Parts

| Parts List 1—Harsh Environment Model | | | |
|---|---|---|---|
| Ref. # | Part Number | Description | Qty |
| 1 | (*)90245500A | Enclosure | 1 |
| 2 | (*)90246200A | Harness, AC Power Terminals | 1 |
| 4 | R0500400A | M3 Nut, Hex, W/Washer | 2 |
| 5 | (*)13002300A | CGB | 3 |
| 6 | (*)12901800A | CGB | 3 |
| 7 | (*)14050100A | Gasket | 3 |
| 8 | (*)14467600A | Small CGB Plug | 3 |
| 9 | (*)90245400A | Front Cover Assembly | 1 |
| 10 | (*)90245700A | Indicator Assembly (see parts list 2, next page) | 1 |
| 11 | R0519200A | M5 Nut, Hex, W/Washer | 3 |
| 12 | R0519600A | M4 Nut, Hex, W/Washer | 4 |
| 13 | (*)14467500A | Tension Cable, 3.25” | 2 |
| 14 | (*)14520400A | Wall Mount Brackets | 2 |
| 15 | (*)12699700A | Warning Label | 1 |
| 16 | (*)13203500A | Warning Label | 1 |
| 17 | (*)13203600A | Warning Label | 1 |
| 18 | (*)14665400A | Harness Clip | 1 |
| 19 | R0520600A | Bracket Mounting Bolts | 4 |
| 20 | (*)14467600A | Large CGB Plug | 3 |
| Not shown | (*)14235400A | Labels, Capacity (Sheet) | 1 |
| Not shown | (*)09591500A | Cable Tie, Small | 3 |
| Not shown | (*)12635700A | Core, Ferrite, 0.75 ID | 1 |
| Not shown | (*)14476100A | Screwdriver | 1 |
| Not shown | (*)14411800A | Hex Key, 2mm | 1 |
| Not shown | R0526900A | Screw M3x8 Drilled Head | 2 |
| Not shown | R0510000A | Screw M4x10 Drilled Head | 4 |

(*) Part number may have a letter prefix.

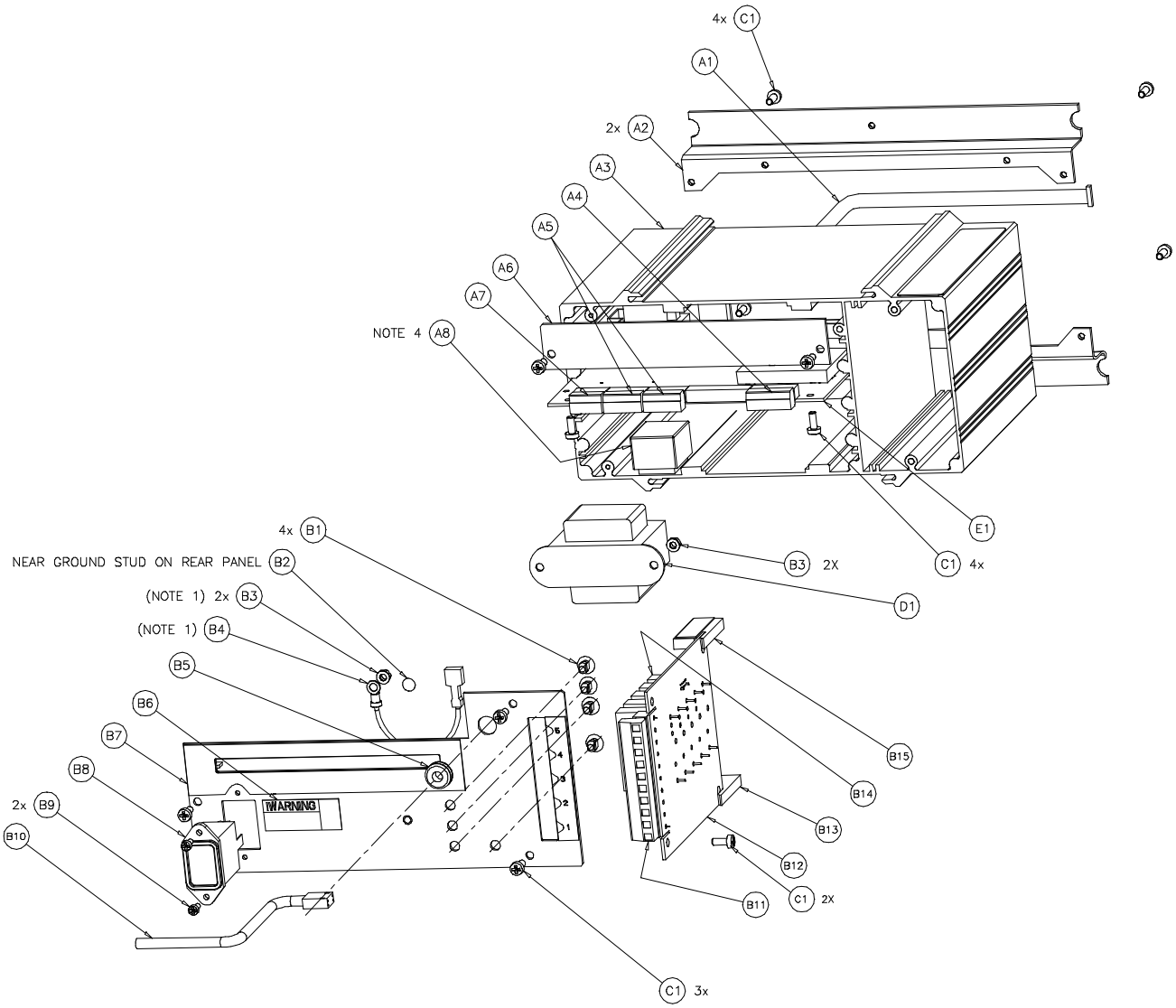
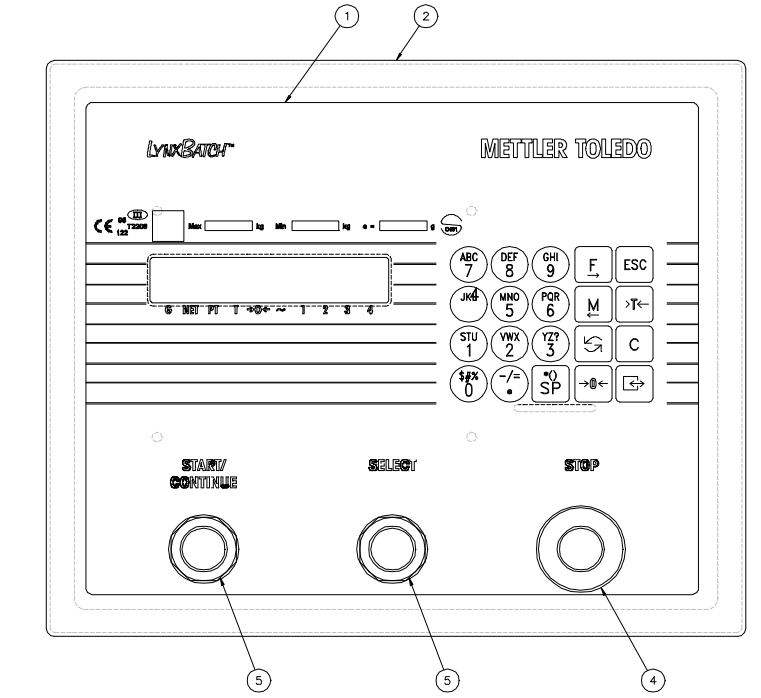



Figure 7-2: Harsh Environment Model Parts

| Parts List 2—Harsh Environment Model | | | |
|---|---|---|---|
| Ref. # | Part Number | Description | Qty |
| A1 | (*)90247000A | Ribbon Harness | 1 |
| A2 | (*)14520200A | Mounting Brackets | 2 |
| A3 | (*)14734300A | Chassis, LynxBatch | 1 |
| A4 | (*)14113200A | Terminal Plug, 7 Position | 1 |
| A5 | (*)14113100A | Terminal Plug, 6 Position | 2 |
| A7 | (*)14374900A | Terminal Plug, 5 Position | 1 |
| A8 | (*)14548600A | Battery, 4.2 V, Alkaline | 1 |
| B1 | (*)14469100A | Anchor, Cable Tie | 4 |
| B2 | (*)14531400A | Label, BSI Ground | 1 |
| B3 | R0519600A | Nut, Hex, M4, KEPS | 3 |
| B4 | (*)14562200A | Ground Wire | 1 |
| B5 | (*)12462700A | Grommet, 0.25 ∅ | 1 |
| B6 | (*)12699700A | Label, Power Warning | 1 |
| B7 | (*)14469000A | Rear Panel | 1 |
| B8 | (*)12424400A | Line Filter, Plug in | 1 |
| B9 | R0524700A | Screw, M3x8, PH., Taptite | 2 |
| B10 | (*)90246300A | Harness | 1 |
| B11 | (*)14623400A | Plug, Terminal Strip | 1 |
| B12 | (*)14622000A | PCB Assembly, Set Point | 1 |
| B13 | (*)14634300A | Guide, PCB, Lower | 1 |
| B14 | (*)13636700A | Solid State Output, Opto 22, Fused, 28-280 VAC | 5 |
| C1 | R0511100A | Screw, M4x10, PH., Taptite | 11 |

(*) Part number may have a letter prefix.



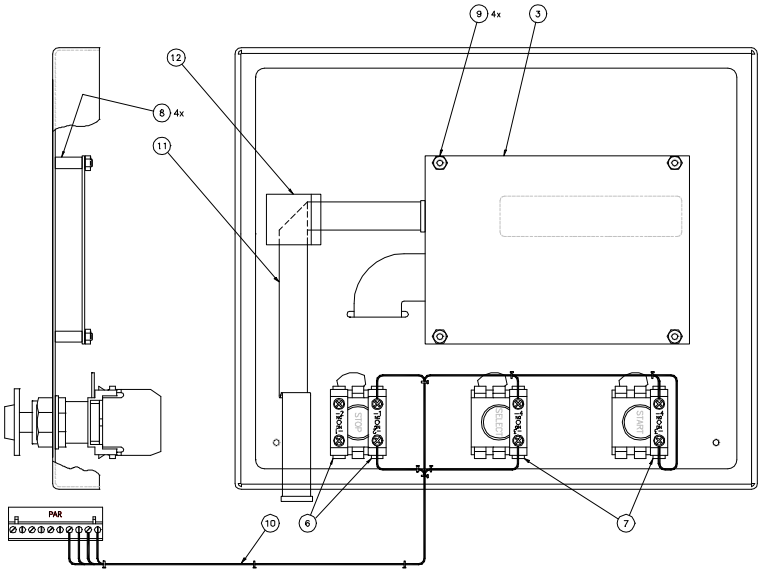




Figure 7-3: Harsh Environment Model Parts

| Parts List 3—Harsh Environment Model | | | |
|---|---|---|---|
| Ref. # | Part Number | Description | Qty |
| 1 | (*)90245200A | Assembly Keyboard LynxBatch | 1 |
| 2 | (*)90245300A | Front Cover | 1 |
| 3 | (*)14287400A | PCB Assembly, VF Display | 1 |
| 4 | (*)90075000A | Switch Operator, Emergency Stop, Red, Maintained | 1 |
| 5 | (*)90086400A | Switch Operator, Black, Momentary | 2 |
| 6 | (*)90086200A | Contact, 1 N.C. | 2 |
| 7 | (*)90086100A | Contact, 1 N.O. | 2 |
| 8 | (*)030484050 | Spacer, Hex, M4x15mm | 4 |
| 9 | R0519600A | Nut, Hex, M4 | 4 |
| 10 | (*)90246300A | Harness Assembly, Switches | 1 |
| 11 | (*)14561700A | Harness Ribbon, Display | 1 |
| 12 | (*)14665400A | Harness Clip | 1 |

(*) Part number may have a letter prefix.

# Panel Mount Parts

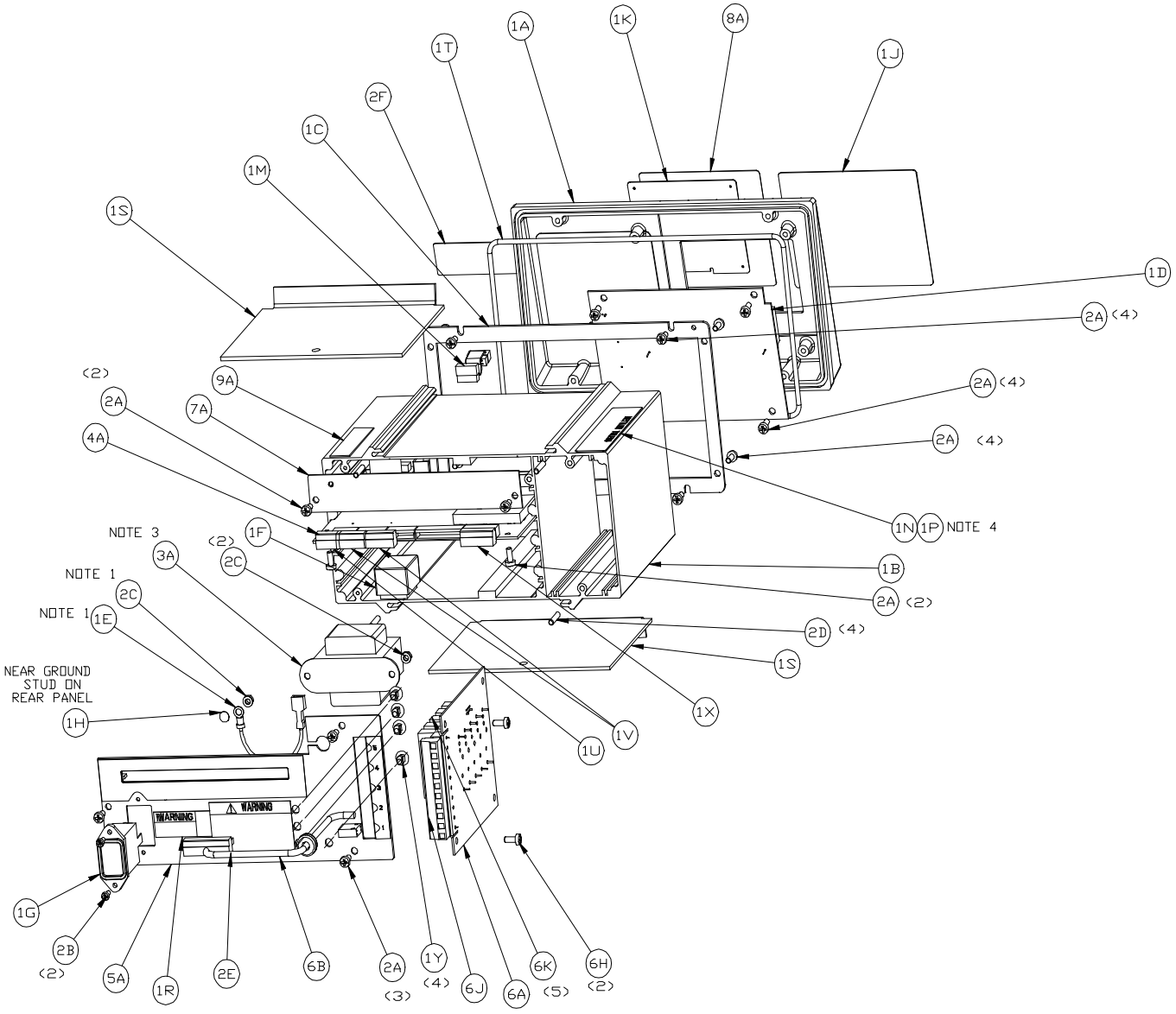



Figure 7-4: Panel Mount Model Parts

| Parts List—Panel Mount Model | | | |
|---|---|---|---|
| Ref. | Part Number | Description | Qty |
| 1A | (*)14464800A | Front Panel, Lynx | 1 |
| 1B | (*)14734300A | Chassis, Lynx | 1 |
| 1C | (*)14014100A | Interface Plate | 1 |
| 1D | (*)14287400A | PCB Assembly, VF Display | 1 |
| 1E | (*)14562200A | Ground Wire | 1 |
| 1F | (*)14548600A | Battery, 4.2 V | 1 |
| 1G | (*)12424400A | Line Filter | 1 |
| 1H | (*)14531400A | Label, BSI Ground | 1 |
| 1J | (*)14466700A | Lens | 1 |
| 1K | (*)14468000A | Keyboard | 1 |
| 1M | (*)14561700A | Harness, Display | 1 |
| 1R | (*)12699700A | Label, Power Warning | 1 |
| 1S | (*)14015200A | Clamp Plate | 2 |
| 1T | (*)14016100A | Panel Seal | 1 |
| 1U | (*)14374900A | Terminal Plug, 5 Pos. | 1 |
| 1V | (*)14113100A | Terminal Plug, 6 Pos. | 2 |
| 1W | (*)14113400A | Terminal Plug, 10 Pos. | 1 |
| 1X | (*)14113200A | Terminal Plug, 7 Pos. | 1 |
| 1Y | (*)14469100A | Anchor, Cable Tie | 3 |
| 2A | R0511100A | Screw, M4x10 PH. Taptite | 19 |
| 2B | R0524700A | Screw, M3x8 PH. | 2 |
| 2C | R0519600A | Hex Nut, M4 KEPS | 3 |
| 2D | R0511300A | Set Screw, M4x20 Flat Pt. | 4 |
| 2E | (*)13203500A | Label, Warning | 1 |
| 3A | (*)14562300A | Transformer, 100/120 V | 1 |
| 4A | (*)14893100A | PCB Assembly, Controller Board | 1 |
| 5A | (*)14469000 | Rear Panel | 1 |
| 6A | (*)14622000A | PCB Assembly Set Point | 1 |
| 6B | (*)14468800A | Harness | 1 |
| 6D | (*)12462700A | Grommet | 1 |
| 6H | R0511100A | Screw, M4x10, PH. Pan HD | 2 |

| Parts List—Panel Mount Model | | | |
|---|---|---|---|
| Ref. | Part Number | Description | Qty |
| 6J | (*)14623400A | Plug, Terminal Strip | 1 |
| 6K | (*)13636700A | Solid State Output, Opto 22, Fused, 28-280 VAC | 5 |
| 7A | (*)14466500A | Blank Plate | 1 |
| 8A | v14893000A | Keyboard Overlay LynxBatch, English | 1 |
| 9A | (*)11397100A | Label, FCC Info. | 1 |
| Not Shown | (*)09591500A | Cable Tie, Small | 3 |
| Not Shown | (*)12635700A | Core, Ferrite | 1 |
| Not Shown | (*)14476100A | Screwdriver | 1 |
| Not Shown | (*)14411800A | Hex Key, 2mm | 1 |
| Not Shown | (*)12363300A | Security Seal | 1 |
| Not Shown | R0526900A | Screw, M3x8 | 2 |
| Not Shown | R0510000A | Screw, M4x10 | 4 |
| Not Shown | (*)14235400A | Labels, Capacity | 1 |

(*) Part number may have a letter prefix.

(*) Part number may have a letter prefix

# Optional Accessories

| Optional Accessories | | |
|---|---|---|
| **Part Number** | **Description** | **Factory Number** |
| (*)100865 00A | Analog Load Cell Simulator (10-step) | 0917-0091 |
| (*)134460 00A | DigiTOL Load Cell Simulator | 0917-0178 |
| (*)15683800A | 8 IN/8 OUT I/O Expansion Board | 0917-0269 |
| (*)082451 020 | Analog Load Cell Simulator (variable) | |
| (*)14476100A | Screwdriver | |
| (*)144118 00A | Hex Key, 2mm | |
| (*)900936 00A | RS-232/20 mA Converter | |

(*) Part number may have a letter prefix.

# Cables and Connectors

| Cables and Connectors | | |
|---|---|---|
| **Part Number** | **Description** | **Factory Number** |
| (*)130115 00A | DigiTOL Load Cell Cable w/DB9 connector attached (10') | 0900-0245 |
| (*)13321800A | Printer Cable, RS232/20 mA (15') | 0900-0258 |
| (*)14656000A | Printer Cable, RS232 (15') | 0900-0309 |
| 510624370 | Bulk Analog Load Cell Cable, 24 gauge | — |
| 510620370 | Bulk Analog Load Cell Cable, 20 gauge | — |
| 510616370 | Bulk Analog Load Cell Cable, 16 gauge | — |
| (*)125819 00A | DE-9 Male Load Cell Connector | 0917-0117 |

(*) Part number may have a letter prefix.

# Recommended Spare Parts

Mettler Toledo recommends you keep the following spare replacement parts in the quantity listed.

| RECOMMENDED SPARE PARTS FOR PANEL MOUNT MODEL AND HARSH ENVIRONMENT MODEL | | |
|---|---|---|
| **Part Number** | **Description** | **Qty** |
| (*)14896900A | PCB Assembly, Controller (English, Standard) | |
| (*)14897200A | PCB Assembly, Controller (Spanish, Standard) | |
| (*)14898900A | PCB Assembly, Controller (English, HAP) | 1 |
| (*)14899200A | PCB Assembly, Controller (Spanish, HAP) | |
| (*)14287400A | PCB Assembly, VF Display | 1 |
| (*)14548600A | Battery, 4.2V Alkaline | 1 |
| (*)14562300A | Transformer, 120VAC | 1 |
| (*)15057800A | Solid State Output, OPTO 22, Fused, 28-280VAC | As Required |
| (*)15058100A | Solid State Output, OPTO 22, Fused, 5-60 VDC | As Required |
| (*)15127100A | Dry Contact Output, OPTO 22, 10 VA Maximum | As Required |

| Recommended Spare Parts for Panel Mount Model only | | |
|---|---|---|
| **Part Number** | **Description** | **Qty** |
| 14913900A | Keyboard Assembly, Panel Mount Model | 1 |

| Recommended Spare Parts for Harsh Model only | | |
|---|---|---|
| **Part Number** | **Description** | **Qty** |
| 90245200A | Keyboard Assembly, Harsh Environment Model | 1 |
| 90075000A | Switch Operator, Emergency Stop, Red, Maintained | 1 |
| 90086400A | Switch Operator, Black, Momentary | 2 |
| 90086100A | N.O. Contact Block | 2 |

NOTES

# 8 Appendices

## Appendix 1: Serial Interface Reference

Three serial ports are standard on the LYNXBATCH 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). COM1 RS-232 is used for loading the LYNXBATCH controller software. The RS-485 interface is two-wire. Both 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 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, 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 LYNXBATCH controller 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 LYNXBATCH controller and cannot receive any more in its buffer, it sends an ASCII XOFF (13h) telling the LYNXBATCH controller to temporarily stop sending data until its buffer clears.

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

The XON/XOFF method is the only type of handshaking that is supported by the LYNXBATCH controller.

## Hardware Connections

All connections to the LYNXBATCH controller serial ports are made using terminal strips. 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 has loops on the rear of the panel allowing you to secure cables with nylon wire ties.

The standard 15-foot RS-232 printer cable available for the LYNXBATCH controller (Factory Number 0900-0309, part number 146560 00A) is wired as shown below:

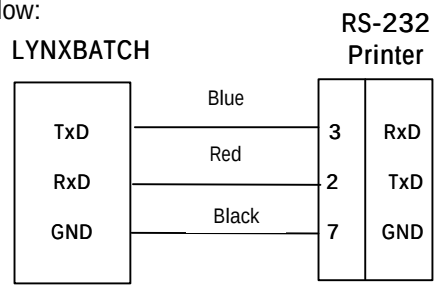



Figure 8-1: RS-232 Printer Cable Wiring

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 |
| 20 mA | 1000 feet |
| RS-422 | 2000 feet |
| RS-485 | 2000 feet |

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:

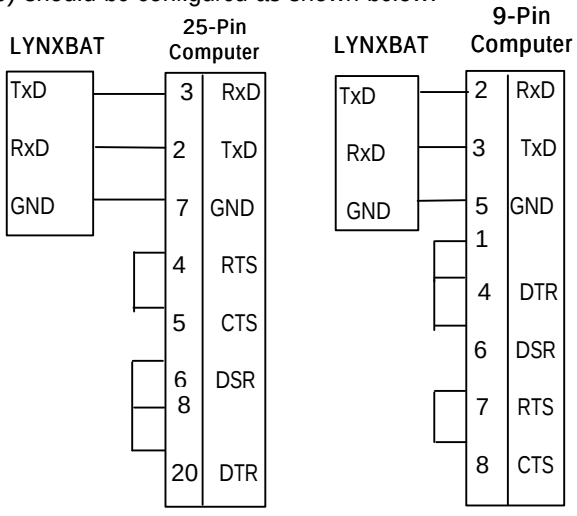



Figure 8-2: Custom Cable Configuration

## Output Modes and Formats

The LYNXBATCH controller supports demand, continuous and host modes of data output.

### Demand Mode

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

- The operator presses **ENTER** in the normal weighing mode.
- An ASCII "P" is sent through a command input port
- Auto print is enabled and all conditions for auto print are met.
- A Print Action Code is executed in a recipe.

When triggered, data is transmitted in a string selected in the template editing portion of setup or as formatted by the batching software. Demand mode is used typically when sending data to a printer. The formats for Demand printing are discussed in Appendix 3.

### Continuous Mode

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 when continuous monitoring of the scale weight is required by an external device such as a computer, remote display, or scoreboard.

The LYNXBATCH controller offers two continuous mode output formats. These are selectable in setup mode and include:

- Standard Continuous Format
- Short Continuous Format

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 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.

## 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 | |
| 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) |

## Host Mode

The LYNXBATCH host mode provides a bi-directional protocol for communications between a host (master) and one or more LYNXBATCH (slaves). If only one LYNXBATCH is connected to the host, and RS232 , 20 mA current loop or RS422, point-to-point connection is appropriate as determined by the distance between the host and the Lynx. If more than one LYNXBATCH is to be connected, RS422 or RS485 physical network connections are required. RS422 requires four wires but operates more efficiently than RS485, which is a two-wire network. Both networks can support up to 9 nodes including the host.

The host mode functions are designed to permit the host computer to send and receive a variety of data fields and records as might be required in a typical data acquisition and management system. Implementation of a host computer program for exchange of single data fields or status and control states is relatively simple. Programming a host for material or recipe file maintenance is much more complex and it is recommended that Mettler Toledo's PC Data Management software be used for these applications. If additional functionality is required beyond that available in the PC Data Management, contact your Mettler Toledo sales office or authorized distributor about licensing the PC Data Manager software for customization.

## Character Format

The character format used by the LYNXBATCH serial interface 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

The character format is configured in Setup in the Serial I/F Program Block.

## Message Format

There are 2 basic types of messages between the host and the LYNXBATCH:

- Upload – The host requests information from the LYNXBATCH, and the LYNXBATCH responds to the request.
- Download – The host transmits new data to the LYNXBATCH.

| 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> LYNXBATCH scale address selected in setup, must be from an ASCII 2 to 9
C <DIR> Data Direction, "U" = Upload (LYNXBATCH to Host), "D" = Download (Host to LYNXBATCH)
D <FCT> Function code, refer to Function Code table 6-9.
E <Data Field> The data field is either the uploaded data from the LYNXBATCH or the downloaded data from the Host. Not all function codes use the data field. All Data Fields are ASCII data type unless noted.
F <CR> ASCII Carriage Return, Hex 0D
G <CKS> Optional Checksum Character.

Message Format

## Checksum Character

The optional checksum character may be turned on or off in setup in the Serial I/F program block. The checksum is calculated by taking the 2's complement of the 7 lower order bits of the binary sum of all characters in the message that precede the checksum itself, including the STX and CR. It is recommended that the checksum character be used, as this is the only method provided to check the integrity of the message.

If the LYNXBATCH controller receives a message that it does not understand, it will ignore the message. Therefore, it is strongly recommended that critical messages that are downloaded by the host be read back by the host to confirm that the message was properly received and the data properly stored.

## Message Function Codes

Following is a list of the available function codes and details about the formatting of messages that use the function code.

| Description | Function Code | | Message Type | Data Field Length |
|---|---|---|---|---|
| | Hex | ASCII | | |
| Concatenated Function Codes B-H | 41 | A | U | 50 |
| Displayed Weight | 42 | B | U | 8 |
| Gross Weight | 43 | C | U | 8 |
| Tare Weight | 44 | D | U | 8 |
| Net Weight | 45 | E | U | 8 |
| Time and Date | 46 | F | U/D | 12 |
| Scale Status Bytes (A,B,C) | 47 | G | U | 3 |
| Batching Status Bytes (D,E,F) | 48 | H | U | 3 |
| Start/Reset Batch | 49 | I | D | 0 |
| Learn Mode Percent | 4C | L | U/D | 2 |
| Material Parameters | 4D | M | U/D | 80 |
| Delete Material | 4E | N | D | 2 |
| Clear Material Usage | 4F | O | D | 2 |
| Clear Preact | 50 | P | D | 2 |
| Clear Dribble | 51 | Q | D | 2 |
| Recipe Parameters | 52 | R | U/D | 32 |
| Recipe Lines | 53 | S | U/D | 30 |
| Delete Recipe | 54 | T | D | 2 |
| Select Recipe | 55 | U | U/D | 10 |
| Recipe Space Available | 56 | V | U | 7 |
| Batch Report / Summary Indices | 57 | W | U | 6 |
| Batch Report Line | 58 | X | U | 44 |
| Batch Summary Line | 59 | Y | U | 20 |

Message Function Codes

### (A) Read All Functions (Upload Only)

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

| LYNXBATCH Response | | | | | |
|---|---|---|---|---|---|
| STX | 2 | U | A | All Functions | CR |
| 02 | 32 | 55 | 41 | Byte Data Field | 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)
- Scale Status Bytes: (3 Bytes)
- Batching Status Bytes: (3 Bytes)

### (B) Displayed Weight (Upload Only)

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

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

### (C) Gross Weight (Upload Only)

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

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

### (D) Tare Weight (Upload)

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

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

### (E) Net Weight (Upload Only)

| Host Transmissions | | | | | |
|---|---|---|---|---|---|
| ASCII | STX | 2 | U | E | CR |
| Hex | 02 | 32 | 55 | 45 | 0D |

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

### (F) Time/Date (Upload)

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

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

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

### Time/Date (Download)

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

### (G) Scale Status Bytes (Upload Only)

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

| LYNXBATCH Response | | | | | |
|---|---|---|---|---|---|
| STX | 2 | U | G | Status Bytes | CR |
| 02 | 32 | 55 | 47 | 3 Byte Data Field | 0D |

| Bit Identification Table for Scale 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 |
| 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 Scale 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 Scale 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 | | | Expand Data x 10 = 1 |
| Bit 5 | | | Always = 1 |
| Bit 6 | | | Hand Tare (Metric Only) |

### (H) Batching Status Bytes (Upload Only)

| Host Transmission | | | | | |
|---|---|---|---|---|---|
| ASCII | STX | 2 | U | H | CR |
| Hex | 02 | 32 | 55 | 48 | 0D |

| LYNXBATCH Response | | | | | | | |
|---|---|---|---|---|---|---|---|
| STX | 2 | U | H | Batching Status Bytes | | | CR |
| 02 | 32 | 55 | 48 | D | E | F | 0D |

| Batching Status Byte Field Definitions | |
|---|---|
| Batching Status Byte D | 1 = Ready |
| Batching Status Byte E | 1 = Error |
| Batching Status Byte F | 1 = Running |

(I) Start/Reset Batch (Download Only)

| Host Transmission | | | | | |
|---|---|---|---|---|---|
| ASCII | STX | 2 | D | I | CR |
| Hex | 02 | 32 | 44 | 49 | 0D |

(L) Learn Mode Percent (Upload)

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

| LYNXBATCH Response | | | | | |
|---|---|---|---|---|---|
| STX | 2 | U | L | Learn Mode % | CR |
| 02 | 32 | 55 | 4C | 2 Byte Data Field | 0D |

(L) Learn Mode Percent (Download)

| Host Transmission | | | | | | |
|---|---|---|---|---|---|---|
| ASCII | STX | 2 | D | L | Learn Mode % | CR |
| Hex | 02 | 32 | 44 | 4C | 2 Byte Data Field | 0D |

### (M) Material Parameters (Upload)

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

| LYNXBATCH Response | | | | | |
|---|---|---|---|---|---|
| STX | 2 | U | M | Material Parameters | CR |
| 02 | 32 | 55 | 4D | 80 Byte Data Field | 0D |

### (M) Material Parameters (Download)

| Host Transmission | | | | | | |
|---|---|---|---|---|---|---|
| ASCII | STX | 2 | U | M | Material Parameters | CR |
| Hex | 02 | 32 | 55 | 4D | 80 Byte Data Field | 0D |

| Material Parameter Field Definitions | | |
|---|---|---|
| **Field Name** | **# of Bytes** | **Data Type** |
| Material Number | 2 | ASCII Numeric |
| Material Name | 10 | ASCII Alphanumeric |
| Name Terminator | 2 | ASCII “00” |
| Material Usage | 16 | HEX Double |
| Material Inventory | 16 | HEX Double |
| Feeder Number | 2 | HEX Byte |
| Dribble Value | 8 | HEX Float |
| Preact Value | 8 | HEX Float |
| Preact Adjustment % | 2 | HEX Byte |
| Jog Time | 2 | HEX Byte |
| Settling Time | 2 | HEX Byte |
| Minimum Flow Rate | 8 | HEX Float |
| Checksum | 2 | HEX Byte |

(N) Delete Material (Upload Only)

| Host Transmission | | | | | | |
|---|---|---|---|---|---|---|
| ASCII | STX | 2 | U | N | Material Number | CR |
| Hex | 02 | 32 | 55 | 4E | 2 Byte Data Field | 0D |

(O) Clear Material Usage (Upload Only)

| Host Transmission | | | | | | |
|---|---|---|---|---|---|---|
| ASCII | STX | 2 | U | O | Material Number | CR |
| Hex | 02 | 32 | 55 | 4F | 2 Byte Data Field | 0D |

(P) Clear Material Preact (Upload Only)

| Host Transmission | | | | | | |
|---|---|---|---|---|---|---|
| ASCII | STX | 2 | U | P | Material Number | CR |
| Hex | 02 | 32 | 55 | 50 | 2 Byte Data Field | 0D |

(Q) Clear Material Dribble (Upload Only)

| Host Transmission | | | | | | |
|---|---|---|---|---|---|---|
| ASCII | STX | 2 | U | Q | Material Number | CR |
| Hex | 02 | 32 | 55 | 51 | 2 Byte Data Field | 0D |

(R) Recipe Parameters (Upload)

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

| LYNXBATCH Response | | | | | |
|---|---|---|---|---|---|
| STX | 2 | D | R | Recipe Parameters | CR |
| 02 | 32 | 44 | 52 | 32 Byte Data Field | 0D |

### (R) Recipe Parameters (Download)

| Host Transmission | | | | | | |
|---|---|---|---|---|---|---|
| ASCII | STX | 2 | D | R | Recipe Parameters | CR |
| Hex | 02 | 32 | 44 | 52 | 32 Byte Data Field | 0D |

| Recipe Parameter Field Definitions | | |
|---|---|---|
| **Field Name** | **# of Bytes** | **Data Type** |
| Recipe Number | 2 | ASCII Numeric |
| Recipe Name | 10 | ASCII Alphanumeric |
| Number of Recipe Lines | 2 | ASCII Numeric |
| First Line Index | 3 | ASCII Numeric |
| Batches Made | 5 | ASCII Numeric |
| Total Weight | 10 | ASCII Fixed Point |

### (S) Recipe Lines (Upload)

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

| LYNXBATCH Response | | | | | |
|---|---|---|---|---|---|
| STX | 2 | U | S | Recipe Lines | CR |
| 02 | 32 | 55 | 53 | 30 Byte Data Field | 0D |

### (S) Recipe Lines (Download)

| Host Transmission | | | | | | |
|---|---|---|---|---|---|---|
| ASCII | STX | 2 | D | S | Recipe Lines | CR |
| Hex | 02 | 32 | 44 | 53 | 30 Byte Data Field | 0D |

| Recipe Lines Field Definitions | | |
|---|---|---|
| Field Name | # of Bytes | Data Type |
| Next Line Index | 3 | ASCII Numeric |
| Action Code | 1 | ASCII Alphanumeric |
| Recipe Line Parameters | 26 | HEX byte |

### (T) Delete Recipe (Download Only)

| Host Transmission | | | | | | |
|---|---|---|---|---|---|---|
| ASCII | STX | 2 | D | T | Recipe Number | CR |
| Hex | 02 | 32 | 44 | 54 | 2 Byte Data Field | 0D |

### (U) Selected Recipes (Upload)

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

| LYNXBATCH Response | | | | | |
|---|---|---|---|---|---|
| STX | 2 | U | S | Selected Recipes | CR |
| 02 | 32 | 55 | 55 | 10 Byte Data Field | 0D |

### (U) Selected Recipe (Download)

| Host Transmission | | | | | | |
|---|---|---|---|---|---|---|
| ASCII | STX | 2 | D | U | Selected Recipes | CR |
| Hex | 02 | 32 | 44 | 55 | 10 Byte Data Field | 0D |

| Selected Recipes Field Definitions | | |
|---|---|---|
| Field Name | # of Bytes | Data Type |
| Recipe Selection Register 1 | 2 | ASCII Numeric |
| Recipe Selection Register 2 | 2 | ASCII Numeric |
| Recipe Selection Register 3 | 2 | ASCII Numeric |
| Recipe Selection Register 4 | 2 | ASCII Numeric |
| Current Register | 2 | ASCII Numeric |

### (V) Recipe Space Available (Upload Only)

| Host Transmission | | | | | |
|---|---|---|---|---|---|
| ASCII | STX | 2 | U | V | CR |
| Hex | 02 | 32 | 55 | 56 | 0D |

| LYNXBATCH Response | | | | | |
|---|---|---|---|---|---|
| STX | 2 | U | V | Recipe Space | CR |
| 02 | 32 | 55 | 56 | 7 Byte Data Field | 0D |

| Recipe Space Available Field Definitions | | |
|---|---|---|
| Field Name | # of Bytes | Data Type |
| Number of Recipes Available | 3 | ASCII Numeric |
| Number of Lines Available | 4 | ASCII Numeric |

### (W) Batch Report / Summary Indices (Upload Only)

| Host Transmission | | | | | |
|---|---|---|---|---|---|
| ASCII | STX | 2 | U | W | CR |
| Hex | 02 | 32 | 55 | 57 | 0D |

| LYNXBATCH Response | | | | | |
|---|---|---|---|---|---|
| STX | 2 | U | W | Indices | CR |
| 02 | 32 | 55 | 57 | 6 Byte Data Field | 0D |

| Batch Report / Summary Indices Field Definitions | | |
|---|---|---|
| **Field Name** | **# of Bytes** | **Data Type** |
| Batch Report Index | 3 | ASCII Numeric |
| Batch Summary Index | 3 | ASCII Numeric |

### (X) Batch Report Line (Upload Only)

| Host Transmission | | | | | |
|---|---|---|---|---|---|
| ASCII | STX | 2 | U | X | CR |
| Hex | 02 | 32 | 55 | 58 | 0D |

| LYNXBATCH Response | | | | | |
|---|---|---|---|---|---|
| STX | 2 | U | X | Batch Report Line | CR |
| 02 | 32 | 55 | 58 | 44 Byte Data Field | 0D |

| Batch Report Line Field Definitions | | |
|---|---|---|
| **Field Name** | **# of Bytes** | **Data Type** |
| Line Number | 2 | ASCII Numeric |
| Buffer Line | 42 | ASCII Alphanumeric |

## (Y) Batch Summary Line (Upload Only)

| Host Transmission | | | | | |
|---|---|---|---|---|---|
| ASCII | STX | 2 | U | Y | CR |
| Hex | 02 | 32 | 55 | 59 | 0D |

| LYNXBATCH Response | | | | | |
|---|---|---|---|---|---|
| STX | 2 | U | Y | Summary Line | CR |
| 02 | 32 | 55 | 59 | 20 Byte Data Field | 0D |

| Batch Summary Line Field Definitions | | |
|---|---|---|
| **Field Name** | **# of Bytes** | **Data Type** |
| Line Number | 2 | ASCII Numeric |
| Batch Number | 4 | ASCII Numeric |
| Target Weight (Grads) | 7 | ASCII Numeric |
| Actual Weight (Grads) | 7 | ASCII Numeric |

# Appendix 2: Application Examples

## Overview of Application Types

The LYNXBATCH controller can be applied to a very wide variety of filling and batching control systems.

### Filling Systems

Filling is defined as delivery of a single material into a container by weight. The filling system may be configured with the container on the scale or the material supply bin or vessel on the scale. Three primary filling system configurations are:

- The container is on the scale and the material supply is controlled to deliver the material in a positive, gross or net, weigh-in sequence.
- The material supply is being weighed and the discharge is controlled to deliver the material in a negative, net weight-out , or dose, sequence.
- The scale hopper or vessel is sized to weigh one “container’s worth” of material then discharged into the container.

In all three cases where a net amount of material must be delivered, the scale is tared to zero prior to starting the material delivery and the material target (setpoint) is a net amount. If a gross amount is to be weighed, the scale is not tared and the setpoint is a gross amount.

Using preprogrammed recipes for filling systems provides improved security and control over filling parameters as well as reducing operator data input errors. It also allows for more complex sequence control where actions other than weighing or interaction with other systems or equipment are desirable.

### Batching Systems

Batching is defined as delivery of two or more materials by weight into a scale hopper or vessel. The use of preprogrammed recipes is very beneficial to batching systems due to their complexity and the desire to reliably recall prior material targets and other process sequence actions from memory.

Single scale batching systems are configured with the supply bins or vessels feeding material into the scale hopper or vessel. The feeders may be single or two-speed. The scale hopper or vessel can also incorporate a discharge feeder, gate or valve that is controlled by the batching system controller to deliver the finished batch to some downstream process, such as a blender or mixer. If desirable, the controller may also control the downstream equipment. The recipe can include many different actions to properly sequence upstream equipment, material delivery, processing of the batch in the scale hopper or vessel, interaction with other systems, and downstream equipment.

### Combination Systems

A combination system for batching and filling is one where the materials are batched into the scale by net weights according to a recipe, processed in the scale by net weights according to a recipe, processed in the scale, then dosed out into smaller containers or to a downstream process in measured amounts. If only a single material is being handled, the system may also control the gross weight refill of the scale bin or vessel by weight.

### Manual Batching/Formulation Systems

Many manufacturing systems use pre-weighed materials that are later added manually. The LYNXBATCH is ideal for automating these manual batching, or formulation, processes. Up to 50 materials may be selected for use in up to 99 recipes. The operator may also be prompted for other steps in the sequence.

Manual weight additions present the material name to the operator for acknowledgment or, if enabled, mandatory verification by input or scanning. This is followed by a "regression weight display" that indicates the target weight as a negative value that progresses toward zero as material is added. An Over, OK, or Under message also tells the operator if the material is within tolerance. Over, OK, and Under lights may also be wired to outputs to clearly indicate to the operator the status of the weight addition.

An optional printer can provide a hardcopy record of the completed batch. Manual batching with LYNXBATCH is an excellent way to improve the accuracy of pre-weighed materials and to create a quality record of the weight of the materials.

## LYNXBATCH Controller Configuration

The LYNXBATCH controller approach of freely constructing recipes from a diverse list of available action coded yields an infinite variety of filling and batching system control possibilities. The storage of up to 99 recipes in the LYNXBATCH controller provides ease-of-use and flexibility unprecedented in its product class. The LYNXBATCH controller also allows for optimum utilization of its inputs and outputs by permitting functional assignments to be freely made to I/O points. Additionally, there are many LYNXBATCH controller system functions that may be enabled or disabled according to the requirements of the filling or batching system:

### System Setup

One of the best features of the LYNXBATCH controller is that most of its system functions may be enabled or disabled, permitting the controller to be easily customized. Enabling only those features that are needed will keep the operators experience of the product as straightforward and easy as possible.

The following table lists the system functions that are most commonly used:

| Function | Description |
|---|---|
| Password Protection | Prevents unauthorized access to or use of selected LYNXBATCH controller functions. |
| User Recipe Editing | Allows the operator access to recipe and material programming, by pressing the **MEMORY** key, without exposing the rest of the setup parameters. |
| Verify Manual Materials | Requires the name of manual material additions to be entered or scanned prior to allowing addition of the material. This applies to Manual Weighed and Hand-Added materials. |
| Learn Mode | Causes the LYNXBATCH to automatically set the preact and dribble values. Refer to Appendix 5 for a complete explanation of Learn Mode operation. |
| Manual Control | Allows operator to select a specific feeder or output then turn it on by pressing and holding the **START** push button. |
| Automatic Control | Automatic, sequential control of recipe execution. |
| Semi-Automatic Control | Same as Automatic Control except the operator is required to initiate each recipe line. |
| # of Batches | Allows the operator to schedule a preset number of batch or filling sequences. |
| Batch Size Adjustments | Allows the operator to scale a standard recipe up or down according to a new total batch size. All material setpoints are adjusted according to the ratio of the standard batch size to the adjusted batch size. |
| Correct Target Weights | Allows the operator to make a change to the setpoint of one or more materials in the next run of the recipe. The stored recipe is not changed. |
| Audit Trail Printing | Causes the LYNXBATCH to print information as the batch is progressing (must be turned on in the recipe). |
| Overlap Two-Speed Feed Control | Causes both the fast and slow feed outputs to be on for fast feed. |
| Split Two-Speed Feed Control | Causes just the fast feed output to be on for fast feed followed by the slow feed output for slow feed. |
| Regulated Two-Speed Feed Control | Used to control a ball valve for two-speed feed control. |
| Slow/Fast/Slow Feed Control | Causes the LYNXBATCH to feed slowly to a percentage of the target weight, followed by fast, then slow again. Helps to minimize splashing or dusting or breakage of fragile materials. |
| Keyboard Recipe Selection | Allows the operator to select the recipe by number or by scrolling through the recipe names. |
| Quick Recipe Selection | Allows the operator to make one batch of a pre-selected recipe thereby eliminating the need to make a recipe selection. |

## I/O Assignments

The next step in configuring a LYNXBATCH controller system is to make a list of the inputs and outputs that the controller must interface. Five outputs are standard with each LYNXBATCH and eight inputs and eight outputs may be added with the Expansion I/O Option.

The following table lists a few of the possible configurations of the standard LYNXBATCH controller outputs for filling systems:

| Filling Systems | | | |
|---|---|---|---|
| Material Feed[1] | Discharge/Dosing [2] | Unused Outputs [3,4] | Comments |
| 1 Speed | | 4 | Container is on the scale. |
| 2 Speed | | 3 | Container is on the scale. |
| | 1 Speed | 4 | Supply bin/vessel is on the scale. |
| | 2 Speed | 3 | Supply bin/vessel is on the scale. |
| 1 Speed | 1 Speed | 3 | Supply bin/vessel is on the scale with refill control by weight or the scale is sized to fill one container. |
| 2 Speed | 1 Speed | 2 | |
| 2 Speed | 2 Speed | 1 | |

Notes:

1. If desired, a “feed interlock” switch may be wired in series with the feed output(s).
2. If desired, a “discharge interlock” switch may be wired in series with the discharge output(s).
3. If additional outputs or inputs are needed, an Expansion I/O Option may be added to the LYNXBATCH controller.
4. Unused outputs may be configured for standard output functions, such as Alarm, or controlled from within the recipe using an Output action code.

The following table lists a few of the possible configurations of the standard LYNXBATCH outputs for batching systems.

| Batching Systems—Standard I/O | | | |
|---|---|---|---|
| Material Feed[1] | Discharge/Dosing [2] | Unused Outputs [3,4] | Comments |
| (2) 1 Speed | 1 Speed | 2 | Two material, single-speed batching |
| (2) 1 Speed | 2 Speed | 1 | Two material, single speed batching, two speed dosing |
| (2) 2 Speed | 1 Speed | 0 | Two material, two-speed batching |
| (3) 1 Speed | 1 Speed | 1 | Three material, single-speed batching |
| (3) 1 Speed 1 Fast Feed | 1 Speed | 0 | Three material, two-speed batching via shared fast feed. |
| (4) 1 Speed | 1 Speed | 0 | Four material, single-speed batching |

Notes:

1. If desired, a “feed interlock” switch may be wired in series with the feed output(s).
2. If desired, a “discharge interlock” switch may be wired in series with the discharge output(s).
3. If additional outputs or inputs are needed, an Expansion I/O Option may be added to the LYNXBATCH controller.
4. Unused outputs may be configured for standard output functions, such as Alarm, or controlled from within the recipe using an Output action code.

The following table lists a few of the possible configurations of the Expanded LYNXBATCH outputs for batching systems:

| Batching Systems—Expanded I/O | | | |
|---|---|---|---|
| Material Feed[1] | Discharge/Dosing[2] | Unused Inputs and Outputs[3,4] | Comments |
| (6) 1 Speed | 1 Speed | 8 Inputs<br>6 Outputs | Six material, single-speed batching |
| (8) 1 Speed | 1 Speed | 8 Inputs<br>4 Outputs | Eight material, single-speed batching |
| (8) 1 Speed<br>1 Fast Feed | 1 Speed | 8 Inputs<br>3 Outputs | Eight material, two-speed batching via shared fast feed |
| (8) 1 Speed | 2 Speed | 8 Inputs<br>3 Outputs | Eight material, single-speed batching, two speed dosing |
| (4) 2 Speed | 1 Speed | 8 Inputs<br>4 Outputs | Four material, two-speed batching |
| (5) 2 Speed | 1 Speed | 8 Inputs<br>2 Outputs | Five material, two-speed batching |
| (6) 2 Speed | 1 Speed | 8 Inputs<br>0 Outputs | Six material, two-speed batching |
| (5) 2 Speed | 2 Speed | 8 Inputs<br>1 Outputs | Five material, two-speed batching, two-speed dosing |

Notes:

1. If desired, a “feed interlock” switch may be wired in series with the feed output(s) or to an input configured for Feed OK (FdOK).
2. If desired, a “discharge interlock” switch may be wired in series with the discharge output(s) or to an input configured for Discharge OK (DsOK).
3. Unused inputs may be configured for standard input functions, such as Feed OK or Discharge OK, or monitored within the recipe using an IF input action code, or for recipe selection by RS_1 and RS-2.
4. Unused outputs may be configured for standard output functions, such as Alarm, or controlled from within the recipe using an Output action code.

| !WARNING! |
| --- |
| If this device is used to automatically control external equipment, all users must provide a hard-wired emergency stop circuit. Failure to observe this precaution could result in bodily injury.<br><br>If the Expanded I/O option is used with a LYNXBATCH Hard Environment model, the Emergency Stop push button can supply power to the additional outputs. Feeder output power is available at TB1-2 and discharge output power is available at TB1-4. |

## Material Setup

After the I/O Assignments are made, the materials in the LYNXBATCH should be setup. Each material, up to 50, should be configured according to the feeder it is attached to and the following is a table explaining the parameters for setting up a feeder:

| Material Parameter | Description |
| --- | --- |
| Material Name | A 10-character name of the material helps to minimize the confusion associated with cryptic material codes or numbers. |
| Feeder | Selects the feeder associated with the material or manual for manually added materials. |
| Settling Time | Sets the amount of time to delay after feed cutoff, prior to a tolerance check. |
| Dribble Value | The amount of weight that will be subtracted from the material cutoff point to determine when to switch to slow feed in two-speed feeders. |
| Preact Value | The amount of weight that will be subtracted from the material setpoint to stop the material feed early in order to compensate for material that will be delivered after the feed output is turned off. |
| Preact Adjustment Percent | The percentage of the error in the material delivery that will be added or subtracted to preact to dynamically improve delivered material accuracy. |
| Automatic Jog | If the material is under tolerance, the feeder will be turned on for a preset period to add more material. This cycle will repeat until the material is in tolerance. |
| Minimum Flow Rate | If the material flow rate drops below this rate, the LYNXBATCH will alarm and turn off the feeder. |
| Inventory Amount | Amount of material in inventory. |

## Recipe Programming

After the materials are setup, the recipe(s) in the LYNXBATCH can be programmed. Recipes are a list of action code lines. Each recipe, up to 99, may have a maximum of 99 lines with a total capacity of 1000 lines in the LYNXBATCH controller. A detailed description of the parameters for each action code is given in Appendix 4.

Following is a table listing the available action codes:

| Action Code | Description |
|---|---|
| Weigh In | Does a single-speed or two-speed tare-weigh-tolerance check sequence. |
| Discharge | Single-speed discharge sequence. |
| Zero Check | Checks for an empty scale or container prior to proceeding. |
| Print | Start/Stop audit trail printing or print a standard or custom report. |
| Output | Turn a specified output on or off for a preset number of seconds. |
| Dose Out | Does a single-speed or two-speed tare-weigh out-tolerance check sequence for one or more containers. |
| Prompt ID | Prompts the operator for data input. |
| Manual Weigh | Presents the material name and a regression weight display for manually weighed materials. |
| Hand Add | Prompts the operator to add a hand-add material. |
| Write | Display a message for a period of time or until acknowledged. Acts as a hold step. |
| Batch Check | Checks the tolerance of the total net weight of the batch and optionally adds a specified material to bring it within tolerance. Also used for gross scale refill and gross weight additions. |
| Manual Operations | Allows the operator to manually control a selected feeder or output from within the recipe. |
| If Input | Checks the on or off status of an input and branches or jumps forward to a specified line of the recipe. |
| Weigh Learn | Same as a Weigh In except a dribble/preact learn cycle is forced each execution. |

# Appendix 3: Reports and Templates

## User-Programmable Templates 1 and 2

The LYNXBATCH controller Templates 1 and 2 are used as header and footer text for the Custom Batch Summary report. If you choose not to use them as headers and footers, these templates can be configured with the text message of your choice and printed separately from the Reports list accessed by the MEMORY key, or from within a batch using a print action code. Please refer to the section entitled Edit Template (Chapter 3) for detailed instructions on entering and editing template text.

The LYNXBATCH controller 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 |
|---|---|
| LYNXBATCH 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 Template 1 is configured with 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:

CENTRAL 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 (LYNXBATCH 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 LYNXBATCH controller 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 4-6 characters that are not used if the field remains unjustified.

## ASCII Characters

The character set for the LYNXBATCH controller and the printer must be the same.

The charts on the following pages list the ASCII Standard and Control characters and ASCII Special characters that are used in the LYNXBATCH controller templates.

The first chart 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 LYNXBATCH controller 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 | \| | 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 | | | |
| æ | 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 | | | |
| *f* | 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 |

## LYNXBATCH Controller Reporting— An Example

This section illustrates the LYNXBATCH controller reports that can be generated as part of the record keeping and reporting associated with a typical batching application. In the following example, an operator sets the LYNXBATCH controller to run Recipe #1 (PROD 1MR33).

Before running the recipe, the operator prints the Recipe Detail Report and the Material Detail Report. These reports confirm that the lines of the recipe are correct and that sufficient material is available.

The recipe example is typical of a two-material, single-speed feed and discharge application. An auxiliary output #3 is connected to a mixer in the weigh hopper and is activated during batching. Recipe detail printing is turned on (see recipe line 1). Inventory management is turned on. Material #1 is Sand connected to feeder #1 using output #1. Material #2 is Clay connected to feeder #2 using output #2. Material #3 is Stabilizer and is a hand-add to the batch prior to discharge. Discharge uses output #4 and alarm, output #5.

```
            RECIPE DETAIL REPORT

TIME  16:45:07    DATE  Apr-04-2000



----------- RECIPE I.D.  01 -----------
          NAME: PROD 1MR33
 BATCHES MADE:           2
 TOTAL WEIGHT:       202.5

LN  ACTION   NAME       SETPOINT    TOLR
01  Print    Print On
02  Z_Check                  0.0     5.0
03  Wgh_In   SAND          125.0     3.0
04  Wgh_In   CLAY           65.0     2.6
05  Output   #3  ON for 30 sec
06  Write    MIXING 30S- for 30 sec
07  Output   #3 OFF
08  H_Add    STABILIZER   120.0
09  Disch                             5.0
10  Print    Summary
```

```
          MATERIAL DETAIL REPORT

TIME  16:49:06    DATE  Apr-04-2000



----- MATERIAL I.D. 01 -----
NAME:              SAND
INVENTORY:            99874.9
USAGE:                  125.1
FEEDER:                     1
DRIBBLE:                  0.0
PREACT:                   2.0
PREACT CORR (%)             0
JOG TIME (SEC)            1.0
SETTLE TIME (SEC)         2.0
MIN. FLOW RATE            0.0


----- MATERIAL I.D. 02 -----
NAME:              CLAY
INVENTORY:            19935.0
USAGE:                   65.0
FEEDER:                     2
DRIBBLE:                  0.0
PREACT:                   3.0
PREACT CORR (%)             0
JOG TIME (SEC)            0.6
SETTLE TIME (SEC)         2.0
MIN. FLOW RATE            0.0


----- MATERIAL I.D. 03 -----
NAME:              STABILIZER
INVENTORY:             9880.1
USAGE:                  119.9
FEEDER:                   Man
DRIBBLE:                  0.0
PREACT:                   0.0
PREACT CORR (%)             0
JOG TIME (SEC)            0.0
SETTLE TIME (SEC)         1.0
MIN. FLOW RATE            0.0
```

Following is the detail that will print during the batch since Audit Trail printing is turned on in Configure System setup and a Print ON action code is at the top of the recipe.

```
SAND            125.0      125.1
CLAY            65.0        65.0
STABILIZER      120.0      119.9
```

s audit trail data is immediately followed by the Batch Summary Report which is printed after the batch since there is a Print Summary action code at the end of the recipe.

```
            BATCH SUMMARY REPORT

TIME  16:46:42    DATE  Apr-04-2000

    RECIPE: 1        NAME: PROD 1MR33
  BATCH No:   3      SIZE:   310.0

MATERIAL       TARGET    ACTUAL TOLR
SAND            125.0     125.1
CLAY             65.0      65.0
STABILIZER      120.0     119.9

BATCH WEIGHT DEVIATION:  +0.0%

TOTAL BATCH WEIGHT:       310.0 lb
```

The operator then generates the following reports from the MEMORY function key:

```
         PRODUCTION TOTALS REPORT

TIME  16:53:53    DATE  Apr-04-2000

ID  RECIPE      COUNT      WEIGHT
01  PROD 1MR33      5      1130.0
```

```
         PRODUCTION DETAIL REPORT

TIME  16:53:57    DATE  Apr-04-2000

     RECIPE: 1        NAME: PROD 1MR33
BATCH#  TARGET   ACTUAL   DEVIATION
   5     310.0    308.0      -0.6%
```

Note that the Production Detail Report only includes the last sequences of the last recipe run.

```
        MATERIAL INVENTORY REPORT

TIME  16:54:09    DATE  Apr-04-2000

ID  NAME              USAGE   INVENTORY
01  SAND              373.6     99626.4
02  CLAY              196.8     19803.2
03  STABILIZER        357.1      9642.9
```

## System Setup Report

The System Setup report is a useful record of the complete LYNXBATCH controller configuration. This report is printed from the Diagnostics Program Block in setup. You should print a System Setup report each time your change any system parameters and retain it as a back-up reference in case you ever need to restore the previous values.

LYNXBATCH TERMINAL SETUP REPORT

C148952 R0

| | |
|---|---|
| **SCALE INTERFACE** | |
| Market | USA |
| Scale Type | Analog |
| Calibration Parameters | |
| Units | lb |
| Scale Capacity | 1000 |
| Increment Size | 0.1 |
| Linearity Enabled | No |
| Calibration Values | |
| Zero Counts | 75758 |
| Mid Weight | 0 |
| Mid Counts | 1040600 |
| High Weight | 500 |
| High Counts | 858076 |
| Geo Value | 16 |
| **APPLICATION ENVIRONMENT** | |
| Character Set | USA |
| Time & Date | |
| Time Format | 24:MM:SS |
| Date Format | MMM-DD-'YY |
| Power Up | |
| Power Up Timer | 0 min. |
| Tare Operations | |
| Tare Enabled | Yes |
| Tare Interlock | No |
| Pushbutton Tare | Yes |
| Keyboard Tare | Yes |
| Tare Recall | No |
| Gross Recall | No |
| Zero Operations | |
| Power Up Capture Range | +0%,-0% |
| Pushbutton Zero Range | +50%,-50% |
| Under Zero Blanking | 99 d |
| Auto Zero Maintenance | |
| Range | 0.5 d |
| Enabled in Net | No |
| Zero Indication | Gross |
| Stability | |
| Stability Range | 0.5 d |
| Stability Interval | 0.4 sec |
| Vibration | |
| Low-pass Filter | |
| Frequency | 3.0 Hz |
| Poles | 8 |
| Notch Filter Freq. | 30.0 Hz |
| Noise Filter | No |

```
SERIAL I/O
  Serial Port Number        COM1
    Baud Rate               9600
    Data Bits               7
    Stop Bits               1
    Parity                  Even
    Flow Control            Xon/Xoff
    Checksum                No
    Output Mode             Demand
      Net Sign Correction   No
      Decimal Pt/Comma      Decimal Pt
      Format                /ptp01
    Input Mode              String
      Input Termination     13
      First Char. Pos.      1
  Serial Port Number        COM2
    Baud Rate               9600
    Data Bits               7
    Stop Bits               2
    Parity                  Even
    Flow Control            None
    Checksum                No
    Output Mode             None
    Input Mode              None
  Serial Port Number        COM3
    Baud Rate               9600
    Data Bits               7
    Stop Bits               2
    Parity                  Even
    Flow Control            None
    Checksum                No
    Output Mode             None
    Input Mode              None
  Print Control
    Minimum Print           No
    Interlock               No
    AutoPrint               No
    Print Threshold         5
    Reset Threshold         0.5
    Check Motion            No
```

```
Literals MEMORY
  Literal   #1
    The new LYNXBATCH Terminal
  Literal   #2
    - Programmable Header -
  Literal   #3
    The new LYNXBATCH Terminal
  Literal   #4
    - Programmable Footer -
  Literal   #5

  Literal   #6

  Literal   #7

  Literal   #8

  Literal   #9

  Literal   #10

  Literal   #11
    GROSS
  Literal   #12
    TARE
  Literal   #13
    NET
  Literal   #14
    TIME
  Literal   #15
    DATE
  Literal   #16
    RECIPE
  Literal   #17
    NUMBER
  Literal   #18
    WEIGHT
  Literal   #19
    SUBTOTAL
  Literal   #20
    TOTAL
Prompt List
  No. of Steps            0
Recipe Prompt List
  Prompt Type  Length Clr  Text
    11   Numeric   8   Y
    12   Numeric   8   Y
    13   Numeric   8   Y
    14   Numeric   8   Y
    15   Numeric   8   Y
    16   Numeric   8   Y
    17   Numeric   8   Y
    18   Numeric   8   Y
    19   Numeric   8   Y
    20   Numeric   8   Y
```

```
BATCHING
  Passwords
    Protect Batch Setup     Yes
    Protect Clear Totals    No
    Protect Matl Verify     No
  Batch Run Options
    User Target Adjust      No
    Material Verify         No
  Controls
    Manual Control          No
    Semi-Auto Control       No
    Automatic Control       Yes
  Discrete Outputs
    Output No.  1           F1
    Output No.  2           F2
    Output No.  3           None
    Output No.  4           Dis
    Output No.  5           Alrm
  Feeder Setup
    Feeder Type             Ovlp
    Slow/Fast/Slow          No
    Stop Slow Feedrate      Yes
    Slow Feedrate Delay     0 sec
  Discharge Setup
    Dribble                 0
    Preact                  2
    Preact Corr             0 %
    Settle Time             0.0 sec
    Off Delay               0.0 sec
  Data Correction
    Prompt For #Batches     No
    Prompt For Size         No
    Prompt For Targets      No
  Audit Trail               Yes
  Accept Off Tolerance      Yes
  Inventory Checking        Yes
  Recipe Selection          Keyboard
```

# Appendix 4: LYNXBATCH Controller Action Codes and Learn Mode

| Action Codes for Recipe Setup | | | | | |
|---|---|---|---|---|---|
| Command | Description | 1. Data | 2. Data | 3. Data | 4. Data |
| Wgh_In | Weigh In | Matl ID?XX | † S/F/S%?XX | SP?XXXXXXX | TolXXXXXXX |
| Disch | Discharge | Rate?XXXXX | TolXXXXXXX | | |
| Z_Check | Check empty container | SP?XXXXXXX | TolXXXXXXX | | |
| Print | Print | Report? (Press SELECT) | | | |
| Output | Turn output on or off | Output XX (Press SELECT) | Output On/Off (Press SELECT) | Time?XXXXXX | Wait? Y/N (Press SELECT) |
| DoseOut | Dose out sequence | Rate?XXXXX | Doses?XX | SP?XXXXXXX | TolXXXXXXX |
| PrmptID | Prompt for operator input | Prompt ?XX | | | |
| M_Weigh | Manual weigh | Matl ID?XX | SP?XXXXXXX | TolXXXXXXX | |
| H_Add | Hand add | Matl ID?XX | WgtXXXXXX | | |
| Write | Write message to display | Message? ********** | Time?XXXXX | | |
| B_Check | Check batch | Matl ID?XX | SP?XXXXXXX | TolXXXXXXX | |
| Man_Op | Manual operation | Type? (Press SELECT) | | | |
| If Input | Monitor status of a discrete input | Input XX (Press SELECT) | Input On/Off | Lines?XX | |
| Wgh_Lrn | Weigh In and Learn each time | Matl ID?XX | † S/F/S%?XX | SP?XXXXXXXX | TolXXXXXXX |
| * = Alphanumeric data | | X = Numeric data | | † = When slow/fast/slow feed operation has been enabled | |

### Wgh_In—(Weigh-In)

Press ENTER to use the Weigh-In action code. The Weigh-In action code requires additional data entry:

- Matl ID?xx—Enter the ID designation of the material to be weighed.
- S/F/S%?xx—Enter percentage of material to be fed during the initial slow feed step (prompt only appears if slow/fast/slow is enabled).
- SP?xxxxxxx—Enter the setpoint for the material.
- Tolxxxxxxx—Enter the tolerance value for the material.

### Disch—(Discharge)

Press ENTER to use the Discharge action code. The Discharge action code requires additional data entry:

- Ratexxxxx—Enter the discharge minimum flow rate (units/minute) or 0 to disable rate monitoring.
- Tolxxxxxxx—Enter the tolerance value for discharge.

### Z_Check—(Zero Check - Check Empty Container Scale Weight)

Press ENTER to use the Zero Check Mode action code. This action code requires additional data entry:

- SP?xxxxxxx—Enter the setpoint (tare weight) for the empty container or the scale.
- Tolxxxxxxx—Enter the tolerance value for the setpoint.

### Print—(Print Report/Ticket or Control Printing)

Press ENTER to use the Print action code. This code requires additional data entry:

- Report#?x—Press SELECT to view a list of available reports or print control options, including:

  Summary (summary for last batch)
  Production Totals
  Production Detail
  Inventory
  Material
  Recipe
  Print On/Off
  Template 1
  Template 2
  Custom

A report is printed when the LYNXBATCH controller executes the Print recipe line. After the batch is finished, all data is still available and can be printed by pressing MEMORY from the standard weighing mode. Only the last batch executed is available. The LYNXBATCH controller offers the flexibility to create a Custom ticket/report. Template 1 defines the report header; Template 2 defines the report footer. Template 1 (ptp01) and Template 2 (ptp02) can be modified in the template editor (setup mode).

```
          BATCH SUMMARY REPORT

TIME  09:47:04    DATE  Mar-11-1996

   RECIPE: 2       NAME: AG7 MIX
 BATCH No: 9       SIZE: 608

MATERIAL      TARGET    ACTUAL TOLERANCE
SAND             482       482
WATER             76        76
WATER             50        50

BATCH WEIGHT DEVIATION:    +0.0%

    TOTAL BATCH WEIGHT:      608
```

Header

Body

Footer

The body text can be turned on or off (with the Print On/Off action code, see below), but cannot be modified like a template.

Print On and Print Off defines what weighments are printed and recorded in the LYNXBATCH controller buffer. This buffer allows you to print the same data again by pressing the **MEMORY** key and selecting the Custom report.

To start recording each weighment, add a Print On action code before the first line in the recipe. This will record the data for printing using the custom report.

The main body of the report (material, target and actual weight for each recipe line) is controlled by the PRINT ON/OFF recipe line command. A PRINT ON must be present in the recipe if any individual material weighments are to be printed. Portions of the weigh results may be selectively printed using these commands.

The Audit On parameter, which is configured in the Setup mode under the Config Sys menu selection, determines if audit trail lines are printed during recipe execution. If this parameter is selected to On, printing will occur between Print On and Print Off action codes.

To stop recording and printing, add a Print Off action code after the last line to be printed/recorded. If no Print Off action code is added to a recipe, all weighments will be recorded. Print On/Off does not affect the inventory or any other accumulators.

## Output—(Turn Output ON and OFF)

Press **ENTER** to use the Turn Output On/Off action code. This action code requires additional data entry:

- **Output#? x**—Press **SELECT** to choose the output to control (must be assigned to "none" in the Controls sub-block of the Batching/Config system program block.)
- **Output On/Off**—Press **SELECT** to choose the action to be taken on the output.
- **Time?xxxxx**—Enter the time period (0.1 to 6000.0 seconds) for which the output will be ON. Enter “0” to turn the output ON until the end of the batch.
- **Wait? Y/N**—Press **SELECT** to toggle between Yes and No. If Yes, the LYNXBATCH controller will not proceed to the next recipe line until the time value in the last step has expired. If NO, the LYNXBATCH controller will

proceed to the next recipe line immediately. (Timed output will be controlled in the background.)

### DoseOut—(Dose Out)

Press **ENTER** to use the Dose Out action code. This action code requires additional data entry:

- **Rate?xxxxx**—Enter the minimum flow rate (units/minute) or 0 to disable rate monitoring.
- **Doses?xx**—Enter the number of doses to be used.
- **SP?xxxxxxx**—Enter the setpoint for the weight of the material for each dose.
- **Tol?xxxxxxx**—Enter the tolerance value for the setpoint.

### PrmptID—(ID Prompt)

Press **ENTER** to use the ID Prompt action code. This action code requires additional data entry:

- **Prompt#? xx**—Enter the recipe prompt number to be used as defined in recipe prompt setup (Memory/Recipe Prompt).

### M_Weigh—(Manual Weigh)

Press **ENTER** to use the Manual Weigh action code. This action code requires additional data entry:

- **Matl ID?xx**—Enter the ID designation of the material to be weighed.
- **SP?xxxxxxx**—Enter the setpoint for the material.
- **Tol?xxxxxxx**—Enter the tolerance value for the material.

### H_Add—(Hand Add)

Press **ENTER** to use the Hand Add Weigh action code. This action code requires additional data entry:

- **Matl ID?xx**—Enter the ID designation of the material to be weighed.
- **Wgtxxxxxxx**—Enter the weight amount of the material to be added.

### Write—(Write Message to Display)

Press **ENTER** to use the Write Message to Display action code. This is similar to the HOLD or WAIT commands often used in other batching controllers. This action code requires additional data entry:

- **Message**—Press **ENTER** then enter a message to be displayed (up to 10 characters).

  If you have a shared Data variable Name, the LYNXBATCH controller will display the variable value dynamically when the write action code is executed.

  The shared data variable name must be preceded by a slash (/). For example “/BAT09" will display the current recipe name. The shared data variables are listed in Chapter 3 following the edit template Sub-block.

- If no message is entered, the LYNXBATCH controller can display "HOLD XXXXX" with XXXXX being a countdown display of seconds remaining.
- **Seconds?xxxxx**—Enter the number of seconds (1-32,000) for which the message will be displayed. Enter "0" if the message is to be displayed until the **START** pushbutton is pressed.

## B_Check—(Batch Check - Check Tolerance of Total Batch)

Press **ENTER** to use the Batch Check Mode action code. This action code requires additional data entry:

- **Matl ID?xx**—Enter the ID designation of the material to be added to the batch if it is under tolerance. Use MATL ID? 0 if no material should be added.
- **SP?xxxxxxx**—Enter the setpoint for the total weight of the batch.
- **Tol1xxxxxx**—Enter the tolerance value for the total net batch weight.

Note that **B_Check** can also be used with a material specification to fill a scale to a gross weight of the material.

## Man_Op—(Manual Operation)

Press **ENTER** to use the Manual Operation action code. This action code requires additional data entry:

- **Type?**—Press **SELECT** to view a list of material feeders and outputs: F1, F2, F3, F4, F1F, F2F, F3F, F4F, Dis, FDis, O1, 02, O3, O0, O5, 06, 07, 08, 09, 010, 011, 012, 013, F5, F6, F7, F8, FF5, FF6, FF7, FF8

## If Input—(Monitor Status of Discrete Input)

Press **ENTER** to use the If-Input action code. This action code is only applicable if the LYNXBATCH is equipped with an Expansion I/O Option board. This action code requires additional parameter entry:

- **Input # x**—Press **SELECT** to choose the input that will be monitored (must be assigned to "none" in the Configure Discrete Input program block).
- **Input on ON/OFF**—Select the "true" state of the input. If ON is selected, the input will be evaluated as logically true when it is on. If OFF is selected, the input will be evaluated as logically true when it is OFF.
- **Lines? XX**—Input the number of recipe lines that should be jumped if the input is evaluated as logically true.
  - An entry of "0" will cause the recipe execution to hold at the If Input line while the input is logically true then advance to the next line.
  - An entry of "1-88" will cause the recipe execution to jump forward in the recipe that number of lines when the input is logically true. If it is logically false, execution will immediately fall through to the next line.
  - An entry of "89-98" will cause the recipe execution to jump to the last line or to one of the nine lines preceding the last line (entry minus 98) when the input is logically true. For example, an entry of 98 will jump to the last line (98-98=0); an entry of 97 will jump to the line preceding the last line (97-98=-1).
  - An entry of "99" will cause the recipe execution to jump to the end of the recipe (terminate) when the input is logically true. If it is logically false, execution will immediately fall through to the next line.

**Wgh_Lrn**—(Do a Weigh-In but always learn)

Press **ENTER** to use the Wgh_Lrn action code. It can be used in place of the Weigh In action code if it is desirable to force the LYNXBATCH to learn the Preact value each execution of the recipe line. This is useful if the amount of material delivered after the feeder is turned off is non-repeatable making the preact value unpredictable. You must turn on Learn Mode by setting the learn percentage to something other than 0. This action code requires additional parameter entry consistent with those required for the Weigh In action code.

- **Matl ID? Xx**—Enter the ID designation of the material to be weighed.
- **S/F/S% xx**—Enter the percentage of material to be fed during the initial slow feed step (prompt only appears if slow/fast/slow is enabled).
- **SP? xxxxxx**—Enter the setpoint for the material.
- **Tol xxxxx**—Enter the tolerance value for the material.

### Learn Mode Operation

If, due to non-repeatable material flow, it is desirable to have the LYNXBATCH learn a new preact value each feed cycle, use the Whg-Lrn action code in the recipe.

The LYNXBATCH Learn Mode automates setting of the material preact value and, for two-speed feeders, the dribble value. It does this by exercising the material feed and observing the behavior of the material flow. Only one parameter controls the operation of the Learn mode. This parameter determines what percentage of the material addition the LYNXBATCH will deliver prior to observing the material flow after cutoff. The parameter is entered in setup in the Batching/Configure System/Run Options sub-block. Setting the parameter to zero disables Learn Mode.

Learn Mode only sets the dribble and preact values if they are 0., It is generally only used to set the parameters the first cycle. The Weigh Learn (Wgh_Lrn) action code forces the preact parameter to zero prior to beginning the weigh-in cycle to cause the LYNXBATCH to learn a new preact each time.

Following is an example of how Learn Mode operates:

The Learn Mode parameter should be set to a percentage value that permits the material rate to stabilize prior to the feed cutoff. Twenty percent is a good starting point.

1. Configure a Fast Feed and Feed output for Feeder 1.
2. Set the Learn Mode parameter to 20%.
3. Set Material 1 for Feeder 1 and its preact and dribble values to zero.
4. Program recipe 1 with a Weigh In action code using Material 1 and a setpoint value of 500.0kg.
5. Run Recipe 1.
6. Material 1 will feed fast until 100.0kg (500kg x 20%), cutoff and settle to capture the dribble value. For our example, it settles at 105.8kg.
7. Material 1 will now slow feed until 200.0kg (20% more), cutoff and settle to capture the preact value. For our example, it settles at 203.9kg.
8. Material 1 will now fast feed until 490.3kg (500kg – (5.8kg = 3.9kg)).
9. Material 1 will now slow feed until 496.1kg (500kg – 3.9kg).
10. Material 1 dribble is now set to 5.8kg and its preact is set to 3.9kg).

In practice, after a new installation of a filling or batching system, the system will be “dry run” or run with substitute materials many times until it is put into production with actual materials and with all of the material handling equipment stable. After this condition is reached and with Learn Mode turned on, use the material editor to set all dribble and preact values to zero so that the next time the system is run, the LYNXBATCH will learn and set all of the dribble and preact values.

# Appendix 5: Loading LYNXBATCH Controller Software

The LYNXBATCH controller is designed to allow easy software installation and upgrade. Using Mettler Toledo's "Flashpro" installation program from a personal computer, you can easily load the latest version of LYNXBATCH controller software and burn it into the controller'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 LYNXBATCH controller 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 to create a new directory to hold the LYNXBATCH controller files, and use the CD command to change directories.
2. Insert the diskette with the new software files into floppy disk drive A or B. The files on this diskette are compressed into a single file named LB_A_0.EXE where "A" represents the major version and "0" represents the minor version.
3. At the DOS prompt, type **A:LB_A_0** or **B:LB_A_0** depending on where you inserted the diskette, then press **ENTER**.

   The compressed files will automatically extract themselves from the diskette into the designated directory on the computer. The extracted files require approximately 1.3 MB 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 serial port is correct. The FP.BAT file resembles the example below. Edit only the -t and -com elements.

   **Example:**
   flashpro -t90247200A -b115.2 -com1 -pe -d7 -s1

   where:
   -t is followed by the file name to be saved such as A145828R.

   -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 controller.

   -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.

If another device is connected to COM1, be sure to disconnect all wires before connecting the RS-232 cable.

You are now ready to use the Flashpro batch file (FP.BAT) to load the software into the LYNXBATCH controller's flash memory. To load the LYNXBATCH controller software:

1. Disconnect power to the LYNXBATCH controller.
2. Open the harsh environment (desk/wall) model as described in Chapter 2 of this manual, 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 LYNXBATCH controller's COM1 serial port. Wire the cable as follows:

| LYNXBATCH 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 LYNXBATCH controller 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 LYNXBATCH controller 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 LYNXBATCH controller. 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.

   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, LYNXBATCH controller responds with the following error messages:

   **BRAM Bad** **RECIPE Bad**
   **EEPROM Bad** **MATERIAL Bad**

7. Press **ENTER** to acknowledge the messages. In this case, the LYNXBATCH controller automatically resets the configuration data to factory defaults.
8. LYNXBATCH controller then displays **SW1-3 ON?**
9. Disconnect power from LYNXBATCH controller, 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 Codes

The following table gives Geo Codes (gravity factor adjustment values) that can be used if you need to relocate your LYNXBATCH controller and scale to a location other than the original location where it was calibrated.

| Northern and southern latitude in degrees and minutes | Height above sea level in meters<br>0<br>325 | 325<br>650 | 650<br>975 | 975<br>1300 | 1300<br>1625 | 1625<br>1950 | 1950<br>2275 | 2275<br>2600 | 2600<br>2925 | 2925<br>3250 | 3250<br>3575 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Height above sea level in feet<br>0<br>1060 | 1060<br>2130 | 2130<br>3200 | 3200<br>4260 | 4260<br>5330 | 5330<br>6400 | 6400<br>7460 | 7460<br>8530 | 8530<br>9600 | 9600<br>10660 | 10660<br>11730 |
| 0° 0′ to 5° 46′ | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | 0 | 0 |
| 5° 46′ to 9° 52′ | 5 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | 0 |
| 9° 52′ to 12° 44′ | 6 | 5 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 |
| 12° 44′ to 15° 6′ | 6 | 6 | 5 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 |
| 15° 6′ to 17° 10′ | 7 | 6 | 6 | 5 | 5 | 4 | 4 | 3 | 3 | 2 | 2 |
| 17° 10′ to 19° 2′ | 7 | 7 | 6 | 6 | 5 | 5 | 4 | 4 | 3 | 3 | 2 |
| 19° 2′ to 20° 45′ | 8 | 7 | 7 | 6 | 6 | 5 | 5 | 4 | 4 | 3 | 3 |
| 20° 45′ to 22° 22′ | 8 | 8 | 7 | 7 | 6 | 6 | 5 | 5 | 4 | 4 | 3 |
| 22° 22′ to 23° 54′ | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 5 | 5 | 4 | 4 |
| 23° 54′ to 25° 21′ | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 5 | 5 | 4 |
| 25° 21′ to 26° 45′ | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 5 | 5 |
| 26° 45′ to 28° 6′ | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 5 |
| 28° 6′ to 29° 25′ | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 |
| 29° 25′ to 30° 41′ | 11 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 30° 41′ to 31° 56′ | 12 | 11 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 |
| 31° 56′ to 33° 9′ | 12 | 12 | 11 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 |
| 33° 9′ to 34° 21′ | 13 | 12 | 12 | 11 | 11 | 10 | 10 | 9 | 9 | 8 | 8 |
| 34° 21′ to 35° 31′ | 13 | 13 | 12 | 12 | 11 | 11 | 10 | 10 | 9 | 9 | 8 |
| 35° 31′ to 36° 41′ | 14 | 13 | 13 | 12 | 12 | 11 | 11 | 10 | 10 | 9 | 9 |
| 36° 41′ to 37° 50′ | 14 | 14 | 13 | 13 | 12 | 12 | 11 | 11 | 10 | 10 | 9 |
| 37° 50′ to 38° 58′ | 15 | 14 | 14 | 13 | 13 | 12 | 12 | 11 | 11 | 10 | 10 |
| 38° 58′ to 40° 5′ | 15 | 15 | 14 | 14 | 13 | 13 | 12 | 12 | 11 | 11 | 10 |
| 40° 5′ to 41° 12′ | 16 | 15 | 15 | 14 | 14 | 13 | 13 | 12 | 12 | 11 | 11 |
| 41° 12′ to 42° 19′ | 16 | 16 | 15 | 15 | 14 | 14 | 13 | 13 | 12 | 12 | 11 |
| 42° 19′ to 43° 26′ | 17 | 16 | 16 | 15 | 15 | 14 | 14 | 13 | 13 | 12 | 12 |
| 43° 26′ to 44° 32′ | 17 | 17 | 16 | 16 | 15 | 15 | 14 | 14 | 13 | 13 | 12 |
| 44° 32′ to 45° 38′ | 18 | 17 | 17 | 16 | 16 | 15 | 15 | 14 | 14 | 13 | 13 |
| 45° 38′ to 46° 45′ | 18 | 18 | 17 | 17 | 16 | 16 | 15 | 15 | 14 | 14 | 13 |
| 46° 45′ to 47° 51′ | 19 | 18 | 18 | 17 | 17 | 16 | 16 | 15 | 15 | 14 | 14 |
| 47° 51′ to 48° 58′ | 19 | 19 | 18 | 18 | 17 | 17 | 16 | 16 | 15 | 15 | 14 |
| 48° 58′ to 50° 6′ | 20 | 19 | 19 | 18 | 18 | 17 | 17 | 16 | 16 | 15 | 15 |

| Northern and southern latitude in degrees and minutes | Height above sea level in meters | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0<br>325 | 325<br>650 | 650<br>975 | 975<br>1300 | 1300<br>1625 | 1625<br>1950 | 1950<br>2275 | 2275<br>2600 | 2600<br>2925 | 2925<br>3250 | 3250<br>3575 |
| | Height above sea level in feet | | | | | | | | | | |
| | 0<br>1060 | 1060<br>2130 | 2130<br>3200 | 3200<br>4260 | 4260<br>5330 | 5330<br>6400 | 6400<br>7460 | 7460<br>8530 | 8530<br>9600 | 9600<br>10660 | 10660<br>11730 |
| 50° 6′ to 51° 13′ | 20 | 20 | 19 | 19 | 18 | 18 | 17 | 17 | 16 | 16 | 15 |
| 51° 13′ to 52° 22′ | 21 | 20 | 20 | 19 | 19 | 18 | 18 | 17 | 17 | 16 | 16 |
| 52° 22′ to 53° 31′ | 21 | 21 | 20 | 20 | 19 | 19 | 18 | 18 | 17 | 17 | 16 |
| 53° 31′ to 54° 41′ | 22 | 21 | 21 | 20 | 20 | 19 | 19 | 18 | 18 | 17 | 17 |
| 54° 41′ to 55° 52′ | 22 | 22 | 21 | 21 | 20 | 20 | 19 | 19 | 18 | 18 | 17 |
| 55° 52′ to 57° 4′ | 23 | 22 | 22 | 21 | 21 | 20 | 20 | 19 | 19 | 18 | 18 |
| 57° 4′ to 58° 17′ | 23 | 23 | 22 | 22 | 21 | 21 | 20 | 20 | 19 | 19 | 18 |
| 58° 17′ to 59° 32′ | 24 | 23 | 23 | 22 | 22 | 21 | 21 | 20 | 20 | 19 | 19 |
| 59° 32′ to 60° 49′ | 24 | 24 | 23 | 23 | 22 | 22 | 21 | 21 | 20 | 20 | 19 |
| 60° 49′ to 62° 9′ | 25 | 24 | 24 | 23 | 23 | 22 | 22 | 21 | 21 | 20 | 20 |
| 62° 9′ to 63° 30′ | 25 | 25 | 24 | 24 | 23 | 23 | 22 | 22 | 21 | 21 | 20 |
| 63° 30′ to 64° 55′ | 26 | 25 | 25 | 24 | 24 | 23 | 23 | 22 | 22 | 21 | 21 |
| 64° 55′ to 66° 24′ | 26 | 26 | 25 | 25 | 24 | 24 | 23 | 23 | 22 | 22 | 21 |
| 66° 24′ to 67° 57′ | 27 | 26 | 26 | 25 | 25 | 24 | 24 | 23 | 23 | 22 | 22 |
| 67° 57′ to 69° 35′ | 27 | 27 | 26 | 26 | 25 | 25 | 24 | 24 | 23 | 23 | 22 |
| 69° 35′ to 71° 21′ | 28 | 27 | 27 | 26 | 26 | 25 | 25 | 24 | 24 | 23 | 23 |
| 71° 21′ to 73° 16′ | 28 | 28 | 27 | 27 | 26 | 26 | 25 | 25 | 24 | 24 | 23 |
| 73° 16′ to 75° 24′ | 29 | 28 | 28 | 27 | 27 | 26 | 26 | 25 | 25 | 24 | 24 |
| 75° 24′ to 77° 52′ | 29 | 29 | 28 | 28 | 27 | 27 | 26 | 26 | 25 | 25 | 24 |
| 77° 52′ to 80° 56′ | 30 | 29 | 29 | 28 | 28 | 27 | 27 | 26 | 26 | 25 | 25 |
| 80° 56′ to 85° 45′ | 30 | 30 | 29 | 29 | 28 | 28 | 27 | 27 | 26 | 26 | 25 |
| 85° 45′ to 90° 00′ | 31 | 30 | 30 | 29 | 29 | 28 | 28 | 27 | 27 | 26 | 26 |

# Appendix 7: Market Destination

Use the following table to determine the finish code parameters for a particular market destination. Refer to the section entitled Model Number in Chapter 1.

| 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/NOR W | 230/50 | N | 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 | M | KG | SWISS FRC | Fr |
| 006 | SWITZERLAND | ITALIAN | ENGLISH | 230/50 | M | KG | SWISS FRC | Fr |
| 007 | SWITZERLAND | FRENCH | ENGLISH | 230/50 | M | 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 | Sl. |

| FINISH CODE | DESTINATION MARKET | PREFERRED LANGUAGE | ALTERNATE LANGUAGE | VOLTAGE & FREQUENCY | PWR CORD CONFIG | WEIGHT UNIT | RETAIL CURRENCY | CURRENCY ABBREV |
|---|---|---|---|---|---|---|---|---|
| 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 |
| 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 | $ |

| FINISH CODE | DESTINATION MARKET | PREFERRED LANGUAGE | ALTERNATE LANGUAGE | VOLTAGE & FREQUENCY | PWR CORD CONFIG | WEIGHT UNIT | RETAIL CURRENCY | CURRENCY ABBREV |
|---|---|---|---|---|---|---|---|---|
| 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 | £ |
| 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 | $ |
| 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.

RETAIL CURRENCY —- The full official name of the currency used.

CURRENCY ABBREV — Abbreviation that should appear on keys and displays.

# Appendix 8: LYNXBATCH Controller 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** | | **Shift Adjustment** | |
| USA | | Zero counts - 74000 | |
| **Scale Type** | | Mid weight - 100.000 | |
| Analog | | Mid counts - 1040600 | |
| **Calibration Unit** | | High weight - 100.000 | |
| Pounds (lb) | | High counts - 1040600 | |
| **Capacity** | | **Calibration** | |
| 100 lb | | No defaults | |
| **Increment Size** | | **Zero Adjustment** | |
| 0.01 | | No defaults | |
| **Linearity Correction** | | **Span Adjustment** | |
| No | | No defaults | |
| | | **Geo Code** | |
| | | 16 | |

| Application Environment Program Block | | | |
|---|---|---|---|
| Default | As Configured | Default | As Configured |
| Character Set | | Zero Operations | |
| USA | | Power-up Zero | |
| Time/Date Format | | Positive Range - 0% | |
| Time Separator - : | | Negative Range - 0% | |
| Time Format - 24:MM:SS | | Pushbutton Zero | |
| Date Separator - (-) | | Positive Range - 2% | |
| Date Format - MMM-DD-'YY | | Negative Range - 2% | |
| Power-up Operations | | Under Zero Blanking - 5 divisions | |
| Power-up Delay - 0 min. | | Auto Zero Maintenance | |
| Tare Operations | | Range - 0.5 divisions | |
| Enable Tare - Yes | | AZM Enabled in Net Mode - No | |
| Tare Interlock - No | | Zero Indication - Gross | |
| Pushbutton Tare - Yes | | Stability Detection | |
| Keyboard Tare - Yes | | Stability Range - 0.5 divisions | |
| Tare Recall - No | | Stability Interval - 0.4 seconds | |
| Gross Recall - No | | Vibration Rejection | |
| | | Autotune - No | |
| | | Low Pass Filter | |
| | | Frequency - 3.0 Hz | |
| | | Poles - 8 | |
| | | Notch Filter Frequency - 30.0 Hz | |
| | | Stability Filter - No | |

| Serial Interface Program Block | | | |
|---|---|---|---|
| Default | As Configured | Default | As Configured |
| **Configure Port** | | **Printer Control** | |
| COM1 | | Minimum Print - No | |
| Port Parameters | | Print Interlock - No | |
| Baud Rate - 9600 | | Auto Print - No | |
| Data Bits - 7 | | Print Threshold - 5.0 | |
| Parity - Even | | Reset Threshold - 0.5 | |
| Flow Control (XON/XOFF) - No | | Check Motion - No | |
| Checksum - No | | | |
| Output Mode - Demand | | | |
| Decimal Point/Comma - DP | | | |
| Template - /ptp01 | | | |
| Input Mode - Command | | | |
| COM2/3 | | | |
| Port Parameters | | | |
| Baud Rate - 9600 | | | |
| Data Bits - 7 | | | |
| Stop Bits - 2 | | | |
| Parity - Even | | | |
| Flow Control (XON/XOFF) - No | | | |
| Checksum - No | | | |
| Output Mode - None | | | |
| Input Mode - None | | | |

| Memory Program Block | | | |
|---|---|---|---|
| Default | As Configured | Default | As Configured |
| Configure Literals | | Configure Prompts | |
| Literals 1 through 4 - Factory Test | | Prompt #1 - OPERATOR? | |
| Literals 5 through 10 - Blank | | Prompt #2 - BATCH #? | |
| Literal #11 - GROSS | | Prompt #3 - LOT NO.? | |
| Literal #12 - TARE | | Prompts #4 through 10 - Blank | |
| Literal #13 - NET | | | |
| Literal #14 - TIME | | | |
| Literal #15 - DATE | | Configure Recipe Prompts | |
| Literal #16 - RECIPE | | Prompt #11 through 20 - Blank | |
| Literal #17 - NUMBER | | | |
| Literal #18 - WEIGHT | | | |
| Literal #19 - SUBTOTAL | | | |
| Literal #20 - TOTAL | | | |

| 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 | | Factory Reset | |
| | | Reset Recipe? - No | |
| | | Reset Material? - No | |
| | | Reset Cal? - No | |

| Batch Mode Program Block | | | |
|---|---|---|---|
| Default | As Configured | Default | As Configured |
| Configure System | | Audit On - No | |
| Password Protection | | F/S Transition - Overlap Feed | |
| Enabled - No | | S/F/S - No | |
| Setup - No | | Accept Off Tolerance - Yes | |
| Clear Totals - No | | Stop Feed - Yes | |
| Material Verification Bypass - No | | Initial Delay - O seconds | |
| Run Option | | Inventory - No | |
| User Adjust - No | | Recipe Select - Keyboard | |
| Verify Materials - No | | Config Batch | |
| Controls | | Recipes - None | |
| Manual Control - Yes | | Materials - None | |
| Semi-automatic Control - Yes | | Feeder - Discharge | |
| Automatic Control - Yes | | Settling Time - 2.0 seconds | |
| Output 1 to 5 - None | | Dribble - 0.00 | |
| Data Correction | | Preact - 0.0 | |
| # Batches - Yes | | Off Delay - 0.0 seconds | |
| Batch Size - No | | | |
| Correct Targets - No | | | |

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# Publication Problem Report

**Publication Name:** LynxBatch Controller Technical Manual (Revision D Software)

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| PROBLEM(S) TYPE: | DESCRIBE PROBLEM(S): | INTERNAL USE ONLY |
|---|---|---|
| ☐ Technical Accuracy | ☐ Text ☐ Illustration | |
| ☐ Completeness<br>What information is missing? | ☐ Procedure/step ☐ Illustration ☐ Definition<br>☐ Example ☐ Guideline ☐ Feature<br>☐ Explanation ☐ Other (please explain below) | ☐ Info. in manual<br>☐ Info. not in manual |
| ☐ Clarity<br>What is not clear? | | |
| ☐ Sequence<br>What is not in the right order? | | |
| ☐ Other Comments<br>Use another sheet for additional comments. | | |

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