LYNX®

Industrial Terminal

Installation Guide

16282000A
6/01.00

CUSTOMER FEEDBACK

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

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

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

PROBLEM:

UNACCEPTABLE DELIVERY:

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

OUT OF BOX ERROR:

- ☐ Wrong item
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- ☐ Missing equipment
- ☐ Equipment failure

- ☐ Wrong documentation
- ☐ Missing documentation
- ☐ Incorrectly calibrated
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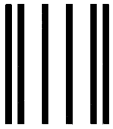
Comments:

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

☐ Retail ☐ Light Industrial ☐ Heavy Industrial ☐ Systems

RESPONSE: Include Root Cause Analysis and Corrective Action Taken.

FOLD THIS FLAP FIRST



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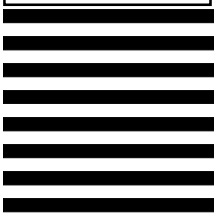

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Declaration of conformity

Konformitätserklärung
Déclaration de conformité
Declaración de Conformidad
Verklaring de overeenstemming
Dichiarazione di conformitá

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

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

Model/Type: LYNX

to which this declaration relates is in conformity with the following standard(s) or other normative document(s).
auf das sich diese Erklärung bezieht, mitder/den folgenden Norm(en) oder Richtlinie(n) übereinstimmt.
Auquel se réfère cette déclaration est conforme à la (aux) norme(s) ou au(x) document(s) normatif(s).
Al que se refiere esta declaración es conforme a la(s) norma(s) u otro(s) documento(s) normativo(s).
Waarnaar deze verklaring verwijst, aan de volende norm(en) of richtlijn(en) beantwoordt.
A cui si riferisce questa dichiarazione è conforme alla/e sequente/i norma/e o documento/i normativo/i.

CE Conformity / CE-Konformität / Conformité CE
90/384/EU Nonautomatic Balances and Scales / Nichteselbsttätige Waagen / Balances à Functionnement non automatique
EN45501:1992 Adopted European Standard / Norme Européenne Adoptée / Angenommene Europäische Norm
89/336/EU EMC Directive / EMU-Richtlinie / Directive concernant la CEM
EN55022, B : 1987 Emissions / Funkstörungen
EN50082-2: 1995 Immunity
73/23/EU Low Voltage / Niederspannung / basse tension
EN61010 el. Safety / el. Sicherheit / sécurité el.

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

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

FCC Notice

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

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

ORDERING INFORMATION

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

COPYRIGHT

PRECAUTIONS

READ this manual BEFORE operating or servicing this equipment.

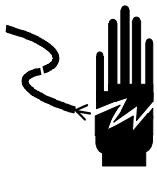
FOLLOW these instructions carefully.

SAVE this manual for future reference.

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

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

CALL METTLER TOLEDO for parts, information, and service.

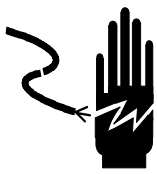


WARNING

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

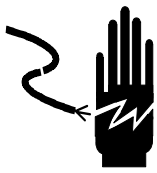
CAUTION

OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.



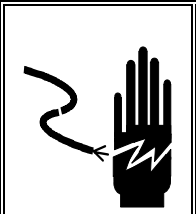
WARNING

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.



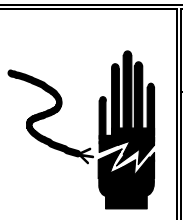
WARNING

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



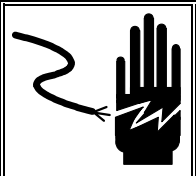
WARNING

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



WARNING

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



WARNING

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

CONTENTS

Installation Guide

Introduction

The following information is intended ONLY to help you install the LYNX terminal. Please read the information thoroughly prior to beginning installation. Any internal wiring, installation of options, or programming should be performed only by qualified technicians. This information is found in the LYNX Terminal Technical Manual provided on the Documentation CD-ROM included with the terminal. Specifications for the LYNX terminal are included at the end of this manual.

The documentation CD-ROM contains a copy of this installation guide, as well as other documentation that may of help to you in installing, configuring, operating, and servicing the terminal. You will need Adobe Acrobat Reader to view these files. If you do not have this program:

- Go to the folder on the CD-ROM labeled Adobe Acrobat Reader 4.0.
- Double-click on the folder to open it.
- Double-click on the file labeled setup.exe.
- Follow the instructions on your screen to install the program.

You may also download for free the latest version of Adobe Acrobat at http://www.Adobe.com.

Unpacking and Inspection

1. If upon delivery the shipping container for the terminal appears damaged, check for internal damage and file a freight claim with the carrier if required.
2. If the container is undamaged, unpack the terminal from its protective package and inspect each component for damage.
3. Verify that you have the correct package contents. To install the terminal, you need the terminal, the screwdriver provided, and these instructions. You may also need common hand tools, such as flat and Phillips head screwdrivers for the general purpose unit and a drill and wrenches for use with the harsh environment unit. All other package contents should remain in the box.

   Package contents for all LYNX terminals include:

   - LYNX Terminal
   - Installation Guide
   - Capacity Labels
   - Documentation CD
   - Ferrite Ring for DigiTOL Scales
   - Three Nylon Cable Ties *
   - 2 mm Hex Key*
   - Weights and Measures Sealing Screws*

   *Included only with the panel-mount version of the LYNX terminal.

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

Location/Environment

The first step in installing the LYNX terminal is to select a location for it that will enhance its longevity and operation. Keep in mind the following when choosing a location:

- The LYNX terminal can be operated between 14° F to 113° F (-10° C to 45° C) at 10% to 95% humidity, noncondensing.
- The harsh environment enclosures are designed to meet NEMA 4X (IP65) requirements for a dust-tight, splash-proof enclosure. On the panel mount enclosure, the front panel and panel clamping mechanism are designed to provide a NEMA 4 (IP65) seal. The rest of the panel mount enclosure meets NEMA 1 (IP30) requirements and provides no protection against dust or water ingress.
- THE LYNX TERMINAL IS NOT INTRINSICALLY SAFE. A special model is available to operate METTLER TOLEDO barriers for scales located in a hazardous area. Contact your authorized METTLER TOLEDO representative for information about hazardous area applications.

WARNING!

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

Installing the Panel Mount Model

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

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

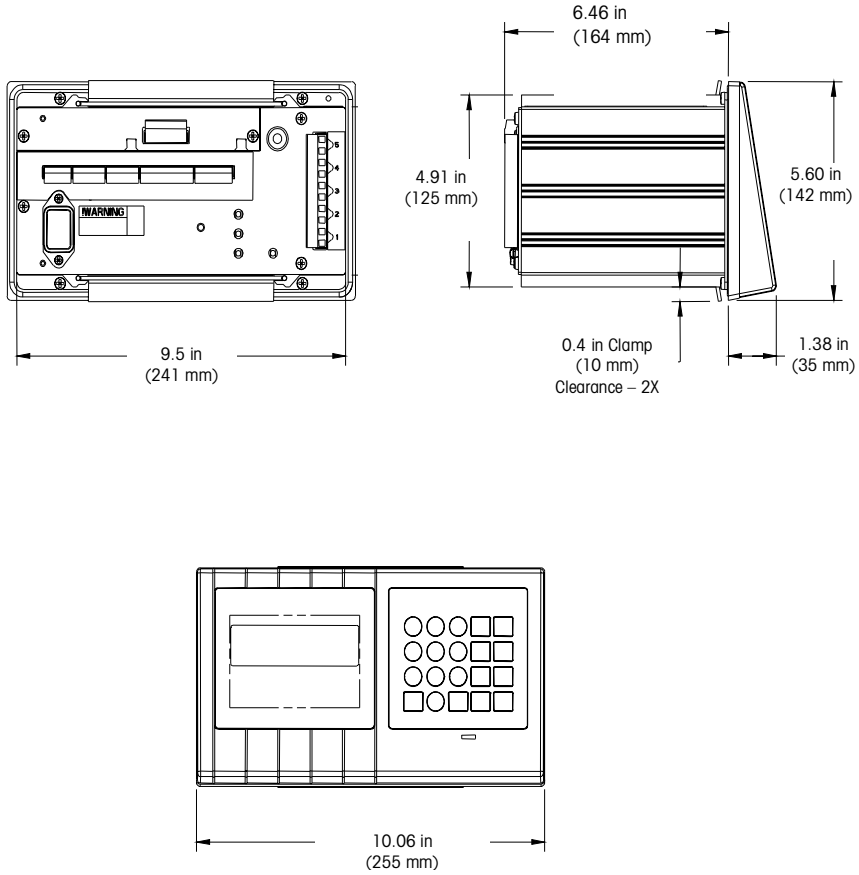


Figure 1-1 LYNX Panel Mount Dimensions

Refer to Figure 1-2 and 1-2 (cutout diagram) and the instructions below to install the panel mount version of the LYNX terminal.

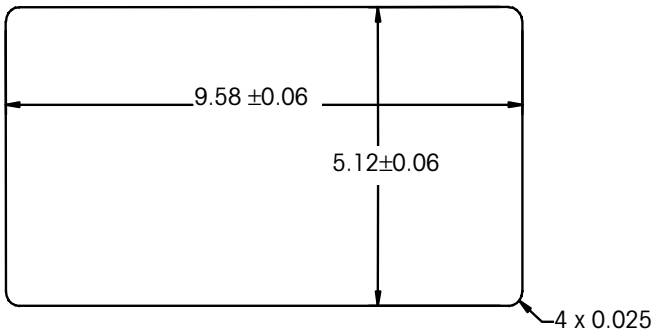


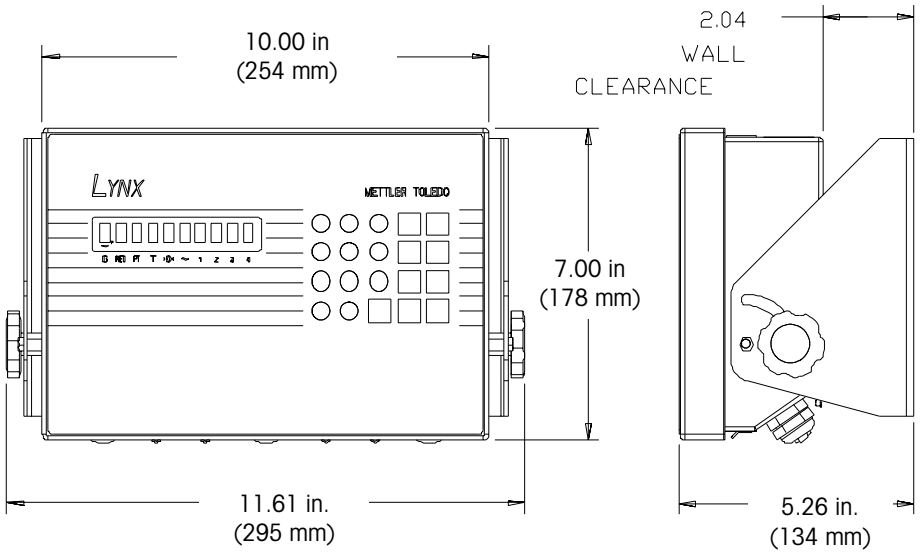
Figure 1-2 Cutout Diagram

1. Cut an opening 9.54 in. (243 mm) wide × 5.08 in. (130 mm) high to accommodate the terminal. A template is included at the end of this manual to mark the panel cutout. The tolerance for the panel cutout is ± 0.06 in. (1.5 mm).
2. Using an Allen wrench, remove the four retaining set screws located at the rear of the enclosure in the top and bottom mounting plate grooves.
3. Remove both mounting plates.
4. Insert the terminal through the panel opening from the front until it is flush against the panel. Confirm that the terminal 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 until the unit is secured and the front panel gasket is compressed.
7. Inspect the front of the LYNX terminal for a good seal to the front of the enclosure.
8. Continue to the section entitled Connecting to the LYNX Terminal.

Installing the Harsh Environment Version

The harsh environment LYNX terminal measures:

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



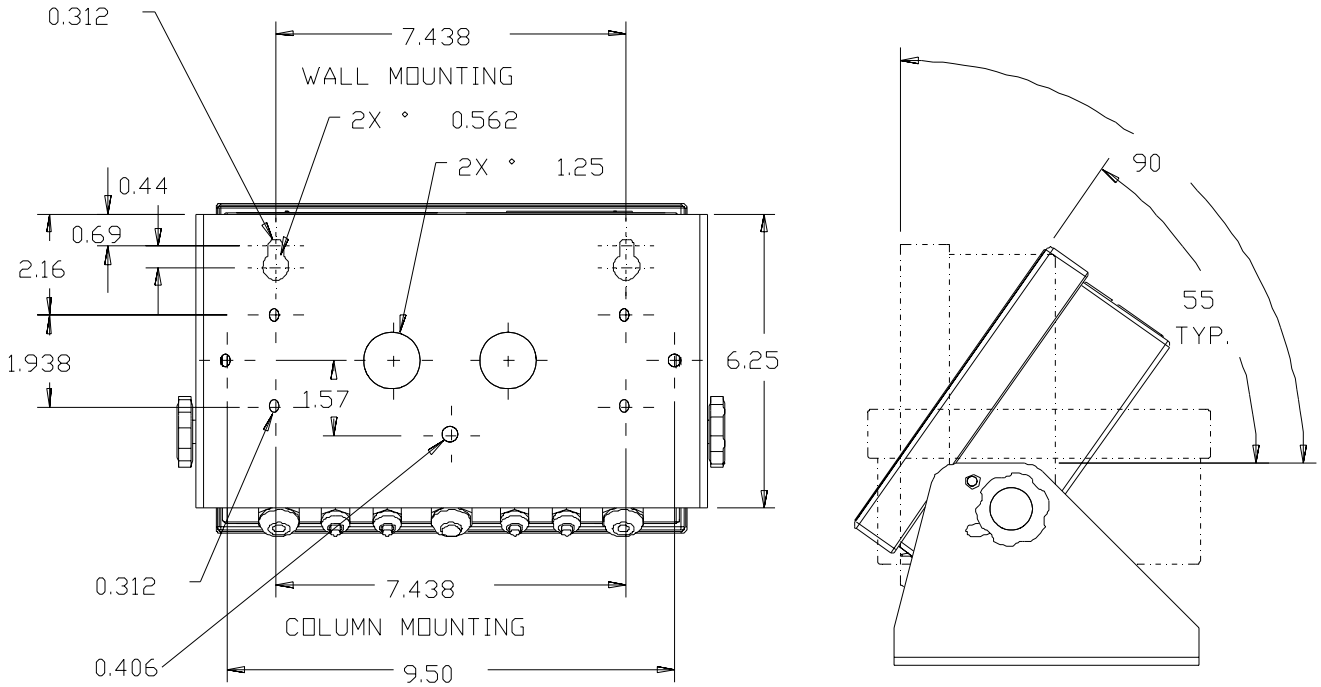
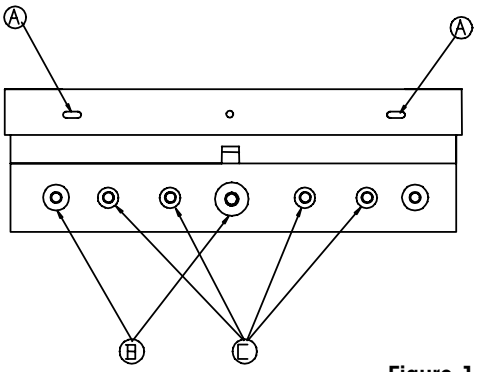


Figure 1-3 LYNX Harsh Environment (Desk/Wall) Dimensions

Note that the harsh environment filling controller is opened and connected in a similar manner except that two mounting brackets are shipped loose for wall mounting.

The harsh environment LYNX terminal uses four spring clips attached to the enclosure body to lock the front panel in place and to seal the enclosure to NEMA 4X specifications. To access the Controller PCB for internal wiring and setting switches:

1. Insert the tip of a flat-blade screwdriver into one of the two slots ("A" in Figure 1-4) on the bottom of the front panel assembly and gently push straight in toward the enclosure. You should hear a quiet "pop" when the cover has been released.
2. Repeat for the other slot.
3. Lift the bottom of the front panel out until it completely clears the enclosure.
4. Squeeze the top of the front panel to the enclosure slightly and raise it to clear the two top clips. The cover will swing down hinged by two wire cables at the bottom.



Reference Letter	Suggested Cable
B	Analog and DigiTOL load cell wiring
C	Serial and discrete I/O cables

Figure 1-4

Be careful to select a cable grip to the terminal block you are wiring to keep the wiring neat and easy to connect.

To connect cabling to the unit:

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 only after re-securing the cover. Continue to the section entitled Connecting to the LYNX Terminal.

Installing the Harsh Environment Filling Controller

The harsh environment LYNX filling controller measures:

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

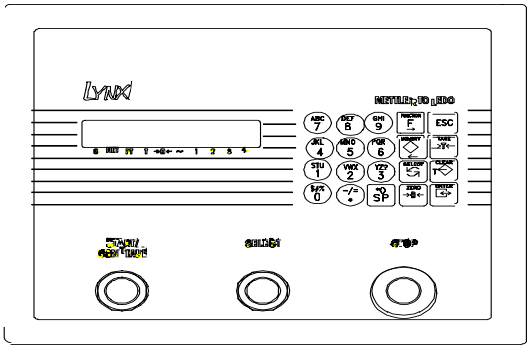


Figure 1-5: LYNX Harsh Environment Filling Controller Dimensions

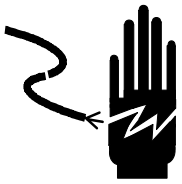
The harsh environment filling controller is opened and connected in a similar manner to that of the harsh environment LYNX terminal except that two mounting brackets are shipped loose for wall mounting. Refer to the section preceding this one for instructions.

CAUTION

DO NOT APPLY AC POWER TO THE LYNX TERMINAL. POWER SHOULD NOT BE APPLIED UNTIL ALL INTERNAL WIRING HAS BEEN COMPLETED BY A QUALIFIED SERVICE TECHNICIAN.

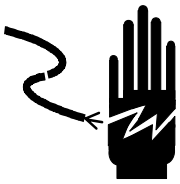
Connecting to the LYNX Terminal

After installing the panel-mount version or opening the harsh environment LYNX terminal, make the electrical connections as described on the following pages.



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.



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.

Power Requirements

The LYNX terminal is available with two power supply versions: one operates from 85 to 132 VAC and the other from 180 to 264 VAC. Both operate with a line frequency of 49 to 63 Hz. Power consumption is 12 Watts maximum. Power is applied though a modular power plug line cord (panel mount) or permanently attached line cord (harsh environment).

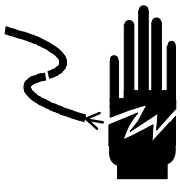
The integrity of the power ground for equipment is important for safety and for the dependable operation of the LYNX terminal and it's associated scale base. A poor ground can result in an unsafe condition if an electrical short develops. A good ground connection also helps to minimize the influence of extraneous noise. It is important that this equipment does not share power lines with noise generating equipment such as heavy load switching, motor starter circuits, RF terminal heaters, and inductive loads.

To confirm ground integrity, a commercial branch circuit analyzer such as an ICE model SureTest ST-ID (or equivalent) is recommended. This instrument uses a high amperage pulse to check ground resistance. It measures the voltage from the neutral wire to the ground connection and will assess line loading.

Do not apply power until completing ALL external connections to the LYNX terminal.

Connect the Load Cell

Make the appropriate load cell connection to the Controller PCB for analog load cells 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 LYNX terminal depends on the total scale resistance (TSR) of the scale base. To calculate TSR:

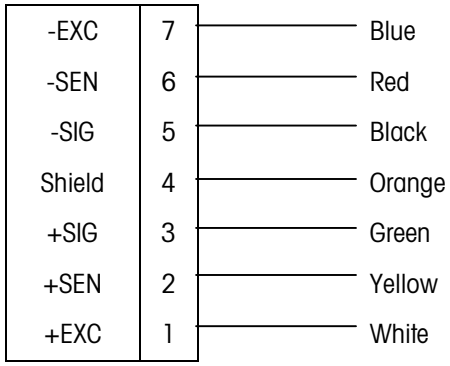
$$TSR = \frac{\text{Load Cell Input Resistance (Ohms)}}{\text{Number of Load Cells}}$$

The chart below gives recommended cable lengths based on TSR and cable gauge. The LYNX terminal can power up to eight 350 Ohm analog load cells.

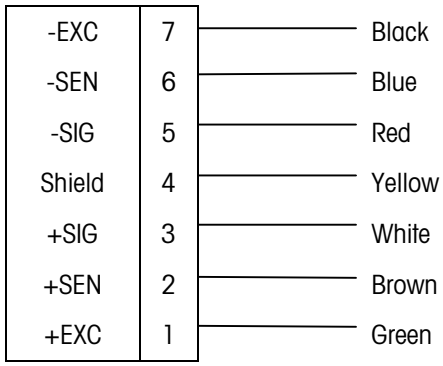
Recommended Maximum Cable Length			
TSR (Ohms)	24 Gauge (feet/meters)	20 Gauge (feet/meters)	16 Gauge (feet/meters)
350	800/240	2000/600	4000/1200
87	200/60	600/180	1000/300
44	100/30	300/90	500/150

The following diagrams describe analog load cell terminal strip wiring for standard 6-wire cable, heavy capacity (Masstron) 6-wire cable, and standard 4-wire cable.

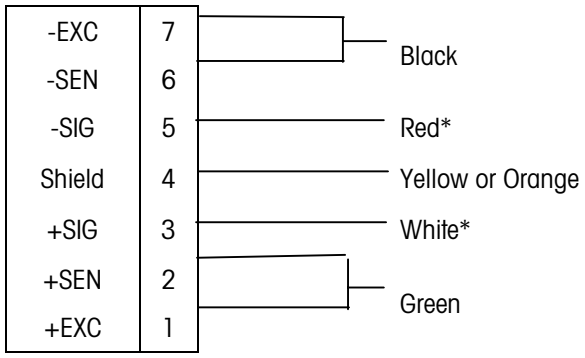
Standard 6-wire Cable J1



Heavy Capacity (Masstron) 6-wire Cable



4-wire Cable

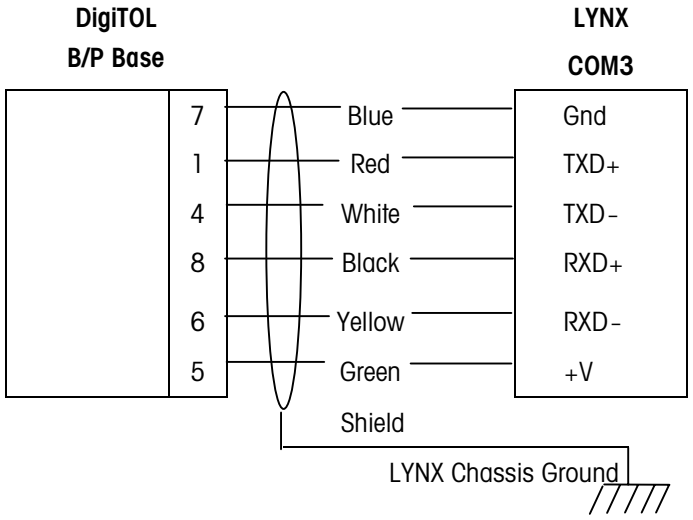


*If an increase in load results in a decrease in weight display, reverse the signal wires (+SIG and –SIG).

DigiTOL Load Cell Connections

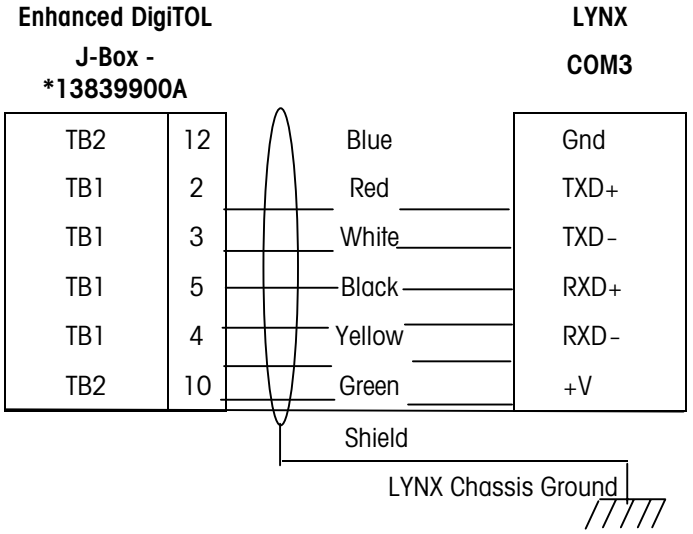
The maximum recommended cable length for all DigiTOL bases is 50 feet (15 meters).

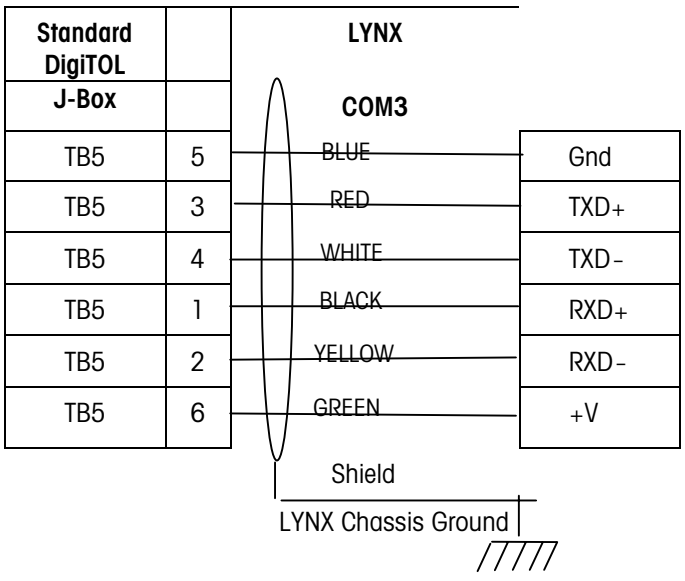
A ferrite ring must be added when connecting a DigiTOL base. Refer to Figure 1-6.



DigiTOL J-Box Connections

Maximum recommended cable length for DigiTOL J-Box scales is 300 feet (90 meters).





When installing a DigiTOL base or J-Box, the included ferrite ring (P/N 12635700A) must be installed to help attenuate noise entering the terminal through the load cell cable. The ferrite ring should be installed inside the harsh enclosure and as close to the connector on the panel mount as possible. 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.

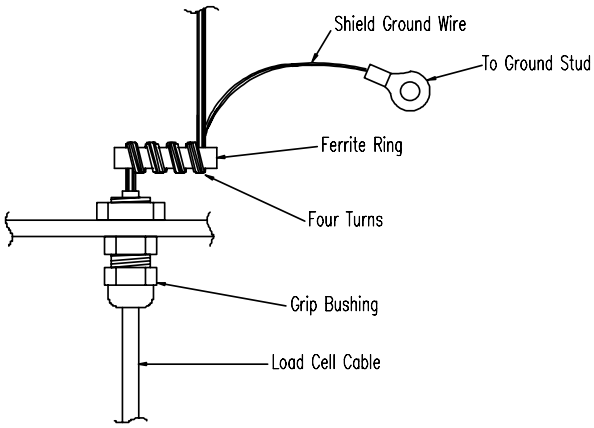


Figure 1-6 Ferrite Ring Apparatus

Serial Port Connections

Refer to the following diagrams for proper cable connections to the LYNX terminal's serial ports COM1, COM2, and COM3. All COM ports are located on the Controller board. The COM port terminal strips will accommodate wire sizes ranging from 28 to 16 AWG (0.14 to 1.5 mm^2). The terminal strips may be removed to facilitate wiring. Removal of the terminal strips also permits easier viewing of the terminal designations printed on the board back plate of the panel mount model. A label describing the I/O port locations and the pin designations for the harsh environment unit is affixed inside at the bottom of the rear enclosure.

- The COM1 serial port can be RS-232 or RS-485. Both are available simultaneously for transmitting; however, only one can receive data.
- The COM2 serial port can be RS-232 or 20mA current loop active transmit. Both are available simultaneously for transmitting; however only one can receive data.
- The COM3 serial port can be a standard RS-422 serial port or a communications port to METTLER TOLEDO's DigiTOL scales. Only one function can be selected.

COM1 RS-232

The maximum recommended cable length for RS232 is 50 feet (15 meters).

LYNX COM1 J9

1	TXD	RS-232 Transmit
2	RXD	RS-232 Receive
3	GND	Signal Ground
4	TXDA	
5	TXDB	

Pin Connection for METTLER TOLEDO Devices Using COM1 RS-232		
LYNX COM1	**8806 8857 8861 8807 8856 8865 8845 8846**	**8617-TB2 9323-TB2 9325-TB2**
TXD	3*	2
RXD	--	--
GND	7*	3
TXDA	--	--
TXDB	--	--

COM1 RS-485

RS-485 is typically used for connecting multiple LYNX units in a network (multi-dropping.) The maximum recommended total distance for RS-485 is 2000 feet (60 meters).

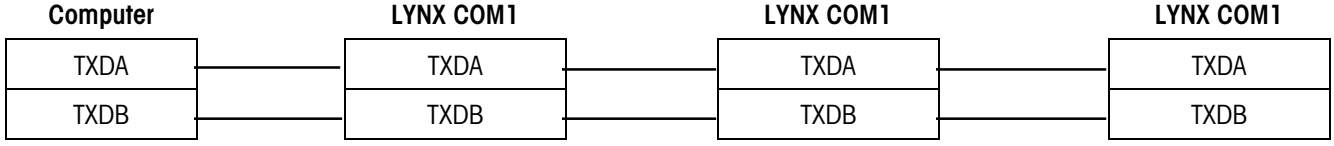
LYNX COM1 J9

1	TXD	
2	RXD	
3	GND	
4	TXDA	RS-485 Transmit +
5	TXDB	RS-485 Transmit –

Either the 8142 or 8530 Host Mode must be used for multi-dropping applications.

COM1 Multi-drop Wiring

This serial port consists of RS-485 signal levels for two-wire multi-drop applications. Up to nine LYNX terminals can be connected into a single multi-drop network.



The LYNX terminal's COM2 serial port can be either RS-232 or 20 mA current loop active transmit. Both transmitters are available simultaneously. Only one receiver can be used.

COM2 RS-232

Maximum recommended cable length for RS-232 is 50 feet (15 meters).

LYNX COM2 J8

1	TXD	RS-232 Transmit
2	RXD	RS-232 Receive
3	GND	Signal Ground
4	CLTX+	
5	CLRX+	
6	CLRX-	

Pin Connection for METTLER TOLEDO Devices Using COM2 RS-232		
LYNX COM2	**8806 8845 8856 8861 8807 8846 8857 8865**	**8617-TB2 9323-TB2 9325-TB2**
TXDA	3*	2
RXDA	--	--
GND	7*	3
CLTX+		
CLRX–	--	--
CLRX–	--	--

COM2 20 mA Current Loop

Maximum recommended cable length for 20 mA interfacing is 1000 feet (300 meters).

LYNX COM2 J8

1	TXD	
2	RXD	
3	GND	Signal Ground (Active Current Loop Transmit -)
4	CLTX+	Active Current Loop Transmit +
5	CLRX+	Current Loop Passive Receive +
6	CLRX-	Current Loop Passive Receive -

Pin Connection for METTLER TOLEDO Devices Using COM 2 20 mA Current Loop							
LYNX COM2	**8806**	**8855**	**8857** 8856****	**8622 8623**	**8614 8616 8619**	**8617 9323 9325**	**8618**
TXDA	--	--	--	--	--	--	--
RXDA	--	--	--	--	--	--	--
GND	18	22	23	10	12	9	4
CLTX+	16	3	25	8	11	8	3
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 LYNX terminal's COM3 serial port consists of RS-422 signal levels for four wire multi-drop or point-to-point applications. This port is also used to support a DigiTOL scale or DigiTOL J-Box serial interface. When interfaced to a DigiTOL base or DigiTOL J-Box, I/O capabilities are not available. The maximum recommended cable length for RS-422 interfacing is 2000 feet (600 meters).

LYNX COM3 J7

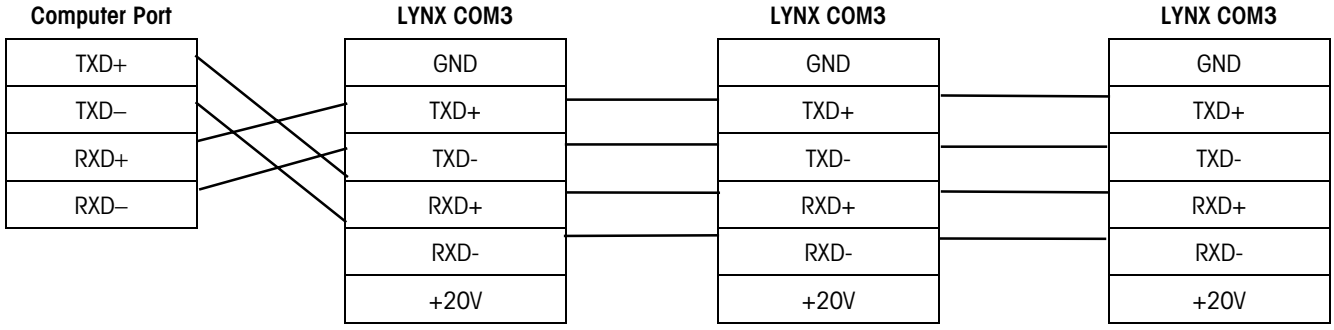
1	GND	Signal Ground
2	TXD+	RS-422 Transmit+
3	TXD–	RS-422 Transmit–
4	RXD+	RS-422 Receive+
5	RXD–	RS-422 Receive–
6	+20V	Power Supply (for DigiTOL scales)

Pin Connection for METTLER TOLEDO Devices Using COM3 RS-422			
LYNX COM3	**8861**	**8865**	**8617, 8623**
GND	—	—	—
TXD+	18	18	TB2, Pin 6
TXD–	19	19	TB2, Pin 7
RXD+	—	—	—
RXD–	--	—	—
+20V	--	—	—

COM3 Multi-drop Wiring

Either the 8142 or 8530 Host Mode (which allows unit addressing) must be used for multi-dropping applications.

This serial port consists of RS-422 signal levels for four-wire multi-drop applications. This port will not support a DigiTOL base when using the multi-drop feature. Maximum distance for multi-drop wiring is 2000 feet (600 meters). Up to nine LYNX terminals can be connected into a single multi-drop network.



Discrete Wiring

The OK to Feed input must be held at logic ground during the entire Feed cycle.

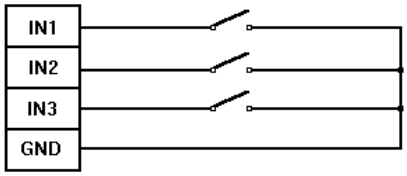
The OK to Discharge must be held at logic ground during the entire Discharge cycle.

The Controller PCB contains three discrete input (at PAR 1) and five discrete output (at PAR 2) connections. Each discrete output can sink up to 35 mA maximum.

PAR 1 Discrete Input Connections

The input connections can be selected in setup as Clear, Tare, Print, Unit Selection, Blanking, Zero, Dynamic, Inhibit Keypad, x10 Weight, Accumulator Total, OK to Feed, OK to Discharge, or Advance Prompt Mode. These connections must be referenced to ground. A switch or relay contact may be used to make the connection. The remote device should hold the input at logic ground for at least 100 ms for all functions except blanking. OK to Feed and OK to Discharge Scale functions are performed when the input is held to ground (leading edge triggered). To blank the display, the selected input must be constantly held to ground. To enable the display again, release the connection to ground. The maximum recommended cable length between the remote device and the LYNX terminal is 10 feet (3 meters).

PAR1 Terminals



PAR 2 Discrete Output Connections

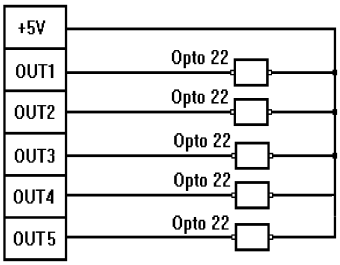
The output connections can be selected in setup as setpoints (single or two-speed with tolerances), Feed, Discharge, Gross/Net Mode, Center of Zero, Scale Motion, Over-capacity or Under Zero conditions. These outputs are negative true and "ON" when the selected condition exists. The panel enclosure has an internal high-level output option available to convert these signals to switch high level AC voltages.

The setpoints may be selected to operate from the gross weight, net weight or displayed weight. If net weight is selected, the outputs will be "OFF" until a tare has been taken then they will react as a standard setpoint.

The setpoints operate on the absolute value of the setpoint value so they can be used for both weigh-in and weigh-out processes. They can be referenced to the 5 or 8 volt DC supply (maximum 115 mA) available on the PAR2 connector or can sink up to 35 mA of current up to 30 volt DC supply voltage from an external source.

The maximum recommended cable length between the remote device and the LYNX terminal is 10 feet (3 meters).

PAR2 Terminals



Analog Output Option Wiring

The optional analog output provides output ranges of 4-20 mA, 0- 5 VDC, or 0-10 VDC, plus a discrete alarm output. This output uses a 16-bit D/A converter for a very precise output. The alarm output is an optically isolated, open collector type with a 30-volt maximum limit. This option can be factory- or field-installed in the harsh environment, filling, and panel-mount enclosures. The field installation kit (0917-0225) includes detailed instructions on installation of the kit.

Analog Output J1

6	+5V	Power Supply
5	Alarm	Alarm Output
4	0-10V	0-10V Analog Output
3	0-5V	0-5V Analog Output
2	GND	Signal Ground
1	4-20mA	4-20mA Analog Output

The recommended wiring for the analog output is 2 conductor, 20 GA available from METTLER TOLEDO as part number 510220190 (equivalent to Belden #8762). The following table shows the recommended load resistance for the input device and the recommended maximum cable length:

Output	Input Device Resistance	Maximum Cable Length
0-5 VDC	100kΩ Minimum	50 feet (15 m)
0-10 VDC	100kΩ Minimum	50 feet (15 m)
4-20 mA	500Ω Maximum	1000 feet (300 m)

BCD Output Option Wiring

The optional LYNX BCD Output Option for the panel mount version provides six decades of TTL compatible BCD data for use by other devices. Also included are inputs for hold data, demand update, and inhibit motion detection. Additional status outputs include motion, net mode, over capacity, and under zero. Connection is via a 50-pin connector on the rear panel. This option may be factory- or field-installed in the LYNX panel mount enclosure only. The field installation kit (0917-0227) includes detailed instructions. The BCD output of the LYNX terminal is compatible with the BCD outputs available in earlier generations of METTLER TOLEDO terminals such as the 8130, 8132 and 8142. The BCD cable should be the shortest possible length, routed away from higher level wiring and should not exceed ten feet (3 m) to avoid erroneous operation due to noise.

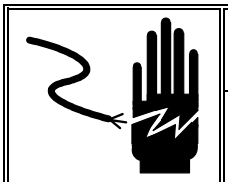
The following table illustrates the BCD connector J-1 pin designations:

PIN	SIGNAL	PIN	SIGNAL
1	10,000's	26	+5VDC, isolated, 100mA Maximum
2	40,000's	27	Gate 100,000's
3	80,000's	28	200,000's
4	Gate 10,000's	29	100,000's
5	20,000's	30	Chassis Ground
6	1,000's	31	400,000's
7	4,000's	32	800,000's
8	8,000's	33	Motion Status Output (HI = motion)
9	Gate 1,000's	34	Net Status Output (HI = net)
10	2,000's	35	no connection
11	100's	36	no connection
12	400's	37	Blank Input (HI = Blank)
13	800's	38	no connection
14	Gate 100's	39	Demand Input (LO = demand)
15	200's	40	Sync Output (LO = Data Invalid)
16	Gate 10's	41	Ground
17	10's	42	Ground
18	40's	43	Over Status Output (HI = over)
19	80's	44	Under Status Output (HI = under)
20	20's	45	no connection
21	Gate 1's	46	no connection
22	1's	47	no connection
23	4's	48	no connection
24	8's	49	Hold Input (LO = hold)
25	2's	50	Motion Detect Inhibit Input*(LO = Inhibit)

* W1 installed between pins 1 and 2 on the BCD board = Motion Detect Inhibit controlled by Pin 50. W1 installed between pins 2 and 3 = Motion Detect always inhibited.

High Level Setpoint Output Wiring (Panel Mount)

The optional LYNX High Level Setpoint Outputs provide high-level AC interfacing (28 - 280 VAC, 1 AMP) for standard low-level discrete outputs. Up to five output modules can be factory- or field-installed in the output board (panel mount only). AC connections are made via a 10-position terminal strip on the back panel. Other output modules (DC) are available from METTLER TOLEDO for installation in the output board to control DC rather than AC voltage. NOTE: This option is always installed in the harsh environment filling enclosure version.

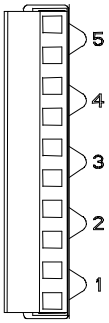


WARNING

OPTO 22s ARE SUPPLIED WITH AUXILIARY POWER. REMOVING INPUT POWER DOES NOT REMOVE AUIXLIARY POWER. USE CAUTION WHEN TESTING EQUIPMENT WITH POWER APPLIED.

There are three available field installation kits: model number 0917-0229 with one Output Module, 0917-0237 with three Output Modules, or 0917-0238 with five Output Modules. These kits include detailed instructions for installing the kit.

The following diagram illustrates the High Level Setpoint Output wiring. Use the two cable ties (P/N 095915 00A) supplied to secure and provide strain relief for the wires.



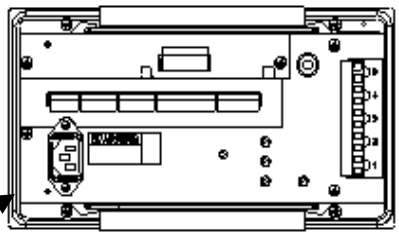
High Level Output 5
High Level Output 4
High Level Output 3
High Level Output 2
High Level Output 1

Figure 1-7

Connect the Power Cable

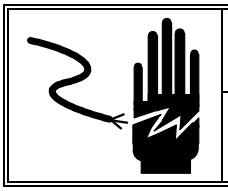
A power cord is provided with the harsh environment LYNX terminal. Connection to the panel mount LYNX terminal must be made at installation. The AC power cord connection must be plugged in for panel mount models:

Be sure to confirm that the data tag on the LYNX terminal indicates the appropriate voltage prior to applying power.



Power Line Connector

Figure 1-8 Power Connections - Panel Mount Model

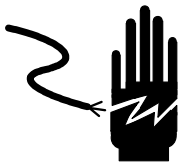


WARNING

DO NOT APPLY AC POWER TO THE TEMRINAL AT THIS TIME.

Apply Power

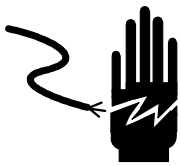
Following the connection of all external wiring AND configuration of circuit board jumpers and switches, power can be applied to the LYNX terminal. Visually inspect the unit to verify that these steps have been properly carried out, then apply power.



WARNING

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

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



WARNING

AC POWER SOURCES MUST HAVE PROPER SHORT CIRCUIT AND OVER CURRENT PROTECTION IN ACCORDANCE WITH LOCAL AND NATIONAL ELECTRICAL REGULATIONS. FAILURE TO PROVIDE THIS MAY RESULT IN BODILY INJURY.

Power-up Sequence

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

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

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

Specifications

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

Standards Compliance

UL and cUL Listing

The LYNX terminal has been tested and complies with UL 1950 and CSA 22.2 No. 950. They carry the UL and cUL labels.

CSA Certification

The LYNX terminal is designed to meet CSA standard C22.2 No 143-1975, Office Machines.

Weights and Measures Approval (U.S.)

The LYNX terminal meets or exceeds requirements for Class III, or IIIL devices. Certificate of Conformance number 95-033 was issued under the National Type Evaluation Program of the National Conference on Weights and Measures for approval.

Conducted and Radiated Emissions (RFI)

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

Radio Frequency Interference Susceptibility

The LYNX terminal meets USA, Canadian, and EC requirements for RFI susceptibility as listed in the following table 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
144 MHz	N/A	N/A	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 LYNX terminal meets NIST H-44, Canadian Gazette Part 1, and OIML-SP7/SP2 line voltage variation specifications as listed in the following 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	102 187 204	120 220 240	132 242 264	58.8 49.0 49.0	60 50 50	61.2 51 51

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