METTLER TOLEDO Xpress

STANDARD FLOOR SCALE

OPERATION & SERVICE MANUAL

Models XFS-XIF

ABOUT THIS MANUAL AND MT XPRESS

Thank you for purchasing an **MT Xpress** product.

All of our equipment is assembled and packed with great care. If you should find any incorrect item, please contact your **Xpress** Dealer immediately.

This **MT Xpress** product was developed, produced, and tested in a METTLER TOLEDO facility that has been audited and registered according to international ISO 9001 quality standards and ISO 14000 environment control program. Properly used and maintained, this product will provide years of accurate weighing. Handle it as you would any piece of fine electronic equipment.

Please READ this manual BEFORE operating or servicing this equipment. Follow the instructions carefully and save this manual for future reference.

We at **MT Xpress** want to make sure you received the product you expected. It is important to us that you are satisfied with your purchase. If there is anything we can help you with, or if you are not satisfied with either your product or the services received from the **Xpress** representative, let us know.

How can you reach us?

XPRESS CUSTOMER CARE CENTER, USA

24/7 Information and Support: www.mt.com/xpress
xpress@mt.com

8 AM to 8 PM EST Toll Free: 1-866-MTXPRESS

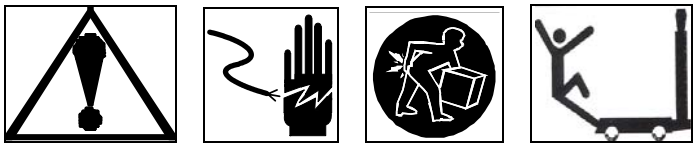
Xpress
Mettler-Toledo, Inc.
60 Collegeview
Westerville, OH 43081

FCC Approval

This device complies with part 15 of the FCC Rules. Operation is subject to the following two 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.

CONTENTS

SAFETY NOTICE



Product safety is a fundamental concern at MT Xpress. Use common sense and follow the simple precautions listed below to ensure your safety and to optimize the use and performance of this product.

- Read this manual before operating or servicing this product. Save this manual for future reference.
- Observe safety warnings located throughout this manual.
- Use caution when lifting or moving heavy equipment.
- This product should only be serviced by qualified personnel. Exercise care when moving, testing, or adjusting this product.
- Disconnect all power to this product before installing, servicing, or cleaning.
- Use only MT Xpress parts for repair.
- Observe electrostatic handling precautions for electronic components. Allow at least thirty (30) seconds after power is disconnected to allow charges to dissipate before servicing any electronic components.
- Allow the product to stabilize to room temperature before connecting the power.

FAILURE TO FOLLOW THESE PRECAUTIONS COULD RESULT IN DAMAGE TO OR DESTRUCTION OF THE EQUIPMENT, OR BODILY HARM.

PREPARING THE SCALE FOR USE

Xpress Floor Scales are designed to meet the real world requirements of industrial material handling applications. The Xpress Standard Floor Scale is a fully electronic scale for top-of-the-floor installation. It meets or exceeds all metrological performance characteristics for Class III, Nmax = 5,000 (NIST Certificate of Conformance pending). It is capable of resolutions up to 5,000 divisions for legal applications (the precalibrated Xpress package has this configuration).

The Floor scale indicator, XIF, is a rugged, reliable electronic weighing indicator in an IP65 washdown enclosure designed for easy operation in washdown applications.

This manual provides essential information for installing, programming, and maintaining of the Xpress Standard Floor Scale. Please review this manual carefully.

UNPACKING AND ASSEMBLY

Thank you for purchasing an MT Xpress product. Please inspect the package immediately upon receipt. If the box is damaged, check for internal damage and file a freight claim with the carrier if necessary. If the container is undamaged, open the box, remove the scale and place it on a solid, flat surface. Please keep the packing material and shipping insert in case you need to return the scale to an Xpress representative.

Package contents for all Xpress Standard Floor Scales include:

Product
- Xpress Standard Floor Scale
- Xpress Indicator

Documents
- Quick Start Guide
- Installation Instructions

CD-ROM
- Operation & Service Manual

1. When you receive the Xpress Standard Floor Scale, inspect it to make sure that it was not damaged during shipping.
2. After placing the scale in its final location, use a screwdriver to adjust each leveling foot so that all four feet touch the floor.
3. When the scale platform is level, tighten the hex nut on each foot to lock the feet in place against the load cells.
4. NOTE: Do not apply torque to the load cells.
5. If the Xpress floor scale is packaged with an Xpress indicator, continue to step 6. If it is not packaged with an Xpress indicator, follow the instructions on this card for instrument cable wiring and calibration, and then finish with step 7.
6. Place the Xpress indicator on a desk or attach it to a wall with the optional wall-mount bracket. Plug the round connector from the power transformer into the side of the indicator. Plug the power transformer into a 120V AC outlet (indicator can also operate on batteries). To power up the indicator, press the On/Off (PRINT) key and hold it for three seconds.
7. Check the scale to make sure that it is working properly. Place a known load or test weight equal to half the scale's rated capacity on the platform. If the recommended test weight is not available, use as much weight as possible to verify proper operation. If the scale indicator reads incorrectly, contact your authorized Xpress representative for help.

POWER UP/DOWN SEQUENCE

TURN ON: Press and hold the On/Off key until the indicator turns on.

TURN OFF: Press and hold the On/Off key until the indicator displays "Off", then release to power down the instrument.

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

While the display is checked by displaying all numbers 0-9, a diagnostic self-test is performed on the memory and microprocessor. An error message is displayed if any component fails the test.

- The program number [125362] is shown next, followed by the revision [Sr. 1.30].
- If everything tests okay, the indicator will show [0] on the display.
- The power-up sequence requires a few seconds to complete.

YOUR XPRESS SCALE AT A GLANCE

DISPLAY

KEYPAD

Key	Name	Function
→0←	ZERO	Captures a new center of zero if the indicator is in gross mode and weight on the scale is stable. The center of zero reference captured by the ZERO key is temporary and is lost when indicator is turned OFF.
→T←	TARE	Subtracts the weight of the object on the scale platform from subsequent indications of weight. This is most often the weight of an empty container. This key is also used to clear the previously entered tare value if the scale is in net mode.
F	FUNCTION	The first function is **unit switch**. Quickly pressing and releasing will switch the unit between "Lb" and "Kg" mode. The second function will turn on/off the **backlight**. Manually press and hold the button for 3 seconds to toggle the backlight between on and off.
	PRINT	The first function will turn the indicator on and off: **Turn on**: Press the key to turn on the indicator. **Turn off**: In normal weighing mode, press and hold the key until "OFF" is displayed on the screen. Release the key to turn off the indicator. The second function is used to **transmit data** from the serial port according to the data output configured in setup. The indicator processes a print command when weight on the scale is stable.

CURSORS (LCD)

Cursor	Description
NET	Indicates the displayed value represents net weights.
B/G	Indicates the displayed value. Represents gross weight.
->0<-	Indicates the indicator is within +/- .25 increments of the center of gross or net zero.
~	Indicates the scale is in motion according to the motion sensitivity, which is set in setup mode.
Battery	Indicates low-battery condition. The battery should be replaced when the battery symbol appears.

OPERATING YOUR SCALE

STRAIGHT WEIGHING

Weighing Operations

Preparation:

Turn on the indicator and watch whether the display of the indicator is normal:

- When there is no load on the floor scale, the indicator displays "0 kg"
- When there is load on the floor scale, the indicator displays the weight

Backlight On/Off

Press the FUNCTION key until the backlight on

Unit of Measure Switching

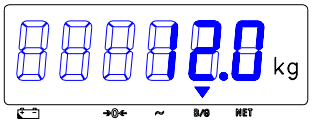
The indicator supports unit-of-measure switching if the weigh unit is calibrated as lb or kg. To switch units, quickly press the **FUNCTION** (F) key. The indicator displays the alternate unit-of-measure and adjusts the increment size and decimal point accordingly depending on the soft switch setting and calibrated units.

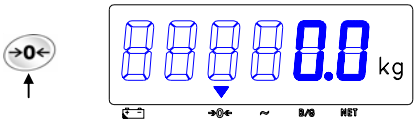
Print Operations

The Print function and data output formats are configured in programming function mode F3. In demand mode a print command can be initiated by pressing the **PRINT** key. While receiving an ASCII Print command, the indicator transmits the data through the serial port and the data is printed according to the data output configuration. Demand printing is disabled while the scale is in motion or in expanded display mode.

RE-ZERO FUNCTION

If Push-button Zero is enabled, press the ZERO →0← key to establish a new zero. Weight on the scale must be within the zero capture range.

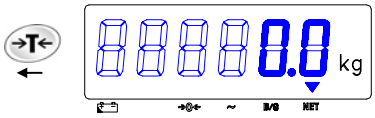




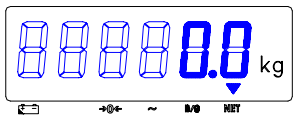
Scale captures the new ZERO

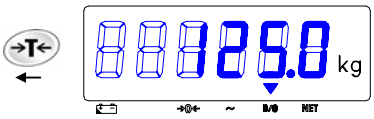
TARE OPERATIONS

The indicator supports the following tare and clear operation:



The indicator displays the net weight





The indicator displays the gross weight

CLEANING AND MAINTAINING YOUR SCALE

DAILY CHECKS AND MAINTENANCE

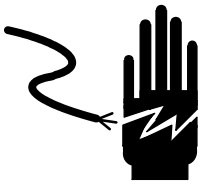
A daily check of the floor scale can limit wear and tear of the unit.

CLEANING OF THE INDICATOR

Periodically clean the keyboard and cover with a soft clean cloth that has been dampened with a mild window cleaner or detergent. DO NOT USE ANY TYPE OF INDUSTRIAL SOLVENT OR CHEMICALS. DO NOT SPRAY CLEANER DIRECTLY ONTO THE UNIT.

SERVICING YOUR SCALE

For the following services, please contact your **Xpress** representative at www.mt.com/xpress.



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.

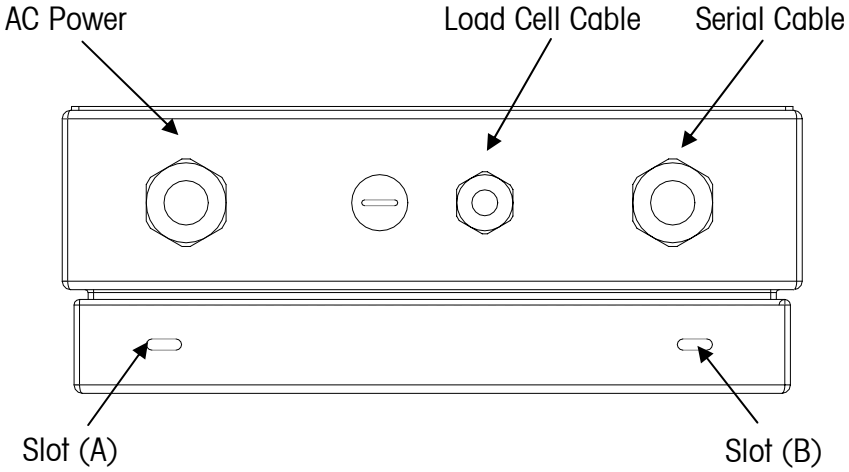
CAUTION

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 DISCONNECTION'S ARE MADE. FAILURE TO OBSERVE THESE PRECAUTIONS COULD RESULT IN DAMAGE TO OR DESTRUCTION OF THE EQUIPMENT, OR BODILY HARM.

ACCESSING THE INDICATOR

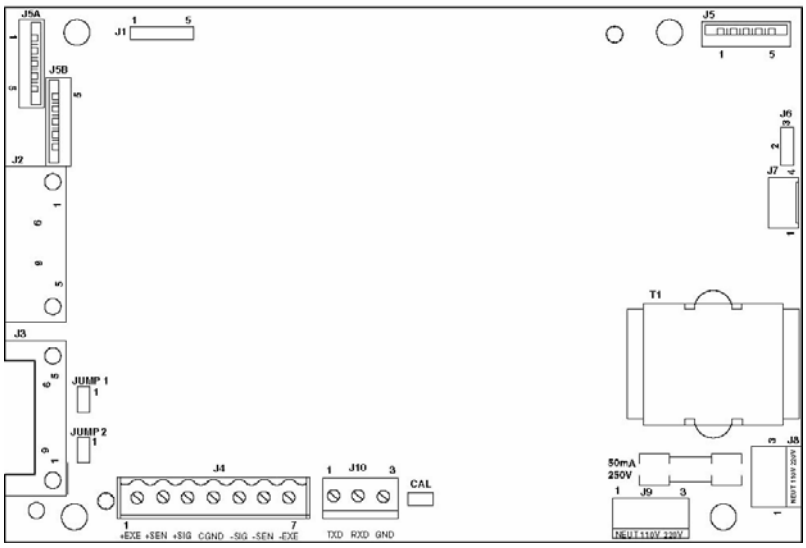
To access the Controller PCB for internal wiring and setting switches:

1. Separate the front panel from the enclosure by inserting the tip of a flat-blade screwdriver into one of the two slots on the bottom of the front panel assembly.
2. Gently push in toward the enclosure. You should hear a quiet "pop" when the cover has been released.
3. Push in on the side of the slot closest to the bottom of the cover. Repeat for the other slot.
4. Lift the bottom of the front panel out until it completely clears the enclosure.
5. 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 a wire cable at the bottom. The next figure shows the location of the slots (A), Load Cell Connection, Serial Cable, AC power cable.



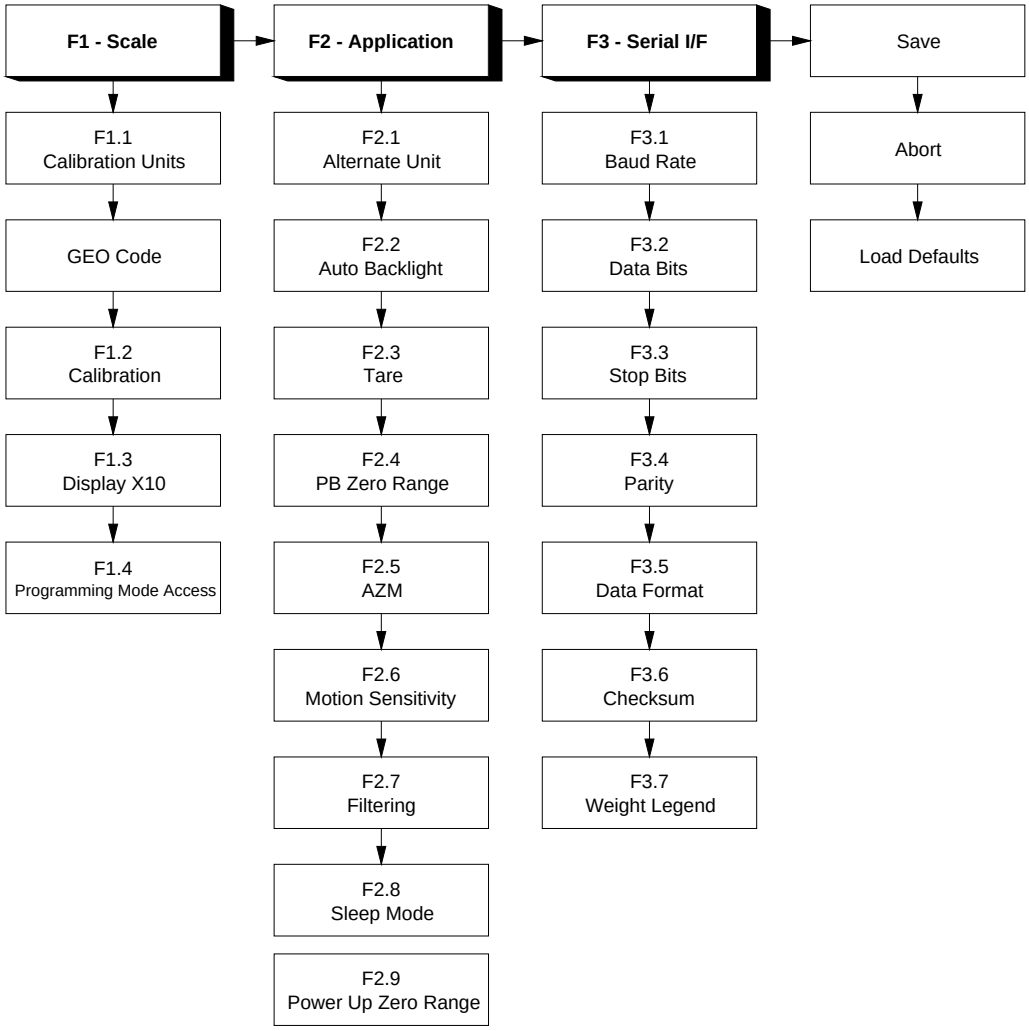
ENTERING THE PROGRAM MODE

In order for you to access the program blocks that allow you to program the indicator, the CAL jumper must be in place shorting the two pins on the Controller PCB. Refer to the following figure for the CAL position. To configure the program blocks, you must enter the programming mode by pressing and releasing the **PRINT** and **ZERO** keys simultaneously.



PROGRAMMING

The XIF indicator contains various program blocks and sub-blocks which can be configured to determine how a scale will function. An overview of the programming mode is shown here.



KEY FUNCTIONS

Should you need to reconfigure the indicator, you can use the following keys to configure the program blocks, which control the following functions in the indicator.

Key	Function	Description
	ZERO	Back up to the previous step.
	TARE	Moves the data entry position one digit to the left.
	FUNCTION	Increments the numeric data entry digit and/or allows the programmer to view the next display in a selection list.
	PRINT	Accepts / terminates a data entry.

ENTERING AND CONFIGURING PROGRAM BLOCKS

Once the [F1] prompt is displayed, use the **PRINT** key to enter the block or the **FUNCTION** key to skip to the next block. The **ZERO** key is used to go back to the previous block.

Once **PRINT** is pressed, the indicator advances to the first parameter in the F1 program block. The display shows the sub-block number and the current value setting. Press **PRINT** to accept the value and advance to the next sub-block or press the **FUNCTION** key to toggle through the choices until the desired selection is displayed.

After the desired selection is displayed, press the **PRINT** key to accept the value. Continue this procedure throughout the setup routine until all required changes have been made.

EXITING THE PROGRAM MODE

At the end of all the program blocks, there is the SAVE program block. In this block you can use the **FUNCTION** key to select SAVE, ABORT, or DEFAULT.

SAVE The indicator will save all the changes you have made to the program blocks and then exit setup.

ABORT All changes will be discarded and the original programming will remain.

DEFAULT All blocks, except those steps denoted by * in Default Settings Table on the following page are reset to the factory defaults.

INDICATOR DEFAULT SETTINGS

The following is a list of the factory default setup parameters in the indicator.

Step Function	Default	Description
F1.1	*	Calibration units – No default
GEO	*	Gravity adjust – No default
F1.2	0	Skip calibration
F1.3	0	Normal weight display
F1.4	0	Master Mode disable
F2.1	0	Alternative units = none (Unit Switch disable)
F2.2	0	Auto Backlit Disable
F2.3	0	Tare enable
F2.4	1	Push button zero enabled, 2% range
F2.5	1	Auto zero maintenance enabled within 0.5d window
F2.6	1	Motion sensitivity ± 1d
F2.7	0	No Filtering
F2.8	0	Sleep mode disable
F2.9	1	Auto zero capture at power up range of ± 2%
F3.1	9600	Serial output baud rate
F3.2	7	Data bits
F3.3	2	Stop bits
F3.4	2	Even parity
F3.5	2	Print format = single line gross-tare-net
F3.6	1	Checksum enable
F3.7	0	No legend for gross weight field

CALIBRATION

When the floor scale is used in legal-for-trade commercial applications, it must be calibrated with certified test weights to the capacity and increment size shown on the data plate. The capacity and increment size is selectable in the programming mode in sub-block F1.2. Calibration is also completed in sub-block F1.2.

Function 1 (F1) Scale Block

This program block allows the user to set and calibrate the features that affect weighing performance.

[F1.1 2] CALIBRATION UNITS

Enter the value that corresponds to the type of test weights that will be used for calibration.

1 = lb
2 = kg
3 = g

[GEO 12] GRAVITY ADJUST

The indicator is calibrated with a GEO code of 12 at the factory. To adjust the factory calibration to your specific area, refer to the appendix for your GEO code. Enter the new GEO code and the calibration will automatically be adjusted for your desired location.

[F1.2 0] SCALE CALIBRATION

0 = Skip Calibration and proceed to F1.3
1 = Enter into the Calibration Sub-block.

[CAP] SCALE CAPACITY

"CAP" displays momentarily then current scale capacity is shown. This value is available for numeric entry editing. Press FUNCTION to clear the data before entering new data. The table below shows all possible selections for capacity and increments:

Increment Size	Scale Capacities (lb, kg, or g)											
0.001	1	–	–	2	–	3	4	5	6	–	8	10
0.002	2	–	3	4	5	6	8	10	12	15	16	20
0.005	5	6	–	10	–	15	20	25	30	–	40	50
0.01	10	12	15	20	25	30	40	50	60	–	80	100
0.02	20	24	30	40	50	60	80	100	120	150	160	200
0.05	50	60	––	100	–	150	200	250	300	–	400	500
0.1	100	120	150	200	250	300	400	500	600	–	800	1000
0.2	200	240	300	400	500	600	800	1000	1200	1500	1600	2000
0.5	500	600	–	1000	–	1500	2000	2500	3000	–	4000	5000
1	1000	1200	1500	2000	2500	3000	4000	5000	6000	–	8000	10000
2	2000	2400	3000	4000	5000	6000	8000	10000	12000	15000	16000	20000
5	5000	6000	–	10000	–	15000	20000	25000	30000	–	40000	50000

[Incr] INCREMENT SIZE

"Incr" displays momentarily then the current increment size is displayed for editing. Press the **FUNCTION** (F) key to toggle through valid selections.

[E SCAL] Empty scale platform and press **PRINT** to continue.

[15 CAL] Delay while initial is set (Display counts down.). If motion sensitivity is not disabled and motion is detected at this step, the display will show **[E 30].** Press **PRINT** and the display returns to the **[E SCAL]** prompt.

[Add Ld] Place test weight on the floor scale. Press **PRINT**.

[0000'0'] Enter test weight value. No decimal point is permitted. Maximum test weight is 100% of full scale capacity.

[15 CAL] Delay while span is set (Display counts down.). If motion is detected at this step then the display will show [E 30]. Press **PRINT** to return to the [Add Ld] prompt.

[CAL d] "Calibration done" is displayed momentarily.

[F1.3 0] EXPANDED DISPLAY

0 = Normal display mode
1 = Weight displayed in minors

[F1.4 0] PROGRAMMING MODE ACCESS
If CAL jumper is installed on the Controller PCB, this step has no effect, and the programming is always accessible.

If CAL jumper is not installed on the Controller PCB:
0 = No access to Master Mode
1 = Programming blocks F2 and F3 may be accessed to change the parameters. Programming block F1 may only be viewed.

Function 2 (F2) Scale Block

[F2.1 0] ALTERNATE UNITS
Select the unit of measure desired as a secondary unit.
0 = No unit switching
1 = lb
2 = kg

If the calibration unit is "kg ", the available choice is only "lb".
If the calibration unit is "lb" or 'g', the choice is only 'kg".
If unit switching is enabled, a quick press of the FUNCTION key will change the unit.

[F2.2 0] AUTO BACKLIGHT
0 = Backlight can only be turned on manually by pressing the FUNCTION key.
1 = The backlight turns on during motion and stays on for 6 seconds after no-motion.

The manual on/off is always available. If unit switching is enabled, press and hold the FUNCTION key for 3 seconds to turn the back light on. If unit switching is disabled, a quick press of the FUNCTION key will turn the backlight on and off.

[F2.3 1] TARE
0 = Tare disabled
1 = Tare enabled

[F2.4 1] PUSH-BUTTON ZERO RANGE
0 = Push-button zero disabled
1 = Enable push-button zero within +/- 2% of scale capacity
2 = Enable push-button zero within +/- 20% of scale capacity

[F2.5 1] AUTO ZERO MAINTENANCE (AZM)
Auto Zero maintenance automatically compensates for small changes in zero resulting from material build-up or temperature changes. This sub-block lets you select the weight range (+/-) around gross zero within which the indicator will capture zero. If residual weight on the scale exceeds the weight range, the indicator will not capture zero.
0 = No AZM
1 = AZM within 0.5d window
2 = AZM within 1d window
3 = AZM within 3d window

If AZM is disabled, the indicator will display weight after power-up. Otherwise, if the weight is not in zero-capture range, display shows [E E E] or [-E-E-E], until weight is within the capture range. AZM is disabled in NET mode.

[F2.6 1] MOTION SENSITIVITY SELECTION
The motion detection feature determines when a no-motion condition exists on the scale platform. The sensitivity level determines what is considered stable. Printing, pushbutton zero, and tare entry will wait for scale stability before carrying out the command.
0 = Motion detector disabled
1 = 1.0 d motion sensitivity
2 = 3.0 d motion sensitivity

[F2.7 0] FILTER
This function will compensate for environmental disturbances such as vibration or noise.
0 = NONE
1 = LIGHT
2 = NORMAL
3 = HEAVY

[F2.8 0] SLEEP MODE
0 = Disable
1 = Enable the sleep mode automatically after 5 minutes of stability.

[F2.9 1] POWER-UP ZERO RANGE
0 = Auto zero capture at power-up disabled.
1 = Auto zero capture at power-up range of +/- 2%.
2 = Auto zero capture at power-up range of +/- 10%.

Function 3 (F3) Interface Block

The following section will introduce the detail steps of configuring the RS232 output.

[F3.1 9600] BAUD RATE

[XXXX] XXXX = A selection list of 1200, 2400, 4800, or 9600 baud

[F3.2 7] DATA BITS
7 = 7 data bits
8 = 8 data bits

[F3.3 2] STOP BITS
1 = 1 stop bit
2 = 2 stop bits

[F3.4 2] PARITY
0 = No parity
1 = Odd parity
2 = Even parity

[F3.5 2] DATA OUTPUT FORMAT
0 = Toledo continuous with STX
1 = Demand, single line, displayed weight only
2 = Demand, single line, gross, tare, net
3 = Demand, three line gross, tare, net

[F3.6 1] CHECKSUM (Only if F3.5 = 0)
0 = No checksum
1 = Checksum

[F3.7 0] GROSS WEIGHT LEGEND
0 = No Legend
1 = B (bruto)
2 = G (gross)

Exit Sub-Block

There are three ways to exit the programming mode:

[SAVE] Press **PRINT** to accept the changes in the program block and exit programming.

[Abort] Press **PRINT** to ignore the changes in the program block and exit programming.

[DEFAULT] Press **PRINT** to reset all program block parameters to factory default data and exit programming.

GRAVITY ADJUSTMENT

The indicator has built in compensation provisions to allow factory calibration with destination correction capabilities to compensate for variances on gravitational forces. If the indicator is subjected to a different gravitational force at its destination location, this can be compensated for electronically by adjusting the geo value. The geo value has 32 settings. The geo value for any world location can be found in the geo value table in the appendix as long as the geographical coordinates and elevation above sea level are known.

KEYBOARD REPLACEMENT

- Disconnect the power source by either removing the six "C" cell batteries from the rear battery compartment and/or the AC power adapter.
- Remove the four screws securing the front and back portions of the cover.
- Disconnect the keyboard tail from the Controller PCB and discard the old front cover.
- Connect the keyboard tail of the new front cover to J5 of the Controller PCB.
- Secure the front cover to the back cover with the four screws.
- Apply power then press and hold the ON/OFF (**PRINT**) key for three seconds.
- Test the operation of the new keyboard.

CONTROLLER PCB REPLACEMENT

If the Controller PCB is suspected to be faulty, use the following procedure to replace the PCB.

- Disconnect the power source by either removing the six "C" cell batteries from the rear battery compartment and/or the AC power adapter.
- Remove the four screws securing the front and back halves of the cover.
- Disconnect the keyboard tail from the Controller PCB and set the front cover aside.
- Disconnect the battery harness from the Controller PCB.
- Disconnect the AC adapter harness from the Controller PCB.
- Remove the two hex standoffs from the side of the enclosure that secures the serial output connector to the back cover of the indicator.

- Remove the four screws that secure the Controller PCB to the back cover.
- Using proper static electricity precautions carefully remove the Controller PCB and place it in a protective static bag.
- Install the new Controller PCB using the same four screws removed in the previous step.
- Install the two hex standoffs to the side of the enclosure that secure the serial output connector to the back cover of the indicator.
- Reconnect the AC adapter and battery harnesses removed previously.
- Connect the keyboard tail of the front cover to J5 of the Controller PCB.
- Secure the front cover to the back cover with the four screws.
- Apply power to the indicator, then press and hold the ON/OFF (PRINT ) key for 3 seconds.
- Reprogram, recalibrate and test the operation of the new Controller PCB

BATTERY REPLACEMENT

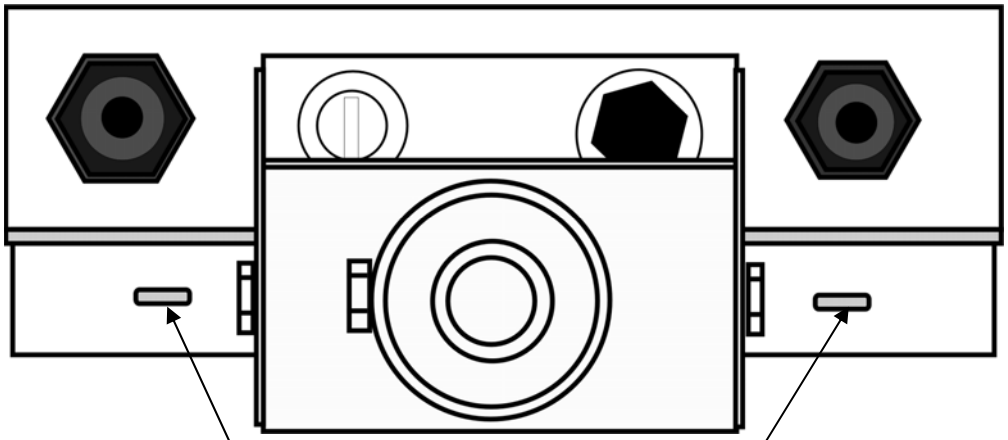
⚠ CAUTION

RISK OF EXPLOSION IF BATTERY IS
REPLACED BY AN INCORRECT TYPE OR
CONNECTED IMPROPERLY.
DISPOSE OF USED BATTERIES ACCORDING
TO LOCAL LAWS AND REGULATIONS.

The battery symbol (at the lower left of the display) is used to indicate low battery power. The cursor above the battery symbol will illuminate when there is approximately 15 minutes of operation remaining.

When the cursor is "on" above the battery symbol, change the batteries as soon as possible using the following instructions:

1. Open the battery door on the bottom-rear of the XIF terminal enclosure by pressing inward each of the two slots at the bottom of the terminal with a small screwdriver until you hear a "click" sound. If you don't hear the click, repeat the procedure while gently squeezing the enclosure.
2. Pull the battery door away from the terminal bottom first then top. Set the cover aside.
3. Carefully remove the six "C" cell batteries. Remove the clear plastic sleeves from each set of batteries. Set the plastic sleeves aside for future use.
4. Dispose of the used batteries according to local environmental and safety regulations.



Press here to unlock the battery cover
Shown from bottom perspective

5. Insert six new, or recharged, "C" cells, three each, into the plastic sleeve and place each sleeve into the terminal housing as shown below. Note the polarity of each battery. The polarity of the battery must correspond to the drawing below.

Battery Orientation

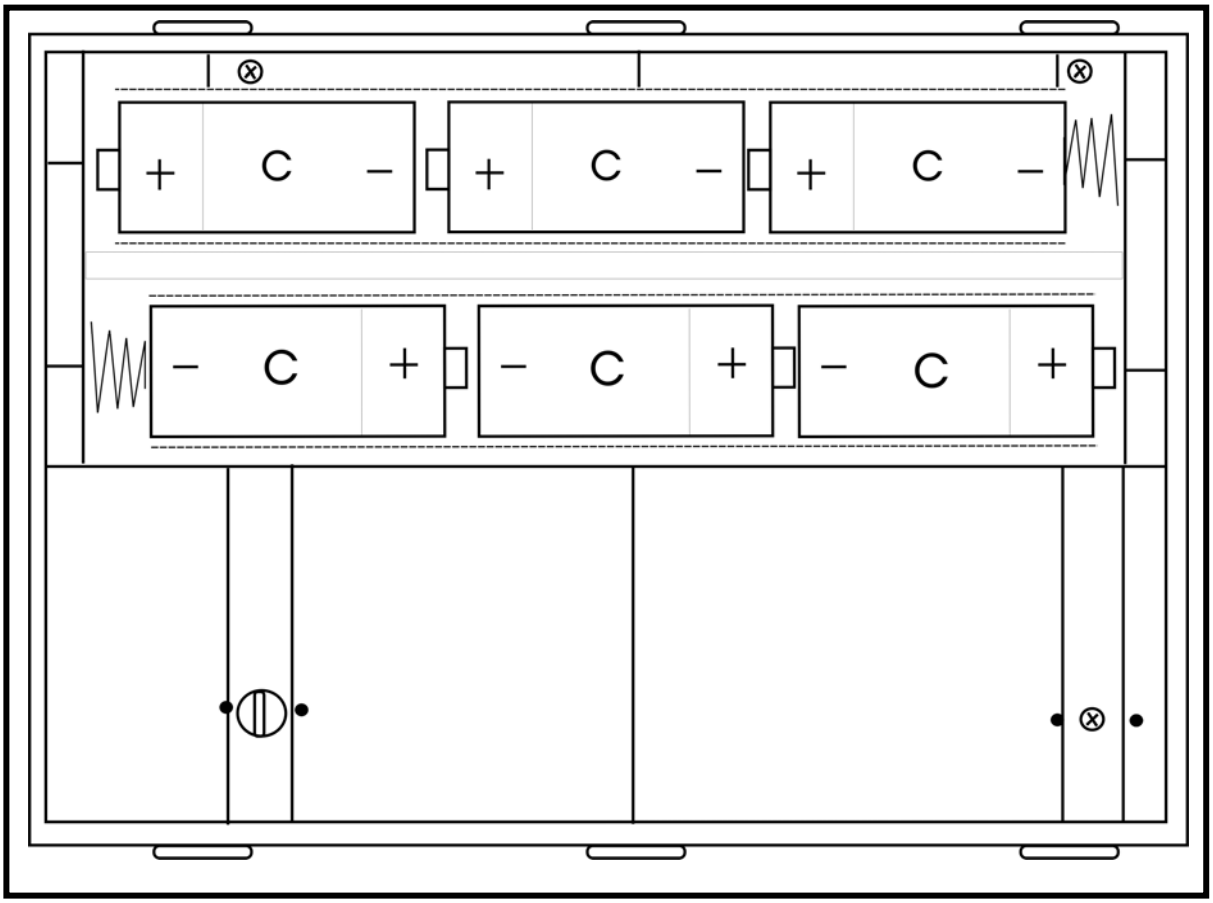


Figure: Shown With Rear Battery Panel Removed

6. Replace the battery cover by placing the cover top first back on the top of the terminal then the bottom. First press the top of the terminal cover against the terminal body, then press the bottom of the cover against the terminal body until you hear a distinctive click sound from both of the bottom retaining clips. Firmly squeeze the enclosure on both sides, and on the top and bottom, to insure that the enclosure is completely sealed.

7. Test the terminal for proper operation. If the terminal fails to operate reopen the battery compartment and insure that you have placed the batteries correctly as shown above.

8. Close the enclosure and switch on for proper operation

⚠ CAUTION

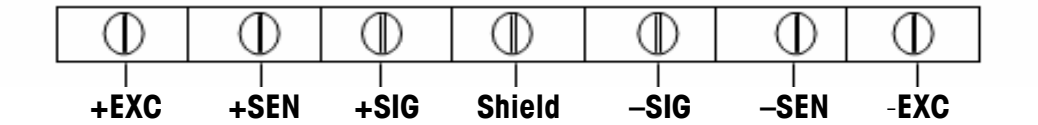
THE XID TERMINAL CANNOT RECHARGE BATTERIES. IF RECHARGEABLE BATTERIES ARE USED, THEY MUST BE EXTERNALLY RECHARGED WITH A COMMERCIALY AVAILABLE CHARGER THEN REINSTALLED INTO THE TERMINAL.

SERIAL PORT CONNECTIONS

The indicator provides an RS-232 port as standard. This port may be used to send data to a printer. The pin for the RS232 connection is J10 on the PCB on the right of the load cell connection terminal.

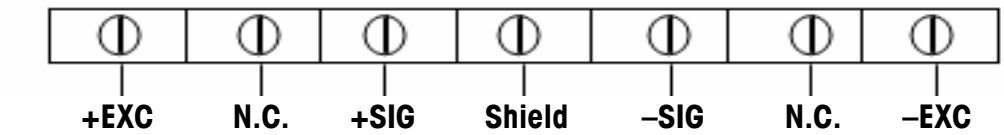
LOAD CELL INDICATOR WIRING

The following diagrams show the load cell terminal strip wiring for the indicator on PCB connector J-4.



Note that jumpers JUMP 1 and JUMP 2 on the Controller PCB are NOT shorting the pins in this configuration.

STANDARD 4-WIRE LOAD CELL COLOR CODE



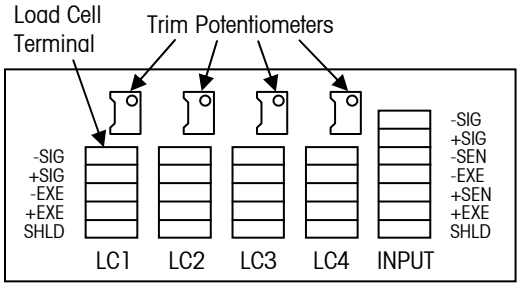
Note that jumpers JUMP 1 and JUMP 2 on the Controller PCB MUST BE shorting the pins in this configuration.

LOAD CELL FLOOR PLATFORM WIRING

- Remove the two screws from the junction box access cover on the side of the platform, and remove the cover.
- Route approximately 6" (150 mm) of the indicator cable through the junction box. Strip 1.5" (40 mm) of the outer covering from the end of the cable. Strip 0.25" (6 mm) of the covering from the end of each wire.
- Connect the indicator cable to the seven-position INPUT terminal strip on the PCB located on the inside of the junction box access cover (See the next figure and table for the terminal location and the wiring color codes.. To connect the wires, use the tip of a screwdriver to apply pressure to the lever on each spring-loaded terminal. Then insert the wire and release the lever.

Function	Indicator Cable Wire Color	Load Cell Wire Color
– Signal	Black	White
+ Signal	Green	Green
– Sense	Red	Not Used
– Excitation	Blue	Black
+ Sense	Yellow	Not Used
+ Excitation	White	Red
Shield	Orange	Braided

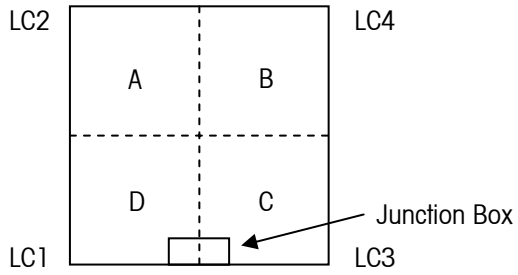
Indicator and Load Cell Wiring Codes



Junction Box PCB Layout

PLATFORM CALIBRATION (Shift Adjustment)

When you shift adjust a scale, you are adjusting the output voltage (signal) of each load cell so that all load cells in the system produce a consistent signal. Before shift adjusting the scale, check the scale's repeatability by placing a test weight on the same location on the platform several times to make sure that you get the same weight reading each time.



Top View of Scale

- The figure shows test weight locations (A, B, C, and D) at the center of each quadrant of the scale platform. Place a test weight, equal to half the rated scale capacity, at location A and record the weight reading. Then move the test weight to location B and record the weight reading. Continue until you have taken a weight reading at each of the four locations.
- Place the test weight at the location immediately clockwise from the location at which you got the lowest weight reading. Then adjust the trimming potentiometer for the load cell that corresponds to the corner of the scale where the test weight is positioned (see figure). Make the adjustment by turning the potentiometer until the weight reading matches the lowest reading.
- Proceeding clockwise, repeat the adjustment described in Step 2 for the next two test weight locations.
- Trimming potentiometers may interact with each other. Repeat Steps 1 to 3 until the weight readings at all corners of the platform are the same.
- Replace the junction box access cover.

GENERAL TROUBLESHOOTING AND MAINTENANCE

If operational difficulties are encountered, first obtain as much information as possible regarding the problem. Failures and malfunctions often may be traced to simple causes such as loose connections, low battery power, or improper setup. Additional troubleshooting is best performed by substitution. A PCB or load cell believed to be defective may be checked by replacing the suspected part with a known "good" part and then observing whether the problem is corrected.

APPENDIX

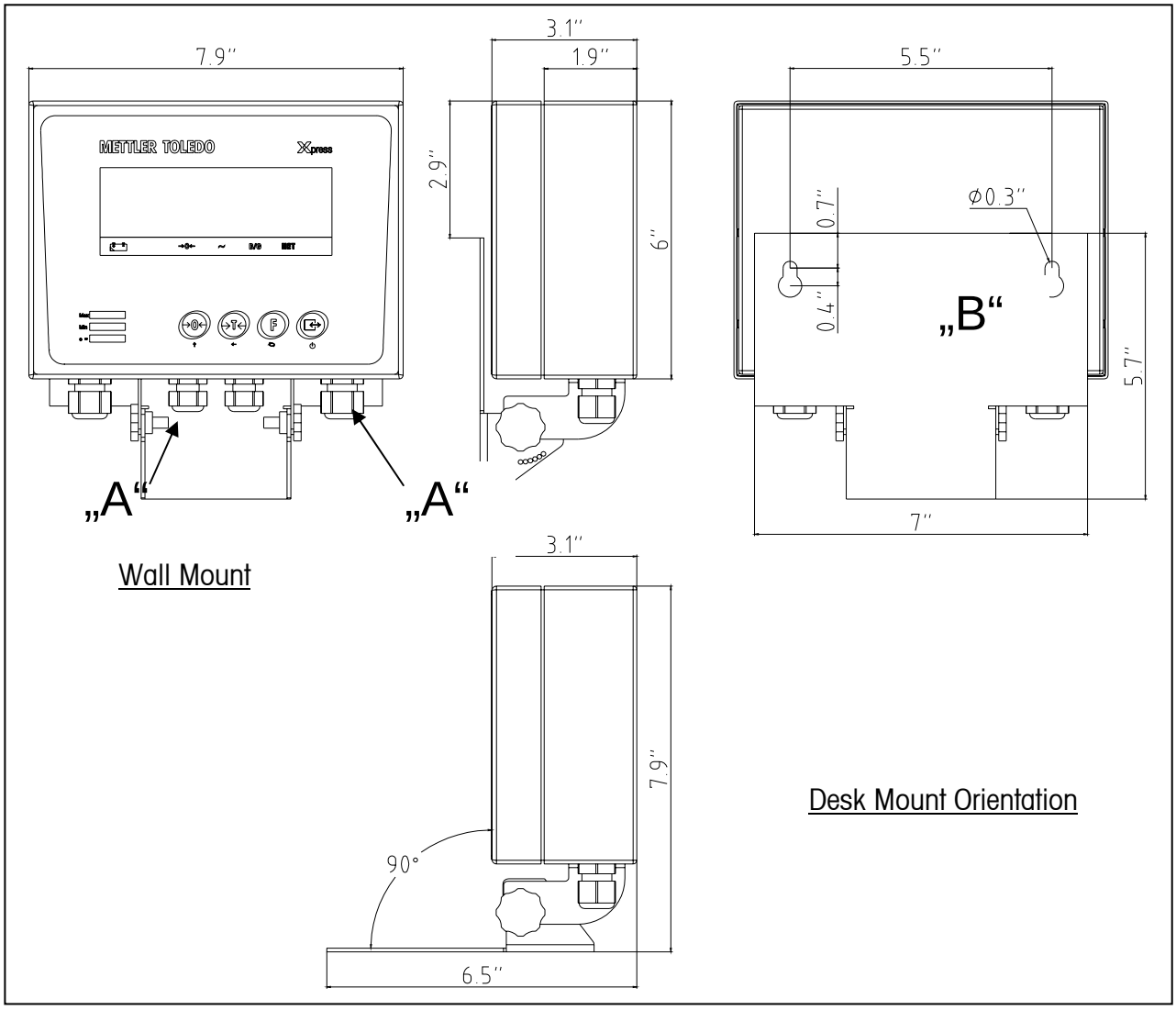
ERROR CODES

The table below lists the error messages that may be displayed by the indicator.

Error Message	Description	Probable Action
E1	ROM error	Check power supply voltages. Replace Controller PCB.
E2	Internal RAM error	Check power supply voltages. Replace Controller PCB.
E7	EEPROM data incorrect.	Check power supply voltages. Replace Controller Logic PCB.
E30	Scale in motion during calibration	Press **PRINT** to return to [E SCAL] or [ADD LD].
E32	Insufficient calibration test weight or insufficient signal from load cell	Press **PRINT**, then add additional test weight. Recalibrate using more test weight.
E34	Calibration Test Weight too large	Press **PRINT**. Use test weight less than 100% of scale capacity.
EEE	Scale not zeroed at power up	Auto Zero on power-up (F2.5) is enabled and the weight is greater than zero. Zero the scale or remove the weight until zero is captured. Re-calibrate the scale.
-EEE	Scale not zeroed at power up.	Auto Zero on power-up (F2.5) is enabled and the weight is on the platform. Add weight until zero is captured. (Put platform on). Re-calibrate the scale.
|-----|	Overload indication.	Weight on scale exceeds calibrated capacity by more than 9d. Decrease load on scale.
|-----|	Underload indication.	Weight on scale is below gross zero by more than 9d. Increase load on scale.

MOUNTING THE XIF TERMINAL

Mounting Instructions for concrete and cement block walls



Concrete Sleeve Anchor - example

Mounting Instructions for concrete and cement block walls

Recommended mounting bolt for poured concrete or cement block wall: Type: UL Listed concrete sleeve anchor, Size ¼" (6 mm), minimum embed ½" (12.7 mm), minimum pullout force of 500lb (266kg).

When mounting the product in cement block, concrete or similar surface, the anchor should be sized according to the recommended bolt size of ¼" (6mm).

CAUTION: Wear proper bodily protection, such as approved safety goggles, ear protectors and gloves

1. Place the terminal on a workbench and carefully remove the two hex screws ("A" above) that hold the terminal to the mounting plate. Set the terminal and screws aside.

2. Measure two holes horizontally spaced 5.5" (140mm) apart or use the (included, "B" above) mounting bracket to mark the mounting holes' location on surface that will support at least 20 lbs (9.0kg).

3. Drill a hole through each of the measurements/locations you marked in step 2 using a carbide bit conforming to ANSI B94, 12-77 with the same size bit as anchor diameter (typically 5/16" (8mm)). The depth of the hole should be deeper than the □" (12mm) embed depth listed in step 2.

4. Clean the holes with a wire brush.

5. Make sure the nut is flush with the top threaded part of anchor and insert the anchor assembly through the mounting bracket and mounting holes and into the base material.

6. Push anchor assembly until washer is snug against the mounting bracket "B".

7. Insure that anchor bolts engage the top center of the two pear shaped holes in the mounting bracket.

8. Turn both nuts, by hand, until they are snug against the mounting plate.

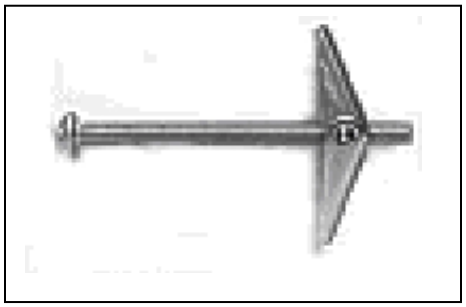
9. Tighten each nut with a wrench (use a screwdriver for flat/round heads), approximately three or four full turns or until anchor is tightly secured to the base material.

10. Reinstall the terminal using the two hex head screws "A" removed in step one. Tighten both screws once you have positioned the terminal to the optimum-viewing angle. Once you have tightened the screws back them off ½ turn to ensure easy removal of the terminal from the wall.

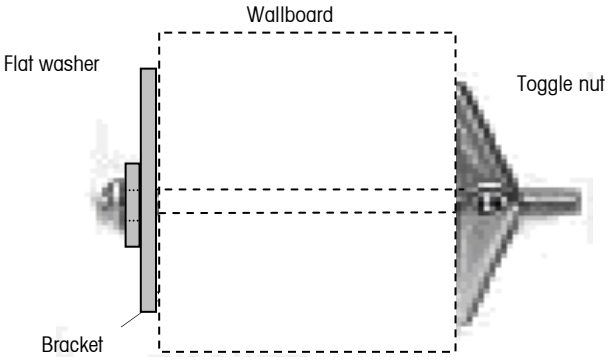
11. Periodically inspect the terminal to insure that it is securely anchored to the wall. If not, remove the terminal and retighten the mounting anchor bolts.

Mounting Instructions wallboard and drywall

Flat washer - example



Toggle Bolt and Nut - example



Installed

Recommended mounting bolt for wallboard and drywall: Type: Toggle Bolt, ¼" (6mm), minimum length 2-1/2″ to 3″ depending on wall thickness, pullout force of 900lb (450kg).

When mounting the product in wallboard, drywall or similar surface, the anchor should be sized according to the recommended bolt size of ¼" (6mm).

CAUTION: Wear proper bodily protection, such as approved safety goggles, ear protectors and gloves

1. Place the terminal on a workbench and carefully remove the two hex screws ("A" above) that hold the terminal to the mounting plate. Set the terminal and screws aside.
2. Measure two holes horizontally spaced 5.5″ (140mm) apart or use the (included, "B" above) mounting bracket to mark the mounting holes' location on surface that will support at least five (20) pounds (9.0kg).
3. Drill a hole through each of the measurements/locations you marked in step 2 using a bit with the same size bit as anchor diameter (typically 5/8″ (16mm)). The depth of the hole should penetrate the wallboard.
4. Clean the holes with a cloth moistened with water.
5. Unthread each toggle bolt and add a ¼″ (6mm) inside diameter, flat washer with an outside diameter of ½″ (12mm).
6. Push the washers to the inside of the heads of both bolts.
7. Push the free end of each bolt through the holes in the mounting bracket.
8. Replace each toggle nut and thread on to each bolt approximately 1″ (25mm). Insure that the ends of the nut folds toward you when you squeeze them.
9. Press both toggle nuts through each opening you created in the wall you should hear a "click" sound when each is opened.
10. Insure that each bolt and washer engage the top center of the two pear shaped holes in the mounting bracket.

11. Pull the bracket away from the wall until you feel the toggle nut contact the inside of the wall.

12. Turn both screws, by hand, until they are snug against the mounting plate.

13. Tighten each screw with a wrench (use a screwdriver for flat/round heads), approximately two or three full turns or until the toggle nuts are to the base material on the inside of the wall, then.

14. Reinstall the terminal using the two hex head screws "A" removed in step one. Tighten both screws once you have positioned the terminal to the optimum-viewing angle. Once you have tightened the screws back them off ½ turn to ensure easy removal from the wall.

15. Periodically inspect the terminal to insure that it is securely anchored to the wall. If not, remove the terminal and retighten the mounting anchor bolts.

MAIN SPECIFICATIONS

- Capacity: 2500lb, 5000lb,10000lb
- Accuracy class: OIML (III)
- Indication stabilizing time: < 10s
- Tare range: 0 –100% F.S.
- Zero range: ± 2 % F.S. or ± 20% F.S.
- Scale power supply: 6V –10Ah storage battery
- Battery Life: 55 – 60 hours
- Operating temperature:-10°C to 40°C (14°F to 104°F)
- Operating humidity: 10% to 95% relative humidity, non-condensing

SPECIFICATIONS OF LOAD CELL

- Model: SBC(S)-1
- Input resistance: 382 ± 4 Ω
- Output resistance: 350 ± 1 Ω
- Sensitivity: 2 ± 0.002 mv/v
- Non-linearity: ± 0.02% F.S.
- Non-repeatability: ± 0.01% F.S.
- Creep(30 min): ± 0.02% F.S.
- Safe overload: 125% F.S.
- Ultimate overload: 250% F.S.

SPECIFICATIONS AND FUNCTION OF INDICATOR

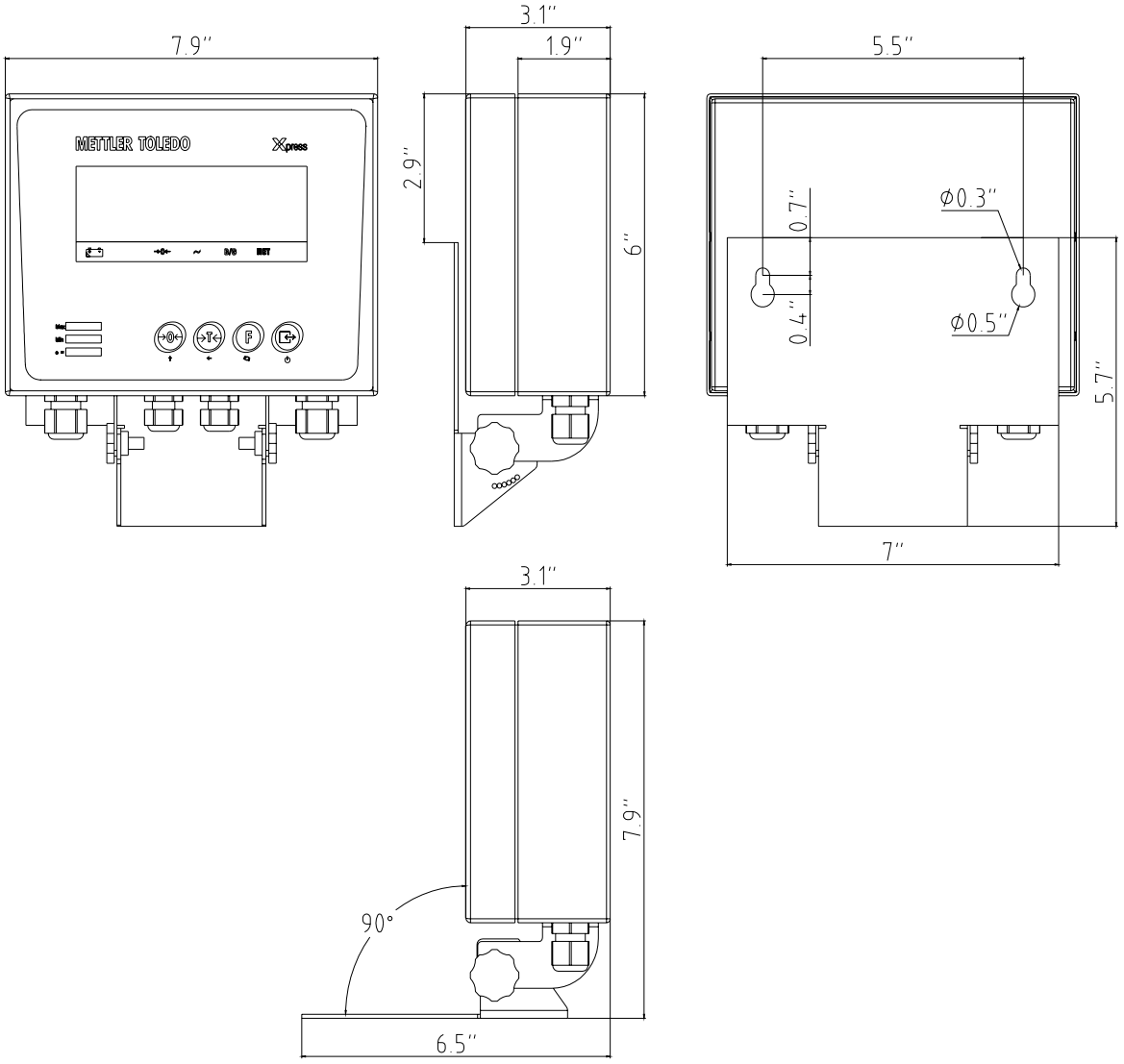
- Display: 6-digit, 25 mm/1 in. tall, high contrast, LCD
- Keypad: 4 color-coded, tactile feel keys: ZERO, TARE, FUNCTION, and PRINT
- Data Output: ASCII via RS-232 standard
- Weighing Units: pounds, kilograms, and grams
- Keyboard calibration and setup
- Push-button tare
- Push-button zero
- Push-button print
- Auto Zero Maintenance (AZM)
- Auto Zero Capture (AZC) at power up
- Low battery indication
- Auto power down

GEO VALUE TABLE

Use the following geo codes if you relocate the floor scale to a site other than the original location where it was calibrated.

Northern and Southern latitude in degrees and minutes	Height above sea-level in meters										
	0 325	325 650	650 975	975 1300	1300 1625	1625 1950	1950 2275	2275 2600	2600 2925	2925 3250	3250 3575
	Height above sea-level in feet										
	0 1060	1060 2130	2130 3200	3200 4260	4260 5330	5330 6400	6400 7460	7460 8530	8530 9600	9600 10660	10660 11730
0° 0′ — 5° 46′	5	4	4	3	3	2	2	1	1	0	0
5° 46′ — 9° 52′	5	5	4	4	3	3	2	2	1	1	0
9° 52′ — 12° 44′	6	5	5	4	4	3	3	2	2	1	1
12° 44′ — 15° 6′	6	6	5	5	4	4	3	3	2	2	1
15° 6′ — 17° 10′	7	6	6	5	5	4	4	3	3	2	2
17° 10′ — 19° 2′	7	7	6	6	5	5	4	4	3	3	2
19° 2′ — 20° 45′	8	7	7	6	6	5	5	4	4	3	3
20° 45′ — 22° 22′	8	8	7	7	6	6	5	5	4	4	3
22° 22′ — 23° 54′	9	8	8	7	7	6	6	5	5	4	4
23° 54′ — 25° 21′	9	9	8	8	7	7	6	6	5	5	4
25° 21′ — 26° 45′	10	9	9	8	8	7	7	6	6	5	5
26° 45′ — 28° 6′	10	10	9	9	8	8	7	7	6	6	5
28° 6′ — 29° 25′	11	10	10	9	9	8	8	7	7	6	6
29° 25′ — 30° 41′	11	11	10	10	9	9	8	8	7	7	6
30° 41′ — 31° 56′	12	11	11	10	10	9	9	8	8	7	7
31° 56′ — 33° 9′	12	12	11	11	10	10	9	9	8	8	7
33° 9′ — 34° 21′	13	12	12	11	11	10	10	9	9	8	8
34° 21′ — 35° 31′	13	13	12	12	11	11	10	10	9	9	8
35° 31′ — 36° 41′	14	13	13	12	12	11	11	10	10	9	9
36° 41′ — 37° 50′	14	14	13	13	12	12	11	11	10	10	9
37° 50′ — 38° 58′	15	14	14	13	13	12	12	11	11	10	10
38° 58′ — 40° 5′	15	15	14	14	13	13	12	12	11	11	10
40° 5′ — 41° 12′	16	15	15	14	14	13	13	12	12	11	11
41° 12′ — 42° 19′	16	16	15	15	14	14	13	13	12	12	11
42° 19′ — 43° 26′	17	16	16	15	15	14	14	13	13	12	12
43° 26′ — 44° 32′	17	17	16	16	15	15	14	14	13	13	12
44° 32′ — 45° 38′	18	17	17	16	16	15	15	14	14	13	13
45° 38′ — 46° 45′	18	18	17	17	16	16	15	15	14	14	13
46° 45′ — 47° 51′	19	18	18	17	17	16	16	15	15	14	14
47° 51′ — 48° 58′	19	19	18	18	17	17	16	16	15	15	14
48° 58′ — 50° 6′	20	19	19	18	18	17	17	16	16	15	15
50° 6′ — 51° 13′	20	20	19	19	18	18	17	17	16	16	15
51° 13′ — 52° 22′	21	20	20	19	19	18	18	17	17	16	16
52° 22′ — 53° 31′	21	21	20	20	19	19	18	18	17	17	16
53° 31′ — 54° 41′	22	21	21	20	20	19	19	18	18	17	17
54° 41′ — 55° 52′	22	22	21	21	20	20	19	19	18	18	17
55° 52′ — 57° 4′	23	22	22	21	21	20	20	19	19	18	18
57° 4′ — 58° 17′	23	23	22	22	21	21	20	20	19	19	18
58° 17′ — 59° 32′	24	23	23	22	22	21	21	20	20	19	19
59° 32′ — 60° 49′	24	24	23	23	22	22	21	21	20	20	19
60° 49′ — 62° 9′	25	24	24	23	23	22	22	21	21	20	20
62° 9′ — 63° 30′	25	25	24	24	23	23	22	22	21	21	20
63° 30′ — 64° 55′	26	25	25	24	24	23	23	22	22	21	21
64° 55′ — 66° 24′	26	26	25	25	24	24	23	23	22	22	21
66° 24′ — 67° 57′	27	26	26	25	25	24	24	23	23	22	22
67° 57′ — 69° 35′	27	27	26	26	25	25	24	24	23	23	22
69° 35′ — 71° 21′	28	27	27	26	26	25	25	24	24	23	23
71° 21′ — 73° 16′	28	28	27	27	26	26	25	25	24	24	23
73° 16′ — 75° 24′	29	28	28	27	27	26	26	25	25	24	24
75° 24′ — 77° 52′	29	29	28	28	27	27	26	26	25	25	24
77° 52′ — 80° 56′	30	29	29	28	28	27	27	26	26	25	25
80° 56′ — 85° 45′	30	30	29	29	28	28	27	27	26	26	25
85° 45′ — 90° 00′	31	30	30	29	29	28	28	27	27	26	26

PHYSICAL DIMENSIONS



Notes

Xpress
Mettler-Toledo, Inc.
60 Collegeview
Westerville, OH 43081

5/2004
MTX04-OM023.1E

STANDARD FLOOR SCALE **QUICK START GUIDE**

Models XFS-XIF

DISPLAY

KEYPAD

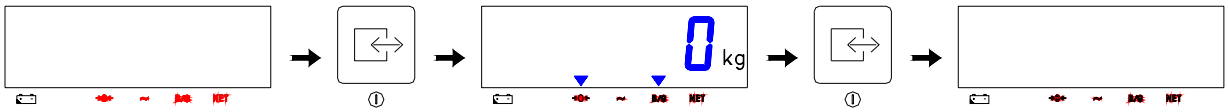
Key	Name	Function
→0←	ZERO	Captures a new center of zero if the terminal is in gross mode and weight on the scale is stable. The center of zero reference captured by the ZERO key is temporary and is lost when terminal is turned OFF.
→T←	TARE	Subtracts the weight of the object on the scale platform from subsequent indications of weight. This is most often the weight of an empty container. This key is also used to clear the previously entered tare value if the scale is in net mode.
F	FUNCTION	The first function is **unit switch**. Quickly pressing and releasing will switch the unit between "Lb" and "Kg" mode. The second function will turn on/off the **backlight**. Manually press and hold the button for 3 seconds to toggle the backlight between on and off.
	PRINT	The first function will turn the indicator on and off: • **Turn on**: Press the key to turn on the indicator. • **Turn off**: In normal weighing mode, press and hold the key until "OFF" is displayed on the screen. Release the key to turn off the indicator. The second function is used to **transmit data** from the serial port according to the data output configured in setup. The terminal processes a print command when weight on the scale is stable.

CURSORS (LCD)

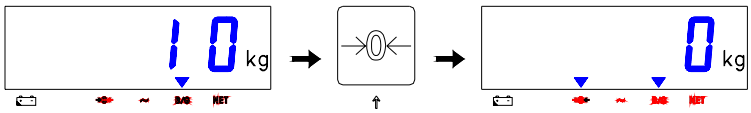
Cursor	Description
NET	Indicates the displayed value represents net weights
B/G	Indicates the displayed value. Represents gross weight.
->0<-	Indicates the terminal is within +/- .25 increments of the center of gross or net zero
~	Indicates the scale is in motion according to the motion sensitivity which is set in setup mode
Battery	Indicates low-battery condition. The battery should be recharged when the battery symbol appears.

BASIC FUNCTIONS

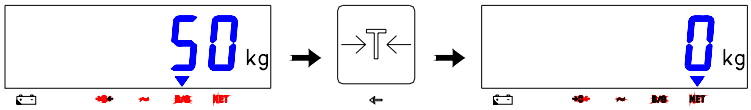
ON/OFF



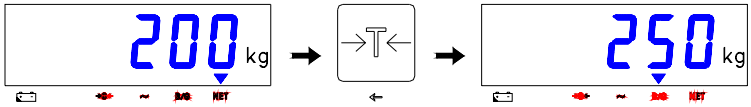
ZERO



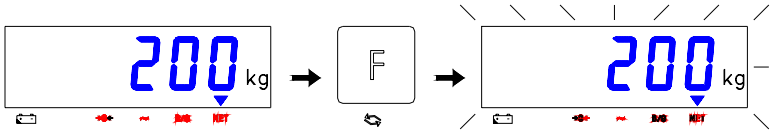
NET



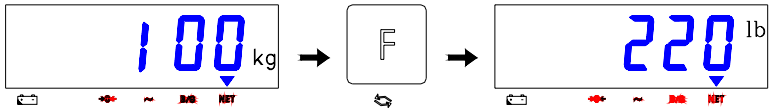
GROSS



BACKLIT DISPLAY



UNIT SWITCHING



STANDARD FLOOR SCALE **INSTALLATION INSTRUCTIONS**

Models XFS-XIF

UNPACKING

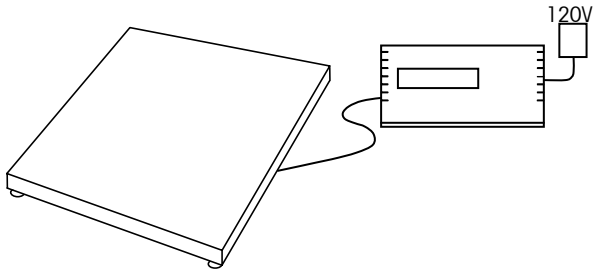
Thank you for purchasing an **MT Xpress** product. Please inspect the package immediately upon receipt. If the box is damaged, check for internal damage and file a freight claim with the carrier if necessary. If the container is undamaged, open the box, remove the scale and place it on a solid, flat surface. Please keep the packing material and shipping insert in case you need to return the scale to an **Xpress** representative.

Package contents for all **Xpress** Standard Floor Scale package includes:

Product
- **Xpress** Standard Floor Scale
- **Xpress** XIF Indicator

Documents
- Quick Start Guide
- Installation Instructions

CD-ROM
- Operation & Service Manual



ASSEMBLY

1. When you receive the **Xpress** Standard Floor Scale, inspect it to make sure that it was not damaged during shipping.
2. After placing the scale in its final location, use a screwdriver to adjust each leveling foot so that all four feet touch the floor.
3. When the scale platform is level, tighten the hex nut on each foot to lock the feet in place against the load cells.

   NOTE: Do not apply torque to the load cells.
4. If the **Xpress** floor scale is packaged with an **Xpress** indicator, continue to step 5. If it is not packaged with an **Xpress** indicator, follow the instructions on this card for instrument cable wiring and calibration, and then finish with step 6.
5. Place the **Xpress** indicator on a desk or attach it to a wall with the optional wall-mount bracket. Plug the round connector from the power transformer into the side of the indicator. Plug the power transformer into a 120V AC outlet (indicator can also operate on batteries). To power up the indicator, press the On/Off (PRINT) key and hold it for three seconds.
6. Check the scale to make sure that it is working properly. Place a known load or test weight equal to half the scale's rated capacity on the platform. If the recommended test weight is not available, use as much weight as possible to verify proper operation. If the scale indicator reads incorrectly, contact your authorized **Xpress** representative for help.

POWER UP/DOWN SEQUENCE

- TURN ON: Press and hold ⏻ until the indicator turns on.
- TURN OFF: Press and hold ⏻ until the indicator displays "off", then release to power down the instrument.

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

While the display is being checked it will display all numbers 0-9. A diagnostic self-test is performed on the memory and microprocessor. An error message is displayed if any component fails the test.

- The program number [125362] is shown next, followed by the revision [Sr. 1.30].
- If everything tests okay, the terminal will show [0] on the display.
- The power-up sequence requires a few seconds to complete.

For detailed product information, please consult the Operation & Service Manual provided on the CD-ROM.

CUSTOMER SERVICE

We at **MT Xpress** want to make sure you received the product you expected. It is important to us that you are satisfied with your purchase. If there is anything we can help you with, or if you are not satisfied with either your product or the services received from the **Xpress** representative, let us know:

24/7 Information and Support: www.mt.com/xpress
xpress@mt.com

8 AM to 8 PM EST Toll Free: 1-866-MTXPRESS

Xpress
Mettler-Toledo, Inc.
60 Collegeview
Westerville, OH 43081