METTLER TOLEDO Xpress

ECONOMY BENCH SCALE

OPERATION & SERVICE MANUAL

Models XBL-XID

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.

MT Xpress products are Weights & Measures approved precision weighing instruments. However, you may want to obtain official certification through your supplier or local Weights & Measures office.

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

PREPARING THE SCALE FOR USE

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 **MT Xpress** representative.

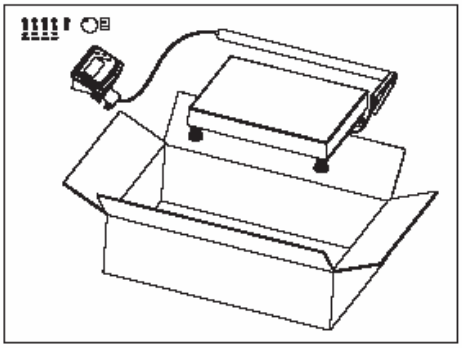
Package contents for all **MT Xpress** Economy Bench Scale units include:

Product
- **Xpress** Economy Bench scale
- **Xpress** Column indicator
- AC-DC power adapter
- Accessory bag (including 4 socket head screws, 4 flat washers, 4 spring washers, 1 cable clamp, 1 cable protective baffle, 1 Allen key, 1 seal screws, 1 lead seal wire, 1 lead, "kg" sticker)

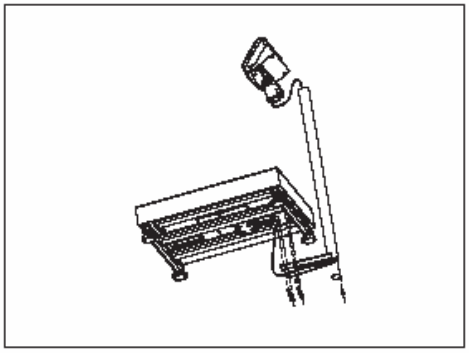
Documents
- Quick Start Guide
- Installation Instructions

CD-ROM
- Operation & Service Manual

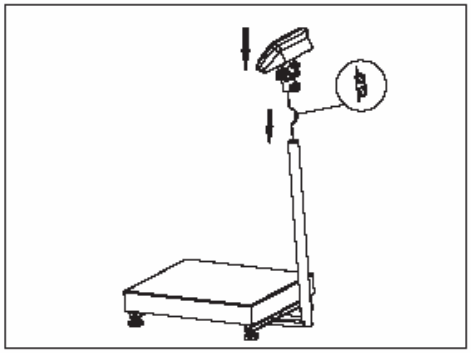
1. Open the box and take out the scale. Remove the packing material from each side of the scale. Set the unit on a sturdy workplace.



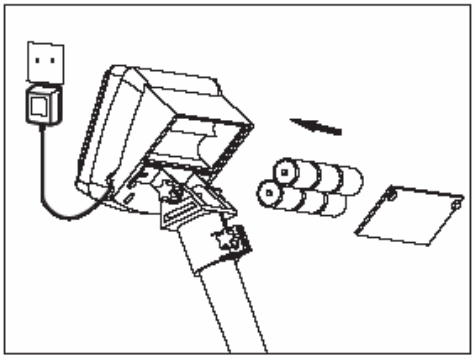
2. Attach the column bracket beneath the bottom scale frame by tightening the four socket head screws.



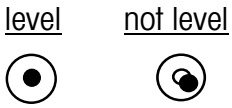
3. Coil the excess load cell cable and insert it into the column. A small length of tape applied to the ends of the coils allows the cable to slide into the column easier Mount the indicator onto the column. Adjust the indicator to the proper angle and fasten the bolt.



4. Apply power to the scale using adapter or six "C" cell batteries.



5. Level the scale by turning the adjustable feet. It is leveled correctly when the bubble indicator is in the center of the circle.



POWERING UP THE INDICATOR

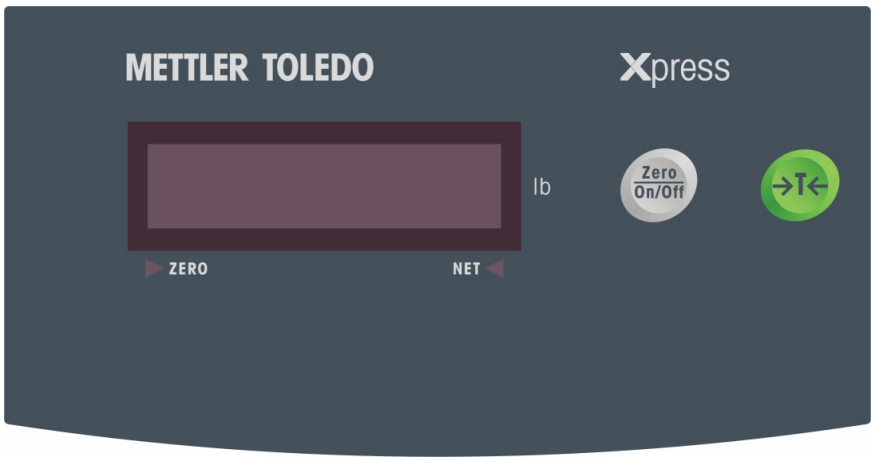
Plug in the indicator to an electrical outlet. Turn the on/off button gently. The indicator will automatically run a self-test when powered up.

- All segments of the display will light. Operator should check that the display is lit.
- Detect the memory of the indicator. If an error message is displayed during the powering up process, refer to the Error Code table in the Appendix.

YOUR XPRESS SCALE AT A GLANCE

DISPLAY

The display of the indicator is made up of six red LED, 0.56" digits. Five of the digits are for weight and the sixth digit is for displaying a negative/minus sign, which indicates motion. Two cursors indicate gross zero and net weight separately. This display is used for showing weighing data, prompting the operator, and coding errors. The indicator has two buttons: "Zero/ON-OFF" and "Tare".



KEYPAD

Key	Name	Function
Zero On/Off	Zero – On/Off Key	On/Off: Turn power on andoff Zero: Zeroes the scale
→T←	Tare Key	Tare: Tares the scale and clears the tare value

CURSORS (LED)

Cursor	Description
▷ ZERO	Illuminates when weight is gross zero (0)
NET ◁	Illuminates when weight is in net weight.

OPERATING YOUR SCALE

STRAIGHT WEIGHING

Zero/ON-OFF button: this button turns the power OFF and ON and zeros the scale. When you want to turn off the power, hold down this button for 3-5 seconds until the display shows "OFF". Then close the indicator.

TARE FUNCTION

Tare button: In gross weighing mode, the displayed weight will be recorded as a tare value by pressing this button. The displayed net weight will be zero. In net weight mode, pressing this button and returning to gross mode will clear the tare value.

When you press both the Zero/ON-OFF and Tare buttons at the same time, the indicator will enter service mode and parameter setup.

POWERING UP AND SELF-CHECKING

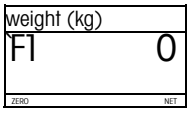
When you press the Zero/ON-OFF button, the indicator powers up and the scale will self-check RAM and ROM before entering the normal operation mode. The self-checking process includes lighting all display segments, displaying software part numbers/versions, and capturing zero.

SPECIAL MODES – SETUP MODE

Several parameters in the scale can be changed to enable you to Setup the scale to your individual needs.

ACCESSING SETUP MODE

When in Normal Weighing Mode, press down and hold the TARE button for three seconds. The display will show the example given below, indicating that the scale has entered into user setup mode.



Zero/ON-OFF button: Press this button to accept the current selected parameter and to move on to the next setup.

Tare button: Press this button to select the set up parameter.

Operation Parameter Configuration

Configuration	Parameter
F1 – Increment selection	0 = Disable
	1 = Enable, press the TARE button to select the increment needed than press the ZERO/ON-OFF button to confirm.
F2 – Push-button zero range	0 = ± 2% FS
	1 = ± 20% FS
E - End of setup	0 = Give up amendment
	1 = Save

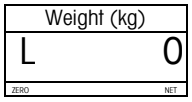
CLEANING & MAINTAINING YOUR SCALE

CLEANING AND REGULAR MAINTENANCE

Periodically clean the faceplate of the terminal with a soft, damp cloth and a mild cleaner. DO NOT use industrial solvent to clean the keyboard or display panel. DO NOT spray cleaner directly onto the unit.

BATTERY CHECK

When the battery power is low the display will show:



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.

Replace the batteries in time. To change the batteries:
1. Open the battery door on the rear of the XID terminal enclosure.
2. Carefully remove the six "C" cell batteries.
3. Contact the manufacturer or seller of the batteries to find out how they should be recycled or recharged.

⚠ CAUTION

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

4. Insert six new or recharged "C" cell batteries as illustrated on the battery housing. This arrangement is shown below.

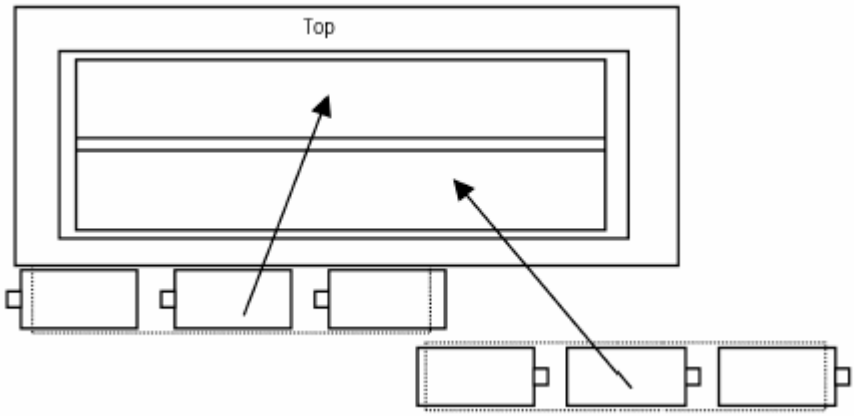
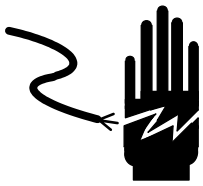


Figure: Shown With Rear Battery Panel Removed

5. Reinstall the rear cover over the batteries and press into place.
6. Test for proper operation.

SERVICING YOUR SCALE

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



⚠ WARNING

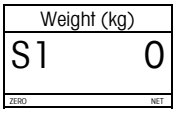
DISCONNECT ALL POWER TO THIS UNIT BEFORE INSTALLING, SERVICING, CLEANING, OR REMOVING THE FUSE. FAILURE TO DO SO COULD RESULT IN BODILY HARM AND/OR PROPERTY DAMAGE.

⚠ 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 SERVICE MODE

Open the indicator enclosure and short jumper J5 on controller PCB, then open the circuit and enter setup mode. The display shows:



Zero/ON-OFF button: Press this button to accept the current selected parameter and to move on to the next setup.

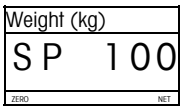
Tare button: Press this button to select the set up parameter.

Parameter Configuration

Setup Item	Optional Value
S1 - Expanded display	0 = Normal display 1 = Expand display (show internal counts)
S3 – Geo code setup	0 = Disable 1 = Enable, default is 12. Change GEO code using the TARE button, and then press the ZERO/ON-OFF button to confirm that selected value.
S4 - Calibration	0 = Skip calibration 1 = Enter calibration
E - End of setup mode	0 = Give up amendment 1 = Save

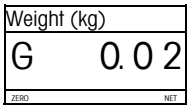
CALIBRATION SEQUENCE

Step 1: Display the scale capacity and then enter the calibration



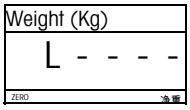
Display default capacity 100 kg. Then press the TARE button successively and the display will show 100 kg, 150 kg, 200 kg, 300 kg, 500 kg, 600 kg, 750 kg, 1000 kg, 2000 kg, 3000 kg, 5000 kg, 10,000 kg, 15 kg, 20 kg, 30 kg, 50 kg, 60 kg, 75 kg. Select a desired capacity and then press the ZERO/ON-OFF button to choose. Then enter the next step.

Step 2: Select the increment



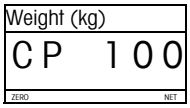
The default setting is 0.02 kg, if 100 kg is selected. Press the TARE button to select other increments if needed, then press the ZERO/ON-OFF button to verify each selected value. Enter the next step.

Step 3: Clear the scale calibration



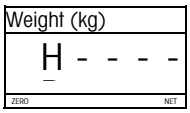
Remove all the items from the scale platter and press the ZERO/ON-OFF button. The display will automatically count down from five to zero to calibrate zero. If any motion is detected during the process the calibration will restart. When you finish the calibration, go on to the next step.

Step 4: Select the calibration weight



Select the calibration weight value that you want by pressing the TARE button. Press the ZERO/ON-OFF button to confirm the selected value and enter into SPAN calibration shown as Step 5: (if 100%FS is selected)

Step 5: SPAN Calibration



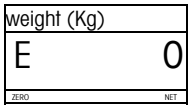
Place a test weight on the scale platter for the selected capacity.

Note: Do not change the loaded test weight at discretion.

Press the ZERO/ON-OFF button and the display will begin counting down from five to zero, indicate SPAN calibration. If any motion is detected during this process, restart SPAN calibration. When completing calibration, then enter next step automatically.

Step 6: Final Option

When calibration is completed, the indicator will show as below:



Here "0" indicates giving up the above amendment and calibration. Use [TARE] button to select "0" or "1". To save all amendment and calibration, then select "1".

Press [ZERO/ON-OFF] button to save the selected parameter and the result of calibration. Then enter normal weighing mode after auto self-testing.

REMOVING OLD LOAD CELLS

- Remove the scale platter and put it on a level surface.
- Loosen the tightening bolt of load cell on the base of the scale by using an inner hex spanner.
- Remove the top base of the scale.
- Loosen the tightening bolt for the load cell on the bottom base of scale.
- Remove the load cell.

INSTALLING NEW LOAD CELLS

Install the load cell on the bottom of the base of the scale using four screws, washers, and flats.

- Make sure load direction of the load cell.
- Tighten the load cell bolt (see NM moment on the chart below).

Install overload stop screw B:

- Install two overload stop bolts with nut on both side of the load cell on the bottom base of scale.

Install overload stop screw A:

- Install four overload stop bolts with nuts in the corner position on the bottom base of scale

Install the top base of scale:

- Mount the load cell on the top base of the scale using four screws, washers, and flats.

Requirement

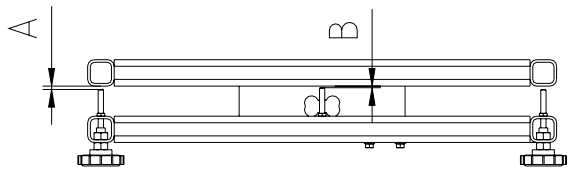
The scale should stay parallel from top to bottom and right to left.

Tighten the load cell bolt according to the chart below:

Model	Moment N.m
XBL30R-XID	10 N.m
XBL60R-XID	10 N.m
XBL60L-XID	25 N.m
XBL150L-XID	25 N.m
XBL300L-XID	30 N.m

Adjust the space of middle overload stop bolt. (See figure below.)

Adjust the space of spacing bolt on both ends. (See figure below.)



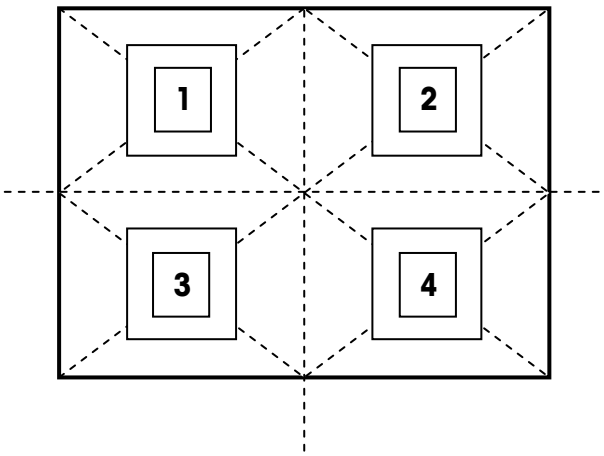
Position	XBL30R-XID Overload protective gap	XBL60R-XID Overload protective gap	XBL60L-XID Overload protective gap	XBL150L-XID Overload protective gap	XBL300L-XID Overload protective gap
A	0.08 in. (2 mm)	0.08 in. (2 mm)	0.1 in. (2.5 mm)	0.14 in. (3.5 mm)	0.2 in. (5 mm)
B	0.02 in. (0.5 mm)	0.02in.(0.5 mm)	0.02 in. (0.5 mm)	0.03 in. (0.70 mm)	0.04 in. (1 mm)

SHIFT TEST AND ADJUSTMENT

The XID indicator – load cell connect and power up:

- Make connection according to this manual. Connect to indicator by power cable.
- Open the indicator enclosure.
- Set the jumper according to the manual instruction.

Make the platter of the scale upside down on the scale base, place test weight (equal to 1/3 F.S) on the four corners as in the figure shown below.



Verify the tolerance of four corners and make adjustment for shift, if necessary.

SETUP SCALE CAPACITY

Set the jumper according to the manual. Use a proper test weight (70% Max F.S) to setup the scale to Weighing Mode.

DEFLECTION TEST

Place the test weight of 1/3 F.S (maximum) on 1, 2, 3, and 4 positions successively as above figure indicates. Refer to the following tolerance table.

Note: Do NOT allow the AMZ to function during the test process.

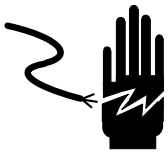
Tolerance Table

Model Number	Capacity	Calibrate Increment Value (e)	Tolerance
XBL30R-XMC	60 lb	0.02 lb	± 0.02 lb
XBL60R-XMC	150 lb	0.05 lb	± 0.05 lb
XBL60L-XMC	150 lb	0.05 lb	± 0.05 lb
XBL150L-XMC	300 lb	0.1 lb	± 0.1 lb
XBL300L-XMC	600 lb	0.2 lb	± 0.2 lb

APPENDIX

TROUBLESHOOTING

The XBL-XID series bench scale uses high-accuracy load cells and an indicator with stable quality and durability. If you should encounter operational difficulties, check the indicator first. Look at the error message displayed and take the suggested action refered to in the section below.



⚠ WARNING

Only permited, qualified personnel should service this equipment.

ERROR MESSAGES

The XBL-XID provides self-diagnostic actions for common operational problems. The error messages detailed below will be shown when trouble or incorrect operation occurs.

Error Message	Description	Probable Action
E11	RAM Error	1. Power down the unit, then power it back up to reset the unit. 2. Replace the Controller PCB.
E16	ROM Error	
E18	EPROM Data Incorrect	
nnnnnn or nnnnn	Overload (weight on scale exceeds 9d of FS)	Remove some goods till the error message disappears.
uuuuu	Underload (weight on scale is below 9d of FS)	Level the scale platter, then press the ZERO/ON-OFF button. This action should return the scale to gross zero.
------	Can not capture zero	1. Turn off the indicator and then turn it back on again when the scale is empty. 2. Recalibrate scale. 3. Replace the load cell or controller PCB.

CORRECTIVE STEPS

Test Sequence	Proper Action
Test the adapter. The output voltage of the adapter should be 10-14VDC with no load on the scale.	If not, replace the adapter.
Test Q1. Press down the ZERO/ON-OFF button. The IC Q1 and the pole voltage shall be 8-13VDC.	If not, replace Q1.
Test triode regulator. Its output should be 5DVC.	If not, disconnect the output pin of this triode regulator.
Test the output solder bracket of triode regulator on PCB. The bracket shall short to ground.	If not, replace this part.
LED on the controller PCB shall light.	If not, replace the CPU.
Disconnect the rear display harness. The display should show OK when you turn on the unit.	Replace the rear display PCB, if display not OK.
Disconnect the load cell harness. The output resistance of load cell should be 350+/-4 ohm and the input resistance is 408+/-10 ohm.	If not, replace load cell.

MODEL SPECIFICATIONS

Model Number (Order No.)	Capacity x Increment	Platform size (inch)	Load Cell Capacity (kg)	Column Height (inch)	Shipping Weight (lb)
XBL30R-XMC	60 lb x 0.02 lb 30 kg x 0.01 kg	12 × 14 × 4.5	60 kg	14	26.4
XBL60R-XMC	150 lb x 0.05 lb 60 kg x 0.02 kg	12 × 14 × 4.5	150 kg	14	26.4
XBL60L-XMC	150 lb x 0.05 lb 60 kg x 0.02 kg	17 × 22 × 5.3	150 kg	27	41.8
XBL150L-XMC	300 lb x 0.1 lb 150 kg x 0.05 kg	17 × 22 × 5.3	300 kg	27	41.8
XBL300L-XMC	600 lb x 0.2 lb 300 kg x 0.1 kg	17 × 22 × 5.3	500 kg	27	41.8

TECHNICAL DATA

Accuracy Grade: Designed to meet NTEP 3000d requirements.
Operation Temperature: 32°F-104°F (0° C to +40° C)
Relative Humidity: 10 to 90% humidity, non-condensing
Maximum Safe Overload: 125% F.S
Display Resolution: Up to 10000d
Power Supply: AC/DC auto conversion
AC (power adapter) Input: 120 VAC -15% to 10%
Output: 9 VDC ± 10% / 0.5 A
DC: Six C cell batteries

WIRING

9 pins D-sub for load cell is assigned as below:

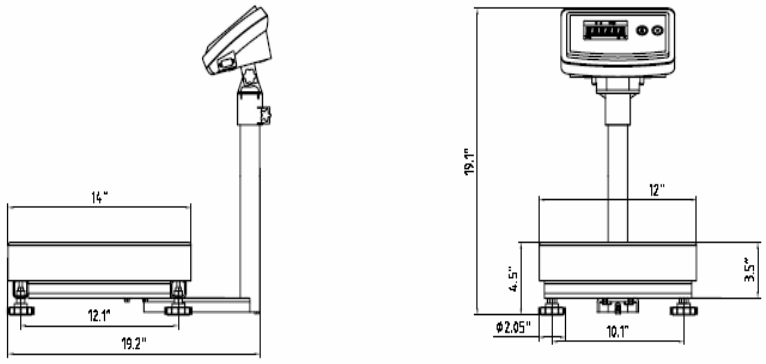
9 Pins D-sub	Signal
1	- EXC (Black)
2	
3	SHIELD
4	+ EXC (Red)
5	
6	
7	+SIG (Green)
8	-SIG (Yellow)
9	

GEO VALUE TABLE

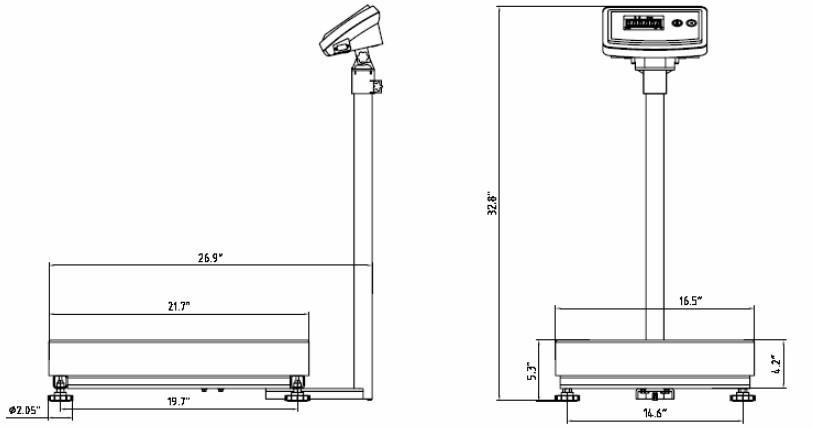
Use the following geo codes if you relocate the XBL-XID to a site other than the original location where it was calibrated.

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



Model: XBL30R-XID, XBL60R-XID



Model: XBL60L-XID, XBL150L-XID, XBL300L-XID

Notes

Notes

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5/2004
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