



# Mx100

## Setup Guide

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# 1 Getting Started

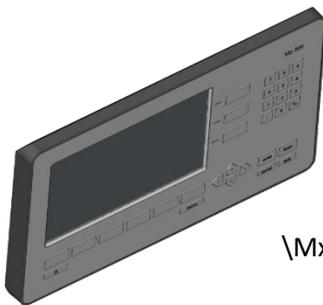
The following sections will describe the package contents, readout specifications, mounting options, and basic machine hardware connections for the Mx100 readout.

## 1.1 Shipping Contents

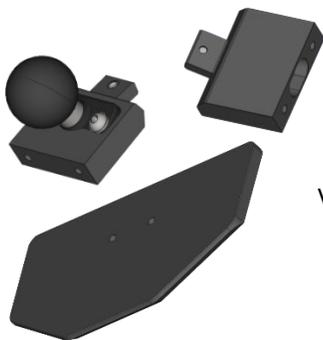
The following components are part of your Mx100 digital Readout kit:

- Mx100 Device
- Machine mounting option(Ball, Block, or Stand)
- Power supply module and Line Cord(US 2-LINE)
- Encoder adapter cables(optional)

**Note:** It may be helpful to save the Mx100 packaging in the event the device needs to be returned to the manufacturer for repair or requires transport to a new location.



\Mx100 Device



\Mounting Option



\Adapter Cables

\Power Supply

## 1.2 Mx100 Specifications

Display: 7" Color 1024 X 600 LCD, with an LED backlit capacitive touch screen.

Power: Power supply(included): 100-240VAC, 50/60Hz, 3.0A. Power Input to Mx100: 12V.

Agency Approvals: CE

DRO Dimensions: 286mm wide x 51mm deep x 162 mm high

DRO Baseplate Dimensions: 120mm wide x 125mm deep x 9.5mm high

Mounting Options:

OEM mount: Two *Riser Blocks* providing up to 4 distinct viewing angles, using (2) M6 threaded holes, spaced 38mm.

RAM ball mount: One *Riser Block* with 1.5" RAM Ball.

Base plate: Base Plate with two *Riser Blocks* providing up to 4 distinct viewing angles from the base.

## 1.3 Hardware Installation and Connections

The following section describes how to connect;

Mounting hardware(A)

Power Connection(B)

Encoder Connections(C)

## A. Mounting hardware installation:

**Note:** It is important that the Mx100 device is operated from a secure and rigid mounting location. While the supplied Metlogix mounting hardware may serve as an adapter piece toward that installation, it is the installation technicians' responsibility to ensure complete and safe installation of the device.

- Select the appropriate mounting method from the 3 options below.

### *OEM Mount Installation:*



Using a 3MM Allen wrench and the supplied M6 screw, connect the riser block to the opening on the rear panel of the Mx100. The hole spacing is 38MM with a ¼"-20 thread pattern. Screws required to connect the OEM mount to the machine mount are not included in the Mx100 mounting kit.

### *Ball Mount Installation(1.5" Ball):*



Using a 3MM Allen wrench and the supplied M6 screw, connect the riser block/ball mount module to the opening on the rear panel of the Mx100.

**Base Mount Installation:**



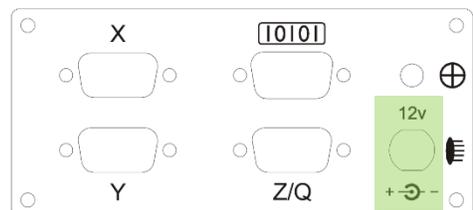
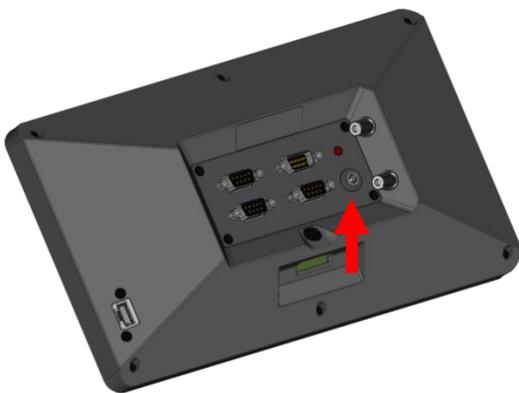
Using a 3MM Allen wrench and the supplied M6 screw, connect the riser block to the opening on the rear panel of the Mx100.

Using a 4MM Allen wrench and the (2) supplied M6 screws, connect the supplied stand to the riser block.

- Complete the Mx100 readout installation according to the recommended mounting technique for the measuring system being used.
- For standard “benchtop” installations place the Mx100 readout on a flat stable surface within reasonable operating distance from the measuring system.

**B. Power Connection:**

- Attach the supplied 12V(Positive Tip)power supply connector to the power input port on the Mx100 readout.



- Connect the supplies 2-wire line cord cable to a stable 110/220 AC power source.

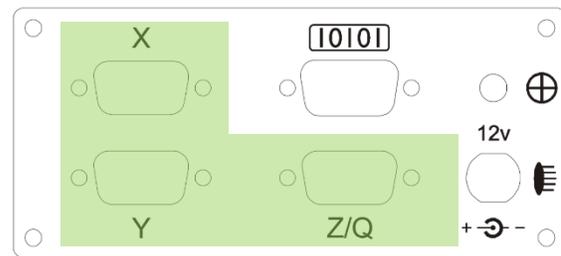
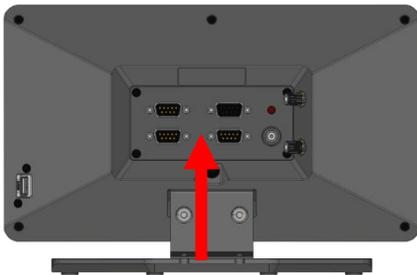
- **IMPORTANT:** The Mx100 digital readout is **NOT** designed to be powered off instantaneously by removal of the power supplied to the unit. As such the power supply to the Mx100 should be connected directly to a power source, and not to an intermediary power switch. To power off the Mx100 correctly long press the power button on the front keypad and press the “Power Off” button displayed at the right side of the main Mx100 screen.

### C. Encoder connections:

The Mx100 is designed to accept input from 1, 2, or 3 analog or TTL encoders. These encoders are typically arranged according to the major axis of the measuring system in which they are mounted; X, Y, and Z(or Q Rotary/Protractor).

**IMPORTANT:** All Mx100 readouts are designed to accept either TTL or Analog input from the connected encoder. It is however critical that the correct signals be connected between the encoder and the Mx100 to avoid damage to the MX100 and/or the encoder. Please ensure that the encoder connections to the Mx100 have been verified as compatible by an authorized Metlogix OEM prior to installation.

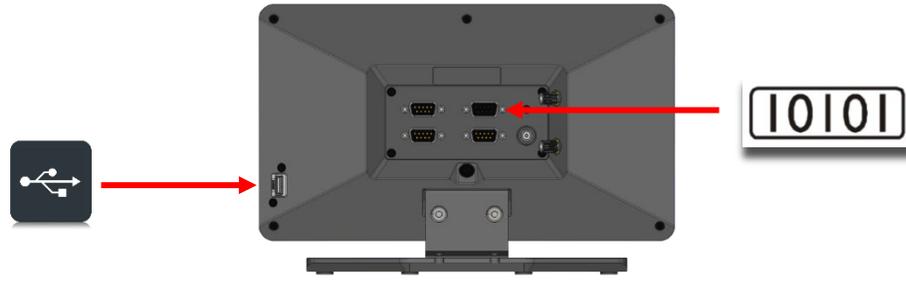
- Ensure that the Mx100 is powered off prior to connecting any encoders.
- Locate encoder terminations from the measuring system and connect them to the X, Y, and Z(Q) encoder inputs on the back of the Mx100 as seen below.



**NOTE:** Secure all encoder connections tightly to the standoffs at the input connector to ensure complete communication between the encoder and the Mx100.

## A. USB and RS232 Port Connections

- The Mx100 is equipped with both a USB port and a 9 pin general purpose IO port to support data transfer to external storage drives, and PC systems(RS232). These connections will be described later in this document within the setup sections for RS232 and Settings File Output.



## 2 Mx100 Software Setup

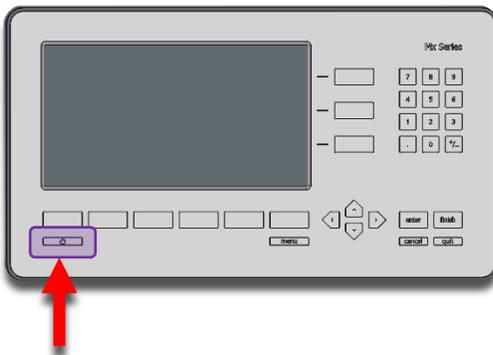
The following section will describe the basic setup parameters for configuring the Mx100. Not all setup screen items will be addressed in this section. Additional setup screen settings and procedures will be described in Section 4, “Additional Setup Screens”.

**QUICK START: Follow the Green Ribbons through this document for the steps to Quick Start Basic Setup of the Mx100 readout. While these steps can help quickly achieve initial machine setup, the additional settings and features described below can always be configured alongside these basic setup steps.**



### 2.1 “Power On” the Mx100 readout.

Press the “Power Button” located in the bottom left corner of the Mx100 keypad.

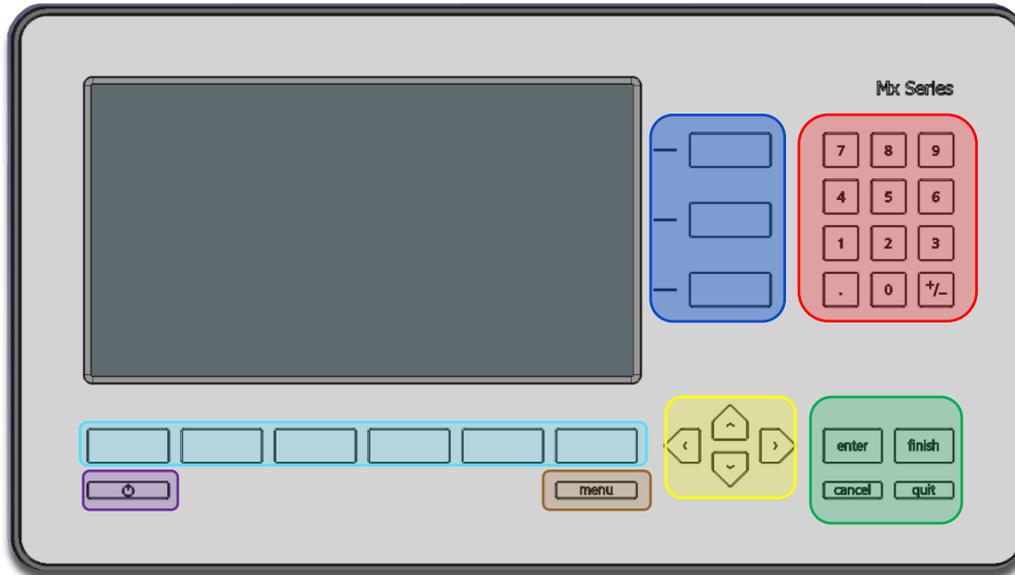


Allow Mx100 boot sequence to complete. Once the Mx100’s main DRO view is displayed you can continue with the setup procedure.

### 2.2 Navigating the Mx100 with Keypad and Touchscreen Controls

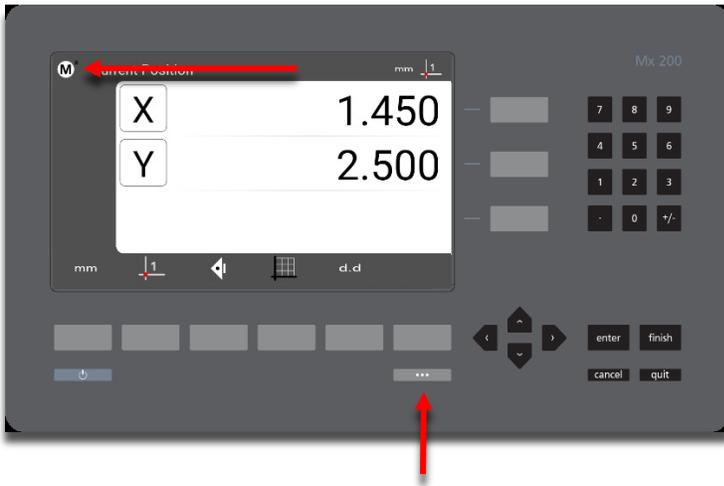
*The Mx100 User Interface can be navigated by touchscreen control, by keypad button control, or a combination of both. This dual input mode support applies to both the setup screen menu’s as well as the main measuring modes of the readout*

Description of keypad button functions can be seen below;



Keys	Function
Number Pad	Enter numeric digits, decimal points, and sign(+/-)into the current field.
Command Keys	<u>Enter</u> - Select data entry field or setup menu item. <u>Finish</u> - Confirm selected function or setup menu item. <u>Cancel</u> -Navigate up one level from current setting menu. <u>Quit</u> – Exit the current setting screen back to the top level settings screen.
Arrow Keys	Navigate the settings menu screens. The left and right arrows go in a level, or out a level. The up and down arrows move the current selection up/down.
Power Key	Single Press to Power On. When On, Single Press for Screen Off, Long Press for Power Off.
Soft Keys(1-6)	Executes the softkey button commands/selection displayed above the key.
DRO Keys	Execute X/Y/Z/Q zeroing function. Select functions as vertical softkeys.
Menu Button	Displays or advances the Softkey Menu. Long press to enter Mx100 Setup.

**ENTERING SETUP:** Enter the Mx100 Information and Setup Screens by pressing either the touchscreen “Mx” button in the top left corner of the screen, or by pressing the “Menu Button” and then choosing the “Mx” softkey button.



Once in the Information screen, the first menu item called “Setup” will grant access to the setup menu items. The remaining items listed provide information about the Mx100 readout itself, including;



Menu Item	Description
Setup	Press to access the main Setup Menu.

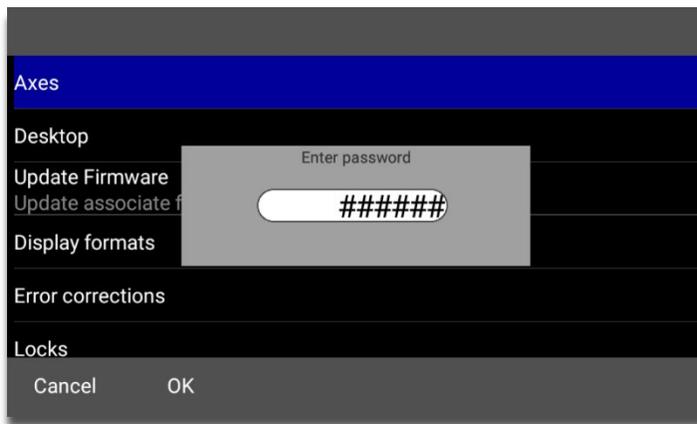
Language	Press to select desired display language.
Product	Displays the Product Description.
Software Version	Displays the Mx100/Mx100 software version.
Release Date	Displays the Release Date of the Mx100 software currently running.
Copyright	Displays Metlogix Copywrite Information.
Options	Displays the currently enabled software/hardware options in the system.
Hardware version	Displays version numbers for installed hardware code. App, Boot, FPGA, MB, and Edge.
Serial Number	Displays the serial number of the Mx100 unit in the format[XXXX-XXXX-XXXX].
Exit Settings	Press to Exit the Mx100 Readout Application.

## 2.3 Supervisor Password Protection

**IMPORTANT:** Many of the settings configured in the Mx100 require password authentication in order to modify them. In general, settings relating to the initial configuration and calibration of the readout will be password protected. Settings that behave more like User Preferences are typically not password protected.

Settings in the setup menu that appear with a blue “lock”  icon require password entry prior to modification. Most important machine configuration settings fall into this category. Use the procedure below to enter the Supervisor Password and unlock the system setup screens.





To enter the Mx100 password;

- Navigate to the Setup Menu and Scroll to the Password menu item.
- Press Enter and then key in “XXXXXX” using the numeric keypad.
- Press “Finish” to confirm the entered password.
- A small message should appear briefly indicating “supervisor mode”.
- To Remove the password, simply highlight the “Password” settings item and press the “Right Arrow” key. A small message should appear indicating “user mode”.

## 2.4 The Setup Menu

Most setup parameters in the Mx100 are configured using screens and data entry fields accessed via the setup menu items. Highlighting a setup menu items and pressing “Enter” grants access to that menu items’ submenu or displays a numeric entry field(or softkey option) for modification of that particular parameter.

The Mx100 setup menu is easily navigated using the following step;

- Press the MENU key(Mx Button).
- Highlight the Setup Menu item and press “Enter”.
- Scroll to the desired setup screen and press “Enter”.
- Highlight the desired setup parameter and press “Enter”.
- Use the keypad for numeric entry, or the softkeys to select setting for that parameter.
- Press the “Finish” key until the Setup Menu is fully exited.

## 2.5 System Settings Import/Export

The Mx100 readout has the ability to Import or Export a System Settings file from an attached USB drive. This allows for quick and convenient loading of previously configured setup parameters to an un-configured Mx100 readout. This also allows backups of existing parameter sets to be stored for use on another device, or as a settings backup for the current device.

To Import or Export an Mx100 settings file from the USB port;

- Put a USB storage device into the USB port of the device. If Importing a settings file, ensure the Mx100 settings file is at the root of the USB device.
- Press the MENU key(Mx Button).
- Highlight the Setup Menu item and press “Enter”.
- Scroll to the “System” setup screen and press “Enter”.
- Select the “Import Settings” softkey to Load a settings file from USB, or the “Export Settings” softkey to store your current settings to the USB device
- Confirm your selection by Pressing the OK or Cancel softkey

## 2.6 Encoder Settings

Proper configuration of the encoders in the Mx100 setup is critical for achieving accurate measuring results from your machine. Encoder Resolution and Encoder Count Direction are the two most important settings for achieving this accuracy. Additionally, systems requiring advanced Stage Error Correction methods such as SLEC or NLEC will require that Reference Marks also be configured, to ensure reliable identification of the machine coordinate zero position each time the machine is used.

**NOTE:** All settings described below apply to the X, Y, and Z axis setup in the Mx100. The descriptions below may reference a particular axis but are intended to apply to each axis, X, Y, or Z. **The Q(Rotary) Axis Encoder Resolution** contains an additional teach function which will be referenced separately below.



Specify the signal type, encoder resolution, and direction for the encoder being configured. Verify that the encoder displacement and direction of travel are correct using some know standard of size and observing the major directions for part coordinates relative to the measuring image of the system.



(X)Axes Menu	Description
Label	Press Enter to specify a new single character Axes Label for the selected axis.
Encoder Resolution	Press Enter to display the encoder resolution entry field for the selected axis. Enter the desired encoder resolution and press “OK” to confirm.
Units	Select the IN or MM softkey to specify the Unit type for the entered encoder resolution(specified above).
(Signal)Type	Select the softkey for the encoder type you are interfacing to the Mx100. -TTL/1VPP/11uA/Nikon/Mitutoyo
Interpolation	Select the softkey that corresponds to the desired Interpolation Factor for your Analog encoder. Consult the encoder specification for information on what Resolution and Interpolation combination to use. The Mx100 supports 1X, 5X, 10X and 16X Interpolations Settings.
Reversed	Select the Yes or No softkey to invert the counting direction of your encoder. To reverse the direction from “current”, simply invert the Yes/No settings.
Startup Zero	Select the desired Startup Zeroing method based on the encoder reference mark technology and machine configuration requirements for the installation. -None/Hardstop/One Ref/2 Ref(Distance Encoded)
Ref Mark Direction	Select the Positive or Negative Pulse softkey to invert the reference mark active state for detection. To reverse the direction from “current”, simply invert the Positive/Negative settings.

Ref Mark Source	Only relevant when “Distance Encoded(2Ref)” startup zeroing method is configured. Specifies whether the Standard or Acurite Algorithm is used.
Ref Mark is Angular	Select the Yes or No softkey to specify a ref mark configuration for rotary encoded axes. Set to “No” for typical linear encoders.
Ref Mark Pitch	Press Enter to set the Reference Mark Pitch as indicated by the specification for your encoders.
Ref Mark Fixed Increment	Press Enter to set the Reference Mark Fixed Increment as indicated by the specification for your encoders.
Machine Zero Offset	Press Enter to display the Use Stage Position softkey or dialog option. Press Enter to calculate the offset(in counts) between the startup zero position and the current stage position.
Report Scale Errors	Select the “Yes” or “No” softkey to enable or disable scale error reporting.

To teach Q Axis Rotary Encoder Resolution:

- Access Setup and enter the Supervisor Password.
- Navigate to the Axes setup screen.
- Select the Q Axis menu item.
- Select the Encoder Resolution menu item.
- Press the Softkey labeled "Teach".
- Follow the on-screen prompts to teach Q.

**A NOTE ABOUT STAGE CORRECTION AND REFERENCE MARKS:** The SLEC stage calibration function requires that a repeatable startup zero position be established prior to calibration and each time the Mx100 readout is started. This position can be established by configuring either Single, or Dual Reference marks in the Encoder Setup Screen. When configured the operator will be prompted to cross the reference marks for each enabled axis at startup.

## Configure Machine Zero Offset and Verify Reference Mark Startup Position

- Configure and verify the correct encoder resolution and count direction for all axes.
- Set the Reference Mark type correctly for each encoder being configured.
- At the Main Mx100 Settings screen press the “Set Home Position” button located at softkey 1. Pic
- Cross the reference marks for each enabled axis, as prompted.
- Position the stage at the desired startup zero position in each axis being configured. Place some artifact within the measuring view and align it with the center crosshair position.
- Enter Setup, Axis Setup, Choose X Axis, and then select the Menu item called “Machine zero offset”
- Press the “Use Current Position” button to set the offset(in counts) from the detected startup encoder position to the current stage position.
- Repeat the previous (2) steps for each axis configured for reference marks.
- Restart the Mx100 and cross reference marks at startup. Position the crosshair at you comparison artifact location and verify that the stage position reports zero in the readout for each enabled axis.
- Drive to a new stage location and repeat the step above, again verifying machine zero at startup.
- 

## 2.7 Setting Display Resolution and Format

The Mx100’s default display resolution is .001 millimeters and .0001 inches. This display resolution value applies to both the current DRO position and to the coefficient results of measured and constructed features. The display resolution can be changed for MM, Inch, DD(Decimal Degrees), and DMS(Degrees Minutes Seconds) unit types using the Display Formats setup screen.



- Access the “Display formats” setup screen at;

### **Mx Button-->Setup-->Display Formats**

- Select the Unit Format item you would like to modify.
- Enter the desired display resolution into the entry field and press OK.

Display formats menu	Description
Display Res for Inch	Press Enter to specify the Display Resolution for Inch Units.
Display Res for MM	Press Enter to specify the Display Resolution for MM Units.
Display Res for DMS	Press Enter to specify the Display Resolution for Degrees Minutes Seconds(DMS) Units of measurement results.
Display Res for DD	Press Enter to specify the Display Resolution for Decimal Degrees(DD) Units of measurement results.
Display Res for Q Axis DMS	Press Enter to specify the Display Resolution for Degrees Minutes Seconds(DMS) Units for connected Q encoders.
Display Res for Q Axis DD	Press Enter to specify the Display Resolution for Decimal Degrees(DD) Units for connected Q encoders.
Q Display Range	Press Enter to select Q Axis angle display format. Use softkey 1 or softkey 2 to select the desired output format.  <b>+/- 180 deg or 0-360 display mode</b>

## 3 Error Correction

Stage Error Correction can be entered into the Mx100 systems by two different methods. Either the error correction data is entered(imported) directly through the error correction interface, or the correction data is imported from an existing correction file.

The following section will describe the process of entering stage calibration data into the Mx100. Squareness, LEC, and SLEC corrections are all executed by collecting actual measurement results(observed) from the measuring system, and then entering the results directly into the appropriate calibration screen. The nominal, or certified, geometries(actual) for the calibration artifact being used are also entered into the system.

**Note:** There are multiple methods and procedures by which the error correction data for Squareness, LEC, and SLEC can be collected. While some sample procedures for calibrations have been provided below, these sections are intended more to provide the procedure by which the correction data is entered in the Mx100, not necessarily how it is collected.

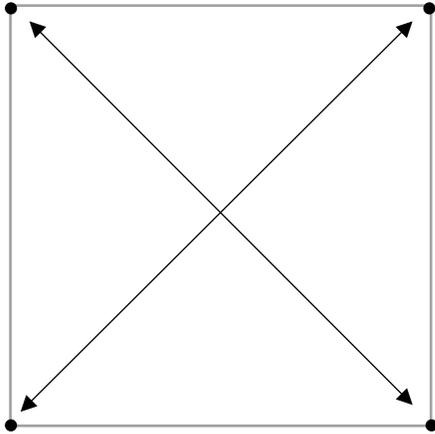
### 3.1 Entering Squareness Correction

The squareness calibration in the Mx100 applies a linear correction coefficient based on a calculated correction angle. This calculated correction angle should reflect the actual amount of mechanical squareness error in the system.

The squareness error of a system can be measured by using a large calibrated square artifact that covers as much of the machines valid measuring area as possible.

- Measure the four sides of the squareness calibration artifact as line features.
- Construct a point intersect at each corner.

- Construct a distance between each diagonal point pair as seen below.



- Take note of the Length(L) coefficient result for each constructed distance.
- Access the Squareness error correction setup screen.  
**Mx Button-->Setup-->Error corrections-->Squareness-->XY Squareness**
- Enter the (2) recorded Length(L) results into the Tangent and Radial Length fields. After entering the Lengths into the fields the “Squareness angle” field should get updated to reflect the current squareness correction angle.
- Set the Enable flag to Yes to activate the squareness correction.

**Note:** Squareness correction will provide no improvement to the overall calibration of the system if Non-linear Error Correction(NLEC) will also be applied in the system.

## 3.2 Entering Linear Error Correction(LEC)

Linear Error Correction(LEC) in the Mx100 applies a linear correction coefficient to the DRO position reading for any single axis of travel. This calculated correction should reflect the actual amount of machine/encoder error in a single axis, across the full range of travel of the machine.

LEC is entered into the Mx100 as 2 distinct values, “Standard” and “Observed”. The standard value is the nominal or certified length of the increment to be used from your calibration artifact, and the observed value is the actual measurement that the Mx100 produces from that same increment.

- Align the calibration artifact to be used along the axis to be calibrated.
- Measure a feature at each end of the calibration artifact and execute a “skew” alignment between the features. You can also directly probe a skew feature along the artifact.
- Using the simple crosshair, probe a point at the start of the segment to be used for correction.
- Travel the distance of the machine axis and calibration artifact and take a point with the crosshair precisely at the end of the known segment of your artifact.
- Construct a distance between the two points and take note of the X or Y component of the distance result (depending on the axis being calibrated).
- Navigate to the LEC correction setup page for the axis you are calibrating.  
**Mx Button-->Setup-->Error corrections-->LEC-->X or Y LEC**
- Enter the (2) values into the “Standard” and “Observed” menu items. The standard value will be the nominal or certified length of the segment used from your calibration artifact. The observed value will be the measured X or Y distance from noted from step 5 above.
- Set the Enable flag to Yes to activate the LEC correction for that axis.

### 3.3 Entering Segmented Linear Error Correction(SLEC)

Segmented Linear Error Correction(SLEC) applies a linear correction coefficient to a the DRO position reading for a specific segment of travel within the full range of a given machine axis. This calculated correction should reflect the actual amount of machine/encoder, for a particular segment within the range of travel of a machine axis.

SLEC is entered into the Mx100 as 2 distinct values, “Standard” and “Observed” for each segment being corrected. The standard value is the nominal or certified length of the segment from your calibration artifact, and the observed value is the actual measurement that the Mx100 produces from that particular segment.

- Align the calibration artifact to be used along the axis to be calibrated.
- Measure a feature at each end of the calibration artifact and execute a “skew” alignment between the features. You can also directly probe a skew feature along the artifact.
- Zero the X or Y position of the first feature in your string of correction segments.

- Starting at zero, measure a point(or feature) at the start and end of each of the segments to be used in the SLEC correction.
- Construct distances between each of the feature pairs that make up the segments of your correction length. Take note of the X or Y component of each distance result.
- Navigate to the SLEC correction setup page for the axis you are calibrating.  
**Mx Button-->Setup-->Error corrections-->SLEC-->X or Y SLEC.**

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**Note: The supervisor password is required in order to add SLEC segments to the system.** If the “+” key is not displayed within the X or Y SLEC screen, please verify that the supervisor password has been correctly entered into the system.

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- Press the “+” softkey button to add your first segment.
- Enter the “Standard” and “Observed” values into the fields for Segment 1. The standard value will be the nominal or certified length of the segment being calibrated. The observed value will be the actual measured X or Y distance for that same segment.
- Repeat the previous 2 steps for each segment to be calibrated.
- Enter the “Mapping offset” for the axis being calibrated into the “Mapping offset” field. The Mapping offset should be set to the distance between the startup machine zero position and the zero position of the calibration artifact that was used to collect the correction data.
- Set the Enable flag to Yes to activate the SLEC correction for that axis.

The procedure above can be repeated for each axis that needs to be calibrated.

## 4 Additional Setup Screens

Additional Mx100 configuration can be completed using the setup items found in the setup screens described in this section.

Additional Setup Menus	Description
Quick Keys	Contains settings for configuring hotkey assignments for the number pad and Footswitch input buttons.
RS232	Contains settings for configuring the RS232 port for communication with another device.
Sounds	Contains settings to effect the Mx100's internal beep tone.

### 4.1 Quick Keys

The “Quick Keys” settings screen is where the mapping of Mx100 functions to keypad keys and footswitch buttons can be configured.

#### Footswitch

Use the Footswitch quick key page to assign keypad button commands to button #1, button #2, or button #3 of the attached footswitch. To assign a footswitch button to a keypad button;

- Select the “Footswitch” item from the Quick Keys settings menu.
- Choose the Footswitch button number you would like to assign.
- Press the “Assign” softkey.
- A dialog will be displayed, “Press front panel key to assign.”. Press the keypad key that you would like to assign to this footswitch button.
- The same procedure can be repeated to configure footswitch button #2.

## 4.2 RS232

The “RS232” settings screen contains setup parameters for configuring the general purpose IO port for on the Mx100 readout for serial data output. The port parameters configured on the Mx100 should match that of the connected device(PC).

**Note:** The general purpose IO port on the Mx100 is used for both serial data transfer and button input. As such the wiring for the connection cable must be specific to the connection modes being used. Please see the signal assignment diagram at the end of this section for reference.

RS232 Function	Description
Baud Rate	Configure Baud rate for connection. 110 through 115,200 can be chosen using the appropriate softkey.
Parity	Configure the correct parity mode for the connection. Even/Odd/No can be selected using the appropriate softkey.
Stop Bits	Configure the correct number of Stop Bits for the connection. 1 or 2 can be chosen using the appropriate softkey.
Send Labels	Specifies whether or not the coefficient label will be sent along with the value. Set to Yes or No using the appropriate softkey.
Send Units	Specifies whether or not the unit type for a given value is sent along with the value. Set to Yes or No using the appropriate softkey.
Send Eol(End of Line)	Configures the desired character to be sent at the end of an output line. CR(Carriage Return), Line Feed(LF) or CR &LF can be selected using the appropriate softkey. EOL can also be set to None.
Field Delimiter	Configures the desired field delimiter(separator) to Comma or Tab. Set to desired delimiter using the appropriate softkey.

MLX200 9 Pin Dsub(F)	Description	Switch Device(Footswitch/Buttons/ETC)	RS232 9 Pin Dsub(M)
1	TRIG_2_IN	SW2 Common	NC
2	RX_IN		2
3	TX_OUT		3
4	TRIG_1_OUT		NC
5	GND	SW1 & SW2 (Normally Open) & Earth Ground	5
6	TRIG_1_IN	SW1 Common	NC
7	TRIG_3_IN		NC
8	TRIG_2_OUT		NC
9	TRIG_3_OUT		NC

### 4.3 Sounds

The “Sound” settings screen contains setup parameter for the Mx100’s internal beeper mechanism.

Sound Function	Description
Enable Sound	Set to Yes or No using the corresponding sofkey to enable or disable the Mx100 beep sound.
Keypress Beep Length	Configures the beep length of the Mx100 beeper. Set to 50, 100, 150, or 200 milliseconds using the appropriate softkey.
Long keypress beep length	Configures the long press beep length of the Mx100 beeper. Set to 50, 100, 150, or 200 milliseconds using the appropriate softkey.
Invalid keypress beep length	Configures the invalid press beep length of the Mx100 beeper. Set to 50, 100, 150, or 200 milliseconds using the appropriate softkey.

# Product Warranty

This product is warranted against defects in workmanship, material and design for 18 months from date of manufacture, to the extent that METLOGIX will, at its sole option, repair or replace the product or any part thereof which is defective, provided, however, that this warranty shall not apply to products subjected to tampering or, abuse, or exposed to highly corrosive conditions.

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This warranty is voidable if the purchaser fails to follow any and all instructions, warnings or cautions in the product's Instruction Manual.

If a manufacturing defect is found, METLOGIX will replace or repair the product or replace any defective part thereof without charge; however, METLOGIX's obligation hereunder does not include the cost of transportation which must be borne by the customer. METLOGIX assumes no responsibility for damage in transit, and any claims for such damage should be presented to the carrier by the purchaser.