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Mx100 User's Guide

Digital Readout

User's Guide

Mx100 Digital Readout Software User's Guide

Published by:

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User's Guide part number: 16100-00

Publishing date: October 29,2019

Printed in United States of America

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Mx-100 software version: 1.00.00

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1 Introduction

The Mx100 user guide describes the operation of the Mx100 readout. The Mx100 supports manual part positioning and encoder displacement feedback from a preset or zero position. While this guide might include some material that doesn't apply to your specific Mx100 configuration, the concepts explained are applicable to all Mx100 systems. For example, Mx100 systems can be 2 or 3 axis systems with X, Y, Z or X, Y axes, however some screens in this document will display one or the other.

1.1 Mx100 Readout

The Mx100 is a metrology readout for applications where precise machine travel in the X, Y, or Z axis needs to be assessed. The Mx100 can be used with optical comparators, measuring microscopes and a variety of other crosshair measurement systems where accurate encoder displacement must be maintained. All user interaction with the software is through the color touchscreen or through the use of softkeys and function keys on the rubberized keypad.

Current encoder position can be assessed from a pre-established zero position or by pre-setting the position of an axis to a specific value. X, Y and Z positions can be displayed in Inch or Millimeter units. A Q axis display is also available for Rotary Encoder position output and can be displayed in Decimal Degrees(DD) or in Degrees Minutes Seconds(DMS) format.

1.2 Prerequisites

Operators are assumed to understand the basics of dimensional metrology.

1.3 Getting Help

Help is available:

- In this guide.
- In the electronic version of this guide accessed from the Help function(“?” Button) in the Mx100 Setup Menu toolbar.
- From your MetLogix distributor or system provider.
- From our product support page at www.metlogix.com.

If it becomes necessary to contact your MetLogix distributor or system provider, be prepared to supply the following information:

- The Mx100 software version number and serial number. These can be read from the main Setup--> “About” page in the Mx100 software.
- Information describing the system hardware.
- A detailed description of the problem and the steps that you've already attempted to resolve it.

User Guide Contents

This user guide is divided into 8 sections:

- The User Interface
- Zeroing and Presetting the DRO
- Sending Data via RS232
- User Setup

2 User Interface

The Mx100 Software interface consists of a current position readout, function buttons, and toolbars for performing all zeroing and pre-setting commands, all via a color touchscreen or keypad.

2.1 Screens

Primary screens of the software interface are:

- DRO Current Position screen(Home screen)
- Preset Position screen
- Send Result screen(RS232)
- Setup screens

DRO Current Position Screen contents include:

Current Encoder Position display

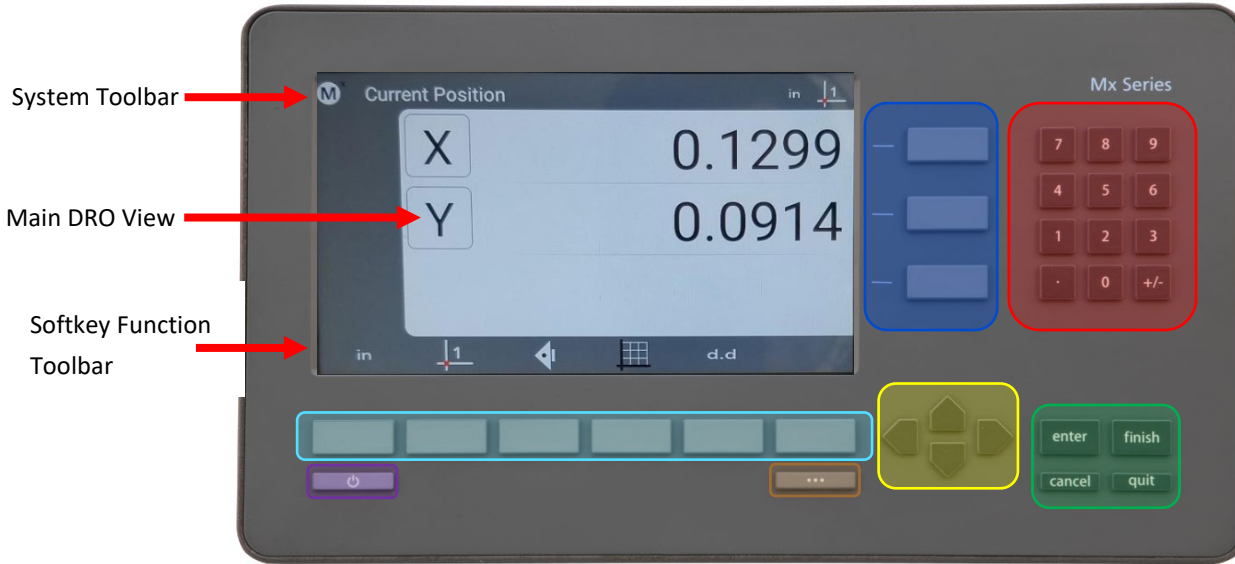
Top Toolbar

Bottom Toolbar(softkey functions)

2.2 Touch Screen – Or not!

The Mx-100 features a color touchscreen that can be used to interact with the device. For caustic or harsh operating environments, the touch screen can be locked out and the readout can then be operated entirely by the soft keys and function keys of the rubberized keypad.








2.3 The Interface Roadmap



Keys	Function
Number Pad	Enter numeric digits, decimal points, and sign(+/-)into the current field.
Command Keys	<p><u>Enter</u> - Select data entry field or setup menu item.</p> <p><u>Finish</u> - Confirm selected function or setup menu item.</p> <p><u>Cancel</u> -Navigate up one level from current setting menu.</p> <p><u>Quit</u> – Exit the current setting screen back to the top level settings screen.</p>
Arrow Keys	Navigate the settings menu screens or numeric entry field. 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 funciton. Select functions as vertical softkeys.
Menu Button	Displays or advances the Softkey Menu. Long press to enter Mx100 Setup.

Softkey Function Toolbar – A storage tray of commonly used functions. The default configuration displays an “Mx” button(access to Setup), an Inch/Metric Button(to toggle display units), and a Datum indicator(displaying current coordinate system).

Softkey Function Toolbar - A storage tray for the soft key functions. See function descriptions below.

Function	Button Icon	Description
IN/MM Button		The IN/MM button toggles the display units between Inch and Millimeter.
Ref Frame Button		The Ref Frame button toggles the Abs/Inc datum frame.
Send Button		The Send button initiates the RS232 send function.
Cart/Polar Button		The Cart/Polar button toggles the positional display format between Cartesian and Polar coordinates.
DMS/DD Button		The DMS/DD button toggles between Degrees Minutes Seconds and Decimal Degrees mode.
Help Button		The Help button provide access to the PDF User Guide. This button can only be added to the bottom toolbar.
Setup Button		The Setup button navigates to the Mx100 setup screen.

3 Zeroing and Presetting

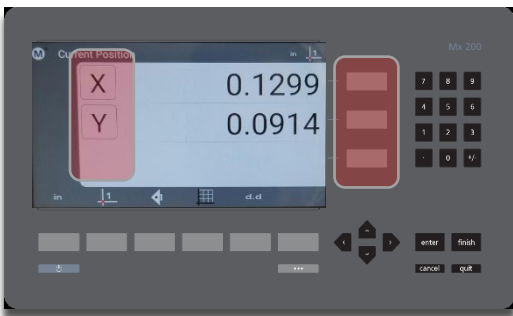
Creating a “Datum”, or zero position can an essential part of coordinate metrology. In many cases an inspection routine with the Mx100 requires that the current position on the DRO is set to zero, or to some other position.

3.1 Zeroing and Presetting the Stage Position

The stage position can be zeroed or preset to a value as the reference for a measurement.

To zero a stage position:

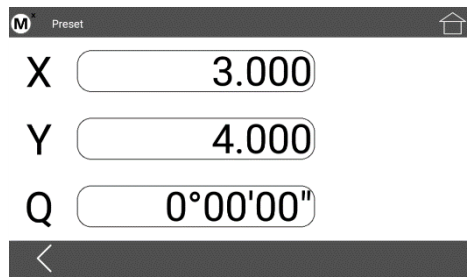
- **Step 1:** Move the stage to the desired measurement reference position.
- **Step 2:** Press the DRO Zeroing Button(screen or keypad) to zero the stage position for the desired axes.




3.2 Presetting the Stage Position to Specific Coordinates

To preset a stage position:

- **Step 1:** Move the stage to the desired measurement reference position.
- **Step 2:** Long-press any DRO Zeroing Button(screen or keypad) to access the preset screen.
- **Step 3:** Enter the desired preset value for each axis and press “Finish” to complete the preset.



3.3 Using Two Zero Positions

- **Step 1:** Zero or preset a stage position that you wish to establish as your initial zero position or preset.
- **Step 2:** Press the datum icon() in the upper tool bar. The datum indicator will now display '2'.
- **Step 3:** Position the stage at a new position and set your secondary zero or preset position.
- **Step 4:** Press the ref frame button to toggle back and forth between the stored stage positions.

4.0 Exporting values via RS232


The Mx100 can send either the current stage position(XYZQ) out of the RS232 port. The port needs to be properly configured, and the correct cable needs to be used in order to successfully send the data.

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

To send measurement data out of the RS232 port. 

- **Step 1:** Press the Send button to access the axis position selection screen.
- **Step 2:** Press the desired softkey, or use the touch screen, to choose what to send out of the RS232 port. The selections you make will be displayed in orange to indicate their selection state.
- **Step 3:** Press the green check-mark button in the softkey toolbar to confirm the selection and transmit the data.

5 Additional Readout Settings

5.1 Configuring a footswitch

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;

- **Step 1:** Select the “Footswitch” item from the Quick Keys settings menu.
- **Step 2:** Choose the Footswitch button number you would like to assign.
- **Step 3:** Press the “Assign” softkey.
- **Step 4:** 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.
- **Step 5:** The same procedure can be repeated to configure footswitch button #2, and #3.
- **Step 6:** It is also possible to assign the footswitch buttons directly to DRO Zeroing functions. Just select the desired Zero X, Zero Y softkey for the Footswitch button you wish to assign it to.