

# MT Series Master Development System

## Software Documentation



### Introduction

The MT Series transcoder is designed for bi-directional remote control and command applications. One of the unique features of the MT Series is that it can be controlled through a software interface as well as a traditional hardware button interface. The MT Series Master Development System is designed to demonstrate both interfaces. The development boards are populated with buttons and LEDs to demonstrate the hardware interface. A QS Series USB module is included to connect to a PC running the demonstration software, which demonstrates the software interface. This document covers the use and set-up of the demonstration software.

### Getting Started

1. Connect the development boards to a Windows-based PC with USB cables. Windows will automatically detect the USB module and start the Found New Hardware wizard to install the USB drivers. The drivers are located on the CD included with the Development System, so point the wizard to the CD when prompted. Application Note AN-00201 goes into the installation of the drivers in detail.
2. Install the Development Software from the CD.
3. Ensure that the USB Interface Jumpers are attached and turn on the power to the boards.
4. Open two instances of the software. The first instance of the software automatically connects to the first board that was plugged in, and the second instance of the software connects to the second board. This enables the software in one window to activate the software in the other window through the development boards. Two separate computers can also be used, or one board can be connected to a PC and the other can be used manually.

## Basic Mode

The software opens in Basic Mode as shown in Figure 1.



Figure 1: The Development Software Window in Basic Mode

There are four links across the top of the window. The first link under the Visit Us label opens the Linx Technologies web site in the computer's default browser. The next three links open documentation associated with the MT Series and the Master Development System. The Software Interface section toggles the interface between Basic and Advanced Modes.

Beneath the links is the demonstration window that shows an image of a house.

To the right of this window, under the My MT Device label, is a simulated device that contains an MT Series transcoder. The status line I/O configuration is depicted by the color of the buttons; gray for outputs, yellow for inputs. Any of the yellow inputs can be clicked and the software activates the transcoder on the development board through the serial interface. The transcoder then sends a command to the other development board.

When a valid command is received from a learned transcoder, the LED next to the activated output changes from gray to green and the action associated with the status line occurs in the demonstration window. If the transcoder is in Default Mode, the address of the originating transcoder is displayed next to the antenna. If the transcoder is in Defined Mode, the ID of the originating transcoder is displayed next to the antenna. Any custom data is shown as a hex value at the bottom of the device.

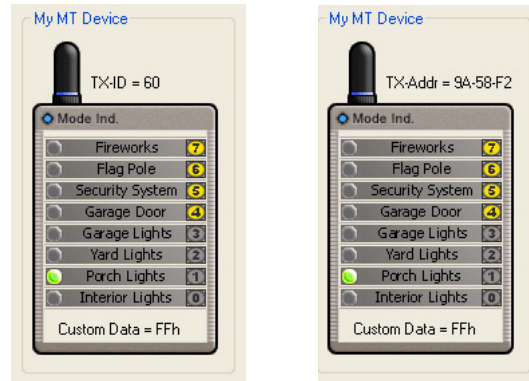


Figure 2: The MT Device Receiving a Command

At the bottom of the window is a section labeled My MT Device Info. This section displays the basic configuration of the transcoder that is connected to the computer. The baud rate is set by the SEL\_BAUD switch on the development board. This sets the baud rate of both, the wireless transmission and the serial interface. The software automatically detects the baud rate of the connected transcoder and displays it under the Baud Rate label. If the SEL\_BAUD switch on the development board is changed, then the Baud Rate selector needs to be changed to match or the Refresh All button clicked.

The Refresh All button updates any configuration changes that may have occurred since the software last read the transcoder. The software automatically refreshes when it is first opened and when switching modes if any changes are made.

The Configuration Settings shows information about the transcoder's current state. The I/O state of the status lines is shown with outputs gray and inputs yellow. Clicking on one of the lines toggles it between an input and an output. When clicked, the connected transcoder is automatically updated with the new configuration. My MT Device is also updated.

The Local Address is the transcoder's 24-bit address. It is displayed in the white box as a decimal number and in the gray box as a hex number. The address can be changed by typing a new decimal number into the white box, and clicking the Enter button. The software writes the new address to the transcoder and the transcoder uses the new address for all subsequent transmissions.

If the Target Addr. box is checked, then Targeting is enabled. In this mode, the transcoder sends a command targeting the transcoder with the address in the gray box under the check box. Only the transcoder with that address accepts the command and responds.

The Learned Users section shows a list of all of the addresses that have been saved in memory and their associated ID number. Note that the addresses are displayed in hex notation and the ID is displayed in decimal notation.

The four boxes to the right of the Address box allow for the entry of a decimal ID value and three hex address values. Clicking the Add button writes the address values to the ID slot. Note that the transcoder can hold up to 60 addresses in memory, so the ID value cannot exceed 60.

The Target button sets the device address that is currently highlighted in the Address box as the target address. The targeted address is then highlighted in green in the Address box.

The delete button removes the device address that is currently highlighted in the Address box from the transcoder's memory.

## Advanced Mode

Selecting Advanced Mode in the Software Interface section causes the development software to change to Advanced Mode, as shown in Figure 3.

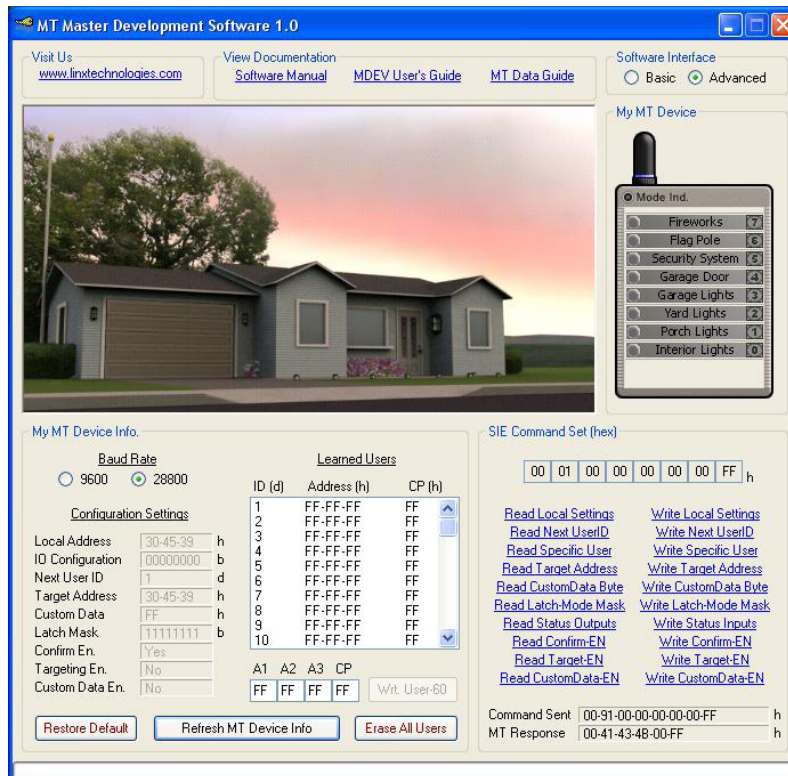


Figure 3: The Development Software Window in Advanced Mode

The Baud Rate selector and the Refresh All button are the same as in Basic Mode.

The Configuration Settings shows the current configuration of the transcoder. Next to each box is the notation of the data in the box; h for hex, d for decimal, or b for binary.

The Learned Users Address box in this mode shows the Address information for all of the IDs, not just learned Addresses. It also shows the Control Permissions for each ID in hex notation. As with Basic Mode, the device that has been selected for Targeting is highlighted in green.

To add an Address to memory, select an ID and type an Address and Control Permissions into the boxes below the Address box and click the Write User button.

The Restore Default button places the transcoder back into Default Mode. This erases all settings that are in the transcoder's memory and it will accept all valid packets.

The Erase All Users button erases all users from memory.

The SIE Command Set section is designed to aid in the development of software utilizing the transcoder's Serial Interface Engine (SIE). All 20 serial programming commands are listed as links. When the mouse hovers over a command link, the link color turns dark red and the command blocks at the top update with the current values for that command.

Each command consists of 8 bytes. From left to right, the command consists of a start byte (00), a command identifier byte, 5 data bytes, and a stop byte (FF).

If any of the command bytes can be changed, they turn yellow. Some commands do not have any editable bytes and others have 5 editable bytes. Above each editable byte is the description for that byte. **A1**, **A2**, and **A3** are the three Address byte values; **IO** is the I/O configuration value; **ID** is the ID value; **CP** is the control permissions value; **Dta** is a data value; **MsK** is the latch mask value; **Pkts** is the value for number of packets; and **En** is the enabled value. All of these values must be entered in hexadecimal format.

Below the command links are labels displaying the packet that is sent to the transcoder, and the packet that is received from the transcoder. The received packet consists of a start byte (00), acknowledgement (41-43-4B), any data returned by the command, and a stop byte (FF). These labels are updated every time serial commands are sent to and received from the development board.

To use this section, hover over the desired command link so that it turns red and the command blocks at the top change. Change any of the command blocks, if applicable (must be a hex value). Click on the command link to write the command to the transcoder. The Transmit Data box at the bottom changes to match the command blocks. When the transcoder replies, the received data is displayed in the Received Data box.

For more information on the commands, please see the MT Series Transcoder Data Guide and Application Note AN-00157.