



TELEDYNE
COAX SWITCHES

USB/Ethernet Mini Matrix

Operation Manual

0-53-021
Revision NC
CN 31087
11/16/2015

Table of Contents

1.	Introduction.....	4
2.	Power Up.....	4
3.	Teledyne Switch Matrix Control Panel.....	5
3.a.	Installing the Software	5
3.b.	USB (Serial) Control Panel	5
3.c.	TCP/IP Remote Control Panel	6
3.d.	Mini Switch Matrix Control Panel	7
4.	USB Serial Interface	8
4.a.	COM Port Settings.....	8
4.b.	Serial Terminal Commands	8
5.	TCP/IP Remote Interface	9
5.a.	TELNET Interface (WinXP).....	10
5.b.	Using PuTTY	10
	Appendix A – Serial Drivers and COM port configuration	11
	Installing the FTDI VCP drivers.....	11
	Changing COM Port Assignment.....	11
	Appendix B – Installing and Using DeviceInstaller	13
	LEGAL NOTICE	Error! Bookmark not defined.

1. Introduction

The USB/Ethernet Switch Matrix is a miniaturized version of the Teledyne Coax Switch Matrix. It is designed to allow the remote operation of up to 4 Single Pole Dual Throw switches or up to 2 Single Pole Multi Throw switches. Remote operation is accomplished via TCP/IP commands to the Matrix's Ethernet interface. Switch control is also accessible via the USB virtual serial port, using the provided command set. Through these interfaces the Coax Switch can be switched to the desired position and its position can be read for



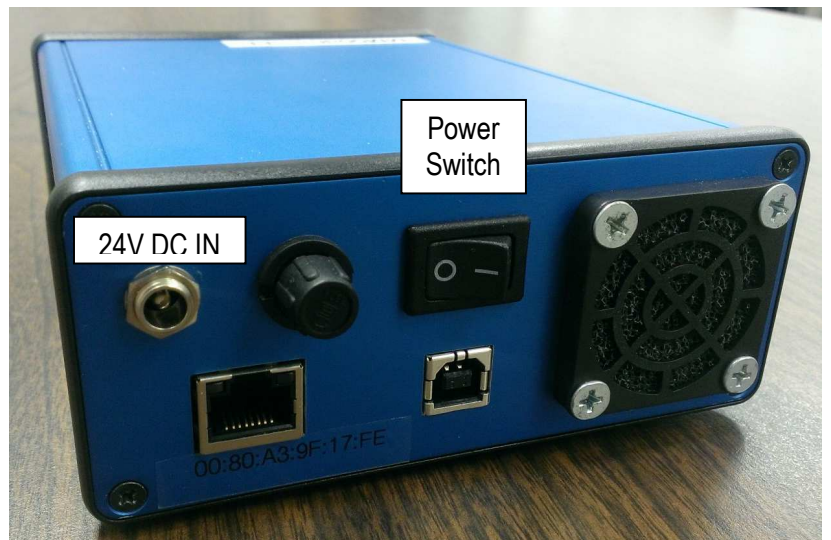
verification. The default switch position at power-up can be set by the user.

For SPDT failsafe switches, Position 1 is the N.O. side and Position 2 is the N.C. side. For latching, the positions are as labeled. The switches are designated A, B, C, and D.

For SPMT switches, Position 0 is Normally Open (all ports open), while Positions 1-6 correspond to the same numbered output port number (e.g. Position 1 connects Port IN to Port OUT 1).

2. Power Up

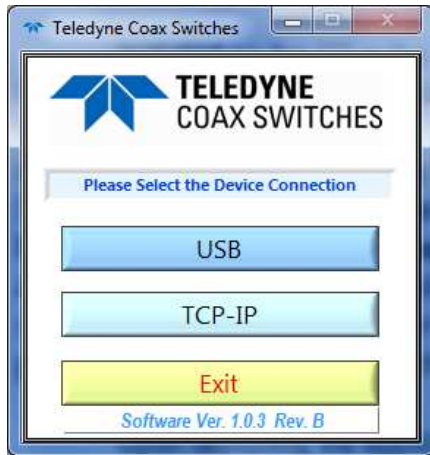
- Connect the External 24V_{DC} Power supply to the 24V_{in} connector of the Unit.
- Connect the AC cord to 110/220V AC power.
- Connect USB cable to PC or Ethernet cable to LAN. (It is not recommended to connect both interfaces simultaneously. This is to prevent commands from conflicting.)
- Toggle the switch to the ON position. The fan will come on and the RJ-45 status LED will shine green.



Section 3 will provide instructions for using the Windows GUI. Sections 4 & 5 provide detail on the API and the communication interfaces. Appendix A & B discuss the drivers and utilities included on your CD.

3. Teledyne Switch Matrix Control Panel

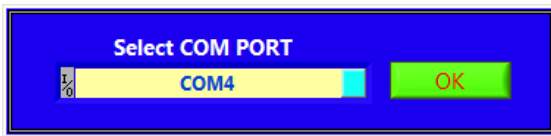
3.a. Installing the Software




Included on the CD is the Teledyne Coax Mini Switch Matrix Control Panel software. Install the application from the setup executable in the folder INSTALLER on the included CD. The wizard will guide you through the installation. After installation, you will be advised to restart your PC. In the Start menu under **Teledyne Coax Switches**, locate the application shortcut **Mini Switch Matrix Control Panel**, then Right-click and choose **'Run as Administrator'** to launch the application. Alternately, choose **'Properties'** under the Right-click menu; under the **Compatibility** tab, click the **'Run this program as an Administrator'** check box, and then click **OK**.

Upon launching the application, you will be presented with the dialog to the left. Click **USB** to connect via USB or click **TCP-IP** to connect via Ethernet. Click **EXIT** to close.

3.b. USB (Serial) Control Panel

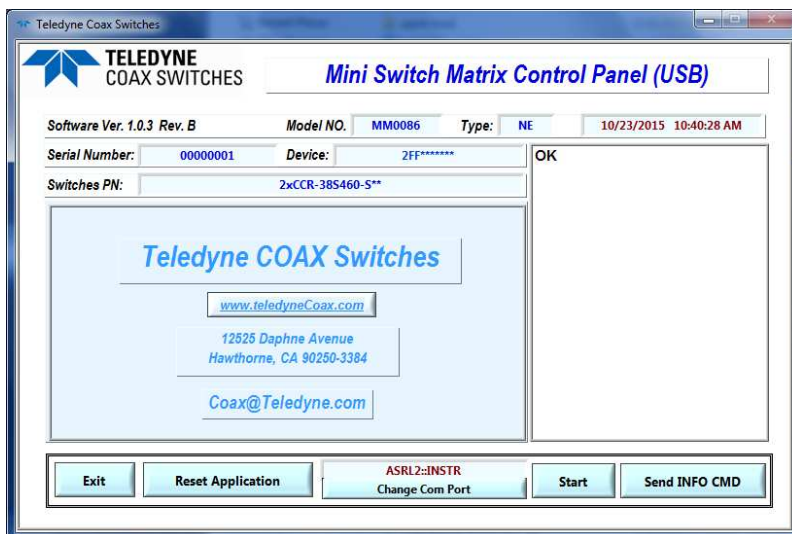


Click **OK** to proceed.

If the COM port shown does not correspond to the one assigned to the Matrix, click the  button to open the drop down menu, and then click on the correct COM port.

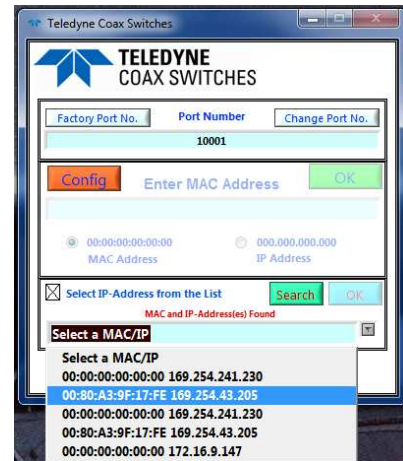
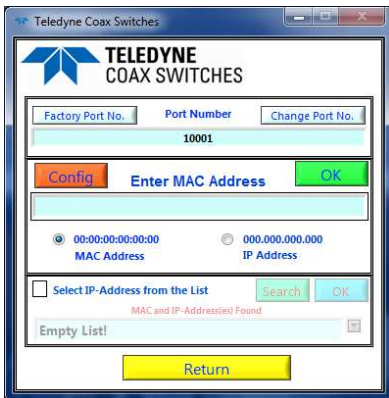


Immediately after the application is loaded, the **'Attention'** and **'Info'** commands are sent. The reply from the Mini Matrix populates the fields shown. There are five buttons:



- **Exit** – Closes the application
- **Reset Application** – Returns to the previous menu
- **Change Com Port** – Brings up the COM port selection window
- **Start** – Opens the command interface for selected Matrix
- **Send ATT CMD** – Sends the Attention command to check the status of the Matrix

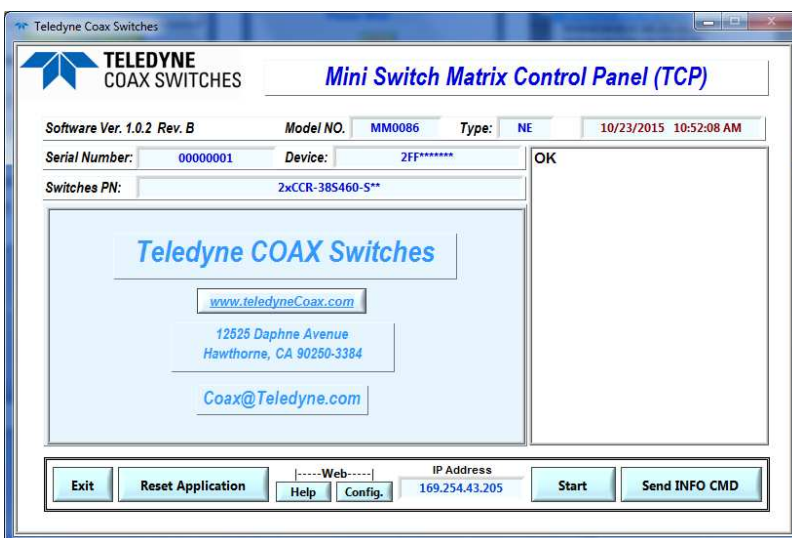
3.c. TCP/IP Remote Control Panel



From this window you can either enter the MAC address of the Matrix (printed on the back panel) or the IP address (if known). Clicking **Search** will initiate a search for any Xport devices on the network. In order to find the device by MAC address, UDP port 30718 must be open in your firewall and the device must be on the same subnet. A prompt will appear regarding password protection; no password is set by default, but if one is enabled, click **Yes** then enter the password to proceed. (see **Appendix B** for details on configuring a TCP password)

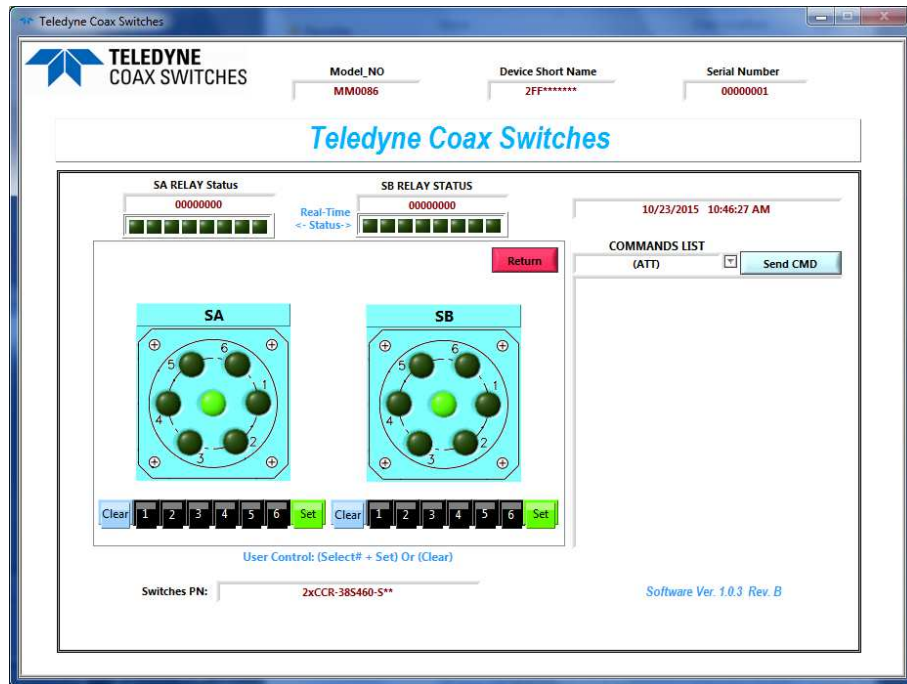


Immediately after the application is loaded, the 'Attention' and 'Info' commands are sent. The reply from the Mini Matrix populates the fields shown. There are six buttons:



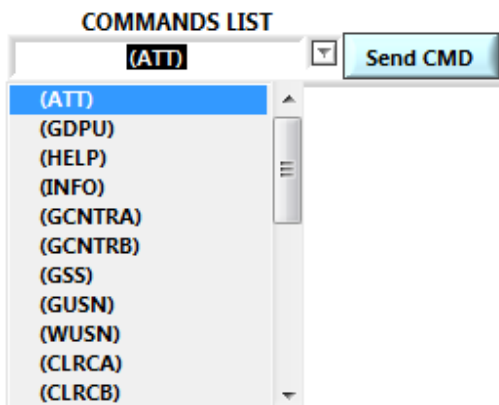
- **Exit** – Closes the application
- **Reset Application** – Returns to the opening menu
- **Web Help** – Opens a web page with Help Information
- **Web Config.** – Opens the Xport web configuration page
- **Start** – Opens the command interface for selected Matrix
- **Send ATT CMD** – Sends the Attention command to check the status of the Matrix

3.d. Mini Switch Matrix Control Panel



This interface provides control over all switching functions of the Mini Matrix. To select a position on a switch, click the corresponding radio button below, and then click **Set** to send the switch command. After a 3 second pause, the status of the switch will be displayed by the indicators above. Click **Clear** to select the Normally Open position. The status byte shown indicates the selected position on each SPMT switch; 87654321 is the format the status indication takes, with each digit being a binary state coordinating to the numbered position on the switch (i.e. a value of 00010000 indicates that position 5 is selected).

For SPDT and Transfer Switches, two buttons, **SET** and **RESET**, appear below each switch pictured; clicking the button sends the command immediately. After a 3 second pause, the status of the switch will be displayed by the indicator above. For Failsafe switches, the status shown indicates whether a switch is being powered or not; 0D0C0B0A is the format, with each letter (A, B, C, D) being a binary value corresponding to the status of the switch so designated (i.e. 01010000 indicates A=Off, B=Off, C=On, & D=On). For Latching switches, the status indicates the last commanded position of the switches; DDCCBBAA is the format, with each binary pair representing the switch position (01 = Pos. 1, 10 = Pos. 2). Thus 10100101 indicates A=1, B=1, C=2, & D=2.



On the right-hand side of the window is the advanced commands menu. From here you can issue commands to set the default switch positions or check the actuations counters. See Section 4.b. for the full commands list with descriptions each command.

4. USB Serial Interface

Connect the Matrix USB interface to the control PC via the USB cable.

See **Appendix A** for driver installation and COM Port configuration guides.

4.a. COM Port Settings

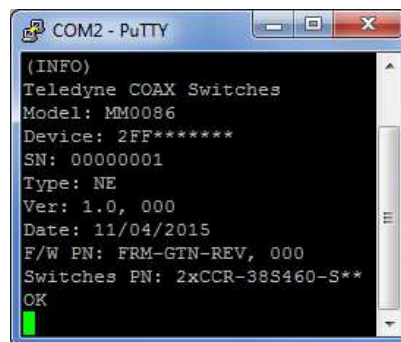
9600 Baud 8 Data Bits 2 Stop Bits No Parity No Flow Control

4.b. Serial Terminal Commands

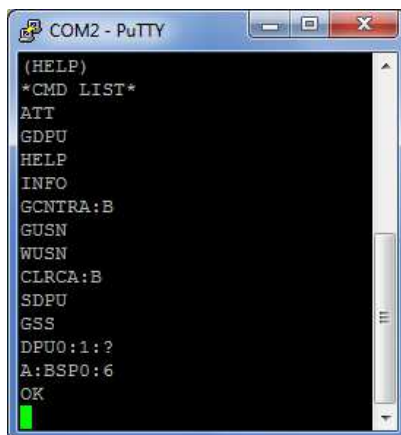
(ATT) Attention command, replies with OK



(INFO) Get Device Info, replies with Manufacturer Name, Model, Device Type, Serial #, Command Type, Hardware Version #, Date Code, Firmware #, and Switch Part #



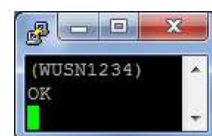
(HELP) Online Help, replies with a list of commands



(GUSN) Get User Serial #, replies with the # assigned by the user



(WUSN@@@) Write User Serial #, allows the user to assign a designation to differentiate between devices



(GDPU) Get Default Power-Up, replies with 8 binary characters showing default positions at Power-Up

```
(GDPU)
SA-00000001
SB-00100000
OK
```

(DPU?) Shows whether the saved default positions will be actuated at startup

```
(DPU?)
DPU1
OK
```

(SDPU) Set Default Power-Up, sets the current switch positions as the default at Power-Up

```
(SDPU)
OK
```

(DPU#) Enable (1) / Disable (0) Default Power-up function

```
(DPU1)
OK
(DPU0)
OK
```

(GSS) Get Switch Status, replies with 8 binary characters showing known position of switches

```
(GSS)
SA-00000001
SB-00100000
OK
```

- (ASP#) Set Switch A to position # (1-6 or 0 for Normally Open), replies with OK
- (BSP#) Set Switch B to position # (1-6 or 0 for Normally Open), replies with OK
- (CSP#) Set Switch C to position # (1 or 2), replies with OK
- (DSP#) Set Switch D to position # (1 or 2), replies with OK

```
(ASP1)
OK
(BSP6)
OK
```

- (GCNTRA) Get Counter A, replies with actuation count of Switch A (SPMT Only)
- (GCNTRB) Get Counter B, replies with actuation count of Switch B (SPMT Only)
- (GCNTRS) Get Counters, replies with actuation count of all switches (SPDT and Transfer Only)

```
(GCNTRA)
CA1: 0000029
CA2: 0000023
CA3: 0000019
CA4: 0000021
CA5: 0000023
CA6: 0000021
OK
```

- (CLRCA) Clear Actuation Counter of Switch A, replies with OK (SPMT Only)
- (CLRCB) Clear Actuation Counter of Switch B, replies with OK (SPMT Only)
- (CLRCS) Clear All Counters, replies with OK (SPDT and Transfer Only)

```
(CLRCB)
OK
```

All commands should be followed by a Carriage Return.

Warning: Sending unstructured binary data may produce unexpected results. Only ASCII characters should be transmitted via Serial or TCP.

5. TCP/IP Remote Interface

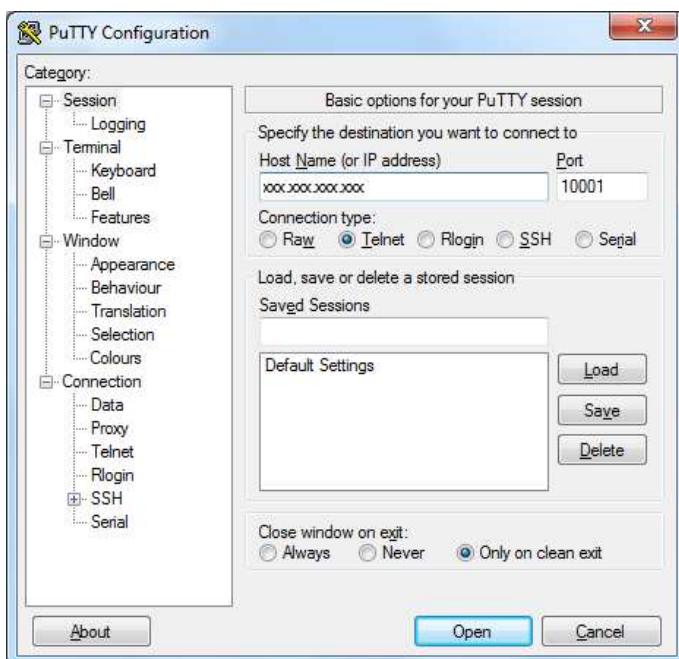
To use the TCP/IP remote interface, connect the Matrix to a network via the Ethernet cable. By default, the port is configured to use DHCP for IP address assignment. If the network requires specific configuration of devices (static IP, etc.), see **Appendix B** for a guide to using DeviceInstaller to configure XPort. DeviceInstaller can also be used to determine the IP address of your Matrix in a DHCP environment.

5.a. TELNET Interface (WinXP)

- Open a command line window (**Start → Run → “cmd” → Ok**)
- Enter `TELNET xxx.xxx.xxx.xxx 10001` (xxx.xxx.xxx.xxx is the IP of your Matrix)
- At the prompt, enter your commands for the Matrix. The commands are listed above in 4.b.
- When finished, close the window.

5.b. Using PuTTY

In Windows 7 and above, HyperTerminal and TELNET are no longer included. There are many alternatives available, including PuTTY. PuTTY can also be used as a Serial terminal. PuTTY is available for download at <http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html>.



After launching the application:

- Select Raw for the Connection Type.
- For Host Name, enter the IP of your Mini Matrix.
- For Port, enter 10001.
- Under the Terminal tab, select **Force On** for both **Local Echo** and **Local Line Editing**.

You can save these settings by typing a name into **Saved Sessions** and clicking **Save**.

To load saved settings, click on the named session then click **Load**.

- Click **Open** to connect to the Matrix.
- At the prompt, enter your commands for the Matrix. The commands are listed above in 4.b.
- When finished, close the window.

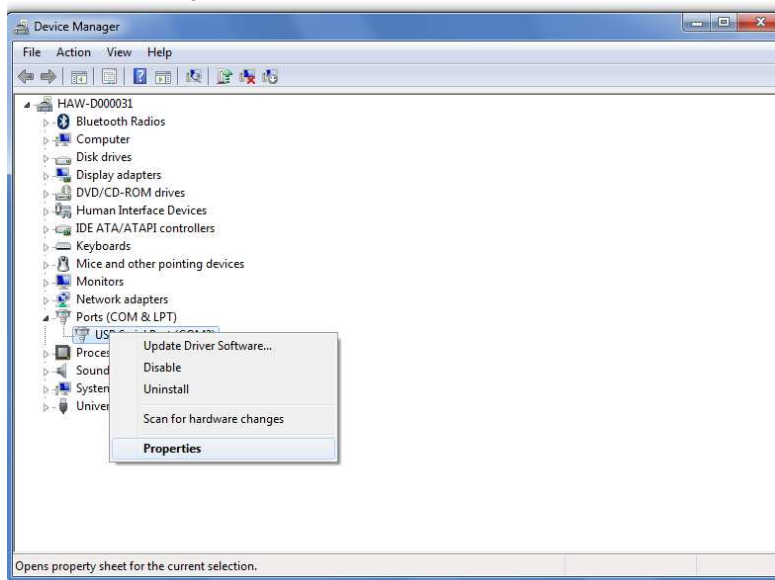
Appendix A – Serial Drivers and COM port configuration

Installing the FTDI VCP drivers

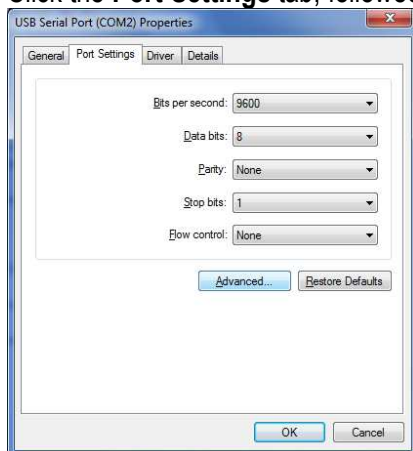
Before connecting the USB cable, insert the CD in to the control computer. On the CD, find the folder **DRIVERS**; select the file **CDM v2.12.00 WHQL Certified.exe**. Run the executable as Administrator to begin installation. The wizard will guide you through the installation. After installation has completed, plug in the USB cable. Windows will now recognize the new hardware and apply the drivers. Once New Hardware Installation is complete, take note of the COM port assigned in the notification bubble. Alternately, open **Device Manager** and expand *Ports (COM & LPT)* to see the device listed. It should appear as *USB Serial Port (COM#)*.

Changing COM Port Assignment

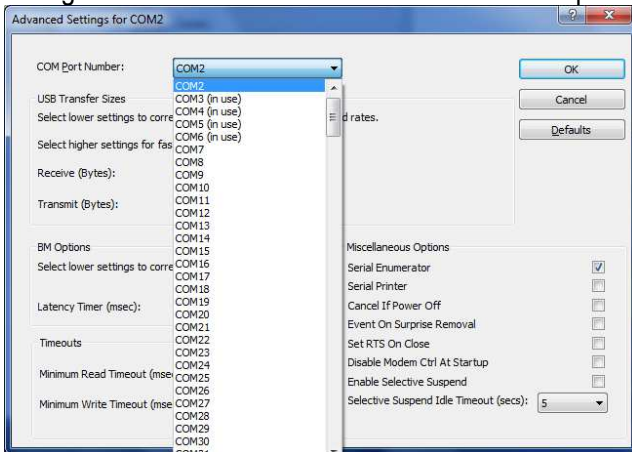
If the port assignment needs to be changed due a conflict with other COM devices, right-click on the device, then choose **Properties**.



Click the **Port Settings** tab, followed by the **Advanced** button.



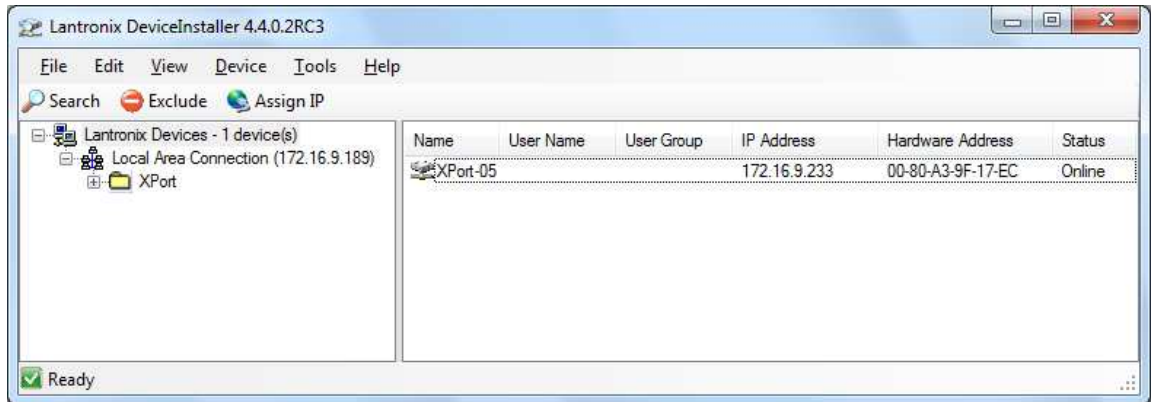
In the top-left there is a **COM Port Number** drop-down box; in this menu a different port can be chosen, taking into account the numbers which have been previously assigned.



Once a selection is made, click **OK**, then **OK** again. You may be advised to restart your PC; if a change was made (especially if the port chosen was marked as “in use”) a restart is advised to be sure that all ports are fully closed and no other applications are attempting to open them.

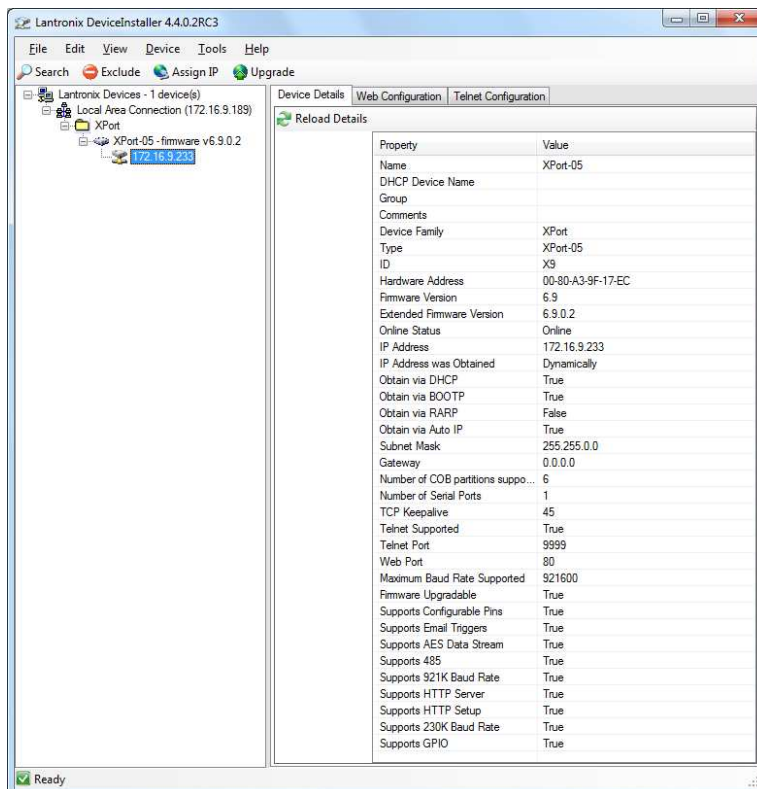
Appendix B – Installing and Using DeviceInstaller

On the CD, find the folder **Utilities**; select **setup_di_x86x64cd_4.4.0.2RC3.exe**. Run the executable as Administrator to begin installation. The wizard will guide you through the installation. After installation, go to **Start → Programs → Lantronix → DeviceInstaller 4.4 → DeviceInstaller** and open the application.



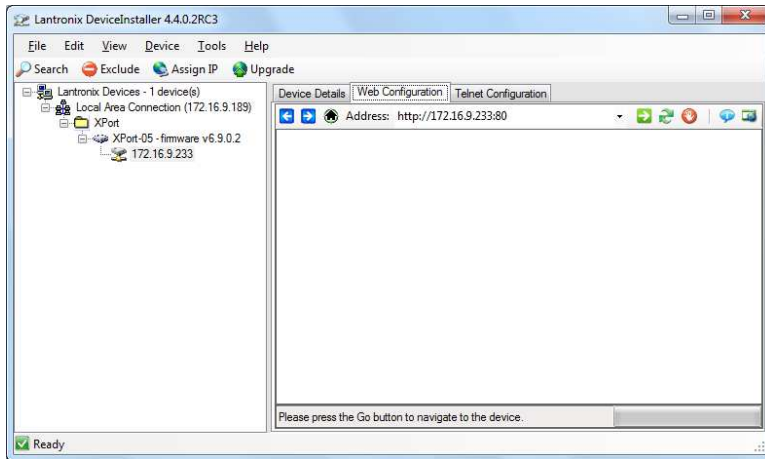
DeviceInstaller will scan the local subnet and locate any Lantronix devices connected.


Double click on your device, identified by the MAC address printed on the back of the case.



If your network is DHCP, you are done; just note the IP address assigned to the Matrix.

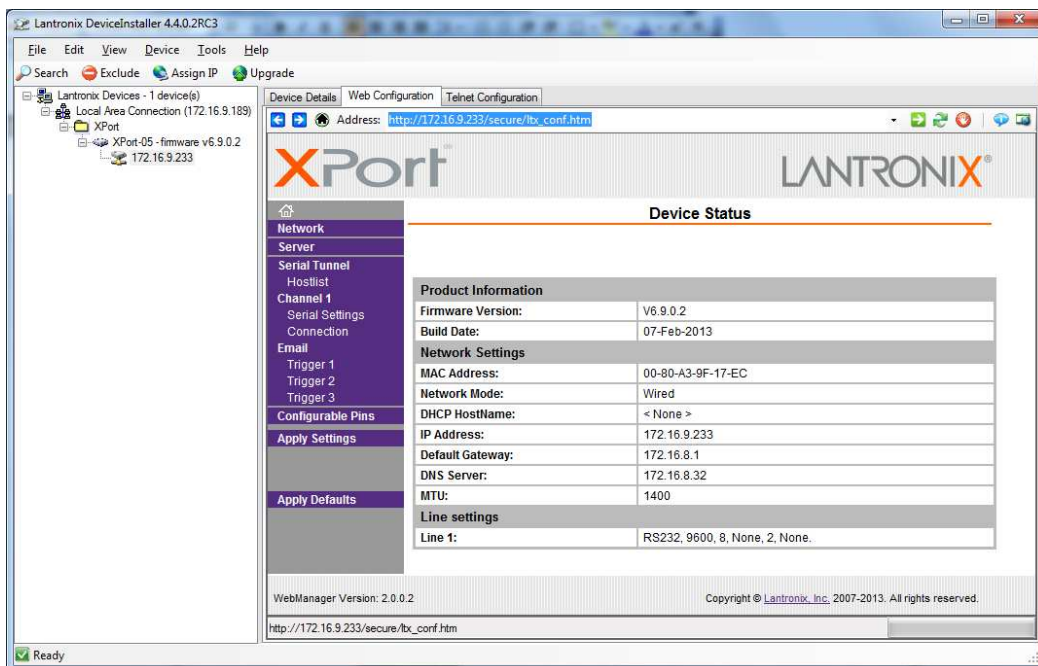
If you require special network configuration, proceed to the next steps.



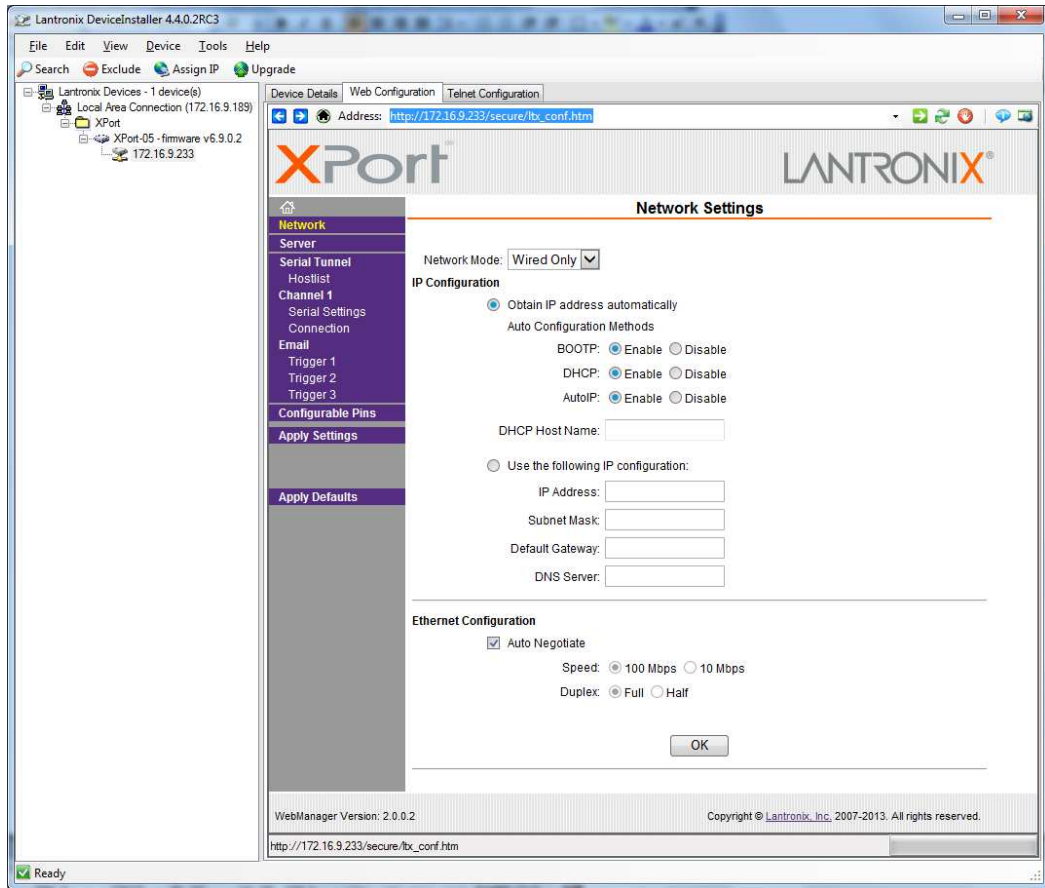
Click on the **Web Configuration** tab, then press Enter or click the  button



After a few seconds a login dialog will appear. Leave the User name and password fields blank, then click OK.



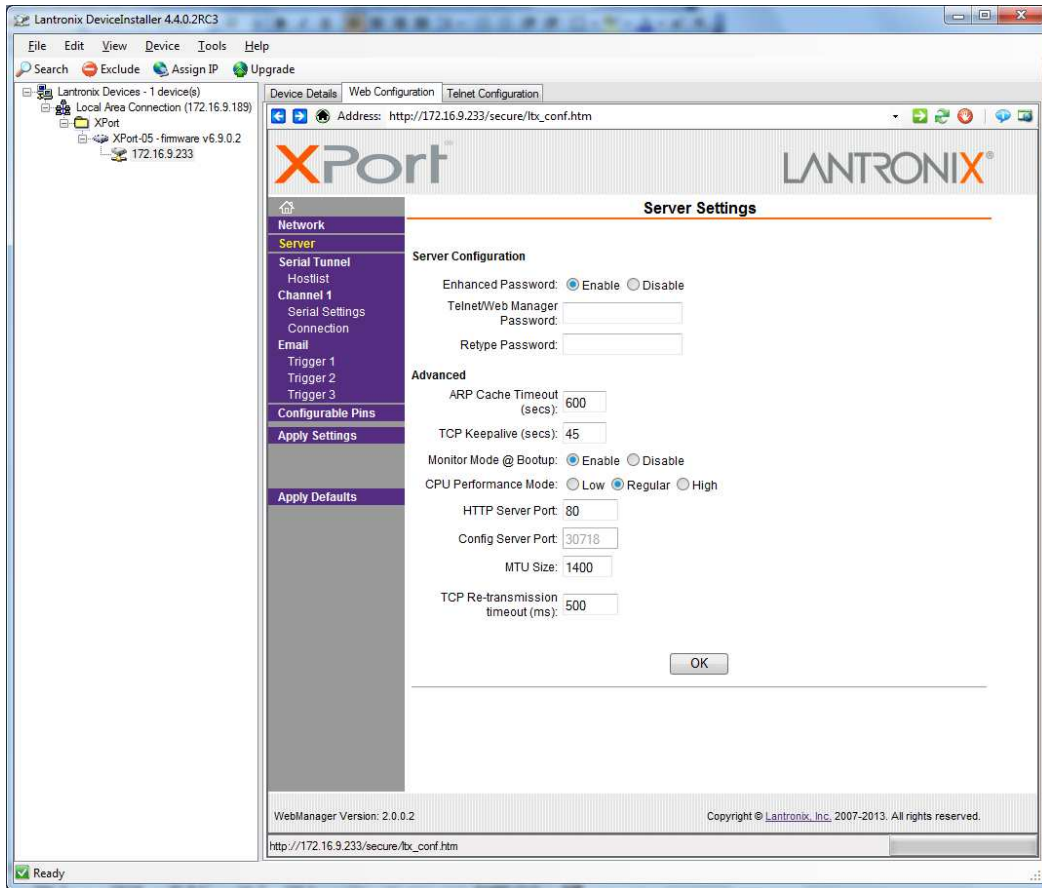
To change network settings, click **Network** in the left side navigation panel of the web browser.



On this page the network configuration can be modified.

Once changes are made, click OK, and then click Apply Settings in the left side navigation panel.

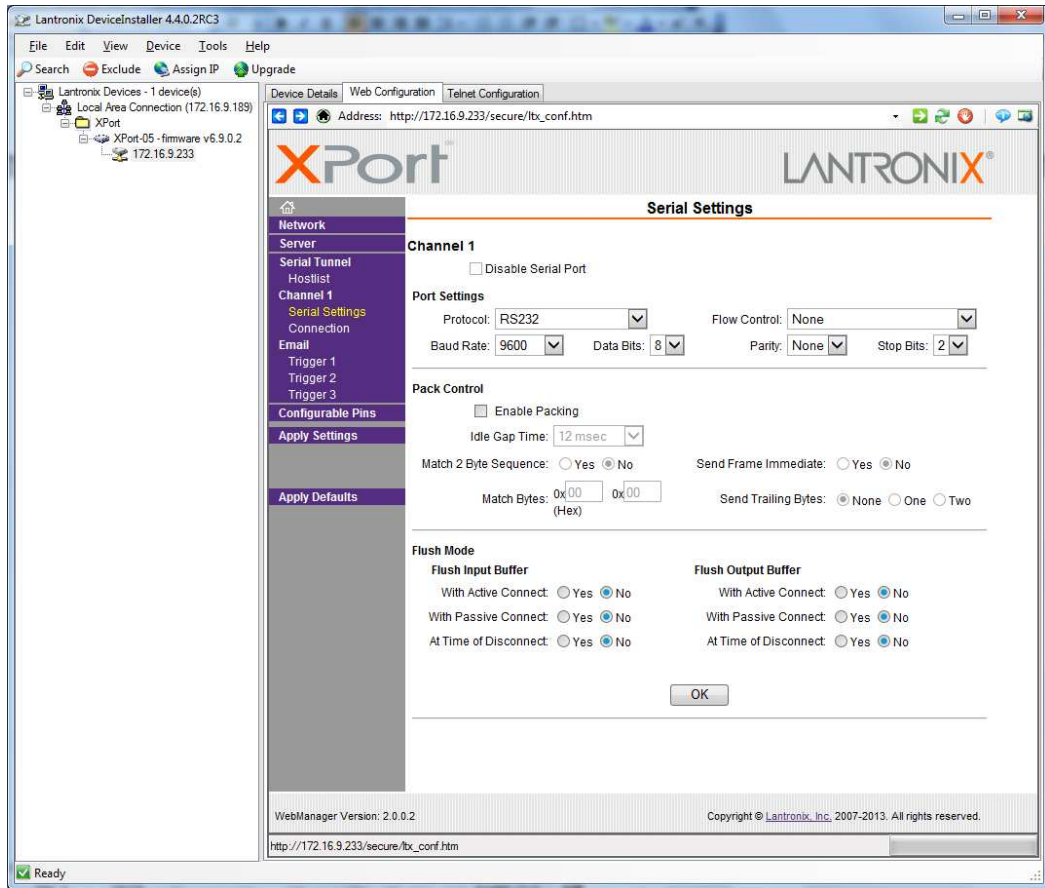
Caution: after changing network settings on the XPort device, you may no longer be able to communicate from your PC (i.e. setting a static IP while on a DHCP network). Carefully verify all settings before committing them.



On the Server panel, the configuration password can be changed. This password is only for the web configuration interface; to set the TCP password, continue to page 17.

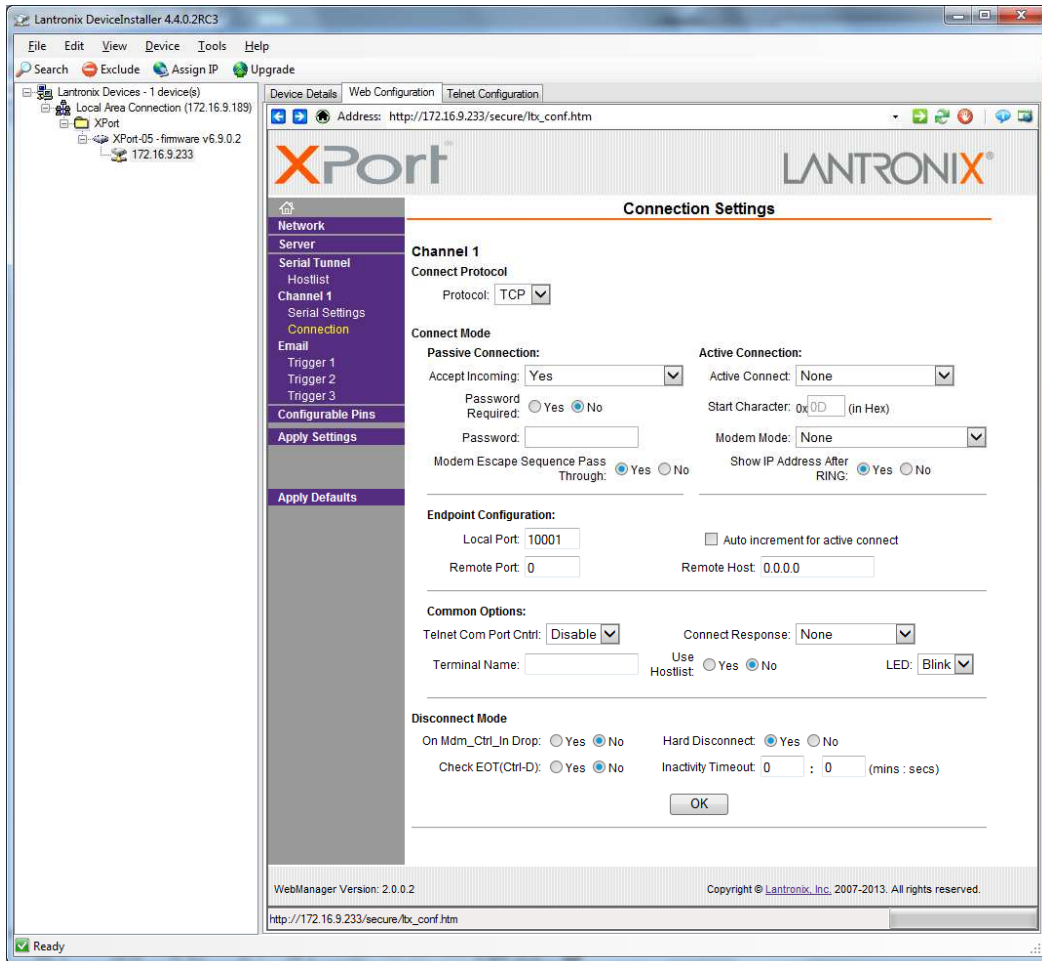
Once changes are made, click OK, and then click Apply Settings in the left side navigation panel.

Caution: It is not recommended to change other settings on this page.



Serial port configuration is shown here for reference.

Caution: changing these settings from those shown above will cause a loss of communication.



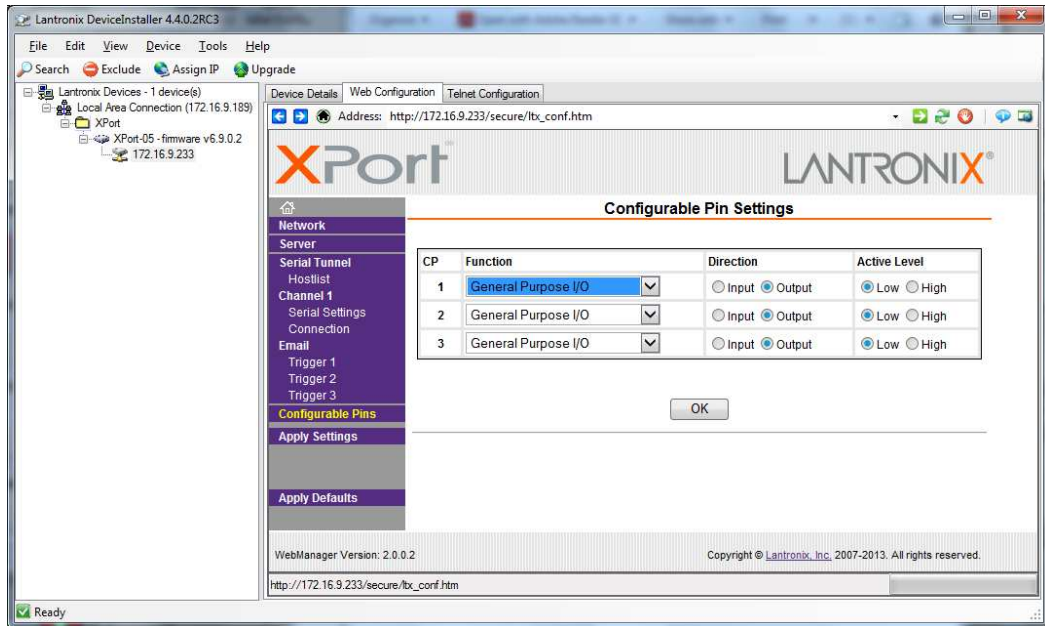
TCP/IP to Serial Bridge settings are shown here.

TCP security can be enabled by: setting **Password Required:** to Yes and typing a password.

Endpoint Configuration Local Port can be modified, if desired. This change will need to be taken into account when following directions in Sections 4 & 5 above.

Once changes are made, click OK, and then click Apply Settings in the left side navigation panel.

Caution: It is not recommended to change other settings on this page.



The Configurable Pins are not used in the Matrix.

Warning: Clicking **Apply Defaults** on any page will revert the XPort back to OEM settings. Doing so will require the XPort to be manually reconfigured to Teledyne specification.

For Questions and Technical Support, Contact:

<http://www.teledynecoax.com/>

coax@teledyne.com

1-800-351-7368

FTDI VCP Drivers are © Future Technology Devices International Ltd. 2015

Lantronix DeviceInstaller is © Lantronix, Inc. 2015.

Teledyne Mini Switch Matrix Control Panel is built with **National Instruments LabVIEW**. It is free to copy and use with Teledyne Mini Switch Matrix products.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.