

AR1100 Calibration and Setup Guide

Summary:

The resistive touch ELI units shown below use an AR1100 Resistive Touch Screen Controller from Microchip. While the AR1100 supports 4-, 5-, and 8-wire resistive touch systems, ELI LCDs use the 4-wire resistive touch system and can provide touch control to a PC running a Windows or Linux operating system. This document describes how to program and calibrate the AR1100 to allow for use with both of these operating systems.

ELI LCDs using AR1100:

- 7.0" Resistive Touch Screen LCD (ELI70-CR)
- 7.0" High Bright Resistive Touch Screen LCD (ELI70-IRHW)
- 12.1" Resistive Touch Screen LCD (ELI121-CR)

Required Hardware:

- One of the ELIs shown above
- Single board computer or PC
- HDMI Video Input
- Type-A to Mini-B USB cable

Required Software:

- Compatible Operating System (Linux/Windows)
- Microchip AR1100 Configuration Utility (Windows Only)

NOTE: The AR1100 setup process will require an internet connection

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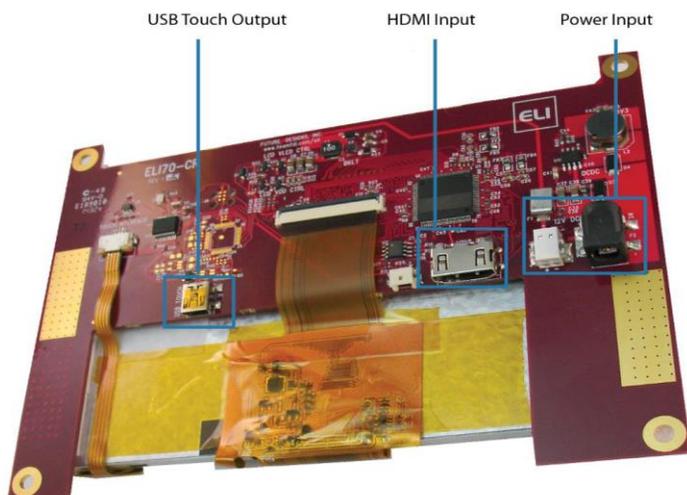
1. Selecting A Programming Method

First, identify the type of operating system that will be used with the ELI. If using a machine running Linux, such as a Raspberry Pi 3, BeagleBone Black, or Linux-based PC, proceed to section 2 (Programming and Calibrating the AR1100 in Linux). If using a Windows based machine, such as a Windows PC or Intel Compute Stick, proceed to Section 3, “Programming and Calibrating the AR1100 in Windows”.

2. Programming and Calibrating the AR1100 in Linux

When using a Linux based machine, terminal commands must be used to configure and calibrate the AR1100 Resistive Touch Screen Controller.

1. Connect the Linux based machine to the Resistive Touch ELI unit using an HDMI cable and a Type-A to Mini-B USB cable.



2. Power the ELI by connecting the power supply.

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3. After booting the Linux based computer and connecting to the Internet, open a terminal and type the following commands:

```
sudo apt-get update           // updates apt-get package list
sudo apt-get install git-core // installs git
cd~                           // changes to home directory
mkdir git                     // creates a new directory "git"
cd ~/git                      // changes to new directory
git clone git://github.com/tom-2015/rpi-AR1100.git // clones the AR1100 software
sudo apt-get install make g++ libusb-dev libgtk2.0-dev // installs libusb
cd ~/git/rpi-AR1100          // changes to AR1100 software dir
make                          // builds AR1100 software
sudo chmod +x AR1100         // provides AR1100 execute permission
sudo ./AR1100 -c 9 -m        // runs AR1100 9-point (-c)alibration
                             // and sets device to (-m)ouse mode
```

NOTE: To use 4 or 25 points, change the last command to

```
sudo ./AR1100 -c 4 -m
```

or

```
sudo ./AR1100 -c 25 -m
```

4. A calibration screen should appear after the last command is entered. Press a finger or stylus onto the calibration points as they appear.

Once calibration is complete, the device will set itself in mouse mode. The terminal can be closed and the ELI can now be used as intended. The calibration is stored in EEPROM registers on the AR1100 chip onboard the ELI and the device will remain calibrated even if the video source is switched (using another Linux based machine, for instance).

NOTE: The calibration will be incorrect if the ELI is switched to a Windows based machine. If the ELI needs to be re-calibrated for Windows, see Section 3, "Programming and Calibrating the AR1100 in Windows".

3. Programming and Calibrating the AR1100 in Windows

When using a Windows based machine, configuration software must be used in order to configure and calibrate the AR1100 Resistive Touch Screen Controller.

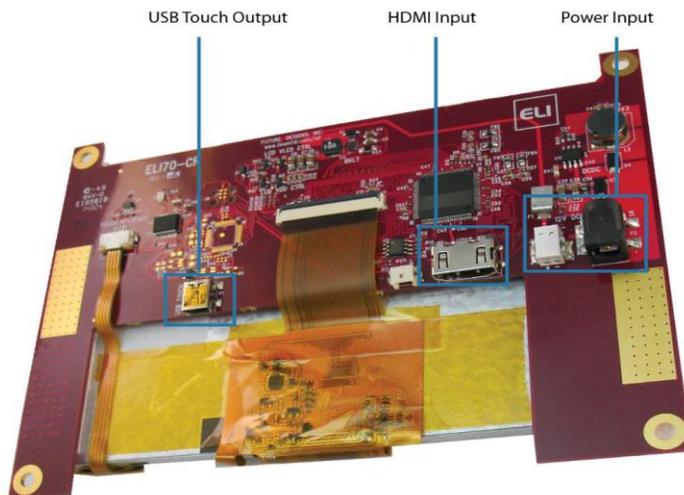
A series of videos have been created to walk users through this process, which is detailed below.

- AR1100 ELI Touch Display Install Win7<https://youtu.be/nrykNQLzrA>
- AR1100 into Digitizer Mode.....<https://youtu.be/due8vItaG4I>

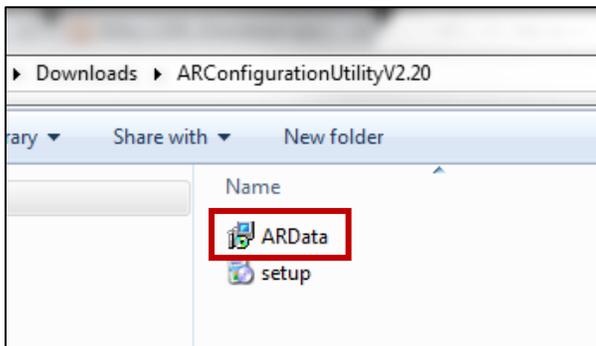
a. Initial Configuration

The steps below describe how to set the AR1100 to USB Digitizer mode for use with Windows. This ensures the device transmit information in the correct “language” for Windows to understand. These steps only need to be completed once for any given ELI prior to use on a Windows machine. Once it has been set up, the mode is saved in the AR1100’s memory. Note, however, that this mode will not work for Linux based machines. To setup ELI for Linux, see [Programming and Calibrating the AR1100 in Linux](#).

1. Connect the Windows based machine to the Resistive Touch ELI unit using an HDMI cable and a Type-A to Mini-B USB cable.



2. Power the ELI by connecting the power supply.
3. Download and install the [Microchip AR1100 Configuration Utility](#) from Microchip’s website.

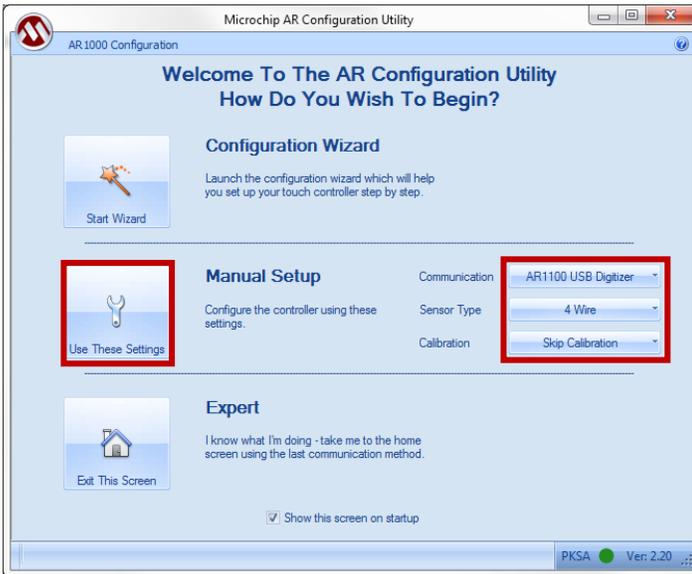


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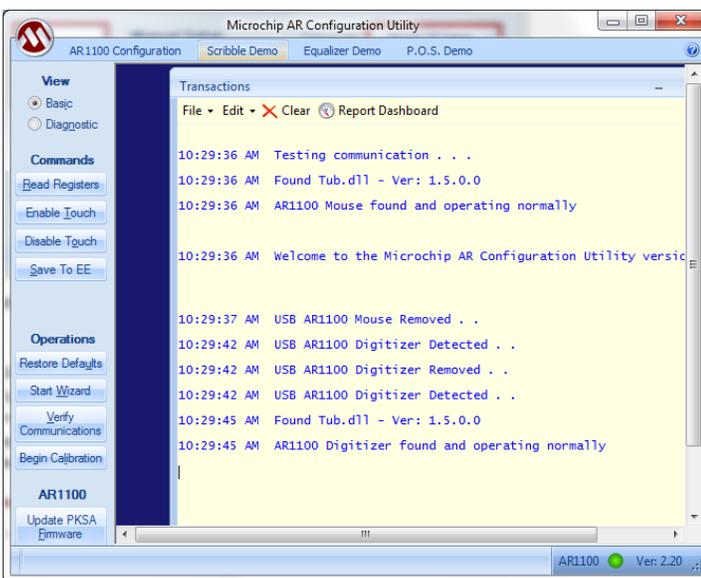
- Once the utility is downloaded and installed, run the AR Configuration Utility.



- On the AR Configuration Utility welcome screen, next to Manual Setup, change the Communication dropdown to AR1100 USB Digitizer, Sensor Type to 4 Wire, and Calibration to Skip Calibration.
- Click on the “Use These Settings” button to continue.



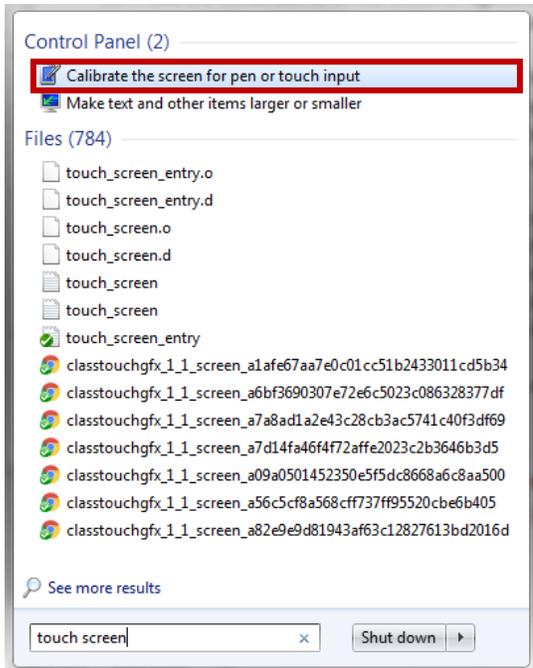
- After the configuration has run, close the AR Configuration Utility



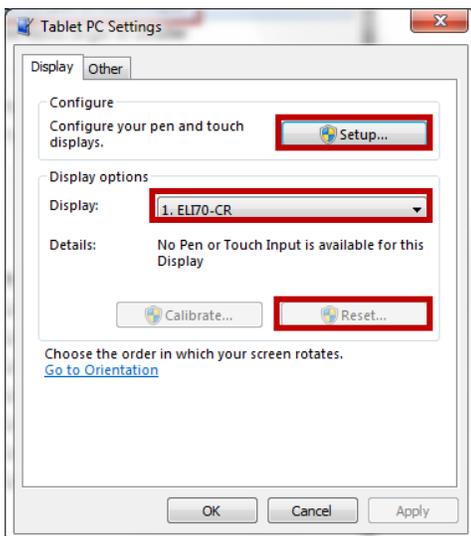
b. Configuring Windows to Accept Touch Inputs

This section describes how to modify Windows settings to allow the OS to treat the ELI as a touch display. This allows for Windows to use the data that is sent from the AR1100 on board the ELI. These steps must be completed every time an ELI is connected to a new Windows machine.

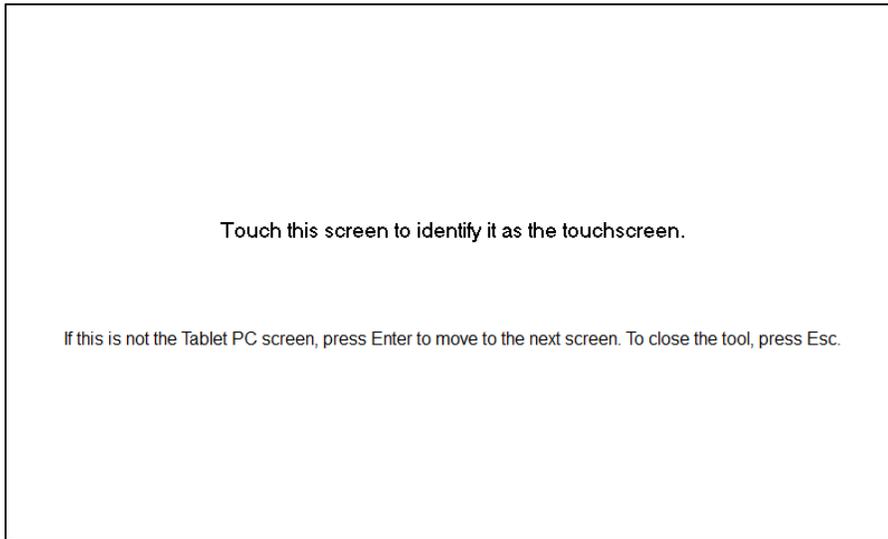
1. Click the Windows Icon on the Desktop or press the Windows key on your keyboard.
2. Type “touch screen”, and click on “Calibrate the screen for pen or touch input”.



3. In the Tablet PC Settings screen, select the ELI display from the drop down menu, and if the option to Reset is available, click Reset.
4. Next, click Setup.



5. Press enter until the ELI display shows text which asks the user to touch the screen.

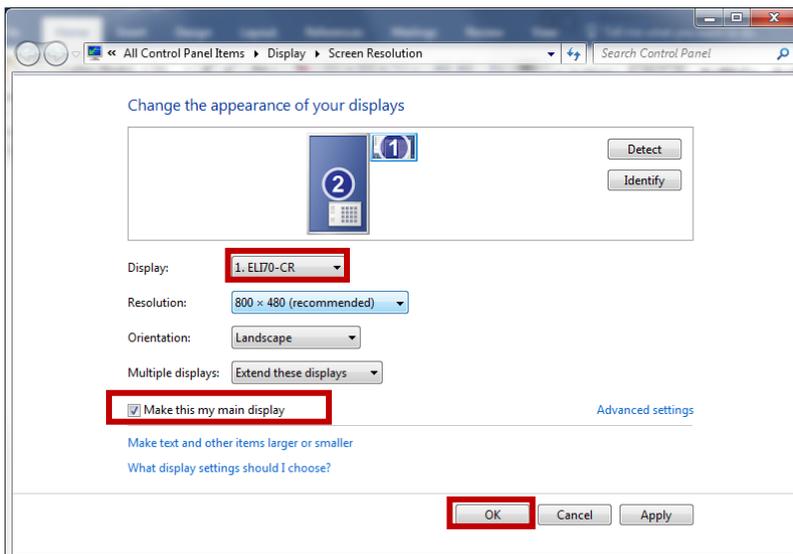


6. Press the ELI screen until the touch is registered. The text will change and ask you to hit enter.
7. Hit enter, then press OK to exit the touch registration menu.
8. Close the Table PC Settings window.

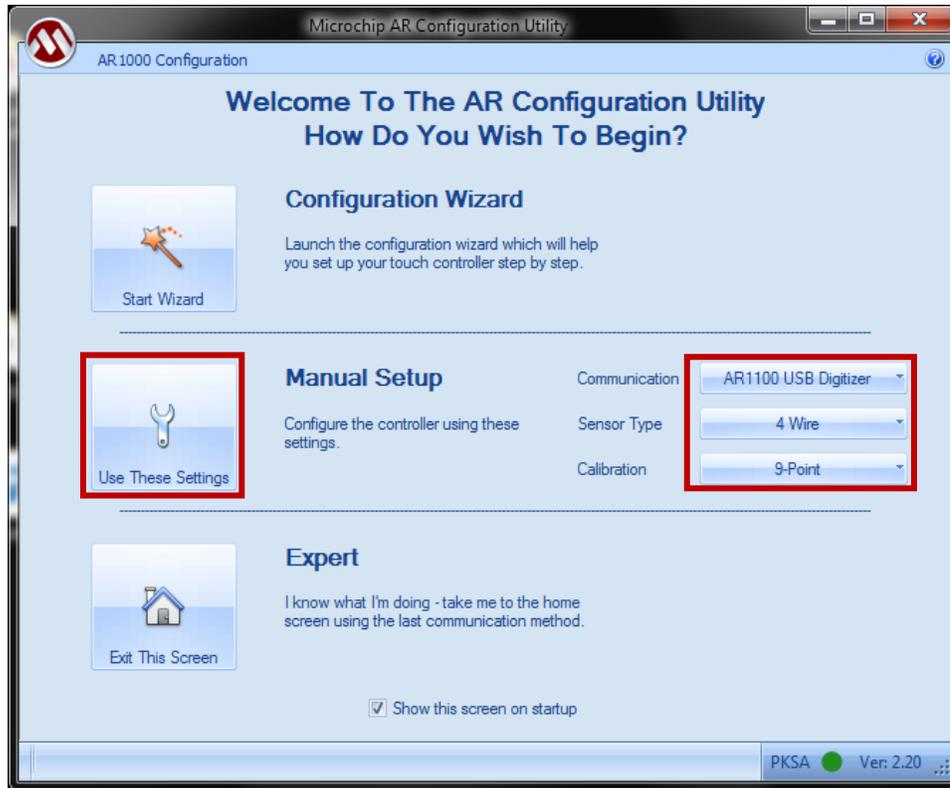
c. Calibrating the ELI Touchscreen

The steps below describe how to calibrate the AR1100 for Windows. Once this calibration has been completed once for a specific ELI, it will not need to be repeated for use with other Windows machines. This calibration is saved into the AR1100 on board memory and will persist from machine to machine.

1. Right-click anywhere on the Windows Desktop and select “Screen Resolution”.
2. In the window that opens, select the ELI display and check “Make this my main display”.



3. Open the AR Configuration Utility software.
4. On the AR Configuration Utility welcome screen, click next to proceed to Manual Setup, change the Communication dropdown to AR1100 USB Digitizer, Sensor Type to 4 Wire, and Calibration to 9-Point (you may also use 4-Point or 25-Point, if you wish).



5. Once these are set, click on the “Use These Settings” button.
6. A calibration screen will appear on the ELI device. Press a finger or stylus onto the calibration points as they appear.
7. After calibration is complete, the device will set return itself into Digitizer mode and the display will be able to be used for touch input. Verify the touch input by using the ELI touchscreen to close the AR Configuration Utility.

4. Appendix

- ELI70-CR <http://www.teamfdi.com/product-details/eli70-cr>
- ELI70-IRHW <http://www.teamfdi.com/product-details/eli70-irhw>
- ELI121-CR <http://www.teamfdi.com/product-details/eli121-cr>
- Microchip AR1100 Configuration Utility (Windows Only)
..... <http://ww1.microchip.com/downloads/en/DeviceDoc/ARConfigurationUtilityV2.20.zip>