



CELIA Engineering Kit

Quick Start Guide

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Telephone : +1 (713) 283-9970

E-mail : sales@bipom.com

Web : www.bipom.com

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Kit Contents

CELIA-E Engineering Kit





Hardware Setup

Diagrams of the CELIA-E board showing all relevant ports and components can be found in Appendix A.

1. Check that the micro-SD card is properly inserted into the micro-SD holder on the board. If it is not fully inserted, gently push into the holder until the card clicks into place.
2. Plug the ethernet cable into Ethernet port on the right side of the CELIA-E board. When the device is powered, yellow LED on Ethernet port will indicate successful connection. Plug the other end of the ethernet cable into computer or router.
3. Plug in the UART end of UART-USB cable to the UART pins near the bottom right of the board. The three right most pins of the UART on the board should be used. From right to left, the order of UART cables is green, white, then black.
4. Plug in USB end of USB-UART cable to computer.
5. Plug in power supply cable to the board's 4-pin power connector located on the top right corner of board. The CELIA-E board can be powered by connecting the power supply cable to a standard power supply outlet. The board can operate between 8V and 30V. Green LED will flash to indicate device is being powered successfully.



Software Setup

Micro-IDE is a Windows-based Integrated Development Environment for micro-controller application development. Micro-IDE has a built-in terminal window to interact with CELIA-E boards through a PC COM port. This software is free to download.

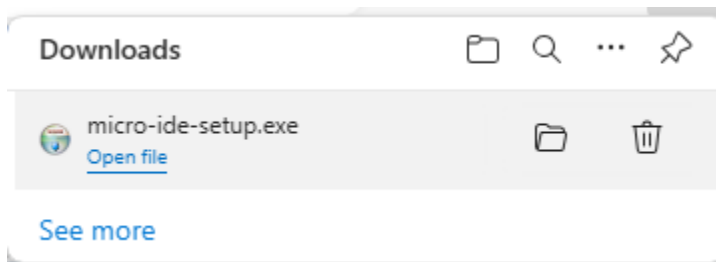
Follow this link to download and install Micro-IDE:

<https://www.bipom.com/microide.php>

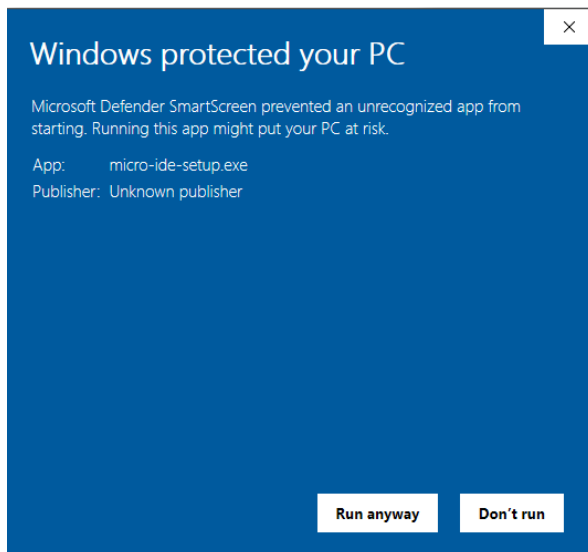
Click the link at the top of the page to access the installation software for Micro-IDE:



Open the downloaded file once it is finished:

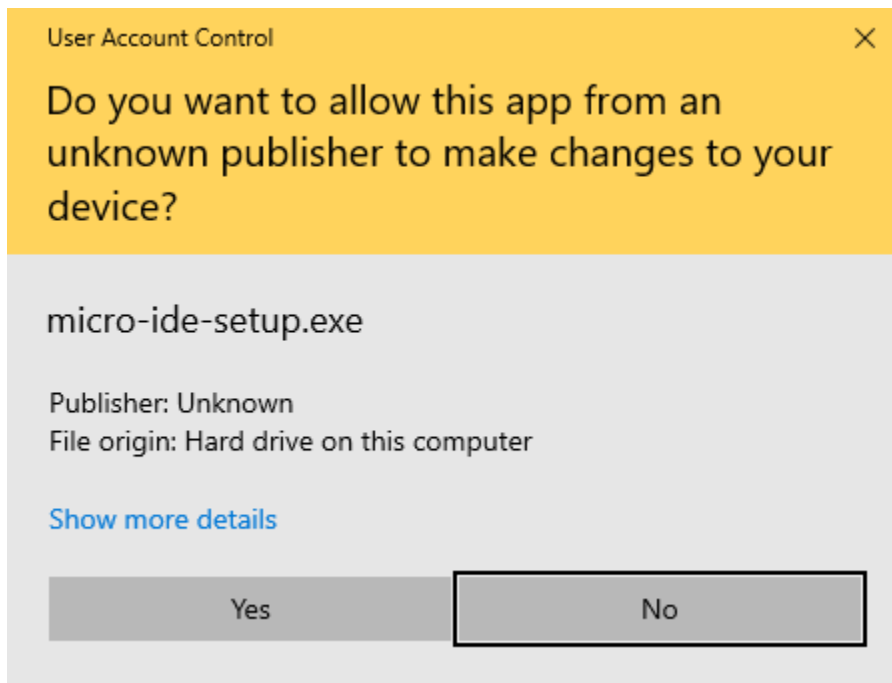


This window may appear. If it does, click “Run Anyway”

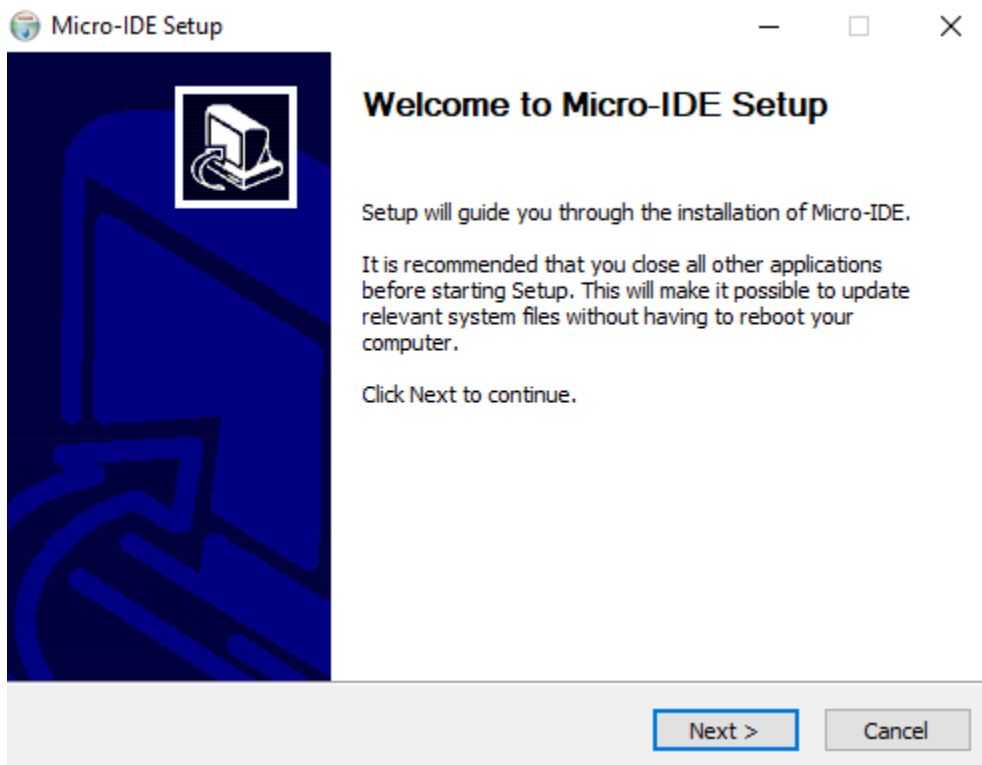




This window will appear. Click “Yes”:

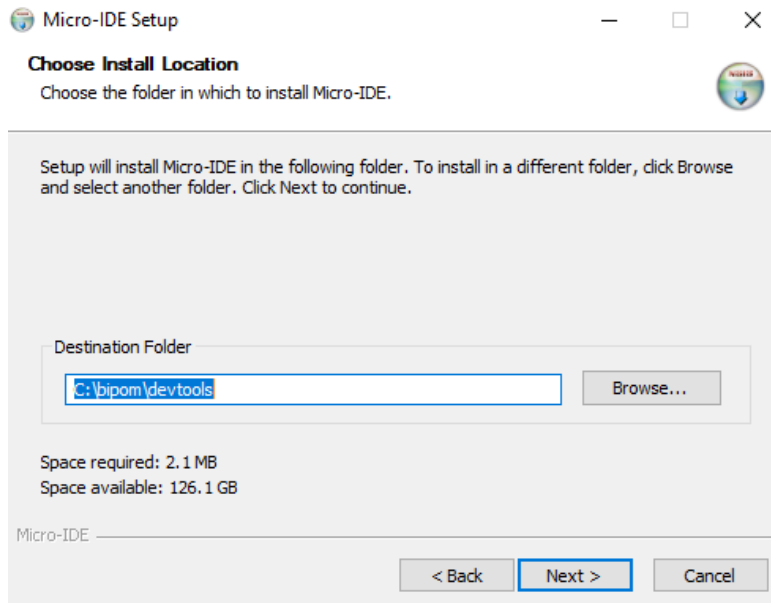


This window will appear. Click “Next”:

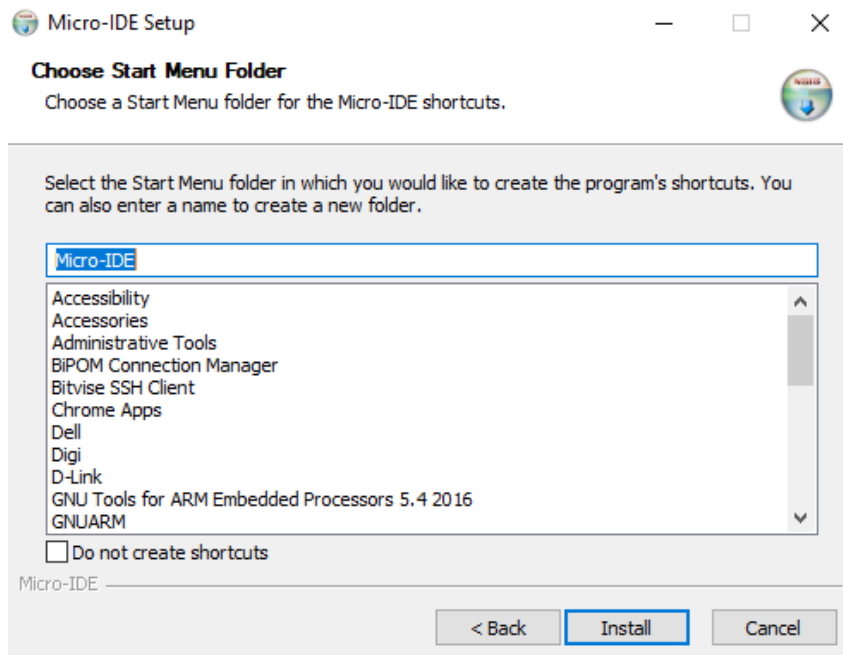




This window will appear. Select a destination for install or use the default location and click “Next”:



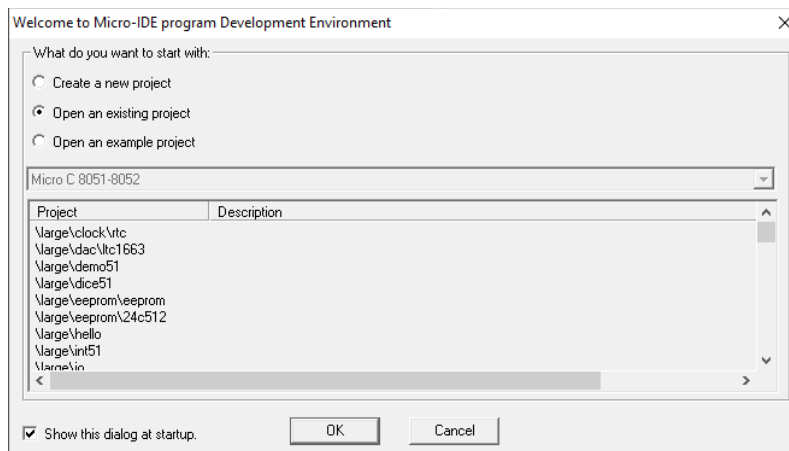
Choose a folder for creating Micro-IDE shortcuts. The default folder “Micro-IDE” can be used. Click “Install” when the folder has been selected:



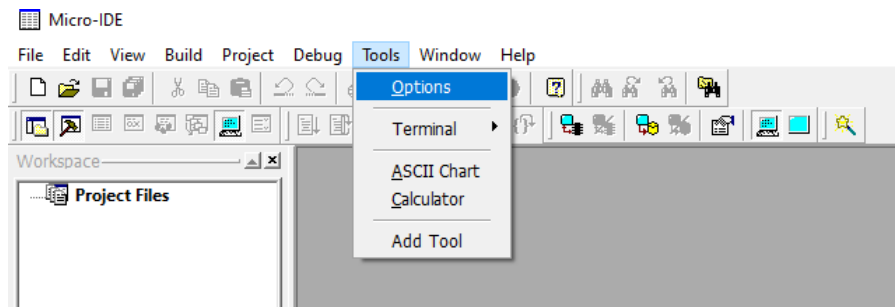
Once Micro-IDE is finished installing, this window will appear. Uncheck the box “Run Micro-IDE” if you are not ready to use the app. Click “Finish”. Micro-IDE is now installed and ready to use.



Open Micro-IDE. A window will appear in the middle of the screen, click the “X” at the top right corner to remove this window:

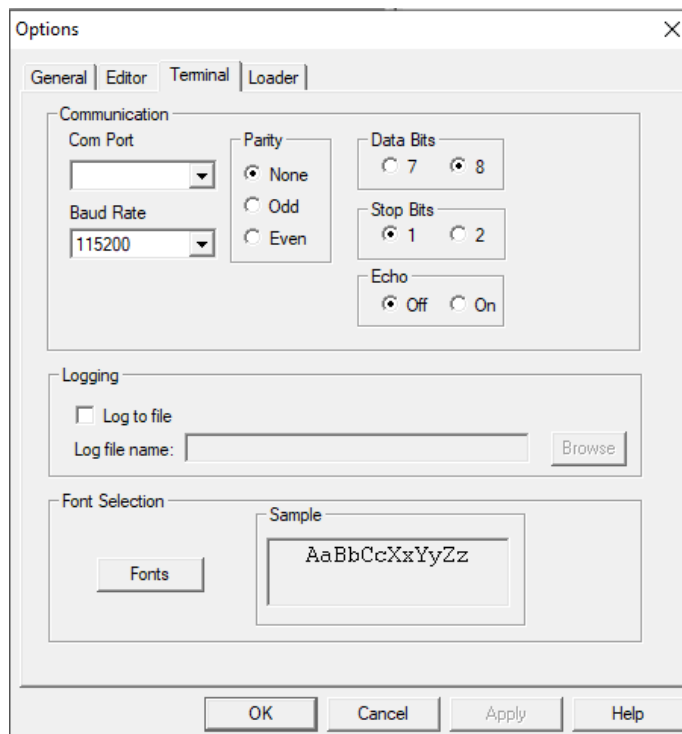


Click on “Tools” button at the top left of the window, then click “Options”. Next, click on the “Terminal” tab:



This will open a window with several settings options. Select the correct COM port depending on where the USB-UART cable is connected to the computer. Make sure to select the correct serial port settings as detailed below:

- Baud Rate: 115200
- Data Bits: 8 Bits
- Parity: None
- Stop Bits: 1 Bit
- Flow Control/Echo: None/Off

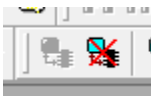


Once all correct settings have been selected, click “OK.”

Click the “Connect” button.



This will establish the connection between Micro-IDE and the CELIA board. When terminal is connected, the buttons will appear as shown:





If all cables are properly connected and the Terminal application is running correctly, Linux system will boot, and output should begin to appear in the terminal window of Micro-IDE application (located on the right side of the main window):

```

Terminal
[[0:32m OK [0m] Started [0:1:39mDaily apt upgrade and clean activities[0m.
[[0:32m OK [0m] Started [0:1:39mPeriodic ext4 Onli&#x201c;ata Check for All Filesystems[0m.
[[0:32m OK [0m] Started [0:1:39mDaily exim4-base housekeeping[0m.
[[0:32m OK [0m] Started [0:1:39mDiscard unused blocks once a week[0m.
[[0:32m OK [0m] Started [0:1:39mDaily rotation of log files[0m.
[[0:32m OK [0m] Reached target [0:1:39mTimers[0m.
[[0:32m OK [0m] Listening on [0:1:39mD-Bus System Message Bus Socket[0m.
[[0:32m OK [0m] Listening on [0:1:39mPC-SC Smart Card Daemon Activation Socket[0m.
[[0:32m OK [0m] Listening on [0:1:39mUID daemon activation socket[0m.
[[0:32m OK [0m] Reached target [0:1:39mSockets[0m.
[[0:32m OK [0m] Reached target [0:1:39mBasic System[0m.
[[0:32m OK [0m] Started [0:1:39mRegular background program processing daemon[0m.
[[0:32m OK [0m] Started [0:1:39mD-Bus System Message Bus[0m.
[[0:32m OK [0m] Started [0:1:39mRemove Stale Onli&#x201c;t4 Metadata Check Snapshots[0m...
Starting [0:1:39mLSB: exim Mail Transport Agent[0m...
Starting [0:1:39mLSB: Load kernel m&#x201c;d to enable cpufreq scaling[0m...
Starting [0:1:39mOpenVPN service[0m...
Starting [0:1:39m/etc/rc.local Compatibility[0m...
Starting [0:1:39mSystem Logging Service[0m...
Starting [0:1:39mOpenBSD Secure Shell server[0m...
Starting [0:1:39mUser Login Management[0m...
Starting [0:1:39mPermit User Sessions[0m...
Starting [0:1:39mEnable USB Ethernet gadget[0m...
[[0:32m OK [0m] Started [0:1:39mWiPOM Service[0m.
[[ 18.170379] stm32-dwmac 5800a000.ethernet eth0: Link is Up - 100Mbps/Full - flow control rx/tx
[[ 18.177560] IPv6: ADDRCONF(NETDEV_CHANGE): eth0: link becomes ready
[[0:32m OK [0m] Started [0:1:39mSystem Logging Service[0m.
[[0:32m OK [0m] Finished [0:1:39mRemove Stale Onli&#x201c;ext4 Metadata Check Snapshots[0m.
[[0:32m OK [0m] Finished [0:1:39mOpenVPN service[0m.
[[0:32m OK [0m] Finished [0:1:39mPermit User Sessions[0m.
[[0:32m OK [0m] Finished [0:1:39mEnable USB Ethernet gadget[0m.
[[0:32m OK [0m] Started [0:1:39mOpenBSD Secure Shell server[0m.
[[0:32m OK [0m] Started [0:1:39mUser Login Management[0m.
[[0:32m OK [0m] Started [0:1:39mLSB: Load kernel m&#x201c;d to enable cpufreq scaling[0m.
Starting [0:1:39mLSB: set CPUFreq kernel parameters[0m...
[[0:32m OK [0m] Started [0:1:39mLSB: set CPUFreq kernel parameters[0m.
[[0:32m OK [0m] Started [0:1:39mLSB: exim Mail Transport Agent[0m.
[[ 23.125410] rc.local[741]: /home/debian/tools/mac_address: EEPROM is empty
[[ 27.442198] rc.local[826]: /home/debian/tools/eepr&#x201c;info: EEPROM is empty
[[ 29.853710] rc.local[1037]: /home/debian/tools/bipom_cert: EEPROM is empty
[[ 33.768873] usb33: supplied by vdd_ush
[[ 33.771385] v3v3_eth: disabling

```

Once the Linux system finishes booting, press Enter key. The login prompt should appear. Type user “debian” then press enter:

```

localhost login:

```

Next, the password prompt will appear. Type password “tmppwd” then press Enter:

```

Password:

```

Command prompt should now appear. User is now logged in and can access the CELIA-E’s Linux:

```

[?20041
[?2004hdebian@localhost:~$ |

```



Appendix A: CELIA-E Board Hardware Visuals

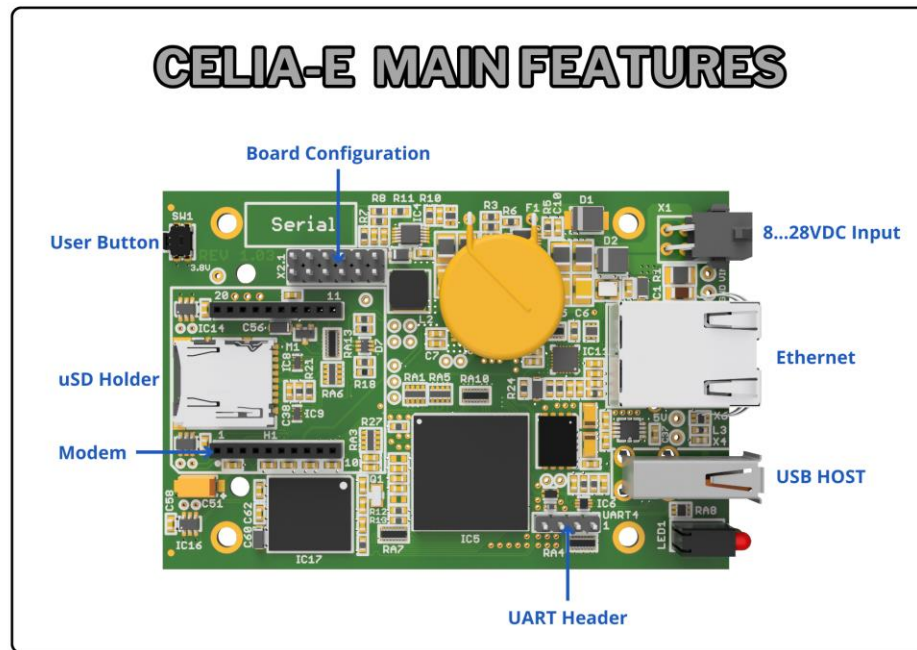


Figure 1: Diagram of CELIA-E board main features and connections.

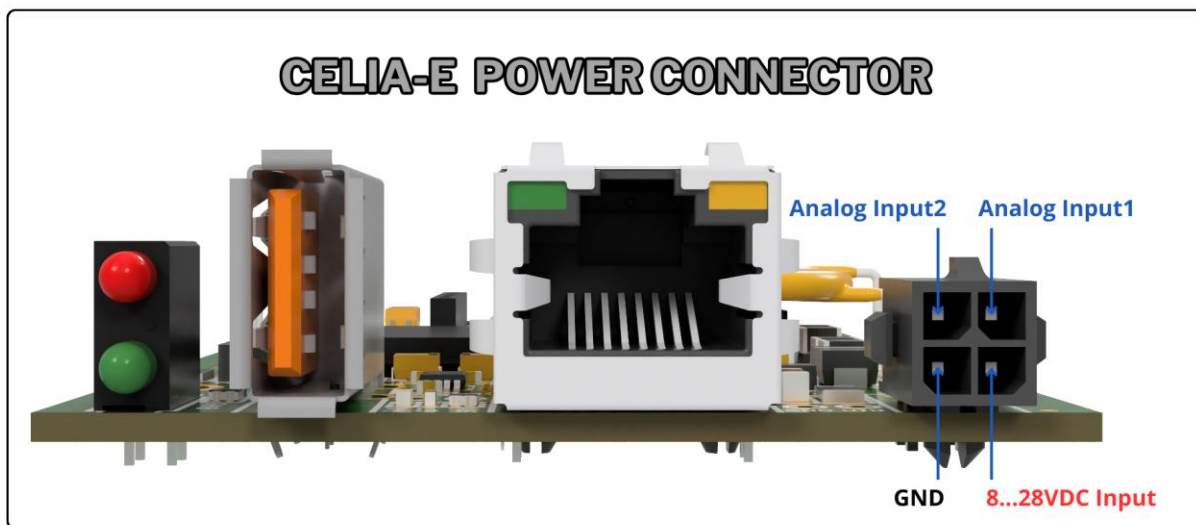
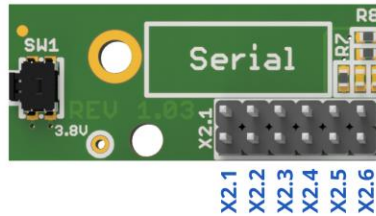


Figure 2: Diagram of connections for power supply cable connector.



CELIA-E BOARD CONFIGURATION



BOOT Source	X2.3	X2.4	X2.5
eMMC			
UART/USB		✓	
Serial NOR flash	✓	✓	
microSD	✓	✓	✓
Engineering BOOT		✓	✓

X2.1 VREF Configuration:
NOT INSTALL - INTERNAL VREF
INSTALL - VREF = VDDA

X2.2 EEPROM Configuration:
NOT INSTALL - WRITE PROTECT
INSTALL - PROGRAM

X2.6 Modem Power:
NOT INSTALL - 3.8 Volts
INSTALL - 3.3 Volts

Figure 3: Configuration of CELIA-E board pins