



AppBox C21 Quick Start Guide



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1.0 System Requirements

To operate the Spectrum Digital AppBox C21 your system needs to meet the following requirements:

- Power Supply (+12-24 VDC at 1 amp)
- CAN network for communications, or
- RS-485 connection for communication, or
- LIN communications
- Atmel-ICE emulator for development (optional)
- Host computer for development system (optional)

2.0 What's Included

The Spectrum Digital AppBox C21 product (Part/SKU #: 703909-0001) includes:

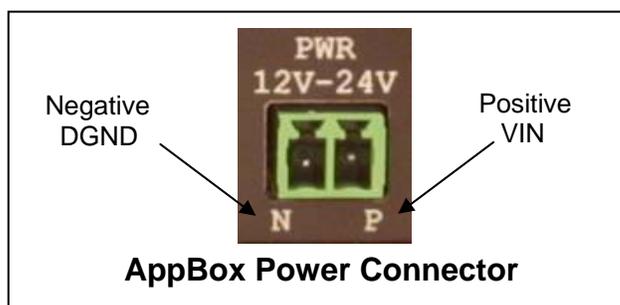
- AppBox C21 in anti-static bag
- Terminal block header for power input
- Product information card

NOTE: This product does not include any software or drivers. Development tools (Atmel-ICE and Software code generation suite) can be obtained from Microchip/Atmel at:

<https://www.microchip.com/development-tools/>.

3.0 Attaching Power to the AppBox C21

Power can be provided to the AppBox C21 by two different means; the AppBox power supply with cable (Part/SKU #: 703925-0001), or wiring the 2 position terminal block header (included with AppBox C21) that plugs into the C21 CPU Board's power input connector. See the figure below.

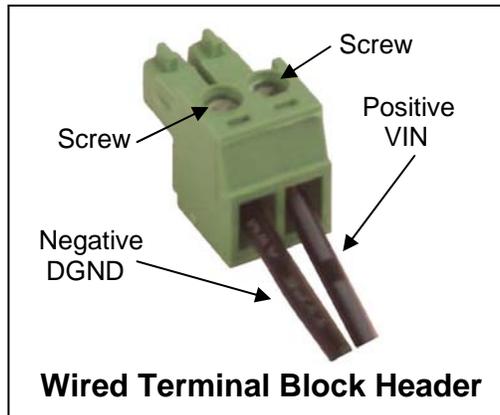


Listed below are the steps to install the terminal block header power connector into the AppBox C21.

1. Cut 2 pieces of wire (preferably 1 red for positive-VIN, 1 black for negative-DGND) to the desired length for your application. This wire should be 22 gauge or heavier
2. Strip ¼ inch (6-7 mm) of insulation from one end of each wire.
3. Position the terminal block header on a flat surface with the key stubs up and away from you. See the figure below.



4. Insert the negative/DGND wire (black) into the left wire hole and tighten the screw.
5. Insert the positive/VIN wire (red or black with stripe) into the right wire hole and tighten the screw.
6. The terminal header should look like the figure below.

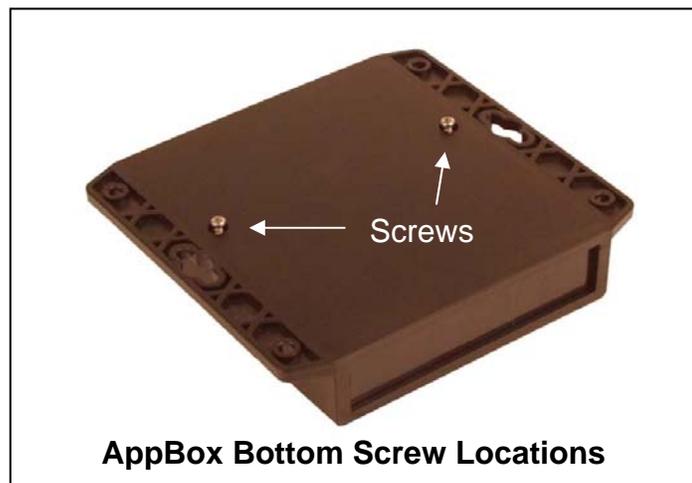


7. Pull/tug on the wires to insure they are secure in the terminal block.
8. Attach the loose end of the wires to a +12 – 24 VDC power source. Be sure of the polarity. This power source should supply at least 1 amp of current. This requirement will vary depending on the current requirements of the C21 CPU Board and the AppIO Modules.
9. Turn on the power source.
10. With a multi-meter or oscilloscope measure the voltage at the terminal block header to verify +12 -24 VDC is present. Place the meter/scope probes on the 2 screws to measure.
11. Turn off the power source
12. Insert the terminal block header into the power input of the AppBox C21.
13. Turn on the power source.

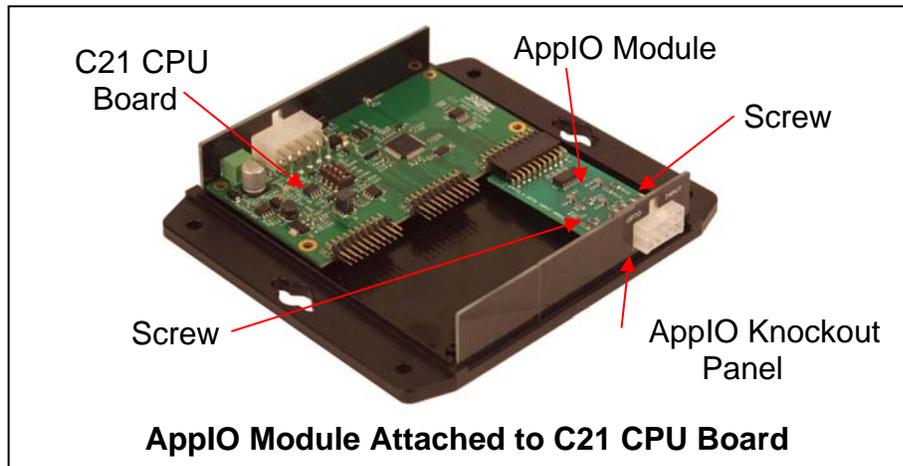
4.0 Installation of AppIO Modules

Listed below are the steps to install AppIO Modules in the AppBox C21:

1. Remove **ALL** power to the AppBox enclosure
2. Remove all interface connections attached to the installed AppIO Modules
3. Remove the CAN/RS-485/LIN connections to the C21 processor board
4. Turn the AppBox over and remove the 2 screws from the bottom of the enclosure as shown below



5. Turn the AppBox back over (label showing) and lift the top off the enclosure being careful not to lose the knockout panels
6. If necessary remove one or more existing AppIO Modules and associated knockout panels by unscrewing the 2 screws
7. Plug the new AppIO Module(s) into EXT1, EXT2, or EXT3 on the C21 CPU Board



8. Insert the included knock out panel associated with this AppIO Module
9. Insert and tighten the 2 screws for the AppIO Module
10. Insert the blank knock out panels in any unused positions
11. Place the cover back over the C21 CPU Board and AppIO Modules
12. Insert the 2 screws back in and tighten until snug, do not over tighten/strip the screws



13. Re-attach the CAN/RS-485/LIN connections to the processor board
14. Re-attach all interface connections to the AppIO Modules
15. Apply power to the AppBox C21

5.0 Attachment of Distribution Box to the AppBox C21

Listed below are the steps to attach the Distribution Box (Part/SKU #: 903924-0001) to the AppBox C21:

1. Remove **ALL** power to the AppBox C21 enclosure
2. Remove any communication cables from the J2 connector on the AppBox C21
3. Plug one end of the AppBox cable (Part/SKU #: 703923-0001) into the J2 connector on the AppBox C21
4. Plug the other end of the AppBox cable into one of the connectors on the Distribution Box

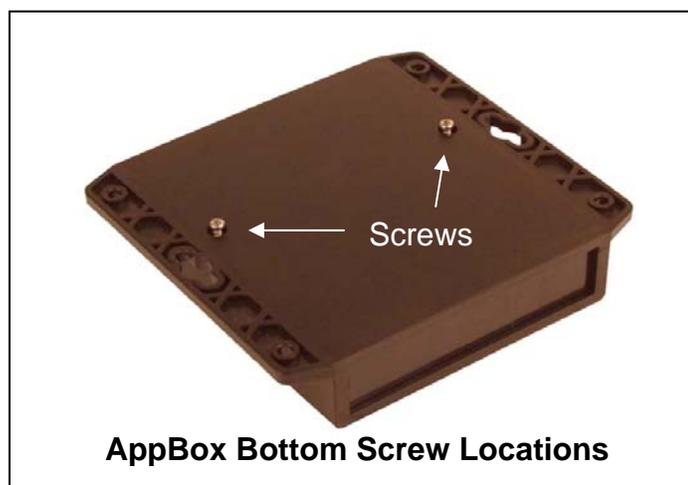


5. Plug the desired communication cables into the Distribution Box
6. Make all other connections before powering
7. Apply power to the AppBox C21

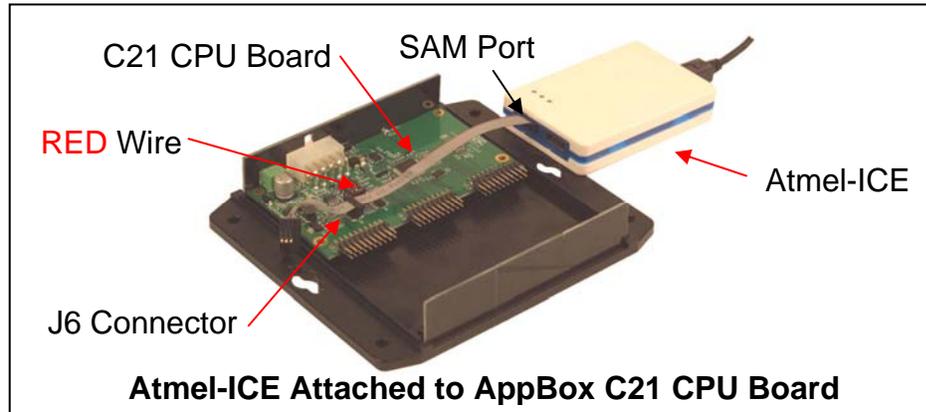
6.0 Installation of Atmel-ICE emulator

Listed below are the steps to install Atmel-ICE emulator:

1. Remove **ALL** power to the AppBox C21 enclosure
2. Remove all interface connections attached to the AppIO Modules
3. Remove the CAN/RS-485/LIN connections to the processor Module
4. Turn the AppBox over and remove the 2 screws from the bottom of the enclosure as shown below



5. Turn the AppBox back over (label showing) and lift the top off the enclosure being careful not to lose the knockout panels
6. Plug the emulator end of the ribbon cable into the "SAM" Port on the emulator
7. Plug in the Atmel-ICE debug into connector J6 on the AppBox C21 CPU board. Visually inspect the connection to insure all the board pins are in the female cable connector.



8. Re-attach the CAN/RS-485/LIN connections to the processor board
9. Re-attach all interface connections to the AppIO Modules
10. Apply power to the AppBox C21
11. Start debug session on the host computer

7.0 Support Resources

Listed below are the steps to install Atmel-ICE emulator:

1. If you have problems or need additional information regarding the AppBox C21 please refer to the AppBox C21 support page. The URL for this page is:

<http://www.spectrumdigital.com/appbox>

2. Support questions can be addressed via email to the following email address:

support@spectrumdigital.com

3. Sales questions can be addressed via email to the following email address:

sales@spectrumdigital.com

4. Mailing address:

PO Box 1559
Sugar Land, TX. 77487-1559

5. Web site is:

www.spectrumdigital.com

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SDI currently deals with a variety of customers for products, and therefore our arrangement with the reseller, customer, or user **is not exclusive**.

Please refer to the product web page on the SDI web site for warranty period.

The warranty and return policy are described on the SDI web site.

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