

To: LFEV Team
FROM: Ben Richards
DATE: 10 April 2014
SUBJECT: Using AMS I2C with a PC and RealTerm

ABSTRACT:

As part of the QA Audit and general troubleshooting, it is useful to be able to communicate with an AMS board directly using a terminal interface. This memo describes usage of AMS I2C with a PC and RealTerm for testing and debugging.

TECHNICAL FINDINGS:

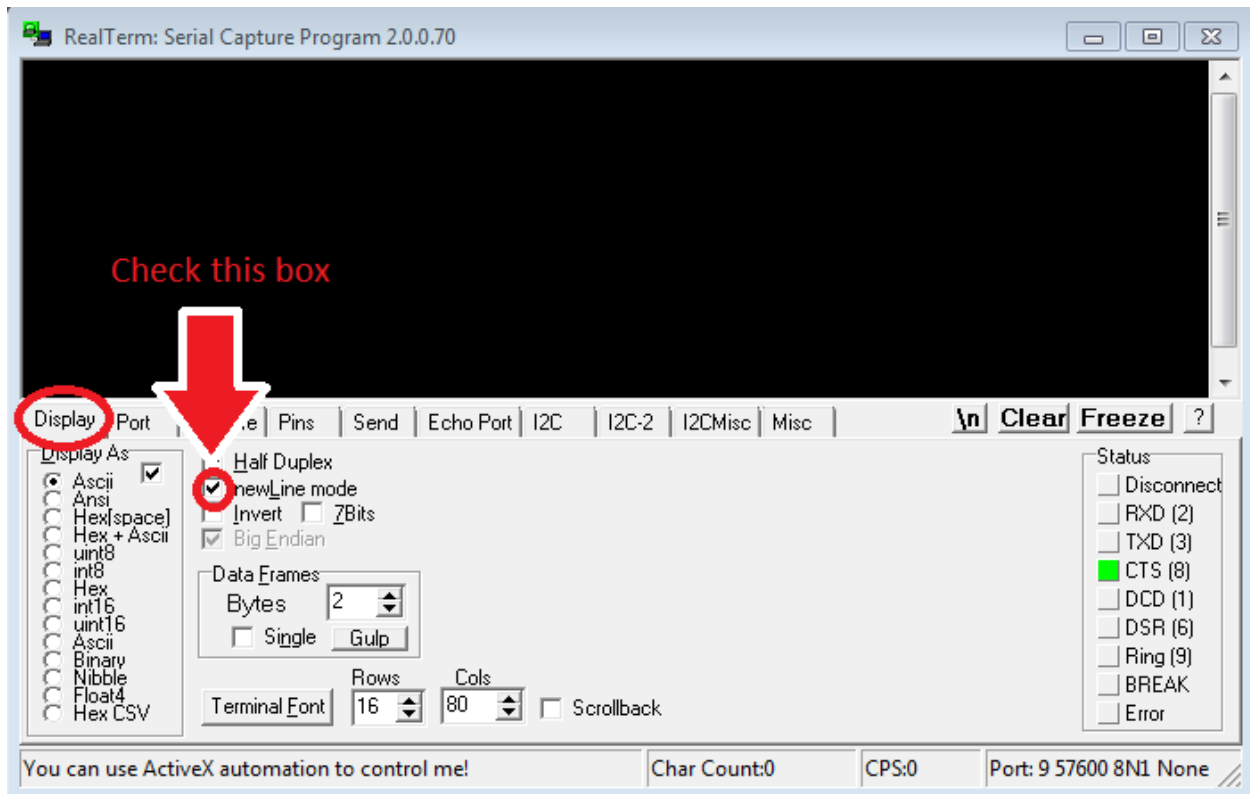
The following items are needed to connect the AMS to a PC:

1. I2C2PC USB to I2C adapter.
2. AMS I2C adapter cable (CW??)
3. PC running RealTerm
4. AMS board
5. Power supply capable of 3.3VDC, minimum 3A

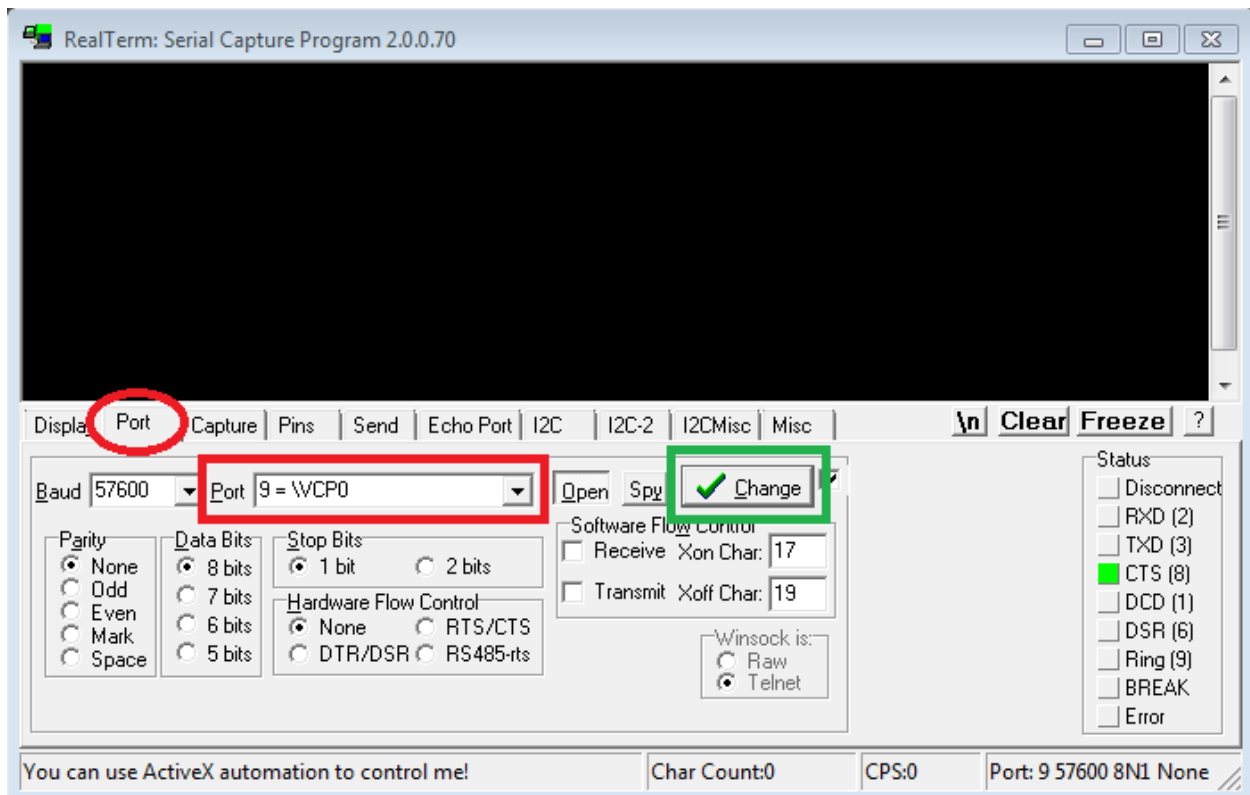
To connect the AMS board, follow these steps:

1. Remove the AMS board from the battery pack, if it is installed.
2. Secure the AMS board in a vise or other suitable stand.
3. Connect the banana jacks of the AMS to the power supply. Set the power supply to 3.3VDC.
4. Connect the USB cable to the PC. Allow the device drivers to install, if necessary.
5. Connect the black connector of the AMS I2C cable to either J2 or J3 on the AMS board.
6. Connect the red connector of the AMS I2C cable to "Bus 3" on the I2C2PC adapter.
7. Start RealTerm.

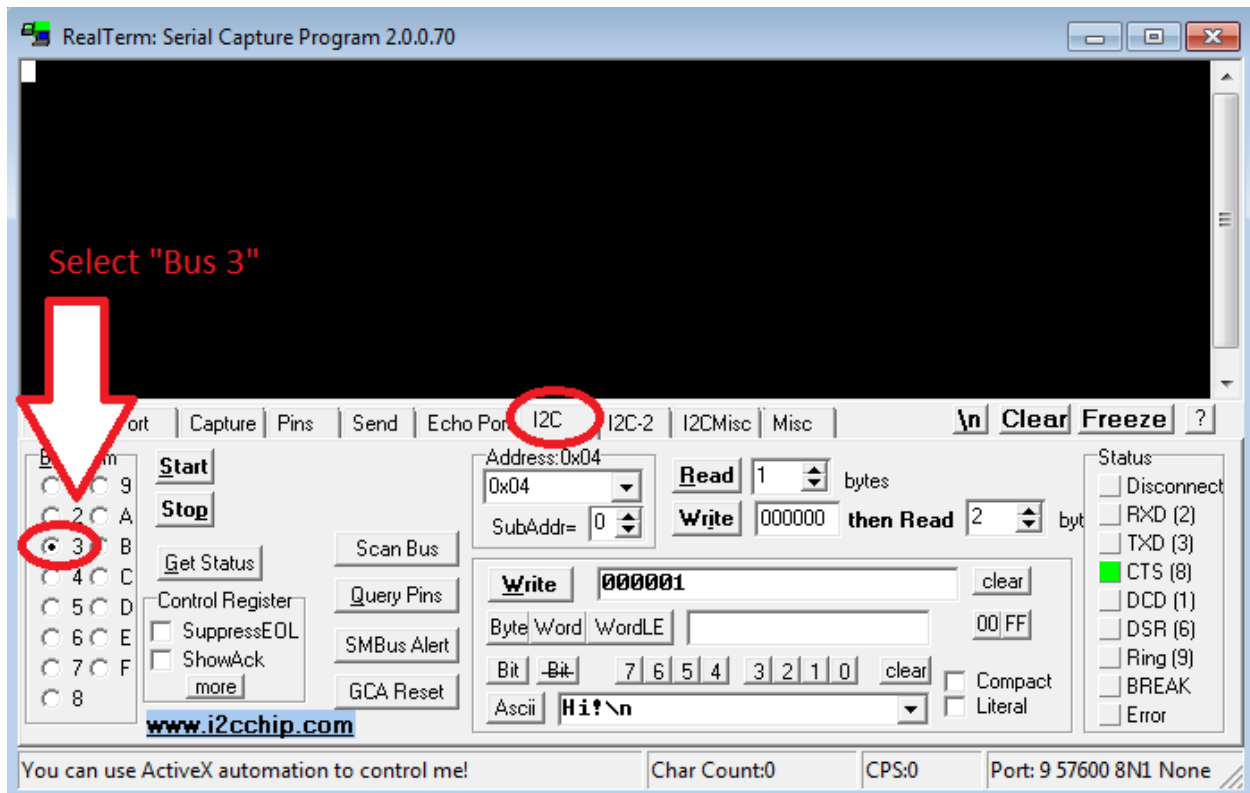
8. Select the “Display” tab. Check the box for “newLine mode”.



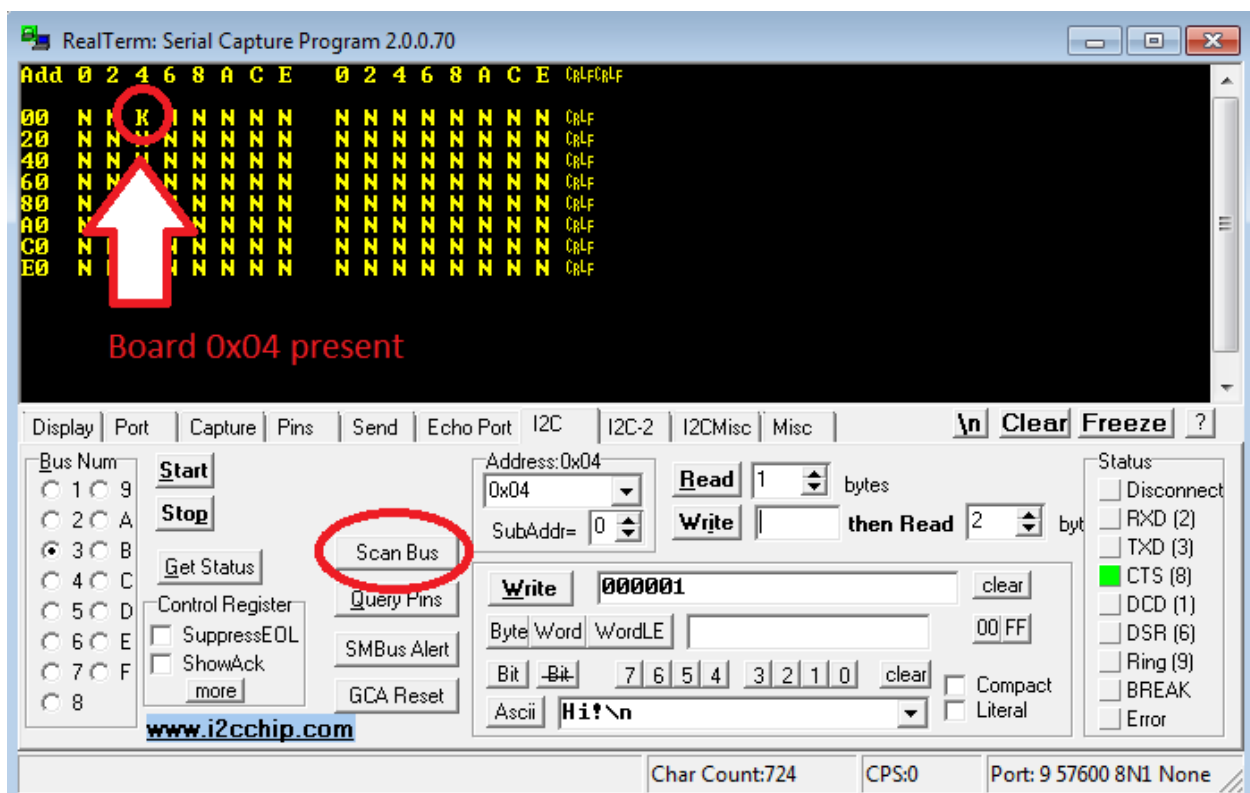
9. Select the “Port” tab. In the “Port” drop-down box, choose “/VCP0” and click “Change”. Leave all other options in this tab at their default settings.



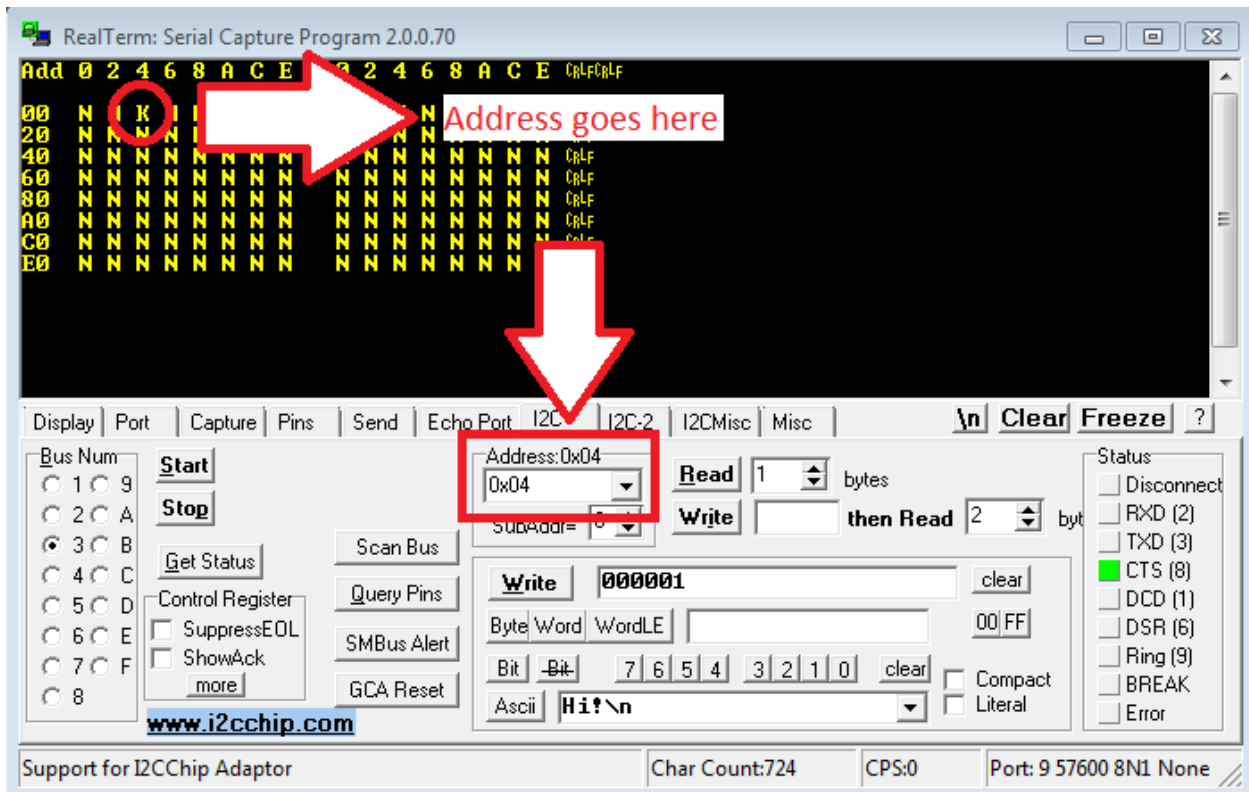
10. Select the “I2C” tab. Under “Bus Num”, select the “3” radio button.



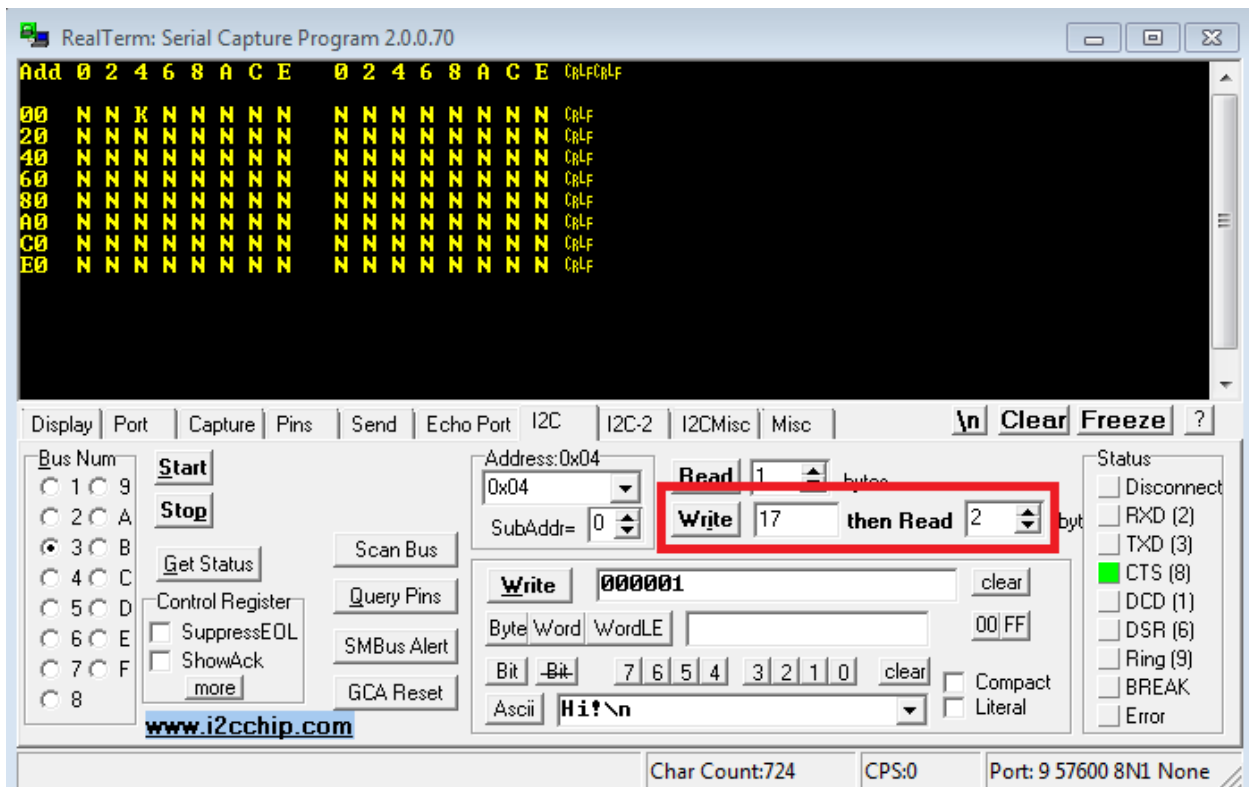
11. Verify that all connections have been made properly by clicking “Scan Bus”. If everything is correct, you will see the “K” character (ACK) in the table representing the address of the AMS board. If “K” is displayed in the wrong location or not at all, disconnect everything, shut down RealTerm, and try again from Step 4.



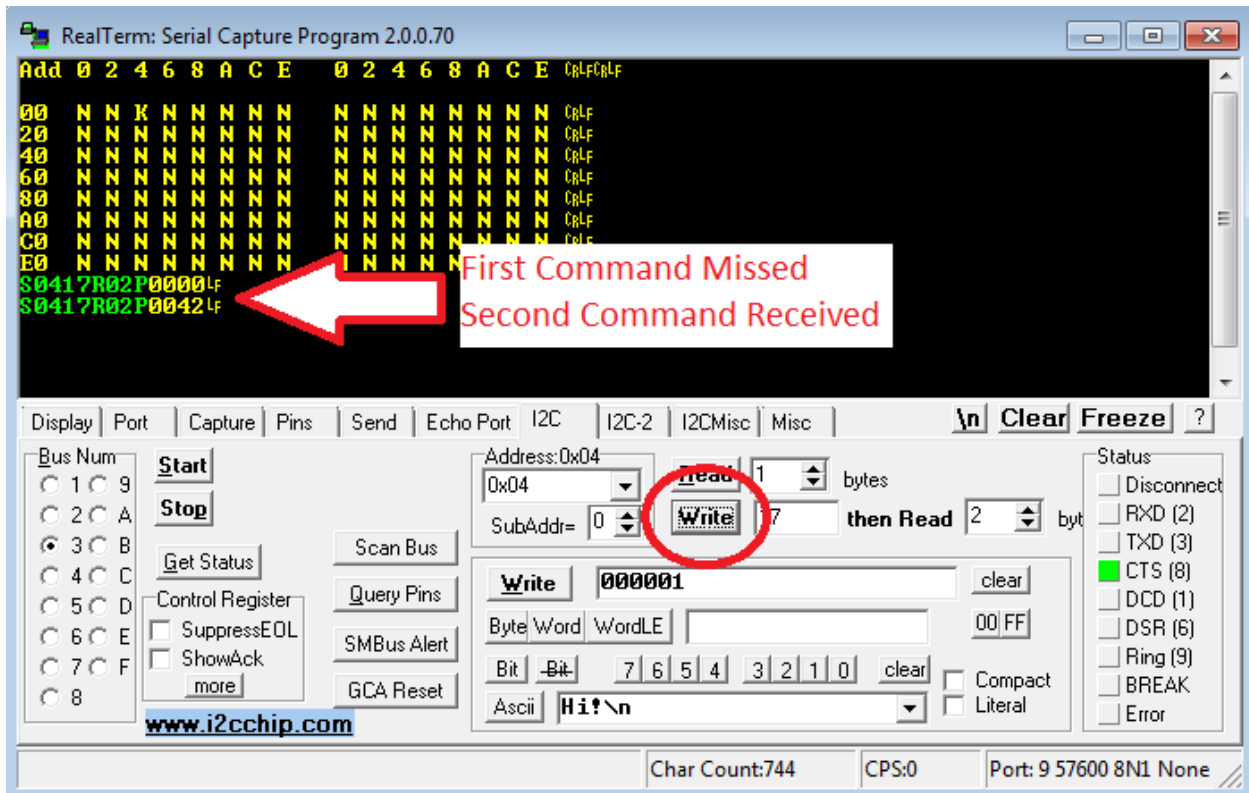
12. In the “I2C” tab, set the “Address” field to the address returned by the “Scan Bus” command.



13. Commands are sent using the “Write then Read” fields. Set “Write” to 17 and “Read” to 2. This will write 0x17 (test command), then read 2 bytes back.



14. Click the “Write” button. The board should return 0x0042. If it does not, click “Write” again. Sometimes the very first command is ignored.



Any command can be sent using this method, although the bytes read back may not always be meaningful. Commands which do not return an explicit value, such as the bypass control commands, will return nonsense. Return value of deprecated commands is not defined.

See the Interface Control Document for a complete list of commands.