



## AML+ Tiny BootLoader

This utility is used to install AML+ firmware updates.

### INSTALL SOFTWARE TO YOUR COMPUTER

#### Download Tiny BootLoader File

1. Download SSI Tiny BootLoader Utility from the SSI web site at <http://www.ssilocators.com/specialty-products/all-materials-locator-plus-series/>, found on the Downloads tab on the SSI website. Save the file to the Downloads folder in your computer.
2. Go to the Downloads folder and extract the file from the compressed file. If your Operating System doesn't have compress software, you can go to <http://www.winzip.com/win/en/downwz.html> to download a free version.
3. Move the tinybldWinBeta.exe file to the desktop, for easy access.
4. This is a very simple application, once you have the file on your desktop, it is ready for use.

**Note:** After completing the firmware update process, your unit will need to be recalibrated, use the AML+ Customer Utility to calibrate the AML+ and to run diagnostics requested by the manufacturer.

#### Updating the Firmware on the AML+

1. Connect the AML+ to your computer with the supplied USB mini cable. Turn on the AML+; if this is the first time you connect your unit to the computer, an automatic notifications will display: "New hardware has been detected" and "Installing new device driver". When your operating system completes its automatic driver installation, you will be ready to proceed to the transfer process.



Figure 15-1



Figure 15-2



Figure 15-3

# APPENDIX



**Note:** the computer will recognize this unit when connecting in future uses.

You can obtain the latest firmware updates by contacting Subsurface Instruments at [info@ssilocators.com](mailto:info@ssilocators.com); create a folder in a convenient location, you will use this folder to store the “\*.HEX” (firmware update) file you receive from SSI.

2. Click on the icon to run the application.
  3. The tiny bootloader screen will display, (Figure 16-1).
  4. The computer will automatically recognize the Comm Port the AML+ is connected. The port # ① will appear in the left panel of the screen.
  5. Select your file source by clicking on “Browse” ② button, select latest firmware file and click “OK”
  6. Go over the configuration settings in all tabs, compare the values with the values in page 17, make sure they match.
  7. On the left panel, click “Write Flash”. This will start the transfer process
  8. Upon completion, the screen will display a string of values and commands (Figure 17-4).
  9. Your AML+ is now updated with the latest firmware and needs to be recalibrated.
- Exit software.

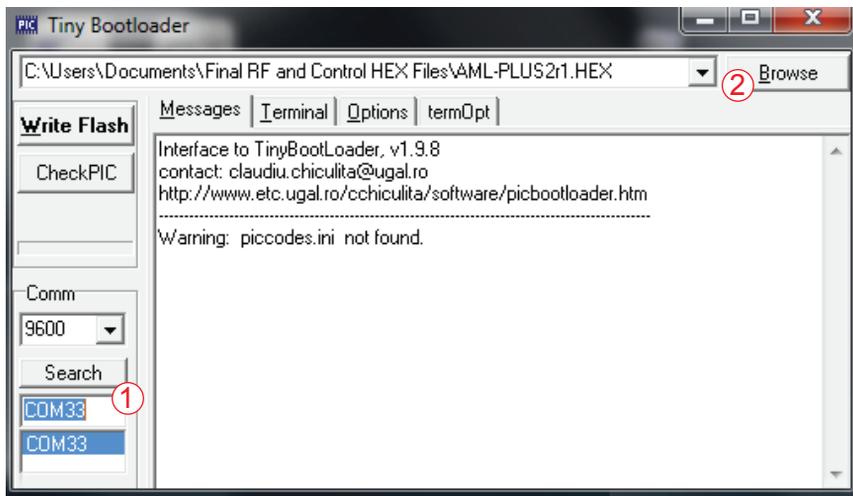


Figure 16-1

# APPENDIX



## Terminal

Comm Port Speed: 9600  
Tx/Transmitter: Char\  
Rx/Receiver: Char - dump.bin

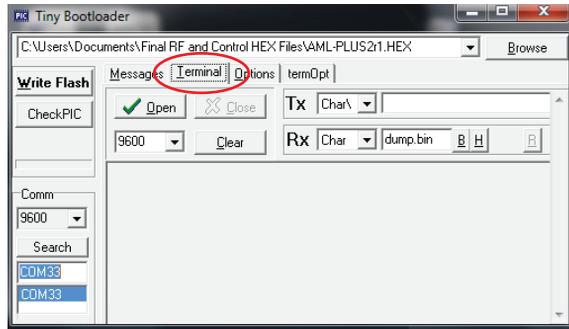


Figure 17-1

## Options

ID code: C1h - Normal  
Reset: "Active" RTS, DTR ON  
Codes to send first: 24h 49h  
Search Delay: 7  
Timeout(ms): 300  
Search for COMs: "Active"

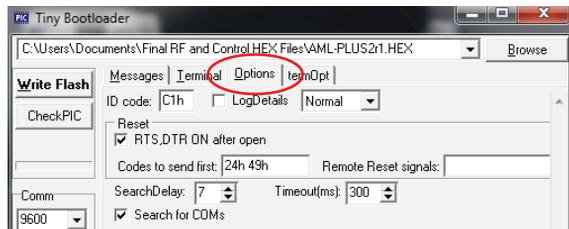


Figure 17-2

## TermOpt

Graphic 2 reference: 128  
Axis compression: 1

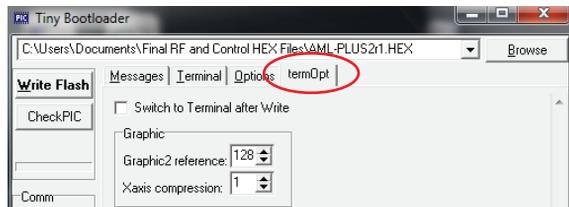


Figure 17-3

Click "Write Flash" to start  
Upon completion a message  
"WRITE OK" will display.

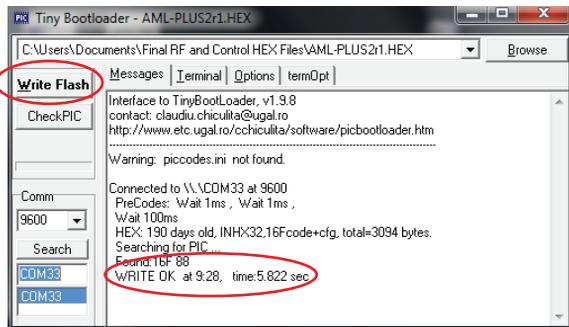


Figure 17-4



## AML+ CUSTOMER UTILITY

The AML+ Customer Utility is used to calibrate and run diagnostics on your AML+ unit.

### INSTALL SOFTWARE TO YOUR COMPUTER

#### Download AML+ Customer Utility

1. Download AML+ Customer Utility from the SSI web site at <http://www.ssilocators.com/specialty-products/all-materials-locator-plus-series/>, found under the Downloads Tab.

Save the file to your Downloads folder in your computer.

2. Go to your downloads folder and extract the file from the compressed file to access SETUP-AML-PLUS-CAL-V1r3.exe If your Operating System doesn't have a compress software, you can go to <http://www.winzip.com/win/en/downwz.html> to download a free version.
3. Double click the SETUP-AML-PLUS-CAL-V1r3.exe and follow the instructions on the screen.
4. The Installation will create a shortcut on your computer's desktop for quick access to the calibration process in the future.

**Note:** The calibration process must be performed outdoors, with the AML+ plugged into the computer and pointing to an unobstructed sky. We suggest performing this process with a portable computer or have a USB extender cord.

### RUNNING THE AUTOCALIBRATION

1. Click on the AML+ Cal V1.3 Icon
2. The utility will run a diagnostic of the AML+ and display it on the screen,

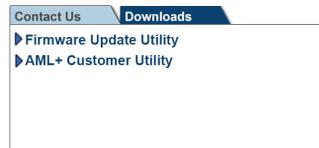


Figure 18-1



Figure 18-2



Figure 18-3

# APPENDIX



3. There will be a command prompt line at the bottom of all diagnostic data from the AML+ unit, (figure 19-1)

```
AML+ CAL V1.3
AML-PLUS Customer Calibration Utility V1.3, SubSurface Instruments
scanning COM ports 1 through 256 ...
found COM33
opening serial port COM33
attempting communications with instrument ...
reply from instrument: Subsurface Instruments AML-PLUS Control V2.1
reading saved instrument settings ...
reply from instrument: 00 51 0C 8F 0F 80 7C 78 74 70 6C 68 64 60
which means ...
Laser pointer: Enabled
Antenna Mode: 4 RX antennas
Modulation: ON
Right Coarse Phase: 1
Right Fine Phase: 15
Left Coarse Phase: 3
Left Fine Phase: 143
Switch 9-1 settings: .919 .89 .862 .833 .804 .775 .747 .718 .689
reading instrument status ...
reply from instrument: U9 00 03B3 0327 0184 019C which means ...
switch position: 9
boosted USB Voltage: 9.257
transmit level: 807
Right phase Voltage: .9482
Left phase Voltage: 1.007
enter 'H' in response to 'command>' prompt to get command summary
command>
```

Figure 19-1

4. Type “a” to start the calibration process and press enter, a confirmation prompt will display, type “y” to confirm and press enter to start the process, (remember to have the AML+ pointing to an unobstructed sky at this point).

```
AML+ CAL V1.3
command>a
proceed with autocal <Y or N>?
```

Figure 19-2

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5. The calibration process will take a few seconds and you will be able to see progress in your screen, which displays 0-9 and then A-F. All values are displayed after the calibration is complete. This information will be helpful when troubleshooting with a SSI Technician. For end user calibration needs, the process is finished and the AML+ is ready to be used.
6. Test your AML unit on the field for proper operation. If you have any questions or concerns contact SSI at [info@ssilocators.com](mailto:info@ssilocators.com).

```
AML+ CAL V1.3
scanning COM ports 1 through 256 ...

found COM33
opening serial port COM33
attempting communications with instrument ...
reply from instrument: Subsurface Instruments AML-PLUS Control U2.1
reading saved instrument settings ...
reply from instrument: 00 51 0C 8F 0F 80 7C 78 74 70 6C 68 64 60
which means ...

Laser pointer: Enabled
Antenna Mode: 4 BK antennas
Modulation: ON
Right Coarse Phase: 1
Right Fine Phase: 15
Left Coarse Phase: 3
Left Fine Phase: 143
Switch 9-1 settings: .919 .89 .862 .833 .804 .775 .747 .718 .689

reading instrument status ...
reply from instrument: 09 00 03B3 0327 0184 019C which means ...

switch position: 9
boosted USB Voltage: 9.257
transmit level: 807
Right phase Voltage: .9482
Left phase Voltage: 1.007

enter 'H' in response to 'command?' prompt to get command summary
command>y
unrecognized command <ASCII character -1 >

command>a
proceed with autocal (Y or N)? y
autocal running <complete on step 'F'> 0123456789ABCDEF
0 .5381231 .2766373
1 .3523949 5.425221E-2
2 8.662148E-2 4.349947E-2
3 4.398823E-3 4.349947E-2
4 4.398823E-3 4.349947E-2
5 4.398823E-3 4.349947E-2
6 4.398823E-3 4.349947E-2
7 4.398823E-3 4.349947E-2
8 4.398823E-3 4.349947E-2
9 4.398823E-3 4.349947E-2
10 4.398823E-3 4.349947E-2
11 4.398823E-3 4.349947E-2
12 4.398823E-3 4.349947E-2
13 4.398823E-3 4.349947E-2
14 4.398823E-3 4.349947E-2
15 4.398823E-3 4.349947E-2

best LEFT coarse/fine values: 3 143 (error= 4.398823E-3 )
best RIGHT coarse/fine values: 2 255 (error= 4.349947E-2 )
autocal session saved to AMLautoCAL.LOG
calibration data now saved in AML non-volatile memory
command>
```

Figure 20-1