



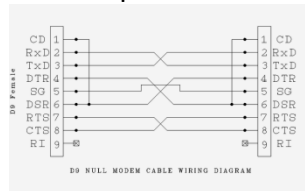
## How to Update your Data Meters' Firmware

Updating your Data Meters' firmware is an easy and safe process ie you cannot "brick" your meter if something goes wrong during the update. The new firmware is contained in a "ZIP" file that can be downloaded from the [www.serialtools.tv/support](http://www.serialtools.tv/support) page. The ZIP file contains the new firmware versions, a MS Windows program that is needed to conduct the update and a text file detailing changes to the firmware as well as this PDF instruction manual. Items that you will need to perform the update are:

A computer running Microsoft Windows to install the "TinyMultiBootLoader+" program onto.

- A female to female 9 pin NULL adapter and cable or a female to female NULL Modem cable.
- An open serial port or USB to Serial adapter (with drivers properly loaded).

**Note:** The NULL adapter/cable should provide a wiring scheme like this:



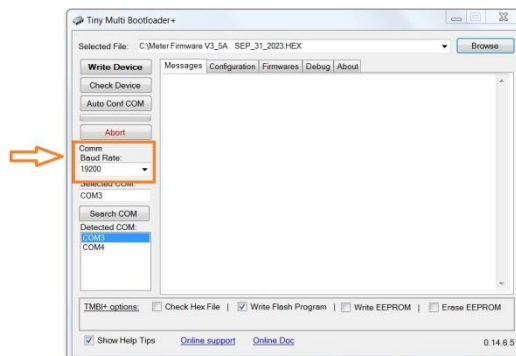
**Note:** if you need to purchase a new USB to RS232 adapter please avoid adapters built with the Prolific Chipset. They do not work well for scoreboard data or firmware updates. The Keyspan adapter works well and any adapter that utilizes the FTDI Chipset work very well. If the adapter you're looking to purchase doesn't state what chipset it uses..... don't buy it.

**Step 1:** Locate the ZIP file you downloaded from the support page. Right click on the file and select "Extract All".

**Step 2:** Locate the extracted files and run "TinyMultiBootloaderPlusInstaller(v0.14.6.5).exe". Running this program will install the bootloader software onto your computer and should install a launch icon (shortcut) onto your desktop.

**Step 3: Configure the "TinyMultiBootloadPlus" program:** Run "TinyMultiBootloadPlus" by double clicking on its icon. If this is the first time it is being run there are a few steps to configure it for use with your meter.

**Configure "COMM Baud Rate":** Using the drop down menu, select 19200 Baud.



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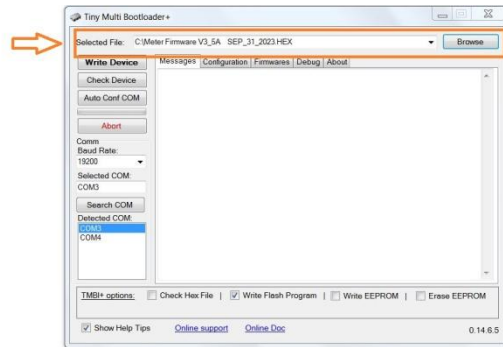
### Selecting the new Firmware to install, Note:

There may be multiple firmware files in your unzipped folder, you may see Meter Firmware V3\_5B and Meter Firmware V4\_1. You must match the firmware version to your meter for the update to work. If

your meter has “V3.4” listed at the top of its display then you should load “V3\_5B”. The “3” is the version of your meter the “.x” following the 3 is the firmware version. Version 3\_x will not load into a Version 4\_x meter and vice versa. The same rules apply to version 4 meters. You cannot load version 3 firmware into a version 4 meter.

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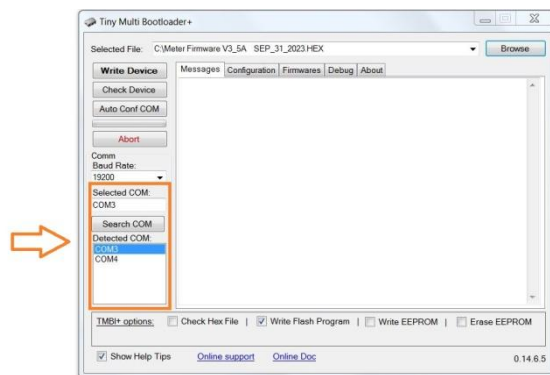
### Selecting your new firmware file:



Click the “Browse” button and navigate to where your downloaded unzipped files are located. Select the “.HEX” file that matches the version of your meter. The file name should now be displayed in the “Selected File:” window.

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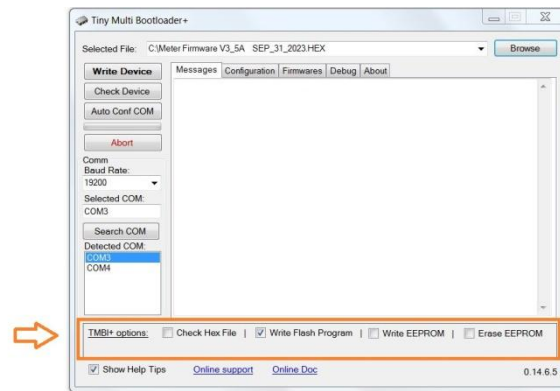
### Select your COM port of your serial adapter/port:



If your RS232 device is installed, the TMB+ program will show it under “Detected COM:” If you don’t see it, click the “Search COM” button. If the “Selected COM:” window is blank, click on your COM port listed under “Detected COM:” to select it.

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**Selected TMB+ Options:** Verify that ONLY “Write Flash Program” is selected.



**Step 4:** Connect the NULL adapter/cable between the Meter and your serial port/adaptor.

**Step 5: Set Meter dip switches for Updating:** Open the battery door and move both dip switches up (away from the battery). One switch will force the meter power “ON” the other will enable the RTS pin for synchronization with the bootloader software. Verify your battery has at least half a charge left in it.



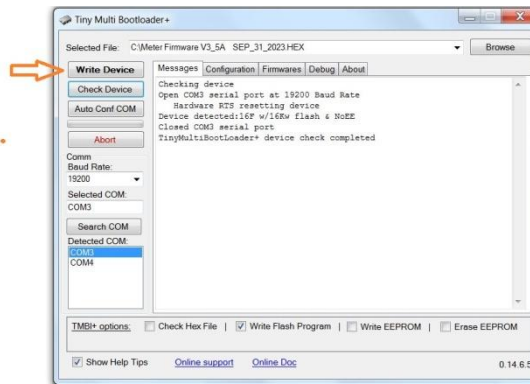
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**Step 6: Checking your setup:** Click on the “Check Device” button. If everything is ok then the message window will contain information similar to this....

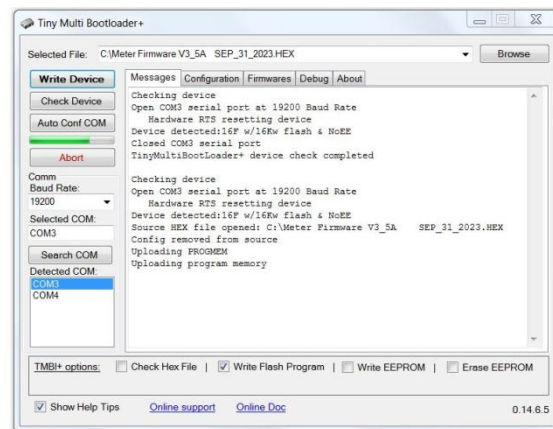


If the window states “ERROR: No Device Detected!!!” then check your NULL modem cable, and your dip switch settings on the meter. The process works, every meter has had its firmware loaded in this fashion at least once.

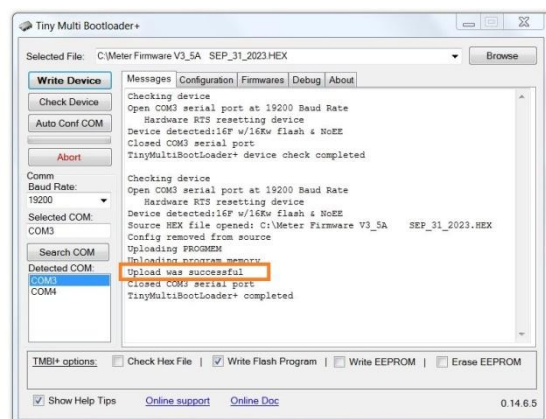
**Step 7: Write The Firmware to the Meter:** Click on the “Write Device” button.



As the firmware is uploading you will notice a GREEN Progress bar located under the Auto Conf COM button slowly progressing from left to right. The process only takes a minute to complete.



When the upload is complete, the progress bar disappears and the Messages window will state “Upload was successful”.



**Step 8:** Reset the Meter’s dip switches (both) to off, (towards the battery).

Your meter is now sporting the latest firmware revision. If you have a problem with the update or discover a bug with scoreboard/speed gun data please send an email to [support@serialtools.tv](mailto:support@serialtools.tv) with a description of the problem you are having or the bug you have discovered so it can be corrected.

## Frequently Asked Questions

**Q. I purchased a new NULL Modem cable from Amazon and I can't get the update to work. The dip switches are set, my RS232 com port is correctly selected, and yet whenever I click on the "Check Device" button a message appears stating "ERROR No Device Detected". What is wrong?**

**A.** Amazon has been selling simple serial cross-over cables but calling them NULL Modem cables, which they are not. For the update process to work you need the following connections between the 9 pin connectors, use an ohmmeter to verify these connections exist in your cable;

Pin 2 to Pin 3

Pin 3 to Pin 2

Pin 7 to Pin 8

Pin 8 to Pin 7

Pin 5 to Pin 5

**Q. My "Detected Com" window is blank. How do I select my RS232 com port?**

**A.** Try clicking on "Search Com". This will scan your computer looking for any installed RS232 devices. If your device wasn't found then its' drivers aren't loaded into the operating system correctly. Go to the Windows Control Panel > Device Manger and look down the list for "Ports (Com&LPT)". Double click and verify that your device is installed and working properly. More than likely there will be a yellow exclamation mark signifying the driver isn't loaded properly. Reload your drivers and check again. You should also contact the manufacturer of the device for help.

**Q. The battery fell out while I was uploading the firmware to the meter. Did I just "brick" my meter?**

**A.** No, you didn't "brick" your meter. Just start over.

**Q. The zip file I downloaded has a couple of different firmware HEX files. Which one do I use for my meter?**

**A.** There are four different versions of data meters that were sold over the years. Some used different displays or used different processors. You must match the version of firmware to the version of your meter. If you look at the top of your LCD screen of the meter it may display "Ver 3.X". The "3" is the meter version and the number in "X" is the firmware revision. Meter versions 3 & 4 can have their firmware updated with the included tinybootloader+ software. Owners of version 1 & 2 meters need to return their meters to have their processors changed out to support field upgradable firmware. If you own one, contact [support@serialtools.tv](mailto:support@serialtools.tv) for more information on how to have them updated or upgraded.

**Q. What exactly is Firmware, anyway?**

**A.** Firmware is the meters' internal program that reads/displays the data, the operating system made up of configurations, timers, counters, analog to digital converters, etc. Whenever a scoreboard manufacturer changes their data protocol an update has to be written to address the new changes. Also, when a bug is found in the meters operation, a new firmware is written to fix it.

**Q. How often are new firmwares released?**

**A.** On a "as needed basis". League changes to clock displays caused the biggest changes a few years ago. A couple scoreboard manufacturers took advantage of these League changes and rewrote their code entirely, which made their earlier data versions obsolete to anyone trying to read their data. Bug fixes are common too. If there is a new firmware it will be found at [www.serialtools.tv/support](http://www.serialtools.tv/support) so check there if you're curious.

If you have any further questions please email your question to [support@serialtools.tv](mailto:support@serialtools.tv).