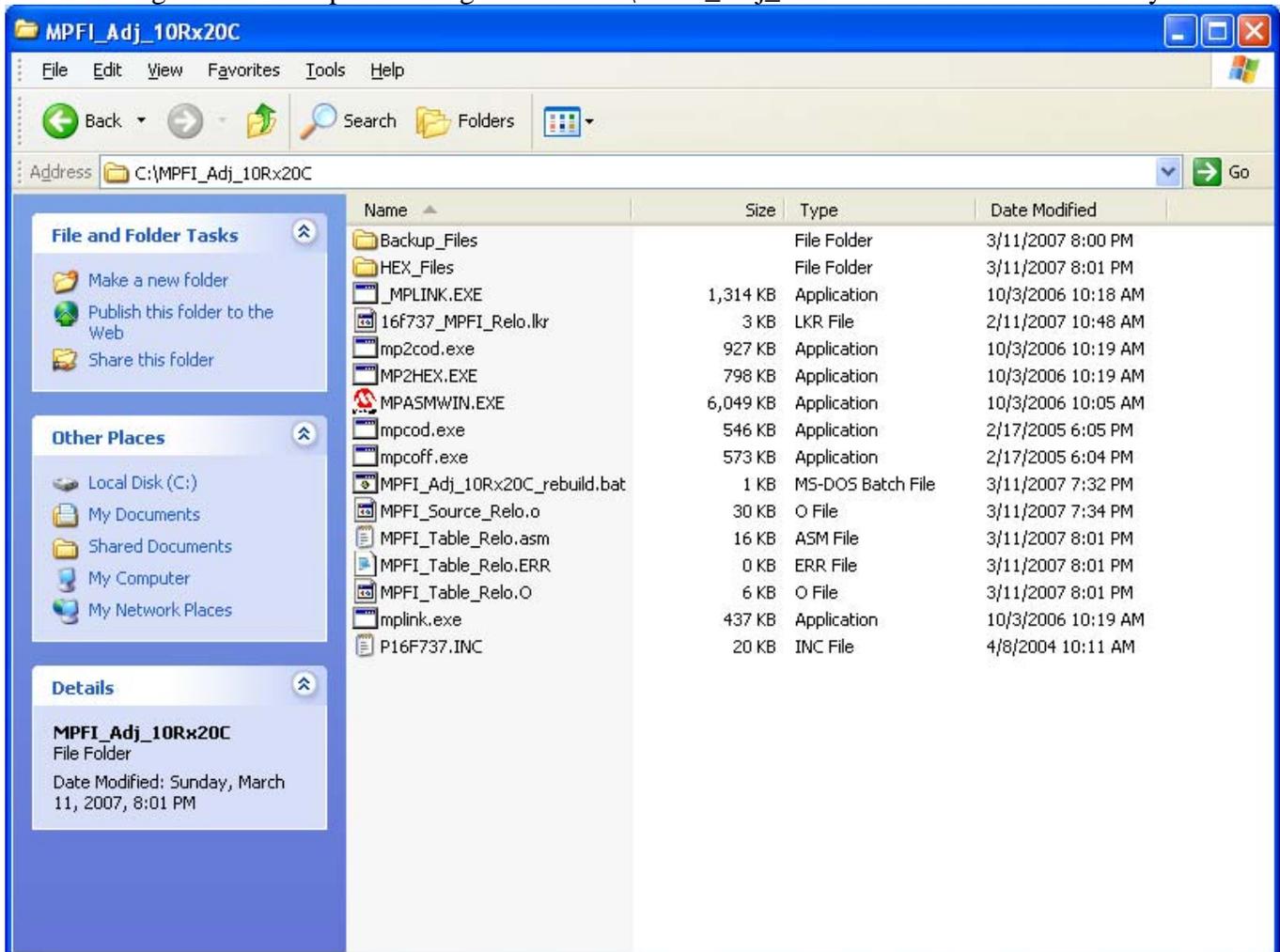




How to Build Hex Files from User Defined Excel Tables

First, get your computer set up.

1. Save the .zip file called MPFI_Adj_10x20_Installer.zip that is attached to this email to the root directory of your C: drive (that is C:\). DO NOT DELETE THIS FILE AFTER INSTALLATION. PRESERVE IT IN THE EVENT THAT YOU NEED TO REPEAT THE INSTALLATION.
2. Unzip the ZIP file named MPFI_Adj_10x20_Installer.zip that was sent in the email. Unzip all contents to the root directory of your C: drive (that is C:\).
3. Use Windows Explorer to view the files in directory C:\
4. You should see a file called MPFI_setup.bat
5. Double click on this .bat file to install the software.
6. This .bat file will build a subdirectory called C:\MPFI_Adj_10Rx20C on your PC and move the appropriate files into it. After this .bat file runs, it cleans up unnecessary files from the C:\ directory that were temporarily installed by the zip file extraction.
7. Using Windows Explorer navigate to this C:\MPFI_Adj_10Rx20C folder or subdirectory.



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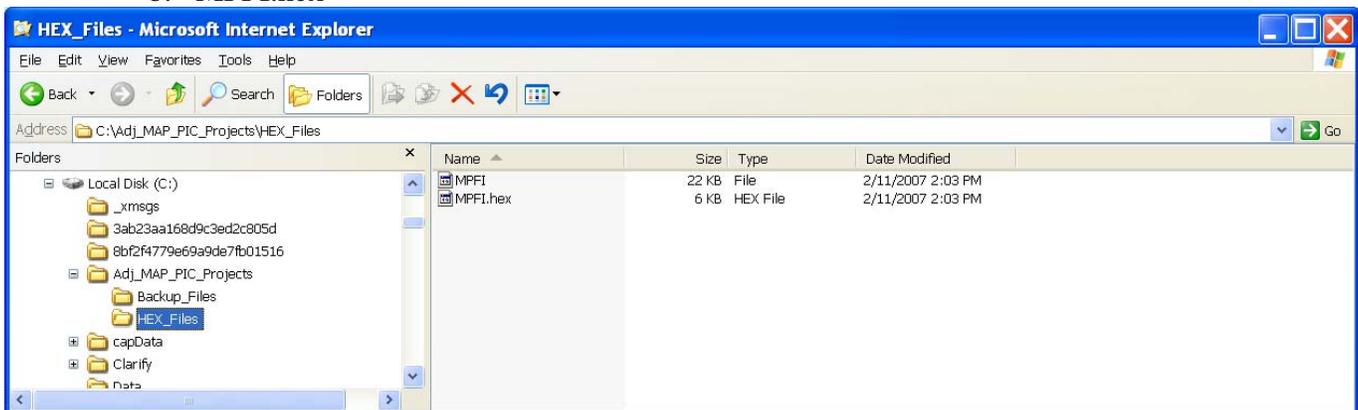
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How to Build Hex Files from User Defined Excel Tables

8. The contents of this folder should be:
 - a. MPFI_Adj_10Rx20C_rebuild.bat
 - b. MPLINK.EXE
 - c. _MPLINK.EXE
 - d. MP2HEX.EXE
 - e. MPASMWIN.EXE
 - f. MPCOFF.EXE
 - g. MPCOD.EXE
 - h. MP2COD.EXE
 - i. P16F737.INC
 - j. MPFI_Source_Relo.o
 - k. MPFI_Table_Relo.O
 - l. 16f737_MPFI_Relo.lkr
9. This .bat file will also build a subdirectory called C:\MPFI_Adj_10Rx20C \HEX_Files on your PC. The HEX files that get built into it.
10. After you use the Excel file to create test files you can use the Windows Explorer navigate to this C:\PIC_Projects\HEX_Files folder or subdirectory.
11. The contents of this folder should look like this:
 - a. MPFI
 - b. MPFI.hex



12. The .hex file is the file that you need to program the ACM using the programmer.
13. You can rename this hex file to a filename that is meaningful to you by right mouse clicking on the file name and choosing Rename from the popup menu.

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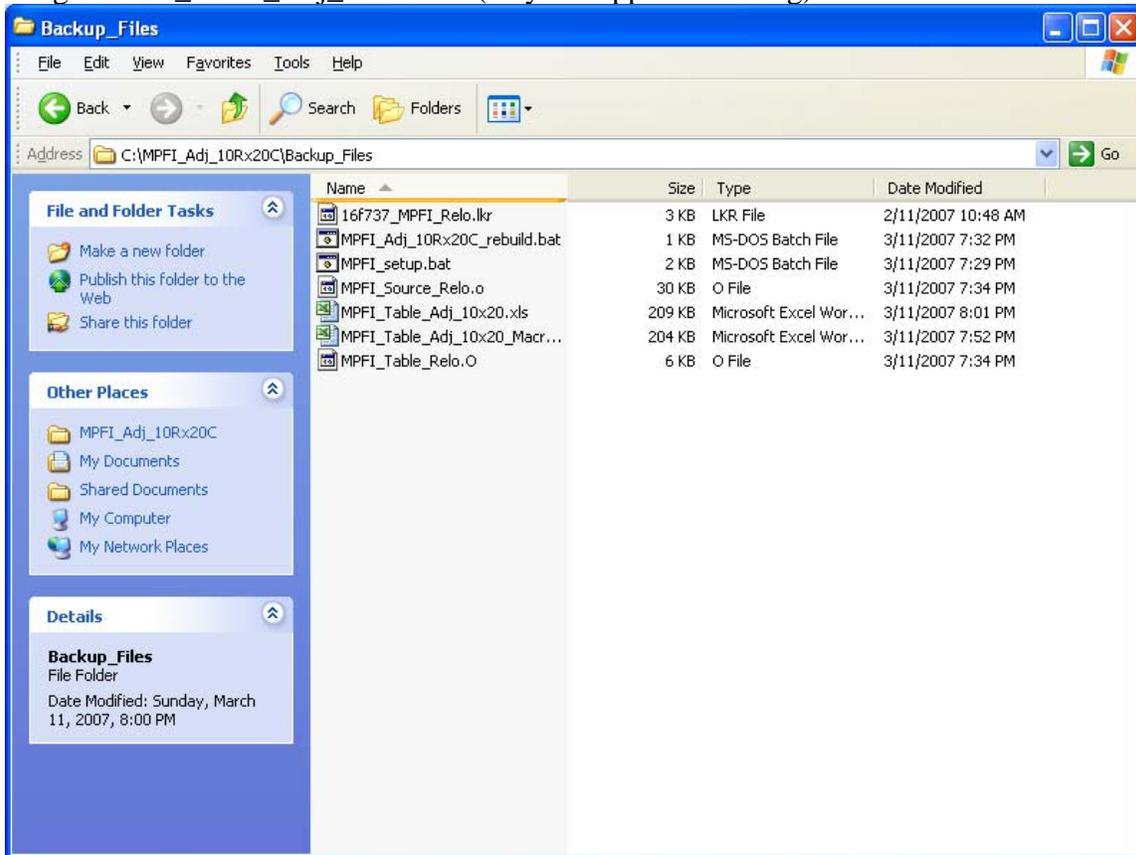
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14. The installer will also create a backup directory called :\\MPFI_Adj_10Rx20C \\Backup_Files to preserve several master files in case you accidentally delete them from the C:\\PIC_Projects folder. This folder will contain the following backup files (as pictured below).
- MPFI_Source_Relo.o
 - MPFI_Table_Relo.O
 - 16f737_MPFI_Relo.lkr
 - MPFI_Adj_10Rx20C_rebuild.bat
 - MPFI_setup.bat
 - MPFI_Table_Adj_10x20_Macro.xls
 - MPFI_Table_Adj_10x20.xls (may not appear in listing)



Next, here's how to update the hex file with new table information.

- BEFORE YOU PERFORM ANY OF THE FOLLOWING STEPS, MAKE SURE THAT THE ANALYSIS TOOLPACK ADD-IN IS INSTALLED IN EXCEL. THIS PROCESS WILL NOT WORK WITHOUT DOING THIS. FROM THE UPPER TOOLBAR IN EXCEL, SELECT **Tools>Add-Ins** AND CHECK THE CHECKBOX LABELED **Analysis Toolpack** (pictured below)**

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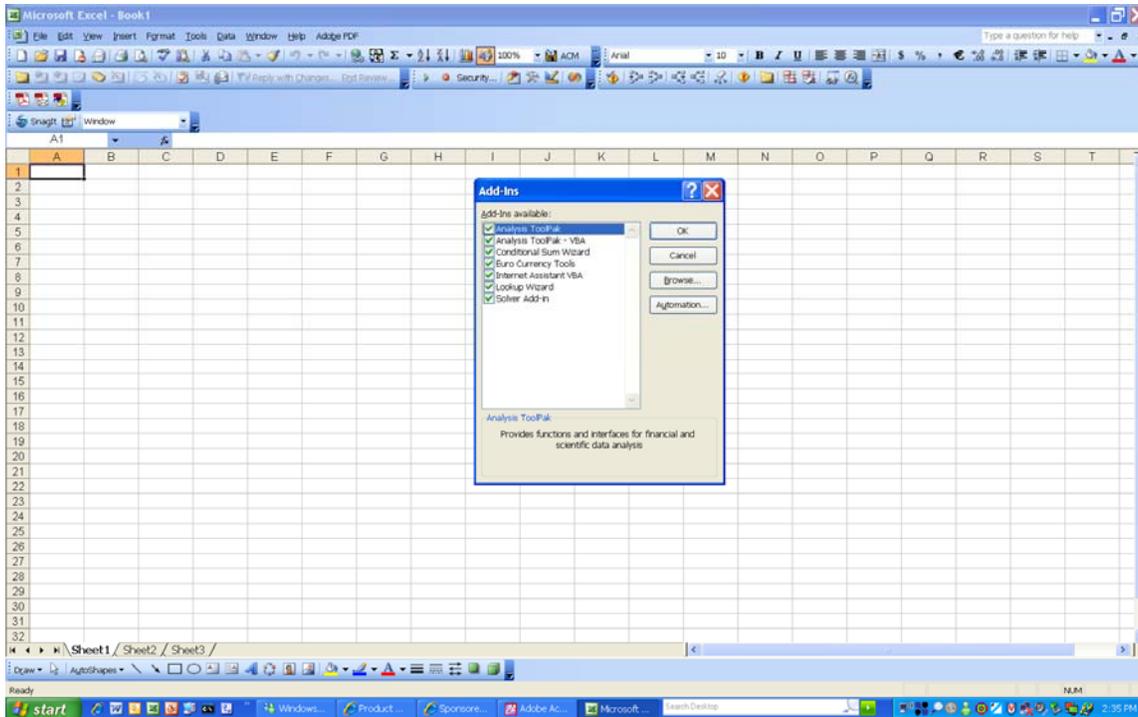
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How to Build Hex Files from User Defined Excel Tables



2. Use the Excel spreadsheet to modify the values that you wish on the spreadsheet Lookup Table tab, remembering to set all the VTS and Anti-Knock cells. Failure to include a value for every cell will result in unpredictable results.

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How to Build Hex Files from User Defined Excel Tables

Microsoft Excel - MPFI_Table_Adj_10x20_Macro.xls

Security...

File Edit View Insert Format Tools Data Window Help

Type a question for help

SnagIt Window

fx 4.75

1 **ALERT! To use this spreadsheet make sure that the Analysis Toolpack Add-In is enabled. To enable this from the toolbar pick Tools>Add-Ins and check the Analysis Tool**

2 Time entries are in milliseconds on time with values ranging from 0 to 6.3 milliseconds in 0.1 millisecond intervals (examples, 1.1, 2.5, 0.7, etc)

3 If you wish to turn on the Vtech solenoid, enter a 1 in the appropriate VTS cell

4 If you wish to turn on the Anti-Knock Filter, enter a 1 in the appropriate AK cell

5

6 External Clock Frequency 2.00E+07

7 Internal Clock Period 2.00E-07

8 Prescaler Value 16

9 TMR0 Overflow count (d) 109

10 TMR0 Period 4.704E-04

11

12 RPM 1000 1375 2500 2875

13 msec count 120.00 87.27 48.00 41.74

14 1/2 msec (512us) count 234.38 170.45 93.75 81.52

15 Count Roundup(h) EB AB 5E 52

16 470.4 usec count 255.10 185.53 102.04 88.73

17 Count Rounddown(h) FF B9 66 58

18 1/4 msec (256us) count 468.75 340.91 187.50 163.04

19 Count Roundup(h) 1D5 155 BC A4

20 MAP Voltage R Justified L Justified

21 2.65 021F 87C0 Time VTS AK Time VTS AK Time VTS AK HEX Value Time VTS AK HEX Value Time VTS AK HEX Value Time VTS AK

22 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00

23 2.75 0233 8CC0 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00

24 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00

25 3.00 0266 9980 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00

26 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00

27 3.25 0299 A640 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00

28 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00

29 3.50 02CD B340 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00

30 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00

31 3.75 0300 C000 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00

32 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00

33 4.00 0333 CCC0 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00

34 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00

35 4.25 0366 D980 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00

36 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00

37 4.50 0399 E640 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00

38 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00 0 0 0 00

LookUp Table / Export Table /

Ready NUM

5. You should rename the HEX file named MPFI.hex to a filename that is meaningful to you by right mouse clicking on the file name and choosing Rename from the popup menu. Make sure you keep the .hex suffix or the file will not work. If you don't change the file name, the next time the process above is run, it will overwrite the previous contents of this file.
6. The .hex file is the file that will get programmed into the MPFI controller using the programming procedure provided in a separate procedure.

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