*For complete installation instructions, please see the WTUSBDML users manual on the included CD.*

1) Install Freescale's CodeWarrior for HC(S)08 microcontrollers v6.2 (for S08 devices) or CodeWarrior HC(S)12 v4.7 (for S12 devcies) on the host computer. A free version can be found at http://www.freescale.com/codewarrior/downloads.

2) Copy the tbdml.dll file from the included CD to the CodeWarrior HC(S)12 v4.7 "gdi" directory (typical location is: C:\Program Files\Freescale\CodeWarrior for HCS12 V4.7\Prog\gdi) for S12 devices and the opensourcebdm.dll file to the HC(S)08 microcontrollers v6.2 "gdi" directory (typical location is: C:\Program Files\Freescale\CodeWarrior for Microcontrollers V6.2\prog\gdi) for the S08 devices. If a file with the same name already exists, rename it to something like "tbdml_old.dll or opensourcebdm_old.dll, in case they are ever needed.

3) Set JP1 for the proper target voltage on the WTUSBDML.

JP1
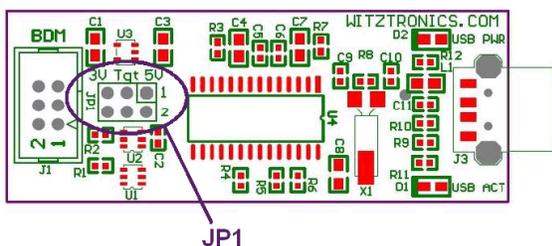
Target Voltage	JP1
5.0V	1-2
Provided by Target	3-4
3.3V	5-6

Note: The WTUSBDML is an electrostatic sensitive device and handling precautions should be observed.

4) Plug the WTUSBDML into a USB port on a host.

5) Install Select "No, not this time" on the initial *Found New Hardware Wizard* dialog box.

6) Select "Install software automatically" on the second *Found New Hardware Wizard* dialog box.

7) Connect the WTUSBDML to the BDM program/debug header on the target PCB.

8) Create or open a project using Freescale's CodeWarrior tools.

9) Select the appropriate target as "TBDML", "HCS08 Open Source BDM" or "Cfv1 Open Source BDM" for a S12, S08 or Cfv1 device respectively. This can also be changed in the project manager window.

10) Create and compile the target firmware.

11) Launch the Debugger

12) "HCS08 Open Source BDM" or "Cfv1 Open Source BDM" for a S08 or Cfv1 device respectively.When starting the debugger you will be presented with a new dialog box. After making your selections and closing this dialog box, debugging will proceed as usual.

The software controlled Vdd options are not supported with the current WTUSBDML hardware. See step 3 for Vdd options.

See reverse side for more information

- **Connection Control menu for S08 and CFV1 devices**

  o Automatically re-connect - This option causes the BDM to continuously update the interface speed to prevent loss of communication in the case with some devices. This option has no effect if the SYNC feature is not available on the target.

  o Force BDM Clock Source - Some HCS08 or Coldfire V1 targets provide an alternative BDM clock selection which may be at a lower speed that the default. This can have advantages when connecting to high speed targets. There may be other requirements before the alternative clock will be used.

  o Use RESET signal - Many of the HCS08 or Coldfire V1 microcontrollers do not have a dedicated reset signal. This is not a problem as it is possible to reset the target using the BKGD mode commands through the BDM interface. However, the RESET signal on the BDM interface will often still be connected to the Reset signal of the processor. This option allows the BDM to monitor and control the RESET signal when appropriate.

- **Connection Control for S12 devices**

  o Automatically re-connect - This option causes the BDM to continuously update the interface speed to prevent loss of communication in this case. This option has no effect if the SYNC feature is not available on the target.

  o Guess speed if no SYNC - Early HCS12s do not support the SYNC feature which allows the BDM interface speed to be determined. Selecting this option will cause the BDM to attempt to find the communication speed by trial and error. This can take quite a while and may be unreliable. Alternatively, set the target speed in the debugger TBDML menu.

  o Force BDM Clock Source - Some HC12 targets provide an alternative BDM clock selection which may be at a lower speed that the default. This can have advantages when connecting to high speed targets. There may be other requirements before the alternative clock will be used. Note: it appears that HC12 use the Alt source by default so the Normal option may be of more interest.

13) The WTUSBDML will now connect to the target board.

The WTUSBDML can now be used to debug and program the target micro.