

# HI-TIDE

## Release Notes for Version 3.13

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THIS FILE CONTAINS IMPORTANT INFORMATION RELATING TO  
HI-TIDE. PLEASE READ THIS DOCUMENT BEFORE RUNNING THE  
SOFTWARE.

# Chapter 1

## Description

HI-TIDE<sup>TM</sup> 3 (HI-TECH Software's Integrated Development Environment v3.xx), based on the Eclipse Platform and CDT, provides an easy-to-use interface to HI-TECH C compilers and enhances code development.

The Eclipse Platform is an open-source IDE that provides an open platform for the integration of tools. CDT is an extension of the platform that provides generic support for C language development. Basing HI-TIDE<sup>TM</sup> on this platform allows HI-TECH Software to focus on developing unique embedded development tools, such as hardware debuggers, simulators, and code-generation tools for microcontroller peripherals. The Eclipse platform brings with it well-tested and widely used tools such as CVS integration, editor code completion, source outlines, etc.

This release includes: fixes for bugs found in previous versions of HI-TIDE, MPLAB ICD 2 support extended to cover most PIC and PIC18 MCUs, new peripherals supported by C-Wiz, and PICC PRO Beta compiler support.

# Chapter 2

## New Features

### 2.1 MPLAB ICD 2 Debugger

**PIC18 Support (3.13)** New to HI-TIDE is MPLAB ICD 2 hardware debugger support for PIC18 devices. One hundred devices are supported. For a list of supported devices see section [7.3.2](#).

**PIC Support (3.13)** An additional 42 devices are supported, including the 16F88x, and 16F91x families. For a full list of supported devices see section [7.3.2](#).

### 2.2 HI-TIDE UI

**Sample Project Import Wizard (3.13)** HI-TIDE now has a new sample project import wizard. The import wizard has simplified the process of importing sample projects from HI-TECH Software's compilers. To access the import wizard select **File->Import..** from the menu bar, then select **Import HI-TECH Sample Project**.

The **Import Sample Project** cheat sheet provides a tutorial.

### 2.3 Compiler Support

**PICC PRO v9.60 Beta (3.12)** PICC PRO v9.60 Beta is now supported.<sup>1</sup>

### 2.4 C-Wiz

**PIC18 Peripheral Support USART(3.12)** The USART peripheral is now supported in C-Wiz for all PIC18 microprocessors.

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<sup>1</sup>C/C++ Build Tool Settings and HI-TECH Debug Variables view support are not complete. Some tool settings are missing and some unnecessary settings are displayed. The value for pointer variables in the Variables view may be incorrect.

# Chapter 3

## Bug Fixes

The following are descriptions of bugs that were present in the previous version(s) of HI-TIDE and have been fixed in this release. The version in brackets indicates the version that the bug was fixed.

### 3.1 Compiler UI

### 3.2 Compiler Core

**Error Opening Project (3.13)** - Opening some projects in HI-TIDE caused a **Managed Make Project File Error**. The error occurred when several conditions were met. The first condition is that the project was created by a previous version of HI-TIDE. The second condition is that the PICC-18 STD compiler was selected for the project. The final condition is that the compiler version was between 9.50 and 9.50PL2 inclusive.

The error was indicated by the **Managed Make Project File Error** dialog which contains the text:

```
The Managed Make project file could not be read because of the following error:
```

```
[Ljava.lang.Object
```

```
Managed Make functionality will not be available for the  
this project.
```

The release fixes the bug above.

**Incorrect CDT Indexer Warning (3.13)** The indexer incorrectly issued a warning if source code included a header file from the include path. The incorrect warning is:

```
C/C++ Indexer Problem: Preprocessor Inclusion not found:....
```

The warning occurs because the indexer is not extracting the paths from the **Include Paths** option. This option is found in the project properties dialog in the common options section of **Tool Settings** tab of the **C/C++ Build page**.

The fix adds an extra **Include Paths** option. The option has been added to the **Compiler** or **Pre-Processor/Parser** tool on the **Tool Settings** tab for STD and PRO compilers respectively. The fix applies to the dsPICC, PICC, and PICC-18 compiler, both PRO and STD. The index will extract paths from the new **Include Paths** option.

**Incorrect Error on Project Import (3.13)** When importing a project HI-TIDE sometimes incorrectly detected that the compiler was missing from the project. When this happened the **Compiler Selection** dialog was shown. Further, if you selected a new compiler and pressed OK, the **C/C++ Indexer** dialog was shown. This dialog did not contain any text. Finally, when the **C/C++ Indexer** is closed HI-TIDE would not be able to build the project. This bug is fixed in this release.

**Build Hang (3.13)** On some Windows platforms the workspace build process would hang. When hung you would see on the right hand side of the status bar **Building Workspace: (0%)** until you terminated HI-TIDE. Also, even though user interface is still responsive, the build process blocked other actions such as saving source file.

HI-TIDE uses a third party program, **make**, to build projects and it is this program that caused the hang. With a version update to the **make** program the build process no longer hangs. This updated version is now distributed with HI-TIDE.

### 3.3 Distribution

**Online Update Restart Failed (3.13)** After updating HI-TIDE via an online update HI-TIDE sometimes would fail to restart issuing an internal error on startup. HI-TIDE was only able to start again after running it with the **-clean** command line option.

With this fix you will be able to update to this release from older releases without the internal error occurring.

**Online Update Error (3.13)** In some circumstances when HI-TIDE is at the end of installing an online update it will display an error dialog. The error will only appear if HI-TIDE hasn't installed an online update before. The contents of the error dialog are:

```
Unable to complete action for feature "HI-TECH Software Development
Tools" due to errors.
InstallHandler.deactivated
Custom install handler required by feature "HI-TECH Software Development
Tools" was not found. [com.htsoft.hitide.install.InstallHandler]
InstallHandler.deactivated
Custom install handler required by feature "HI-TECH Software Development
```

Tools" was not found. [com.htsoft.hitide.install.InstallHandler]  
The updated HI-TIDE functions normally after restart.  
With this release this error no longer occurs.

## 3.4 C-Wiz

### 3.4.1 PIC18

**PortB Interrupt-On-Change (3.13)** The Port B Interrupt-On-Change configuration was missing from C-Wiz for PIC18 chips.

The fix now allows the Interrupt-On-Change feature to be configured.

**MSSPx Interrupt Creation (3.13)** C-Wiz wasn't creating code for some Serial Port settings in MSSPx peripherals. Specifically C-Wiz wasn't creating interrupt handling code for these peripherals when requested.

Now C-Wiz creates interrupt handling code for the MSSPx Serial Port peripherals.

## 3.5 Debugger UI

**Debugger Internal Error (3.13)** In some instances, when debugging, an internal error occurs. The full content of the error dialog is: An internal error occurred during: "Debug async queue." For the error to occur the **Variables** view must be showing at least one variable.

This bug has been fixed in this release.

**Missing Memory View Content (3.13)** The **Memory View** didn't display configuration register values when using the PICC and PICC18 debuggers. This problem effected the simulators and hardware debugger.

The memory now correctly displays configuration register values.

**Incorrect Disassembly (3.13)** The **Disassembly** view displays mixed C and assembly incorrectly on some occasions. It shows several assembler instructions and below it will show those same instructions again unnecessarily. It displays the unnecessary instructions most commonly when disassembling `while` and `for` loops.

The **Disassembly** view now does not display the unnecessarily instructions.

# Chapter 4

## Limitations

### 4.1 Debugger UI

**Variable View** The address contained in function pointers is displayed correctly, but the symbolic function name associated with this address is not displayed.

### 4.2 MPLAB ICD 2 Debugger

**Chip Support** The PIC baseline and PIC18FxxJxx parts are not supported by the MPLAB ICD 2 Debugger at this time.

**Programming Support** Programming support is not currently available.

**Communication** HI-TIDE is currently not able to communicate via USB.

### 4.3 C-Wiz

**EUSART Support** At this time the EUSART peripheral is not supported.

## Chapter 5

# Online Updates

Updates to the IDE can now be downloaded from within HI-TIDE. To update select **Help->Software Updates->Find and Install...** from the menu bar. Then when the **Install** wizard appears, select **HI-TECH Software Updates** and select **Finish** to complete the wizard.

Once the **Install** wizard is complete the **Update** wizard is shown. Select **HI-TIDE update site**, and complete the pages in the wizard as required.

Once the wizard is finished the **Verification** dialog will appear. This dialog displays the certificate details used to sign the files that are being downloaded. A certificate provides a digital signature that allows verification that the downloaded files originated from the expected party, here HI-TECH Software.

There are three key items in the dialog that should be verified before proceeding with the install. First, the text **The provider of this feature has been validated by a trusted third party** should appear towards the top of the dialog. Second the **File signed by** text box should contain, among other things, the URL to the HI-TECH Software update site, **updates.htsoft.com**, and a valid date range. Third the **According to** text box should contain, among other things, the URL to the Go Daddy Secure Certification Authority Repository, **http://certificates.godaddy.com/repository** and a valid date range.

## Chapter 6

# Compiler Support

For a list of compilers and associated features pleader refer to the table 6.1.

Table 6.1: Supported Compilers and Associated Features

<b>Compiler</b>	<b>Project Management</b>	<b>C-Wiz</b>	<b>Simulator</b>	<b>Hardware Debugger</b>
PICC STD v9.50+	Yes	Yes	Midrange only.	MPLAB ICD 2
PICC-18 PRO v9.60+	Yes	Yes	Yes	MPLAB ICD 2
PICC-18 STD v9.50+	Yes	Yes	Yes	No
dsPICC STD v9.60+	Yes	No	No	No

# Chapter 7

## Debugger Notes

### 7.1 PIC18 Simulator

Core simulator support is implemented for all PIC18 microcontrollers known at the time of release.

The below is a list of simulated peripherals:

- Reset
- Reading/writing to Flash (includes J parts)
- Reading/writing to EEPROM
- Reading/writing to External memory (timing not simulated)
- Timers 0-4
- Interrupts for the above triggers

### 7.2 PIC Simulator

Core simulator support is implemented for all PIC midrange microcontrollers known at the time of release. Baseline and high-end devices are not supported.

The below is a list of simulated peripherals:

- Reset
- Reading/writing to Flash
- Reading/writing to EEPROM
- Timers 0-2
- Interrupts for the above triggers

## 7.3 MPLAB ICD2 Debugger

### 7.3.1 Operating System (Firmware) Files

PIC12F16F	v2.07.02	(ICD01020702.hex)
PIC10F2XX, PIC16F54/57	v1.04.03	(ICD07010403.hex)
PIC16F68X	v1.05.00	(ICD08010500.hex)
PIC12F629/675, PIC16F630/676	v1.00.00	(ICD09010000.hex)
PIC18F	v2.07.05	(ICD04020705.hex)
PIC18F Extended	v1.04.01	(ICD05010401.hex)

### 7.3.2 Debugger Device Support List

12F629 <sup>1</sup>	12F635 <sup>1</sup>	12F675 <sup>1</sup>	12F683 <sup>1</sup>
16F627A <sup>1</sup>	16F628A <sup>1</sup>	16F630 <sup>1</sup>	16F631 <sup>1</sup>
16F636 <sup>1</sup>	16F639 <sup>1</sup>	16F648A <sup>1</sup>	16F676 <sup>1</sup>
16F677 <sup>1</sup>	16F684 <sup>1</sup>	16F685 <sup>1</sup>	16F687 <sup>1</sup>
16F688 <sup>1</sup>	16F689 <sup>1</sup>	16F690 <sup>1</sup>	16F716 <sup>1</sup>
16F737	16F747	16F767	16F777
16F785 <sup>1</sup>	16F818	16F819	16F87
16F870	16F871	16F872	16F873
16F873A	16F874	16F874A	16F876
16F876A	16F877	16F877A	16F88
16F883	16F884	16F886	16F887
16F913	16F914	16F916	16F917
16F946	16HV785		
18F1220	18F1230	18F1320	18F1330
18F2220	18F2221	18F2320	18F2321
18F2331	18F2410	18F242	18F2420
18F2423	18F2431	18F2439	18F2450
18F2455	18F2458	18F248	18F2480
18F2510	18F2515	18F252	18F2520
18F2523	18F2525	18F2539	18F2550
18F2553	18F258	18F2580	18F2585
18F2610	18F2620	18F2680	18F2682
18F2685	18F4220	18F4221	18F4320
18F4321	18F4331	18F4410	18F442
18F4420	18F4423	18F4431	18F4439
18F4450	18F4455	18F4458	18F448
18F4480	18F4510	18F4515	18F452
18F4520	18F4523	18F4525	18F4539

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18F4550	18F4553	18F458	18F4580
18F4585	18F4610	18F4620	18F4680
18F4682	18F4685	18F6310	18F6390
18F6410	18F6490	18F6520	18F6525
18F6527	18F6585	18F6620	18F6621
18F6622	18F6627	18F6680	18F6720
18F6722	18F8310	18F8390	18F8410
18F8490	18F8520	18F8525	18F8527
18F8585	18F8620	18F8621	18F8622
18F8627	18F8680	18F8720	18F8722

### 7.3.3 Operating System Support List

Windows XP SP2, Windows Vista 32-bit, GNU/Linux 64bit, and Mac OS X

- Only initial testing has been performed on 32-bit Vista for this release. 64-bit Vista is not supported at this time.

**NOTE:** Windows NT and Windows 98/ME OSes are *not* supported.

### 7.3.4 Communication

HI-TIDE is able to communicate to the MPLAB ICD 2 via the a (RS–232) connection. USB connections are not supported at this time.

**NOTE:** For platforms (PC, Mac, etc) that do not have a RS–232 port a USB-to-serial adapter can be used.<sup>2</sup>

### 7.3.5 Reference Documents

The following documents may be found on the Microchip website:

- MPLAB ICD 2 Design Advisory (DS51566)
- Using MPLAB ICD 2 Poster (DS51265)
- MPLAB ICD 2 User’s Guide (DS51331)
- Header Specification (DS51292)
- Universal Programming Module Instruction Sheet (DS51280)

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<sup>1</sup>Header interface board required. See **MPLAB ICD 2 Header Specification** (DS51292), for a list of available headers by device number.

<sup>2</sup>The Keyspan® USA-19HS adapter has been tested on the operating systems above.

### 7.3.6 Powering the MPLAB ICD 2 and Target Board

**NOTE:** MPLAB ICD 2 must be powered BEFORE power is applied to the target application.

#### 7.3.6.1 MPLAB ICD 2 Power

Serial (RS-232) connection to the PC:  
Power supply required.

#### 7.3.6.2 Target Board Power

The MPLAB ICD 2 can provide 5 V and up to 200 mA to a target if the ICD itself is powered by a power supply.

### 7.3.7 Setting Up the MPLAB ICD 2 and Target Board

Following the instructions in the **Debugging with the MPLAB ICD 2** cheat sheet. The cheat sheet can be accessed by selecting **Help->Cheat sheets...** from the menu bar. Once the **Cheat Sheet Selection** dialog is open expand the **HI-TIDE Cheatsheets** folder and select **Debugging with the MPLAB ICD 2**.

### 7.3.8 Known Problems

The following is a list of known problems.

#### 7.3.8.1 General Issues

- For baseline devices, TRISIO and OPTION\_REG cannot be read.
- For PIC18F8720, MEMCON cannot be read if in a microcontroller mode. This is a silicon issue.
- You may not be able to enter debug mode if power-up timer is enabled for the following devices:
  - PIC18F4620/4610/2620/2610
  - PIC18F4680/2680/4681/2681
  - PIC18F4520/4420/2520/2420
  - PIC18F4550/2550/4455/2455
  - PIC18F8490/8410/6490/6410/8390/8310/6390/6310
  - PIC18F8722/8627/8622/8527/6722/6627/6622/6527
- MPLAB ICD 2 may not operate on a dual processor platform in dual processor mode. It is recommend that you change the application properties for MPLAB ICD 2 to single processor mode.

- On PIC16F88X devices it is necessary to pull the RB3/PGM pin low for ICSP programming. This is due to a silicon issue.
- When connecting the PIC16F818/819 to the latest MPLAB ICD 2's (r3), the device may latch resulting in the error **Error creating debugger: Chip ID is 0. Check that the target board is powered and connected to the MPLAB ICD 2.** A work around is to use a .1 uF capacitor on VPP to GND.

### 7.3.8.2 System Service Requests (SSRs)

**SSR 20230:** Programming or reading a code-protected EEPROM memory generates no messages by MPLAB IDE for MPLAB ICD 2 for a PIC12F675 device.

**SSR 24354:** Some peripherals do not freeze. This is a silicon issue.

**SSR 26344:** Below 4.5 V, MPLAB ICD 2 will not over-program User IDs on these devices:

PIC12F635	PIC16F684	PIC16F689	PIC16F914
PIC12F683	PIC16F685	PIC16F690	PIC16F916
PIC16F636	PIC16F687	PIC16F785	PIC16F917
PIC16F639	PIC16F688	PIC16F913	PIC16F946

**SSRs ICD2-37, ICD2-72, ICD2-81, ICD2-82:** As a general comment on these issues, some devices may not be able to enter debug mode at 32 kHz speed.

**SSR ICD2-109:** When connecting the PIC16F818/819 to the latest MPLAB ICD 2s (r3), the device may latch resulting in the error **Error creating debugger: Chip ID is 0. Check that the target board is powered and connected to the MPLAB ICD 2.** To work around the issue, reduce the cable length to less than 6 inches. Also, if AC162049 is being used, remove the R1 pull-up resistor. Some devices require that a .1uF bypass capacitor be placed from the Vdd pin to the Vss pin of the device to successfully program the device. If programming failures still arise, try increasing this value incrementally to a maximum of 10uF.

**SSR ICD2-140:** When the command to erase EEPROM in the device at 3.1V, the EEPROM in the device gets reprogrammed in the same voltage. Please note that below 3.0V, EEPROM will not be erased.

### 7.3.9 Important Notes

- The following applies to all devices except for Extended PIC18F Devices V2:
- While single stepping, the MPLAB ICD 2 will not respond to interrupts.
- The SLEEP instruction cannot be used when debugging.
- The WDT cannot be used when debugging.
  - An exception to the single step SLEEP and WDT in the above notes:
  - Extended PIC18F Devices V2 will allow the user to interrupt while single stepping, use SLEEP, use WDT.

- For PIC18Fxx20 devices, you must connect the AVDD and AVSS pins for the devices to program.
- Make sure that table reads/writes are not code protected.
- In low voltage mode, bulk erase will not erase code protect bits.
- When using a 32 kHz crystal, you may receive the error **Unable to enter into debug mode. Check that the oscillator is configured correctly.** Relaunch the debugger to enter debug mode.

#### 7.3.9.1 Firmware

- MPLAB ICD 2 has different OS's for different part families. HI-TIDE will automatically download the correct OS as necessary.

#### 7.3.10 Reserved Resources

The MPLAB ICD 2 uses on-chip resources when debugging, i.e., some device resources are reserved for use by MPLAB ICD 2. The resources required by the MPLAB ICD 2 will be reserved by the compiler if the **Microchip ICD 2** option is set to **ICD2**. You can find this option by right clicking on a project in the **C/C++ Project** view, then selecting **Properties**. Once the properties dialog has opened select **C/C++ Build** from the list on the left of the dialog. The make sure the **Tool Settings** tab is selected. From the **Tool Settings** tab select the **Debugging** options category. In this category you will find the **Microchip ICD 2** option.

## Chapter 8

# Licensing

- Visit <http://www.eclipse.org> for licensing information for the Eclipse Public License.
- The *Sun* Java Runtime Environment<sup>TM</sup> - License can be found in the file `sun-jre-license.txt` in the HI-TIDE<sup>TM</sup> 3 distribution's docs directory.
- DOM4J<sup>TM</sup> - License can be found in the file `dom4j-license.txt` in the HI-TIDE<sup>TM</sup> 3 distribution's docs directory.
- This product also uses source code provided by *Sun*. This source code is covered under the license found in the file `sun-samples-license.txt`.