CH564 Evaluation Board Reference

Version: V1.0

https://wch-ic.com

1. Overview

This evaluation board is applied to the development of the CH564L chip. The IDE uses the MounRiver compiler, with the option of WCH-Link for emulation and download, and provides reference examples and demonstrations of applications related to chip resources.

2. Evaluation Board Hardware

Please refer to the CH564SCH.pdf document for the schematic of the evaluation board.
CH564L Evaluation Board

Description

1. Main control MCU	2. LED row pin	3. SDI debug interface	4. Network port
5. USB interface	6. USB interface	7. Reset button	8. Power switch
9. Download button			

The above CH564L evaluation board comes with the following resources.
Motherboard - CH564L-R0-1v0

1. Main control MCU: CH564L
2. LED Pin: LED pin for connecting chip IO port.
3. SDI debugging interface: Used to select cut off or connect external 5V USB interface power supply.
4. Network port: Network communication interface of the main chip
5. USB interface: Connects to the high-speed USB interface of the main chip.
6. USB interface: Connects to the high-speed USB interface of the main chip and provides USBPD function.
7. Reset button: Used for external manual reset of the main MCU
8. Power Switch: Used to cut off or connect external 5V power supply or USB power supply.
9. Download button: Used to enter boot download mode at power up.

Tips: In order to adapt to the download and debugging of SDI interfaces of different packages, the debugging interface of CH564 series chips supports free configuration; single-line debugging or dual-line debugging is optional. Debugging interface pins PB10 (SWIO), PB11 (SWCLK two-wire debugging optional)

3. Software Development

3.1 EVT Package Directory Structure

Description:

PUB folder: Provides evaluation board manuals, evaluation board schematics.

EXAM folder: Provides software development drivers and corresponding examples for the CH564 controller, grouped by peripheral. Each type of peripheral folder contains one or more functional application routines folders.

3.2 IDE Use-MounRiver

Download MounRiver_Studio, double click to install it, and you can use it after installation. (MounRiver_Studio instructions are available at the path: MounRiver\MounRiver_Studio\ MounRiver_Help.pdf and MounRiver_ToolbarHelp.pdf)

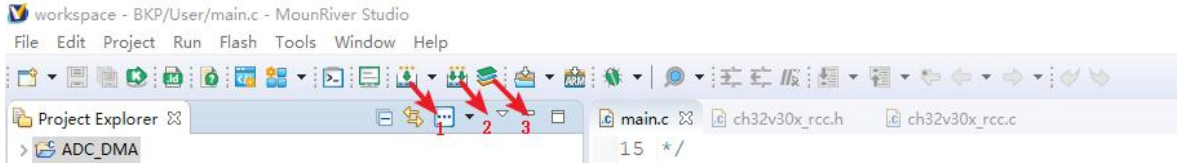
3.2.1 Open Project

➢ Open project:

1) Double-click project file directly with the suffix name .wvproj under the corresponding project path.
2) Click File in MounRiver IDE, click Load Project, select the .project file under the corresponding path, and click Confirm to apply it.

3.2.2 Compilation

MounRiver contains three compilation options, as shown in the following figure.



Compile option 1 is Incremental Build, which compiles the modified parts of the selected project.

Compile option 2 is ReBuild, which performs a global compilation of the selected project.

Compile option 3 is All Build, which performs global compilation for all projects.

3.2.3 Download/Simulation

➢ Download

1) Debugger download

Connect to the hardware via WCH-Link (see WCH-Link instructions for details, path: MounRiver\MounRiver_Studio\ WCH-Link instructions.pdf), click the Download button on the IDE, and select Download in the pop-up interface, as shown in the figure below.

1. For querying the chip code protection status.
2. For setting the chip code protection and re-powering the configuration to take effect.
3. For lifting the chip code protection and re-powering the configuration to take effect.

4. Select and setting Link mode
5. Select Chip Model
6. Set the debug interface mode (1-wire serial/2-wire serial)
7. Select the target file to download
8. Configure download options

➢ Simulation

1) Toolbar description

Click Debug button in the menu bar to enter the download, see the image below, the download toolbar.

Detailed functions are as follows.

(1) Reset: After reset, the program returns to the very beginning.
(2) Continue: Click to continue debugging.
(3) Terminate: Click to exit debugging.
(4) Single-step jump-in: Each time you tap a key, the program runs one step and encounters a function to enter and execute.
(5) Single-step skip: Jump out of the function and prepare the next statement.
(6) Single-step return: Return the function you jumped into

Instruction set single-step mode: Click to enter instruction set debugging (need to use with 4, 5 and 6 functions).

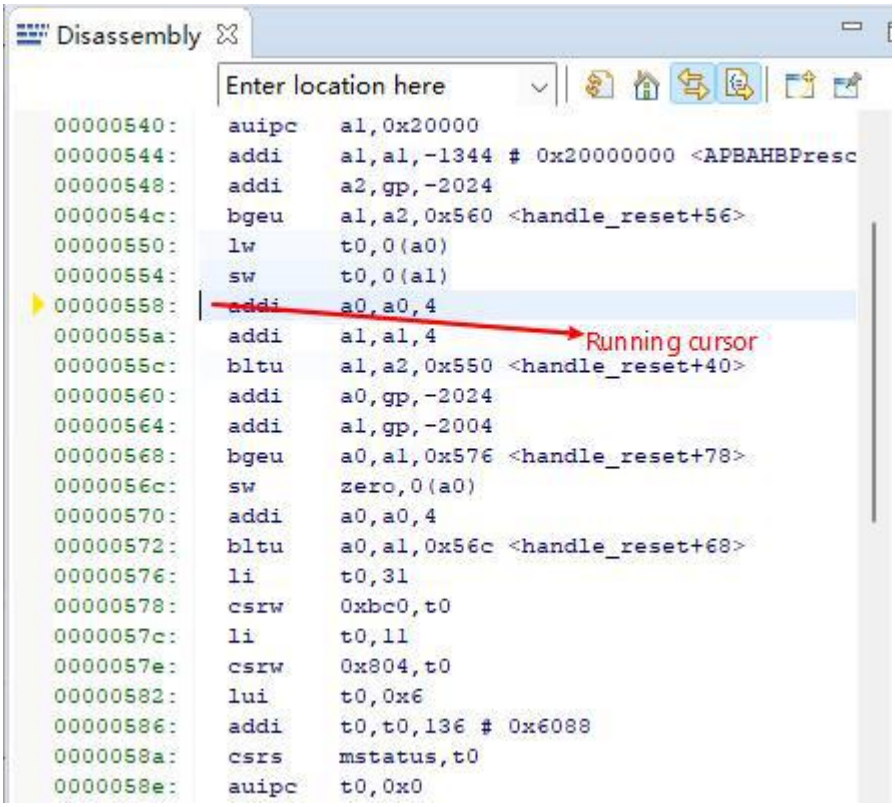
2) Set breakpoints

Double-click on the left side of the code to set a breakpoint, double click again to cancel the breakpoint, set the breakpoint as shown in the following figure;

3) Interface display

(1) Instruction set interface

Click on the instruction set single-step debugging can enter the instruction debugging, to single-step jump in for example, click once to run once, the running cursor will move to view the program running, the instruction set interface is shown as follows.

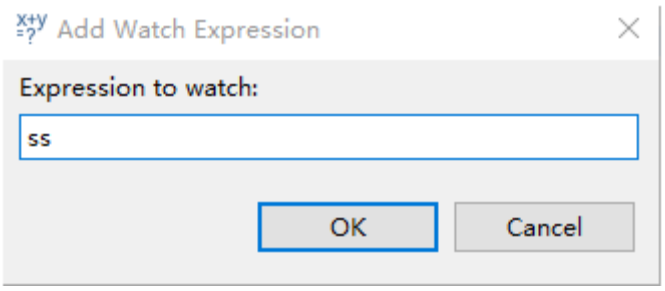


(2) Program running interface

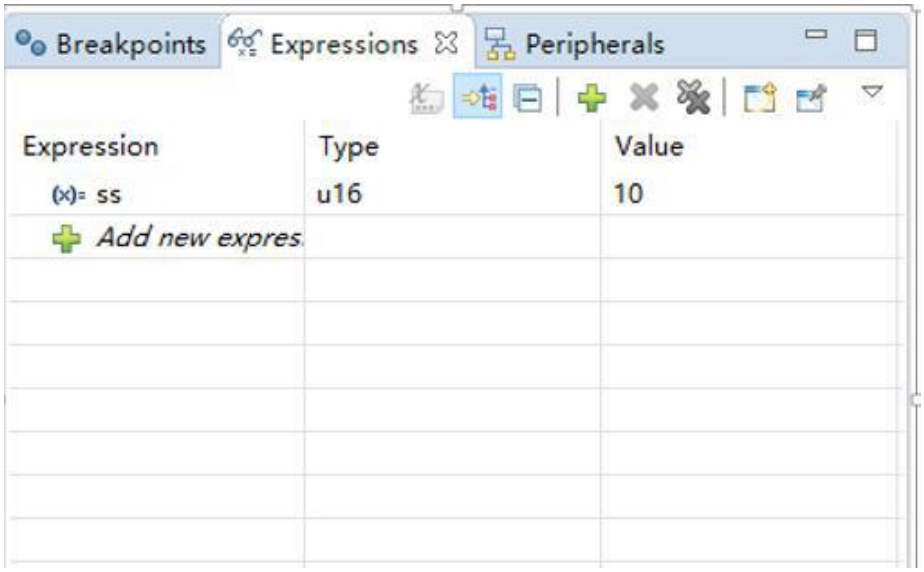
It can be used with instruction set single-step debugging, still take single-step jumping in as an example, click once to run once, the running cursor will move to view the program running, the program running interface is shown as follows.

4) Variables

Hover over the variable in the source code to display the details, or select the variable and right-click add watch expression

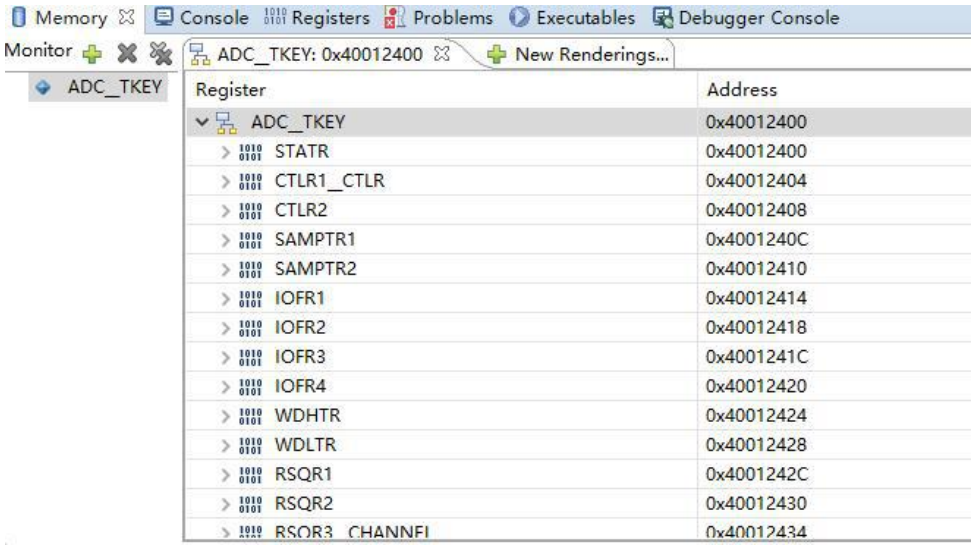


Fill in the variable name, or just click OK to add the variable you just selected to the pop-up.



5) Peripheral registers

In the lower left corner of IDE interface Peripherals interface shows a list of peripherals, tick the peripherals will display its specific register name, address, value in the Memory window.



Note:

(1) When debugging, click the icon in the upper right corner to enter the original interface.

(2) For documentation to access the compiler, click F1 to access the help documentation for detailed instructions.

4. WCH-LinkUtility.exe Download

The download process for the chip using the WCH-LinkUtility tool is:

1) Connect WCH-Link
2) Select chip information
3) Add firmware
4) If the chip is code protected, you need to release the chip code protection.
5) Execute

5. WCHISPTool.exe Download

Please download the WCHISPTool.exe tool from our official website to download the hex file to the chip flash operation.

CH564 chip needs to enter the download mode to use ISP tool to download the code, it is most convenient to use USB to download the code, CH564 chip will enter the download mode if it detects the boot pin is at low level when powering up. When the CH564 chip detects a low level on the boot pin during power-up, it will enter the download mode. If the chip does not communicate with the ISP tool within 10 seconds after entering the download mode, it will automatically exit the download mode.

Connect the CH564 evaluation board to the computer using the USB plug-to-plug cable. As shown in the figure, open our official ISP download tool. As shown in the figure, open our official ISP download tool, select CH564 as the chip model, select USB as the download mode, power off the CH564 evaluation board, then press and hold down the download button on the evaluation board and then power on the board, at this time, the USB device list of the ISP tool will show the newly connected CH564 chip. Check "Run target program after downloading" as needed, select the .hex file generated in 3.2 in the user program file column, and finally click "Download" to download the program in 3.2 to the main chip on the evaluation board and run it automatically.

When using the serial port to download the code to the CH564 evaluation board, connect the TXD (PB11) and RXD (PB10) pins of UART1 of the chip to the computer through the USB to TTL module, press and hold the download button or ground the download configuration pin and then power on the evaluation board, open the WCHISPTool tool, select the chip model, choose the download method of the serial port, and then click on the search, and select the port number connected to the evaluation board. Select the port number connected to the evaluation board, and finally click Download to start the operation of downloading the code, and the specific steps and status will be displayed in the download log.

Note: CH564L/Q series boot pin is PB7, CH564D series boot pin is PB9; CH564D series only support the above serial port download.

The WCHISPTool interface is shown in the figure:

1. Select MCU series and chip model
2. Select the serial port or USB download mode
3. Identify the device, usually automatically, if it fails to identify, you need to select manually
4. Select the firmware, select the downloaded .hex or .bin target program file
5. Configure the download according to the requirements
6. Click download

6. Statement of Attention

1) If you use WCH-Link to download, refer to WCH-Link instructions for specific switching mode. Detailed inquiries/questions can be logged in the following.

WCH official website: https://www.wch-ic.com/

WCH-LINK instructions for use: https://www.wch-ic.com/products/WCH-Link.html