

Renesas CS+ Debugger

Abstract

This document describes the usage of the Renesas CS+ debugger as target system. The minimum required version of CS+ is V3.01.00. TESSY supports the RH850, RL78, and RX controller families.

Table of Contents

Abstract	1
1 Renesas CS+ Debugger	2
1.1 Setup of the CS+ IDE	2
1.1.1 Loading the script file manually	2
1.1.2 Loading the script file automatically	4
1.1.3 Starting and stopping CS+ automatically	4
2 TESSY Environment Settings.....	5
3 Test Run.....	6
3.1 Interactive Debugging	6

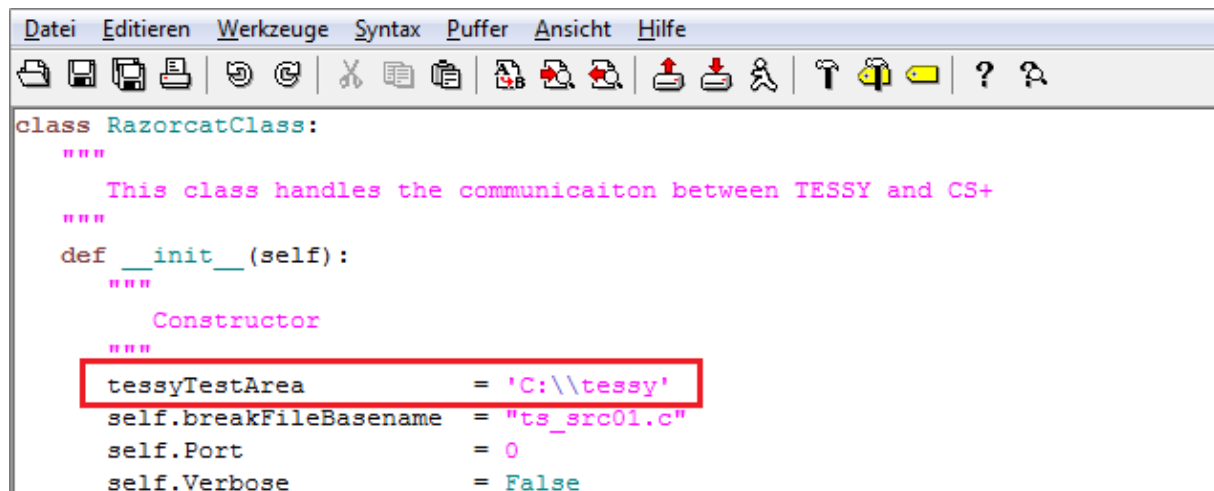
1 Renesas CS+ Debugger

The communication between TESSY and CS+ is based on an API which uses the IronPython language. There is a script file contained in the TESSY installation directory which has to be loaded into CS+ before TESSY can communicate with CS+. The script automatically connects and disconnects the debugger appropriately for the test run. If you copy the script into the root folder of the CS+ project you use for TESSY and rename it to the CS+ project's name keeping the `.py` extension, CS+ will automatically load the script when the project is being opened.

1.1 Setup of the CS+ IDE

Before running a test from TESSY, please make sure that the debug hardware and the target controller on the target board are working correctly when operated from within CS+ with the CS+ project you plan to use for TESSY's test runs. You may create a sample project or use your current development project and download and run the built program on the debug hardware.

In order to let TESSY communicate with CS+, a special script file has to be loaded. This file normally does not need to be altered unless you have chosen a different TESSY test area. The default value is `C:\\tessy`. So, if you have chosen a different location for the test area during the TESSY installation process, you have to open the script file using a text editor of your choice and alter the path appropriately.



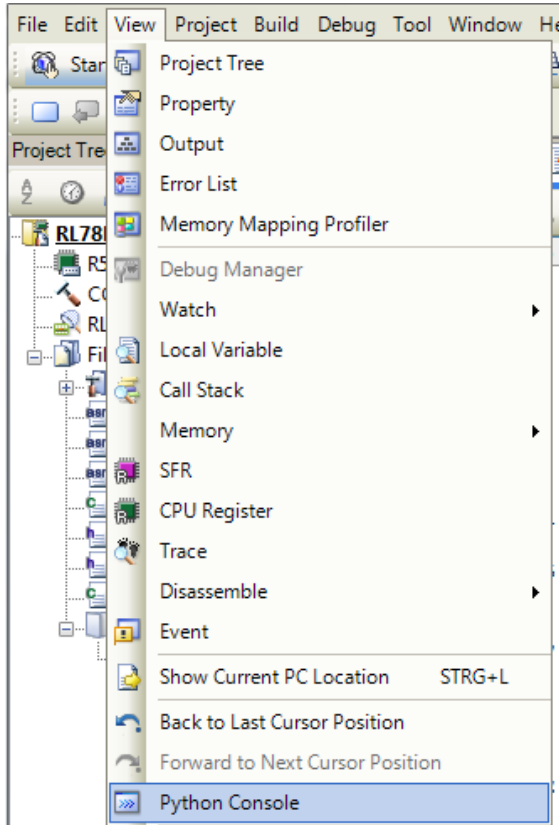
```
class RazorcatClass:
    """
        This class handles the communication between TESSY and CS+
    """
    def __init__(self):
        """
            Constructor
        """
        tessyTestArea = 'C:\\tessy'
        self.breakFileBasename = "ts_src01.c"
        self.Port = 0
        self.Verbose = False
```

Please, note that backslashes have to be escaped as shown above!

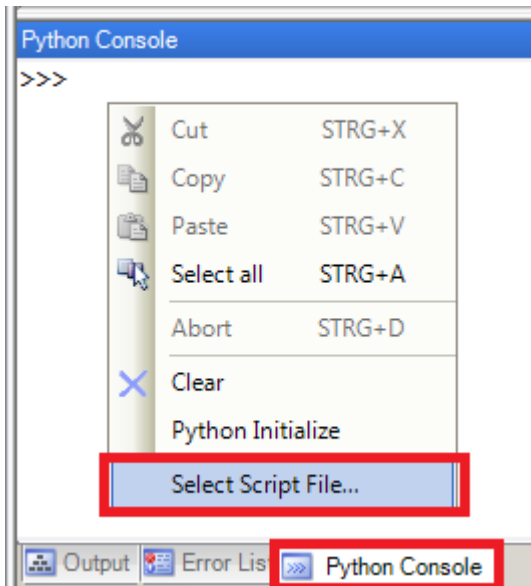
There are two options to load the script file finally. These options are explained in the next two subchapters.

1.1.1 Loading the script file manually

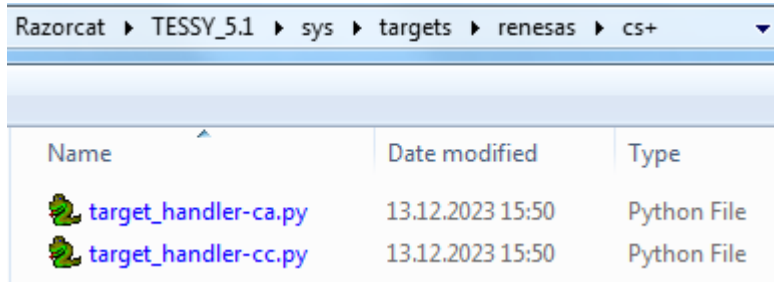
If you prefer to load the script manually, you will have to do the following steps each time you open the CS+ project. From the main menu select **View->Python Console** to open the **Python Console** as shown below.



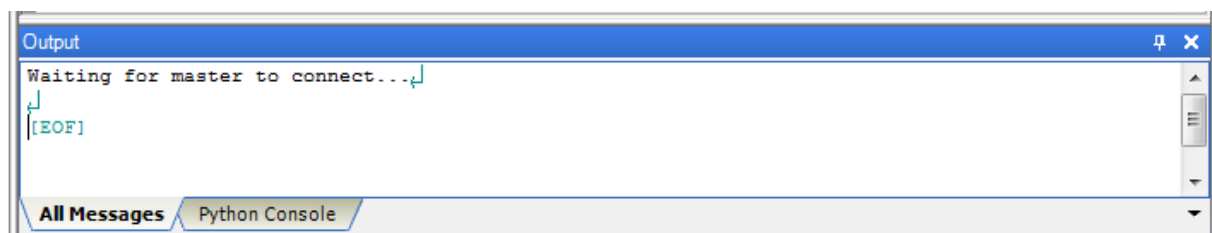
Within the **Python Console** open the context menu (try the right or left mouse button) and choose **Select Script File....**



From the dialog navigate to the script file found for example in TESSY's installation directory.



The script will start running as soon as you have selected the correct file and confirmed the dialog by clicking **Open**. If the script started successfully the following message is displayed in the **All Messages Output** console.



The message indicates that the script is ready to receive commands from TESSY's master. Before you start the test run from within TESSY you have to setup the TESSY environment using the TESSY environment editor (TEE). This is explained in the next chapter.

1.1.2 Loading the script file automatically

If you copy the script file into the root folder of your CS+ project and rename it to the name of the CS+ project while keeping the .py extension then the script file will be opened by CS+ automatically as soon as the project is being opened. The message in the All Message Output console will be the same as when loading the script file manually. For instance, if your CS+ project is called **TESSY-Test** then the script file should be named **TESSY-Test.py** and should be found in the same folder as where **TESSY-Test.mtpj** is found.

1.1.3 Starting and stopping CS+ automatically

It may be convenient to let TESSY start the CS+ IDE before a batch test runs and stop it afterwards. You will find a TEE mod file which creates and sets the required TEE attributes, when you import the file. All you have to adjust is the **Debugger Path** and the **Project File**, i.e. the Renesas CS+ project file. The TEE mod file is found within the TESSY installation in file

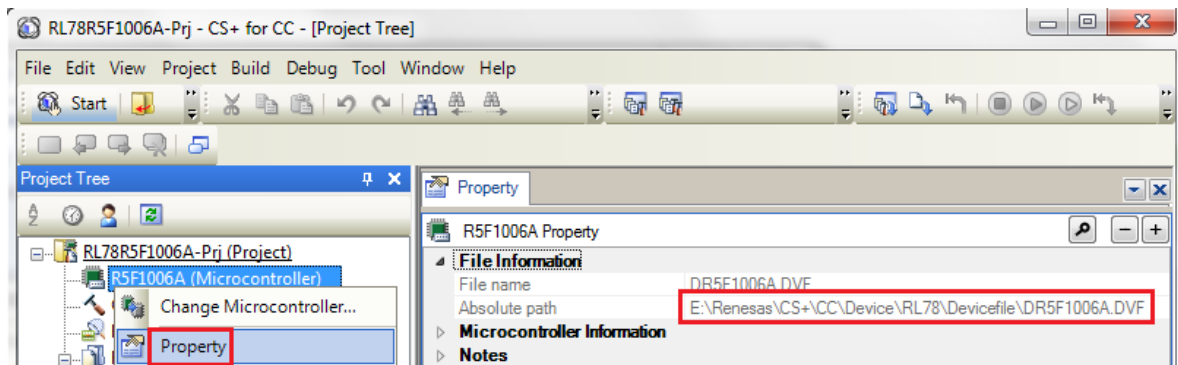
```
sys\targets\renesas\CS+\Renesas CS+ (Autostart CS+).mod
```

From TESSY's menu select Support->Enable Support Mode. Open the **TEE** perspective, select your configured Renesas CS+ environment, which you want to extend, and click the **Load Modification** button, which is found within the **Project Environment** view's toolbar, to select and load the modification file.

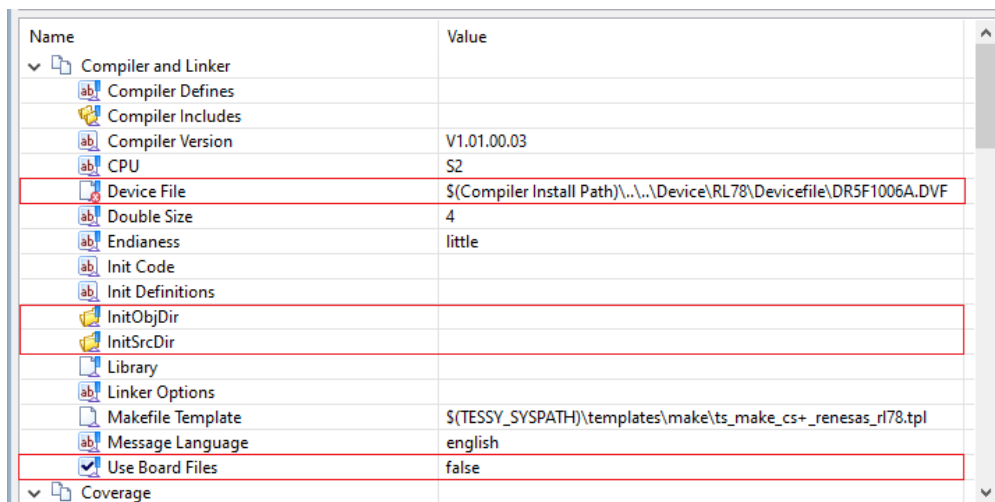


2 TESSY Environment Settings

Copy the location of the device file from your CS+ project

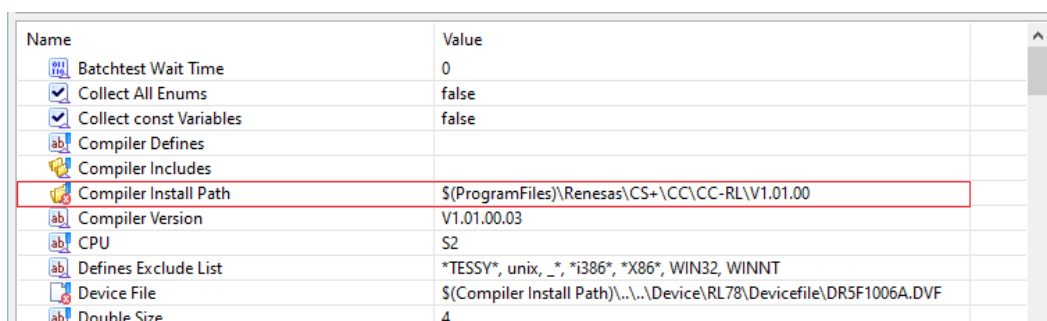


and paste it into the TEE attribute **Device File** as shown below.












Also set the compiler installation directory (**Compiler Install Path**) and the source (**InitSrcDir**) and object (**InitObjDir**) folder of the board files you will need to link to your program appropriately. Finally set the attribute **Use Board Files** to **true**.

Please note: Only use those board files that are really needed! Create a separate folder for each source and object board files. Also copy the header files needed by the board files into the source folder. Keep in mind that you do need board files or startup code, which can be found in your CS+ project's source folder.



Finally set the TEE attribute **Target Configuration** depending on what type of simulator respectively emulator you suppose to use. Supported values are

Simulator
Minicube
Minicube2
Minicube2Jtag
Iecube
Iecube2
E1Jtag
E1Serial
E1Lpd
E20Jtag
E20Serial
E20Lpd

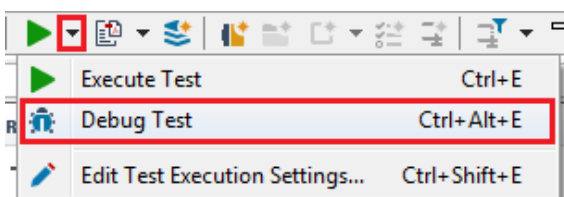
Name	Value
 Linker Options	
 Makefile Template	\$(TESSY_SYSPATH)\templates\make\ts_make_cs+_renesas_r178.tpl
 Message Language	english
 MISRA Do While Expressions	OU, false
 Relative Path Variables	
 Synthetic Declarations In Source	true
 Target Configuration	Simulator
 Target Install Path	
 Target Version	V3.01.00

3 Test Run

Since the CS+ IronPython API utilizes the CS+ IDE during a test run, interactive debugging is also supported by this target adaption. Interactive debugging is explained in the next section.

3.1 Interactive Debugging

For interactive debugging select **Debug Test** from TESSY's toolbar menu.



TESSY Application Notes

The test will be started and the CS+ debugger will halt at your test object containing your corresponding test data. The global variables `TS_CURRENT_TESTCASE` and `TS_CURRENT_TESTSTEP` contain the test case respectively the test step number. By default, the script jumps to the C source file of your test object. If you do not want it to open the C source file but instead only watch the **Disassemble** view you may set the TEE attribute **Jump To Source** to **false**.

