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CMOS 32-BIT SINGLE CHIP MICROCONTROLLER

S1C31 Family
PA File Creation Tool
Manual Rev.3

arm

SEIKO EPSON CORPORATION

Rev.3.0

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1. Overview

This tool creates a PA file (Seiko Epson's data for submission) from an ELF file (ROM data) by development environment. If using the service to load user programs to the internal flash memory in S1C31 Family at Seiko Epson's factory, a PA file must be created and submitted to Seiko Epson.

1.1 Working Environment

To use this package, the following conditions are necessary:

- PC

  Windows 10

- ARM® development environment

  IAR Embedded Workbench for ARM® (IAR EWARM) or MDK-ARM® (uVision)

- S1C31 Setup Tool Package

  Includes Flash loader and PA file creation tools.

2. Installation

2.1 Installation instructions

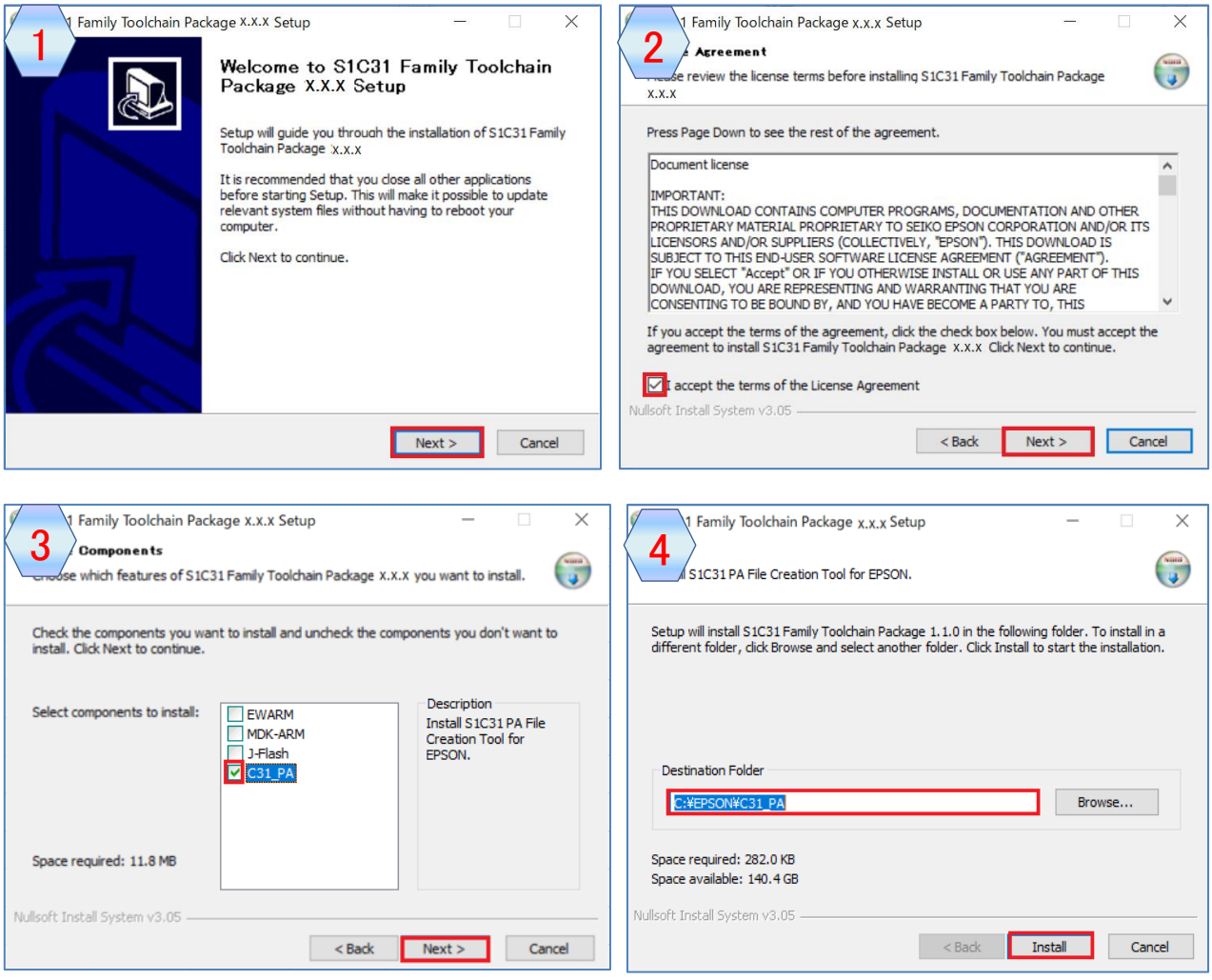
This section describes how to install the S1C31SetupTool package, which includes the S1C31 Family PA file creation tool.

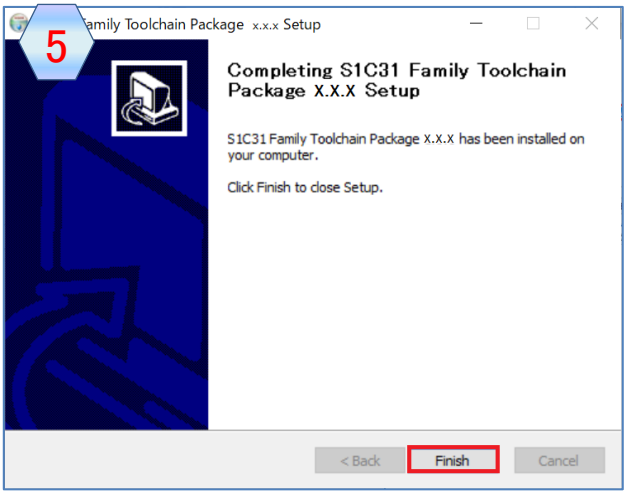
(1) Download S1C31SetupTool.zip from our microcontroller website and unzip it to any folder.

(2) Execute “s1c31ToolchainSetup.exe” from the extracted folder.

(3) After the installer starts, follow the installer's instructions to perform the installation.

1. Check the installation contents.
2. Check the terms of the license agreement.
3. Select C31_PA.
4. Select installation folder and execute installation.
5. Exit the installer.




5
amily Toolchain Package x.x.x Setup
Completing S1C31 Family Toolchain Package X.X.X Setup
S1C31 Family Toolchain Package X.X.X has been installed on your computer.
Click Finish to close Setup.
< Back
Finish
Cancel

2.2 Folder structure

The structure of the installation folder is as follows:

```
C:\EPSON (default)
    \C31_PA
        uninstall.exe                   Uninstaller
        license.txt                     License file for this package
        \TOOL
            ptd.exe                     Motorola-S2-format file conversion tool
            winmdc17.exe                PA file creation tool
        \IAR
            c31_setup.bat               Batch file for setting up this tool for IAR EWARM
            S1C31xxx_create_pa.bat      Execution batch file for IAR EWARM
            …
        \ARM
            c31_setup.bat               Batch file for setting up this tool for MDK-ARM
            S1C31xxx_create_pa.bat      Execution batch file for MDK-ARM
            …
        \mcu_model                      Folder of the model-specific files for creating PA file
            \S1C31xxx
            …
```

3. Registering Tool

By registering this tool to the IDE (IAR EWARM or MDK-ARM) as external tool, you can create a PA file in the IDE. Follow the procedure below to register this tool.

3.1 Using IAR EWARM

(1) Launch the IAR EWARM

Launch the IAR EWARM form the start menu.

(2) Register the PA file creation tool

Follow the steps below to register the PA file creation tool as an external tool in the IAR EWARM.

1. Select the [Tools] > [Configure Tools…] in IDE menu to open the [Configure Tools] dialog.

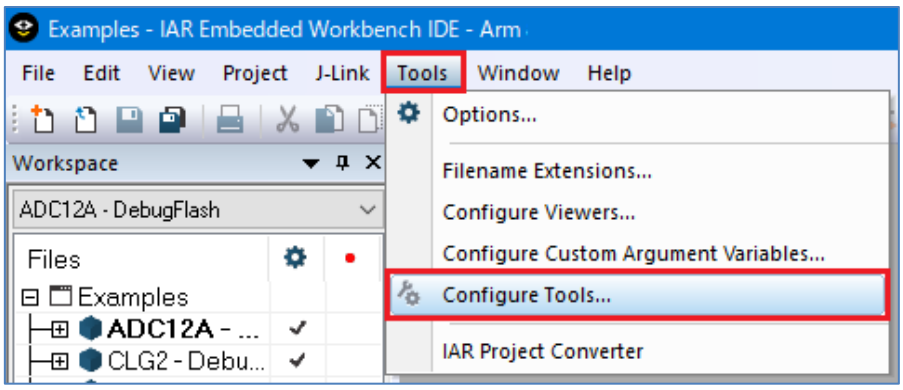


Figure 3.1.1 Display of [Configure Tools] dialog

2. Click the [New] button.

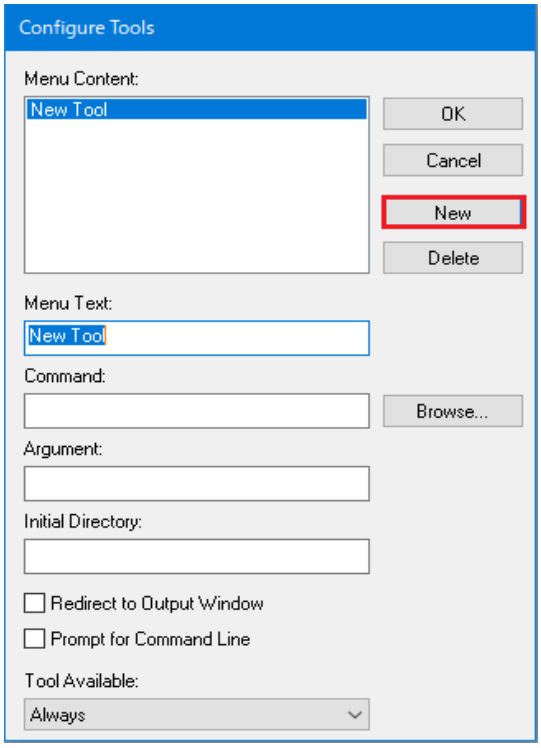


Figure 3.1.2 Display of [New]

3. Ten enter the ‘Create S1C31xxx PA File’ in the text box at the [Menu Text:].
   Note) *xxx* : Indicates the target model name.
4. Click the [Browse…] button at the [Command:], and then select the S1C31xxx_create_pa.bat in C:\EPSON\C31_PA\IAR(default installation folder).
5. Enter the ‘"EXE_DIR" "$PROJ_FNAME$" "$TARGET_FNAME$" "EW_DIR"’ in the text box at the [Argument:].
6. Enter the ‘EXE_DIR’ in the text box at the [Initial Directory:].
7. Enable the [Redirect to Output Window:] checkboxes.
8. Disable the [Prompt for Command Line:] checkboxes.
9. Select the [When not debugging] in the [Tool Available:] drop dawn list.
10. Click the [OK] button to complete the tool registration.

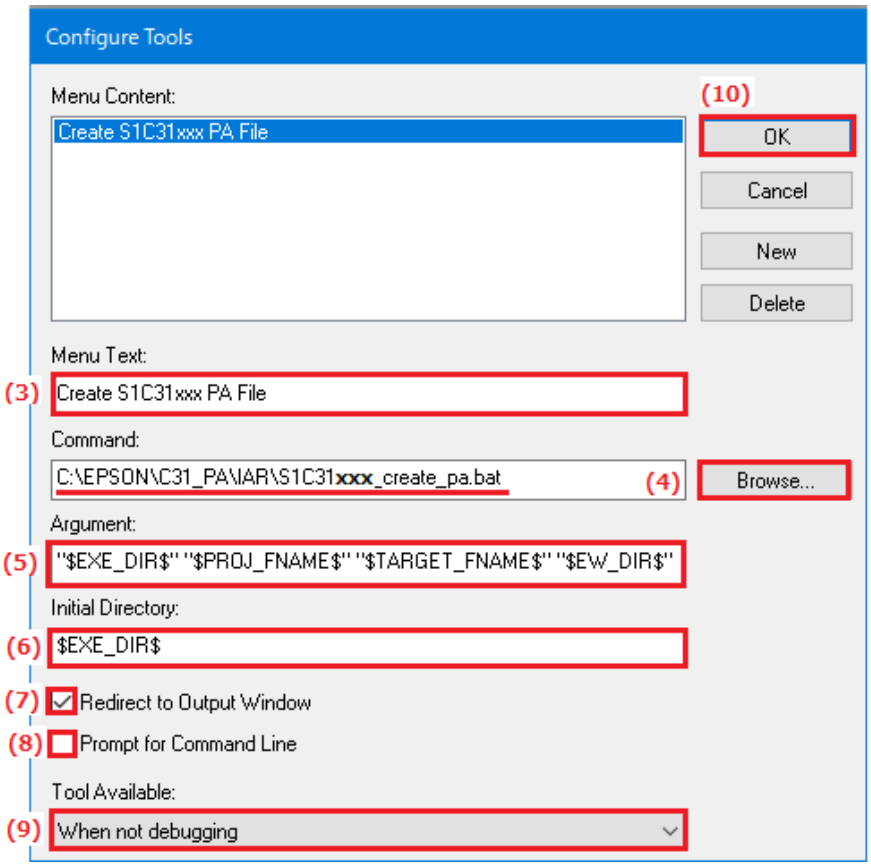


Figure 3.1.3 Setting of tool

3.2 Using MDK-ARM

(1) Launch the uVision (MDK-ARM)

Launch uVision which is IDE included with MDK-ARM.

(2) Register the PA file creation tool

Follow the steps below to register the PA file creation tool as an external tool in the IDE.

1. Select the [Tools] > [Customize Tools Menu…] in IDE menu to open the [Customize Tools Menu] dialog.

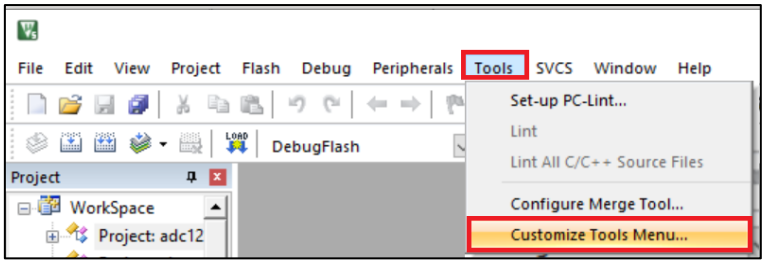


Figure 3.2.1 Display of [Customize Tools Menu] dialog

2. Double-click the blank line in [Menu Content:], and then enter the 'Create S1C31xxx PA File'.
3. Click the […] button at the [Command:], and then select the S1C31xxx_create_pa.bat in "C:\EPSON\C31_PA\ARM"(default installation folder).
4. Enter the '$L' in the text box at the [Initial Folder:].
5. Enter the '"$L" "@L" "%L" "$K"' in the text box at the [Arguments:].
6. Disable the checkboxes, [Prompt for Arguments], [Run Minimize] and [Run Independent].
7. Click the [OK] button to complete the tool registration.

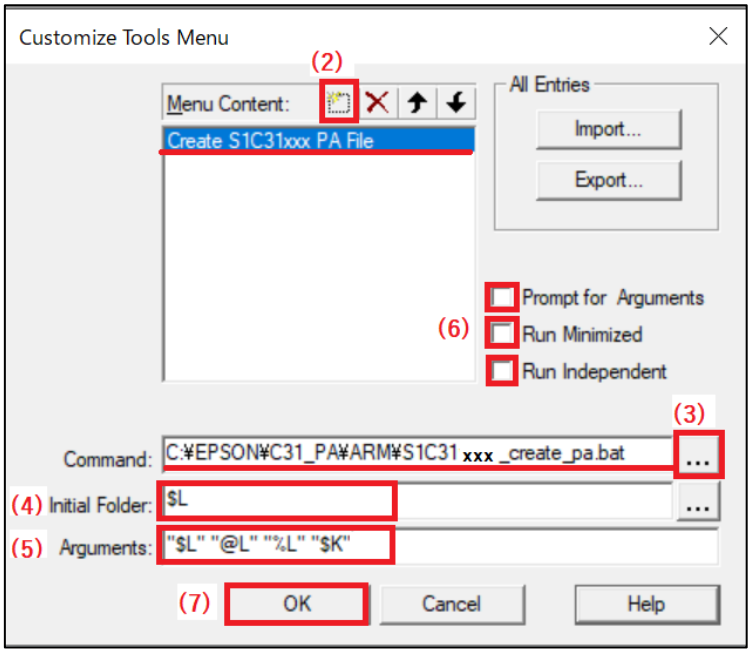


Figure 3.2.1 Setting of [Customize Tools Menu]

4. Creating PA File

If you want to use the service to load the user programs to the internal flash memory of the S1C31 Family at the Seiko Epson's factory, you need to create a PA file and submit it to Seiko Epson.

Follow the procedure below to create a PA file.

4.1 Using IAR EWARM

This section uses the S1C31xxx peripheral circuit sample software provided by Seiko Epson as an example.

(1) Open the Workspace

Launch the IAR EWARM, and then select the [File] > [Open] > [Workspace...] in the IDE menu to open the Examples\WORKSPACE\IAR\Examples.eww.

(2) Create the ELF file(*.out)

Set the desired project as active and select the build configuration with "Flash" (ex. DebugFlash or Release Flash). Then select the [Project] > [Make] in IDE menu to build the active project. After the build is completed, an ELF file (*.out) is created in the "$PROJ_DIR\{build configuration}\Exe" folder.

(3) Create the PA file

Select the [Tools] > [Create S1C31xxx PA File] in IDE menu to create the PA file.

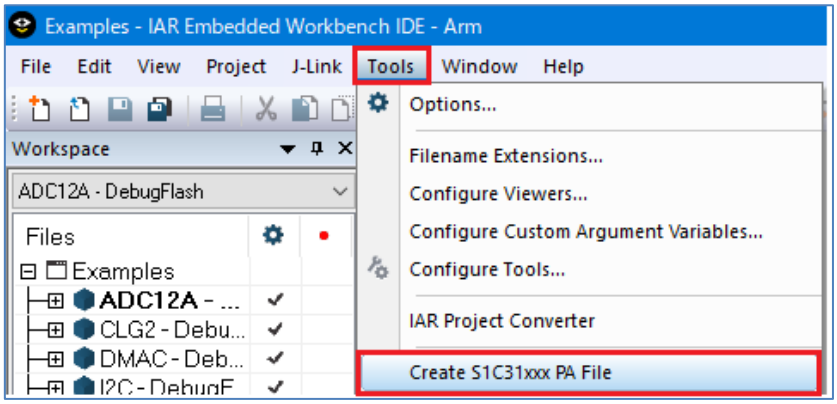


Figure 4.1.1 Creating a PA file

When a PA file generation succeeds, the following message is output to the [Tool output] window displayed at the bottom of IDE.

```
*
*  OK     PA file is created.
*
********************************************************************************
```

The PA file (*.PA) is created in the folder where the ELF file(.out) exists.

4.2 Using MDK-ARM

This section uses the S1C31xxx peripheral circuit sample software provided by Seiko Epson as an example.

(1) Open the Workspace

Launch the uVsion(MDK-ARM), and then select the [Project] > [Open Project…] in the IDE menu to open the Examples\WORKSPACE\ARM\Examples.uvmpw.

(2) Create the ELF file(*.axf)

Set the desired project as active and select the build configuration with “Flash” (ex. DebugFlash). Then select the [Project] > [Build ‘xxx (yyy)’] in IDE menu to build the active project. After the build is completed, an ELF file (*.axf) is created in the $PROJ_DIR\obj\{build configuration} folder.

(3) Create the PA file

Select [Tool] > [Create C31 PA File] in uVision menu to create the PA file.

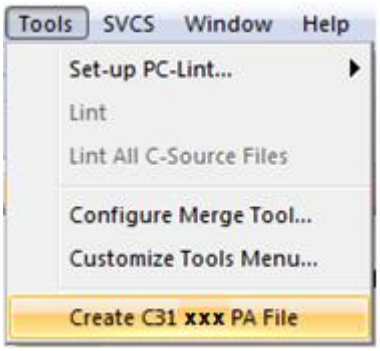


Figure 4.2.1 Creating a PA file

When a PA file generation succeeds, the following message is output to the [Build Output] window displayed at the bottom of uVision.

```
*
*  OK     PA file is created.
*
********************************************************************************
```

The PA file (*.PA) is created in the folder where the ELF file(.axf) exists.

Revision History

Attachment-1

Rev. No.	Date	Page	Category	Contents
Rev 1.0	04/25/2017	All	New	New establishment.
Rev 2.0	08/30/2017	P.5-P.9	Modify	Modified sections 2.2, 3.1 and 4.1
Rev3.0	01/15/2021	All	Changed	Change installer.

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