ABOV SEMICONDUCTOR

IAR EW8051 (Compiler and Debugger)

E-OCD II / OCD / OCD II
EW8051 Setup Guide

MDS

Contents

1. Introduction

- This user guide introduces a method to develop ABOV devices in the 8051 debugger of IAR (C-SPY) environment.
  - How to connect and detect the OCD/ OCD II/ E-OCD II dongle.
  - How to detect ABOV's 8051 device.
  - How to debug ABOV's device.

- This user guide describes restrictions under the 8051 debugger of IAR (C-SPY) environment.
  - Compatibility according to IAR version
  - Restrictions according to the number of Breakpoints that are built in ABOV's device.

2. IAR Debugger Connections

2-1 USB Kernel Driver Installation

- E-OCD II dongle
  - » Since the built-in HID of Windows is used, additional driver doesn't need to be installed.
  - » Due to the use of the built-in HID, it can be used immediately after connecting to PC.
- OCD/ OCD II dongle
  - » It requires an installation of Kernel Driver on a PC.
  - » While operating the OCD Debugger Setup Program that is provided by ABOV, necessary files are copied.
  - » You can refer to ABOV's OCD Debugger Manual for the information of the driver installation.
  - » You can check the HW connection through the Device Manager on your PC.

2. IAR Debugger Connections (continued)

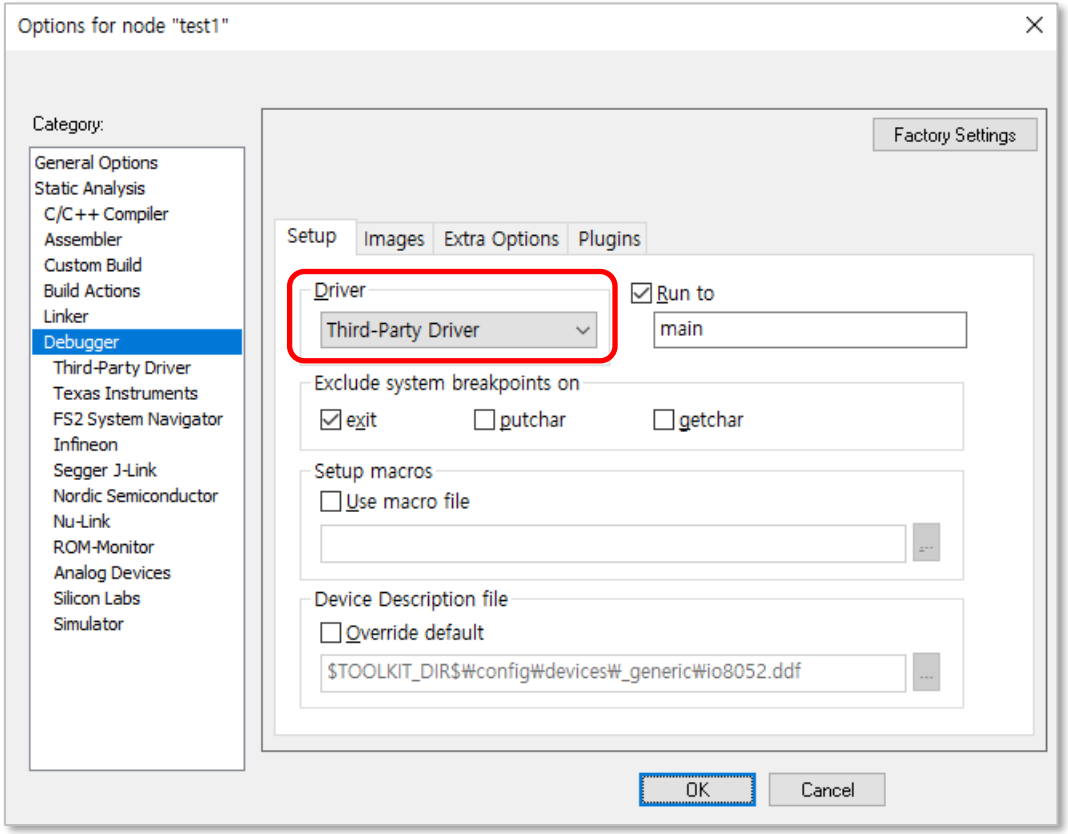
2-2 ABOV's SDK DLL Connections

- SDK DLL
  - » SDK DLL is a Dynamic Link Library that is used for a development in the IAR Debugger (C-Spy) environment.
    - SDK: Software Development Kit
    - DLL: Dynamic Link Library
  - » IAR selectively provides basic DLL only for some companies such as TI, Infineon, and Segger.
    - Products of other companies are connected by using Third Party Drivers.
  - » ABOV developed DLLs to support its dongles and devices by using SDK sources of IAR.

- SDK DLL compatibility between IAR versions
  - » It needs to remember that IAR SDK DLL is compatible according to IAR versions.
    - Causes: Problem of IAR itself, compatibility problem
    - When the version of IAR Embedded Workbench is 8.0, ABOV_OCD_IAR_1010.DLL must be used.
    - When the version of IAR Embedded Workbench is 8.1, ABOV_OCD_IAR_1030.DLL must be used.
  - » ABOV is under development for DLL that is compatible with current version of IAR.
    - It is expected that the DLL won't be compatible with new version of IAR.
    - SDK DLL and IAR operate only when they are the same version.
    - You should check whether the DLL operates when the version of the installed IAR becomes higher (or lower).

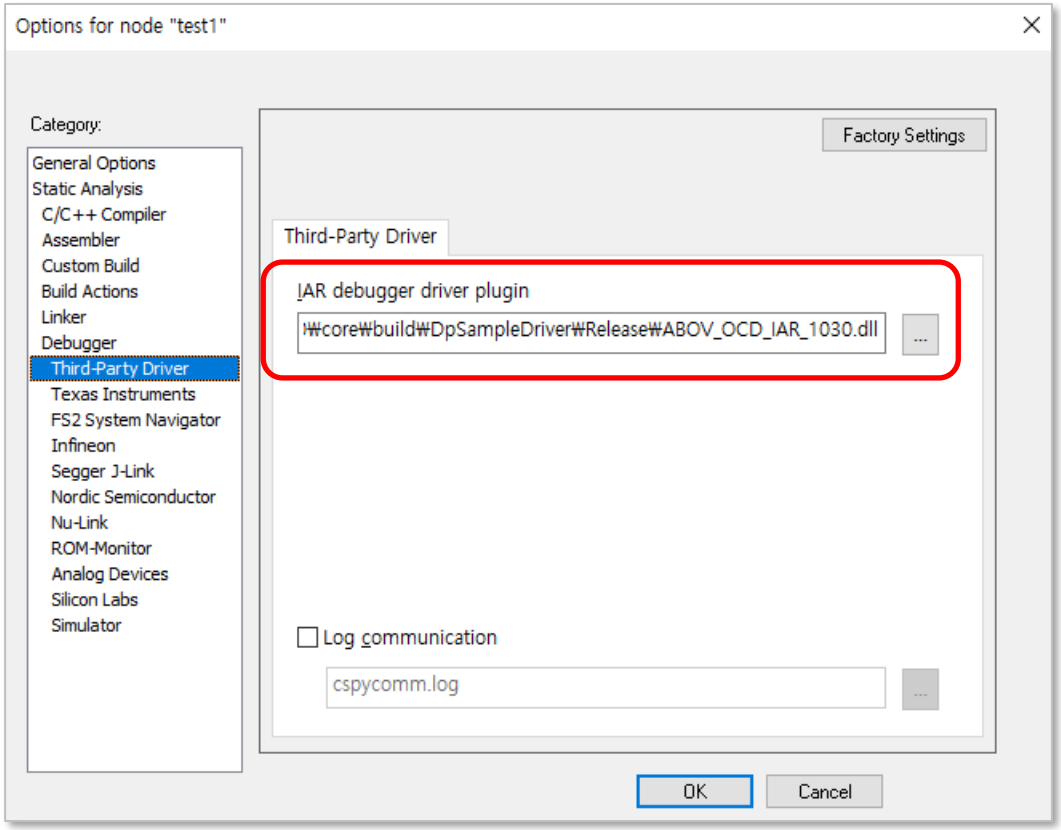
2. IAR Debugger Connections (continued)

- IAR project settings
  - ① Select “Options…”, then select “Debugger”.
  - ② Press “OK” button to connect to the Third-Party Driver.



2. IAR Debugger Connections (continued)

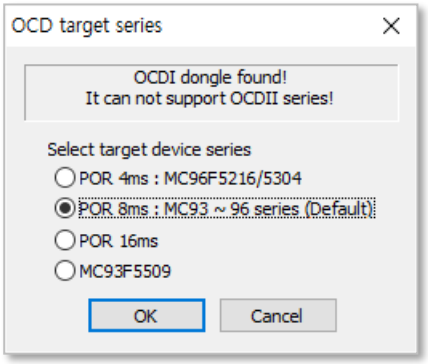
- IAR Third-Party Driver settings
  - ① Select “Options…”, then select “Debugger”. Finally select “Third-Party Driver”.
  - ② Press “OK” button to connect to an SDK DLL file provided by ABOV (Check the IAR version for the compatibility of SDK DLL).



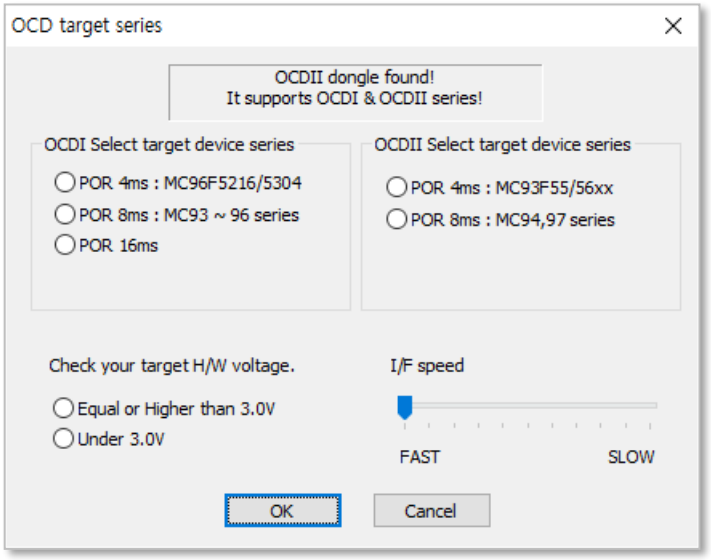
3. Use of IAR Debugger

3-1 Download Hexfile

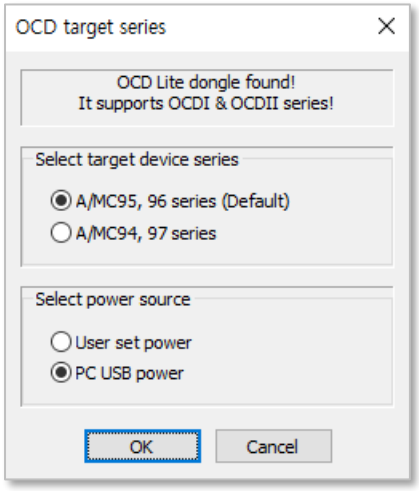
- By pressing a debugging button ( ), you can proceed operations consecutively.
  - ① Detect OCD/ OCD II/ E-OCD II dongle.
  - ② For each dongle, select POR (Power-on Reset) for the series to which a target device belongs.



When connecting
OCD dongle



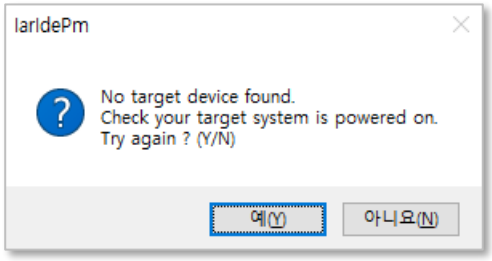
When connecting
OCD II dongle



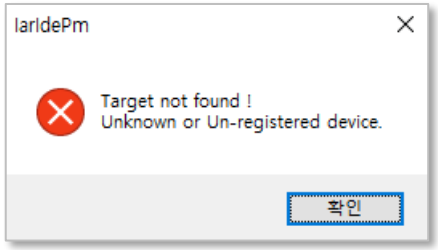
When connecting
E-OCD II dongle

3. Use of IAR Debugger (continued)

- If the target is turned off, a dialog box is displayed as shown below:



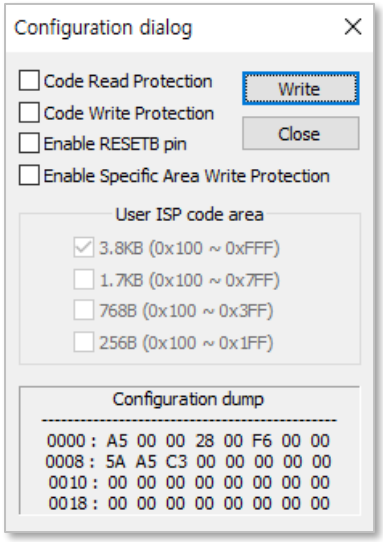
- If the target is turned on, but an unregistered product is detected, a dialog box is displayed as shown below:



- When the target is detected normally, a Hex File is downloaded into the Flash of the target.

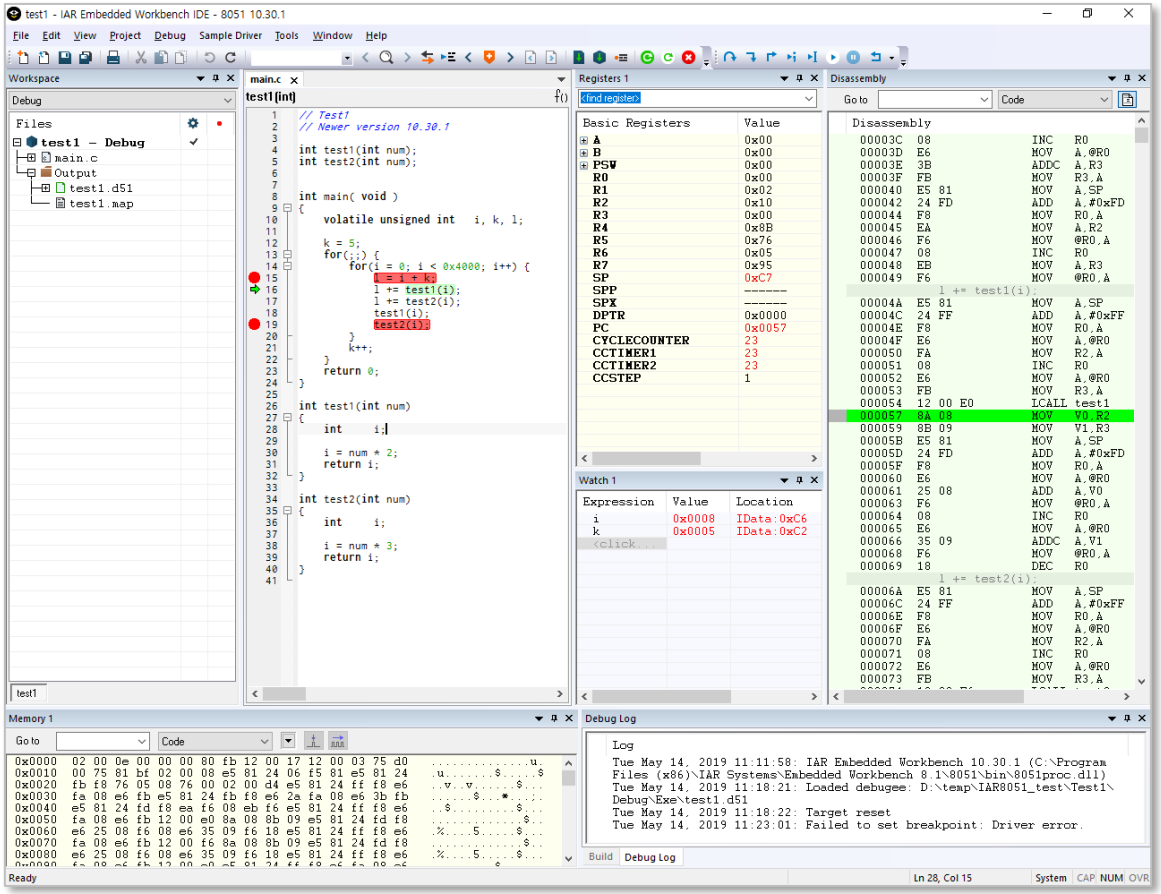
3. Use of IAR Debugger (continued)

- If a target device has options,
  - » After downloading a Hex file, the corresponding option dialog for the device is displayed.
  - » Example option dialog for MC96F8204 is shown below:



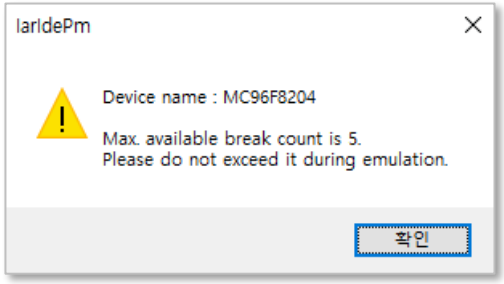
3-2 Cautions for Debugging

- Use the functions of IAR debugger without changes.
  - » Remember only that the number of Breakpoints is limited.

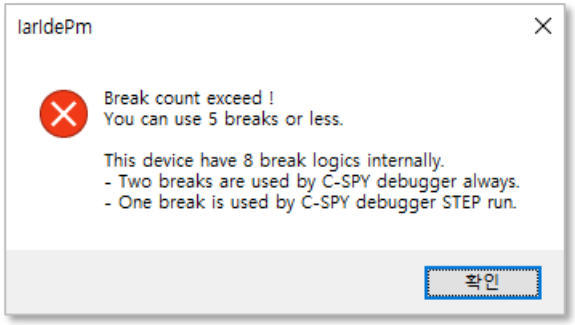


3. Use of IAR Debugger (continued)

- After downloading a Hex file, it displays the number limit of the Breakpoints.
  - » ABOV's devices limit the number of built-in Breakpoints.
    - The number of Breakpoints for each device is different.
    - It displays the number of Breakpoints available for developers, except for Breakpoints used by IAR debugger.



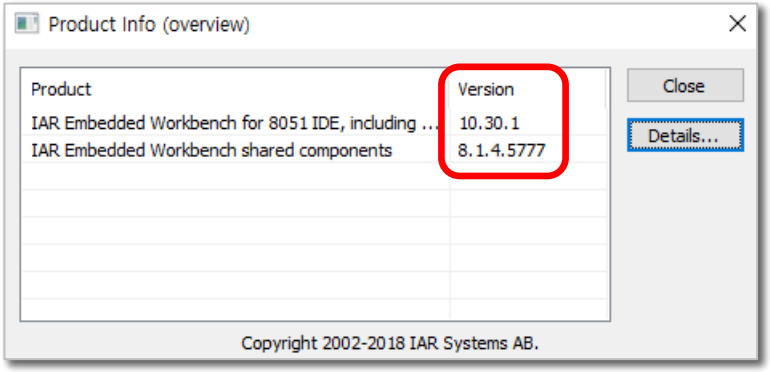
  - » It displays a warning message if a developer sets a larger number than the number of available Breakpoints on the device.
    - Breakpoint settings made after the warning message are ignored.
    - Only by reducing the set number of Breakpoints, you can set up with new number.



4. Appendix

4-1 SDK DLL Compatibility according to IAR Versions

- Remember that SDK DLL compatibility is decided according to a version of IAR Embedded Workbench.
  - » Some of SDK DLL are not compatible if their Embedded Workbenches have different versions.
  - » As of 2019, ABOV supports the version 8.0 and 8.1 of Embedded Workbench.
  - » Check the IAR version by following the procedure below:
    - I. Start the IAR.
    - II. Select “Help”, “About”, and “Product Info …” in order from the menu.
    - III. You can check the two versions in a Product Info window as shown below:



4. Appendix (continued)

- IAR version table
  - » Since IAR GUI requires different SDK DLL to be developed and supported for each version, it is not easy to manage and distribute the SDK DLL.

IAR version	Detailed version: released year	Matched SDK DLL version
8.1	10.30.x : 2019	10.30
8.0	10.20.x : 2018	10.10
8.0	10.10.x : 2017	10.10
7.3	9.30.x : 2016	9.30
7.2	9.20.x : 2015	9.20
7.0	9.10.x : 2014	9.10
6.5	8.30.x : 2013	8.30
6.4	8.20.x : 2012	8.20
6.1	8.11.x : 2012	8.10
6.1	8.10.x : 2011	8.10

4-2 Number Limitation of Built-in Breakpoints for each Device

- Number of Breakpoint logics that are built in ABOV's device:
  - » OCD IP has 8 Breakpoints that is defined in a default spec.
  - » OCD II IP has 12 Breakpoints that is defined in a default spec.

- Reduction of the number of Breakpoint for each device:
  - » It results that the cost reduces in product planning and the chip size reduces in consideration of competitiveness.
  - » It is expected that products with small ROM size can be managed with the reduced number of Breakpoints.
  - » Products that reduces number of Breakpoints to 4, 2, or 1 are released.

- Number of reserved Breakpoints for each GUI
  - » ABOV's debugger: N.A.
  - » KEIL: 2 to 3 (The number can vary according to the debugger settings.)
  - » IAR: 3 to 5 (The number can vary according to the debugger settings.)

- Reduction of developer's Breakpoints when using Third Party GUI
  - » Registration is impossible if the number of built-in Breakpoints is less than 4.
  - » Debugger malfunctions if the built-in number is set to the number that exceeds the number of available built-in Breakpoints.
  - » Considering users of Third Party GUI, it is recommended that the number of Breakpoints is maintained at least 8.

4-3 Number of Built-in Breakpoints: ABOV Devices

- OCD device

Number of Breakpoints	Device list						
8 (default)	MC91CS801 MC95FG104 MC96F4548 MC96F6832 MC96F8204 MC96FC864A MC96FR116C MC96FT082 MC96FT241 A96G140 A96L416 A96T385	MC93CV401 MC95FG204 MC96F5208 MC96F7064 MC96F8316 MC96FD316 MC96FR4128 MC96FT083 MC96FT242 A96G166 A96R136	MC93F5508 MC95FG308 MC96F5216 MC96F7616A MC96FB504 MC96FK102 MC96FR316A MC96FT085 MC96P0202 A96G174 A96R150	MC93F5508B MC95FR432 MC96F6416P MC96F7816 MC96FC364 MC96FM204 MC96FR332A MC96FT1504 MC96P1102 A96G181 A96R717	MC93F5509 MC95FR464 MC96F6432 MC96F7848C MC96FC832 MC96FM408 MC96FR332B MC96FT1516B MC96P6608 A96L302 A96R725	MC95FB204 MC95FT081 MC96F6508A MC96F7864 MC96FC832A MC96FR112C MC96FR364B MC96FT1616 A96L312 A96R739	MC95FG0128 MC96F4524 MC96F6509 MC96F8104 MC96FC864 MC96FR116B MC96FR364C MC96FT1704 A96L322 A96T218
4	MC96F5304		A96T365				
2	MC96F1206	A96T316					
1	A96T346	A96T356		AL4000			

- OCD II device

Number of Breakpoints	Device list						
12 (default)	MC97F1316EVA MC97F6064 A97C624	MC97F2208EVA MC97F6108A	MC97F2664 MC97F6108M	MC97F2664A MC97F68128A	MC97F38128 MC97F8324H	MC97F3864 MC97FG316	MC97F60128
8	A97C450						
4	MC93F5516 MC97F1206EVA A94B114 A94Q116	MC93F5616 MC97F8264 A94B316 A94Q427	MC93F5632 A94B336	MC94A332B A94B428	MC94F1202A A94B438	MC94FB704 A94B517	MC94PU20 A94B920

5. End of Document

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