

Tutorial

How to use IAR EWARM with Spansion templates

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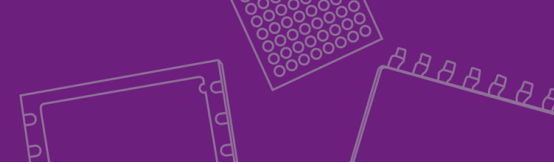
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This board and its deliverables must only be used for test applications in an evaluation laboratory environment.



Debugging (IAR EWARM)



IAR Development Tools (Software)

- EWARM-KS (Kickstart) **Free download**
 - 32K C/C++ Compiler, Assembler, IAR Embedded Workbench, Debugger/Simulator, no library support

- EWARM-EV (Evaluation) **Free download**
 - 30 day full version of C/C++ Compiler, Assembler, IAR Embedded Workbench, Debugger/Simulator

- EWARM-BS (Base Line)
 - 256K C/C++ Compiler, Assembler, IAR Embedded Workbench, Debugger/Simulator

- EWARM (Full Version)
 - C/C++ Compiler, Assembler, IAR Embedded Workbench, Debugger/Simulator

- EWARM-CM (Cortex M Series)
 - C/C++ Compiler, Assembler, IAR Embedded Workbench, Debugger/Simulator



IAR Development Tools (Hardware)

- J-LINK ARM Lite
 - 20-Pin JTAG to USB adapter (only 3.3 Volt support)
- J-LINK (JTAG adapter for ARM)
 - 20-Pin JTAG to USB adapter
- J-TRACE for ARM Cortex M3 (JTAG trace adapter for ARM)
 - 20-Pin JTAG to USB adapter
 - 20-Pin JTAG ETM to USB adapter

Installation

- Download latest version of EWARM from IAR Website
 - EWARM 30-day Evaluation Version
 - ◆ <http://supp.iar.com/Download/SW/?item=EWARM-EVAL>
 - EWARM 32K Kickstart Version
 - ◆ <http://supp.iar.com/Download/SW/?item=EWARM-KS32>
- Install EWARM
- Install J-LINK Debugger
 - Connect J-LINK to USB Port and follow installation advices
 - ◆ Drivers:
*<Installation_Path>\IAR Systems\Embedded Workbench
x.y\arm\drivers\Jlink\ x64 or x86*
- Start EWARM Workbench

Getting Started

- IAR Information Center
 - Getting Started
 - User Guides
 - Example Projects
 - Tutorials
 - Support
 - Release Notes

- Can always be displayed by: *Help* → *Information Center*

The screenshot shows the IAR Information Center for ARM website. At the top, there is a navigation bar with the text "IAR Information Center for ARM". Below this is a yellow banner with the title "IAR Information Center for ARM" and a sub-header: "Here you will find all the information you need to get started: tutorials, example projects, user and reference guides, support information, and release notes." The IAR SYSTEMS logo is in the top right corner. The main content area features six icons in a 2x3 grid, each with a corresponding title and description:

- GETTING STARTED**: Guidelines for setting up your project, adding files, compiling, linking, and debugging it.
- USER GUIDES**: Complete product documentation in PDF format gives you all the user and reference information you need.
- EXAMPLE PROJECTS**: Example applications that demonstrate hardware peripherals for specific devices and evaluation boards.
- TUTORIALS**: Tutorials to make you familiar with the IDE and the features of the IAR C-SPY debugger.
- SUPPORT**: For questions about how to use your IAR product, reporting a problem, or finding support resources.
- RELEASE NOTES**: Read about the latest features, new device support and bug fixes in the release notes.

On the right side of the page, there are two links with descriptions:

- www.iar.com/resources: Read in-depth articles from our software engineers and product managers, see video presentations and check the webinar calendar or view the recordings.
- www.iar.com/mypages: Create your user account and download product updates from MyPages. Here you can also manage your contact information and check your license and SUA status.

Choose Example Project

■ Choose Manufacturer

- Use Fujitsu
- Use MB9BF500
- Use IAR KSK-MB9BF506
- Open a project
 - ◆ Browse to folder, if necessary

Information Center for ARM - EXAMPLE PROJECTS

Information Center for ARM | EXAMPLES

EXAMPLE PROJECTS

Example applications that demonstrates hardware peripherals for specific devices and evaluation boards.

IAR PowerPac board support packages

Fujitsu examples

- MB86R01
- MB86R01
- MB9BF500

MB9BF500 examples

- IAR KSK-MB9BF506

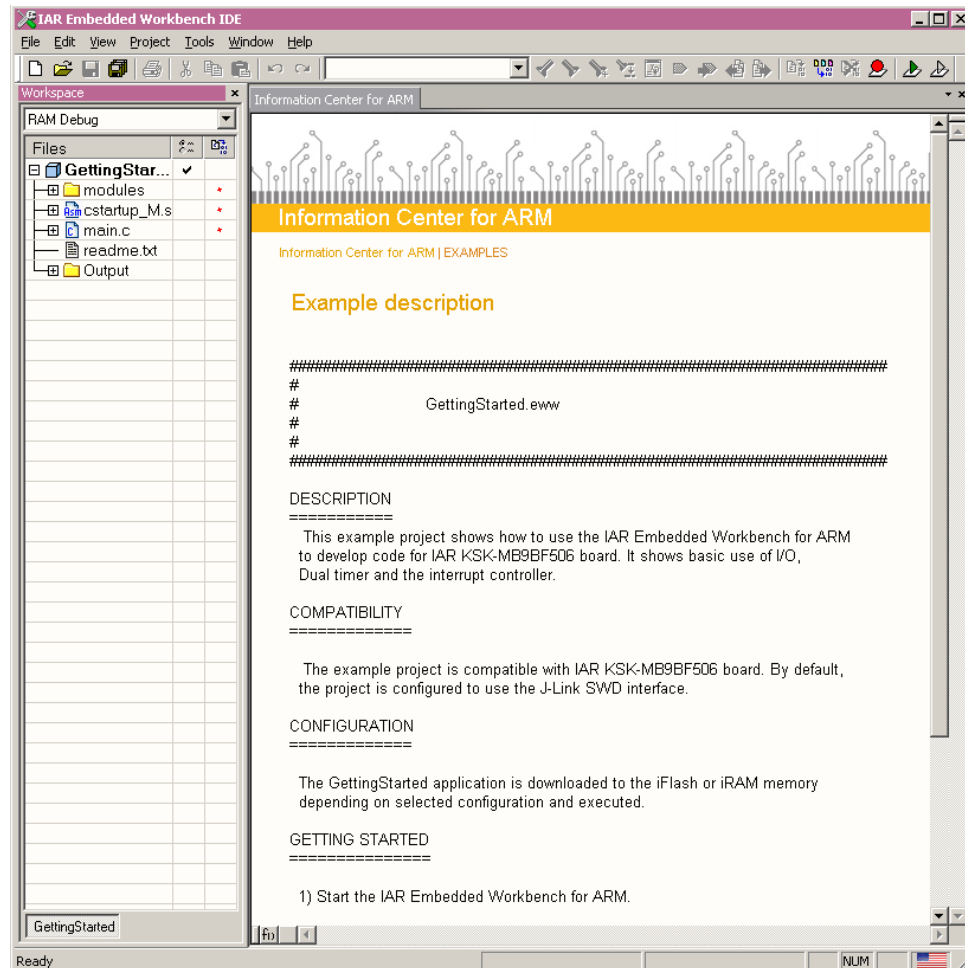
Examples for IAR KSK-MB9BF506

Info	Open project	Name	Description
		Getting Started	Shows basic use of the I/O, the Dual timer and the interrupt controller.

Main Window

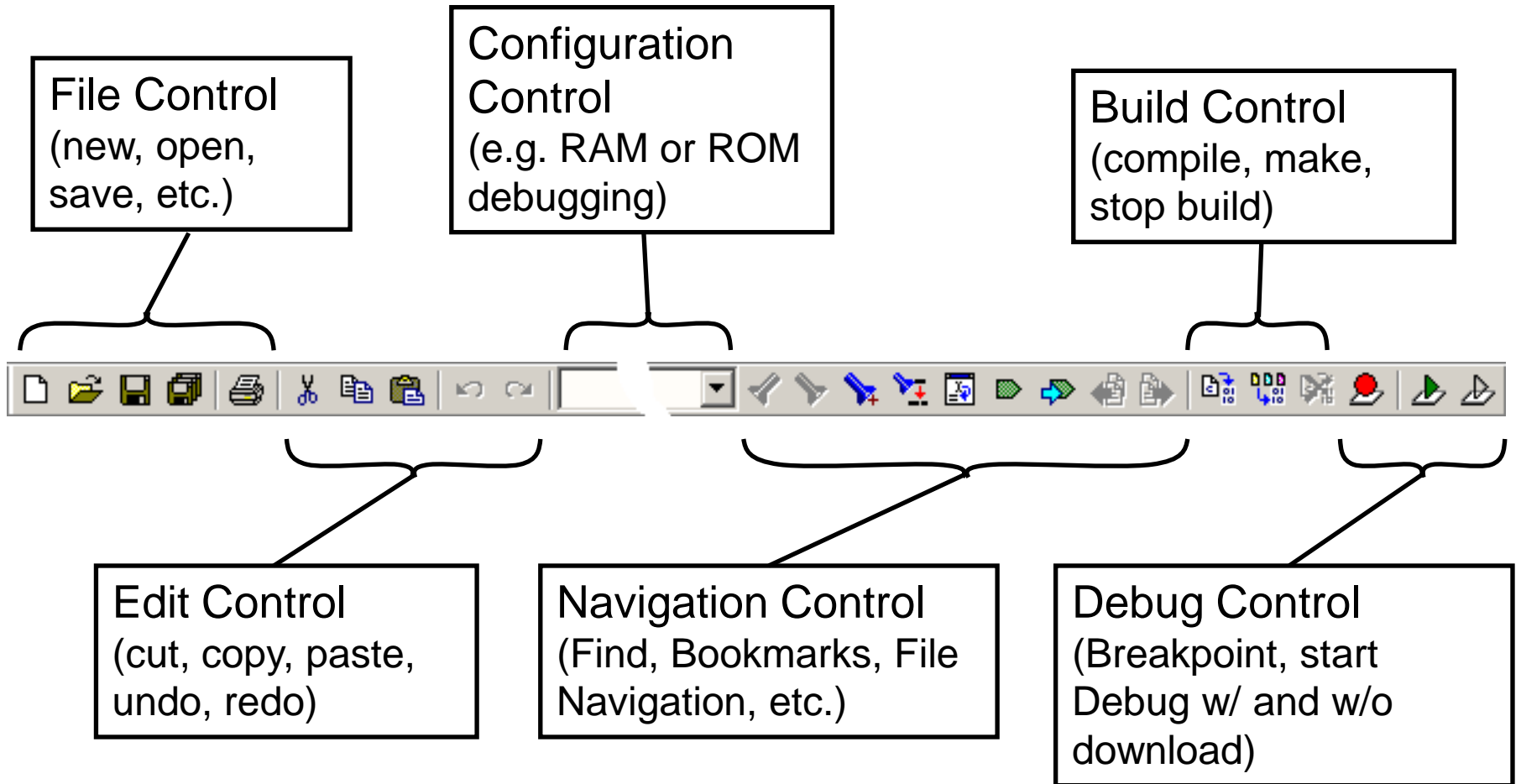
■ IAR Workbench

- Workspace on left side of Workbench window
 - ◆ Choose:
View→Workspace,
if hidden
- Source files on right side of Workbench window as tabbed windows
- Project can alternatively be opened by:
File→Open→
Workspace→*.eww



Debugging (IAR EWARM)

Menu Bar



Workspace Window

Project Name

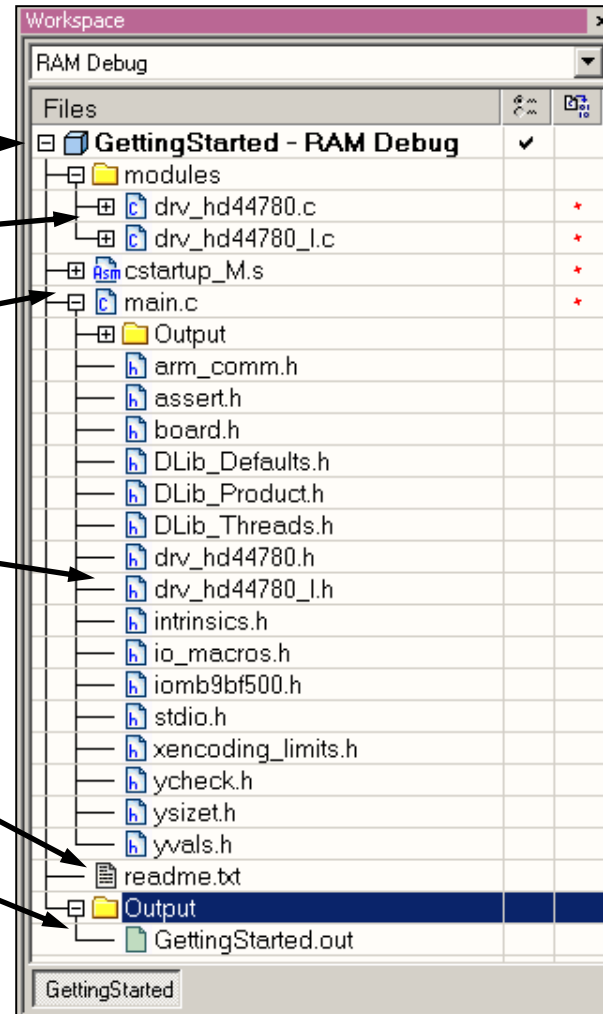
Sub Folder Modules

Main Modules




Module Includes

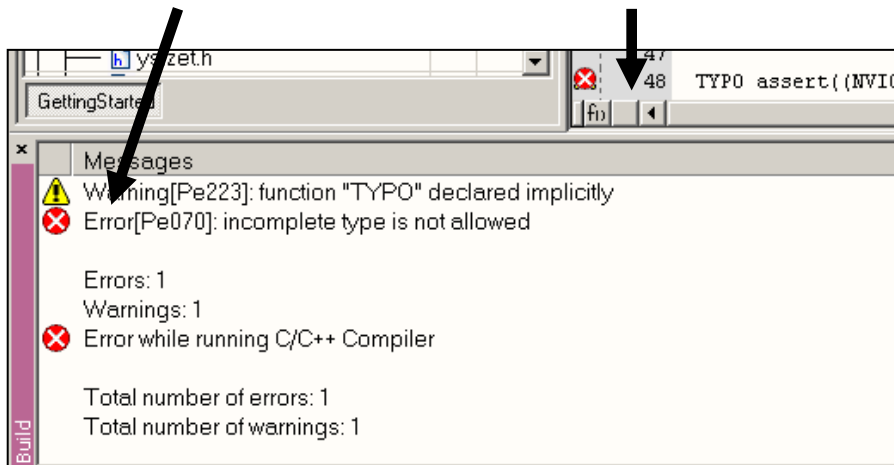
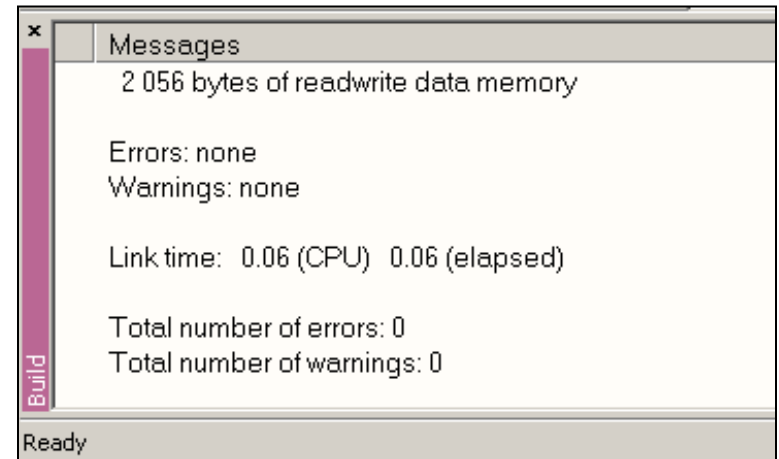
Project Description

Project Built Output




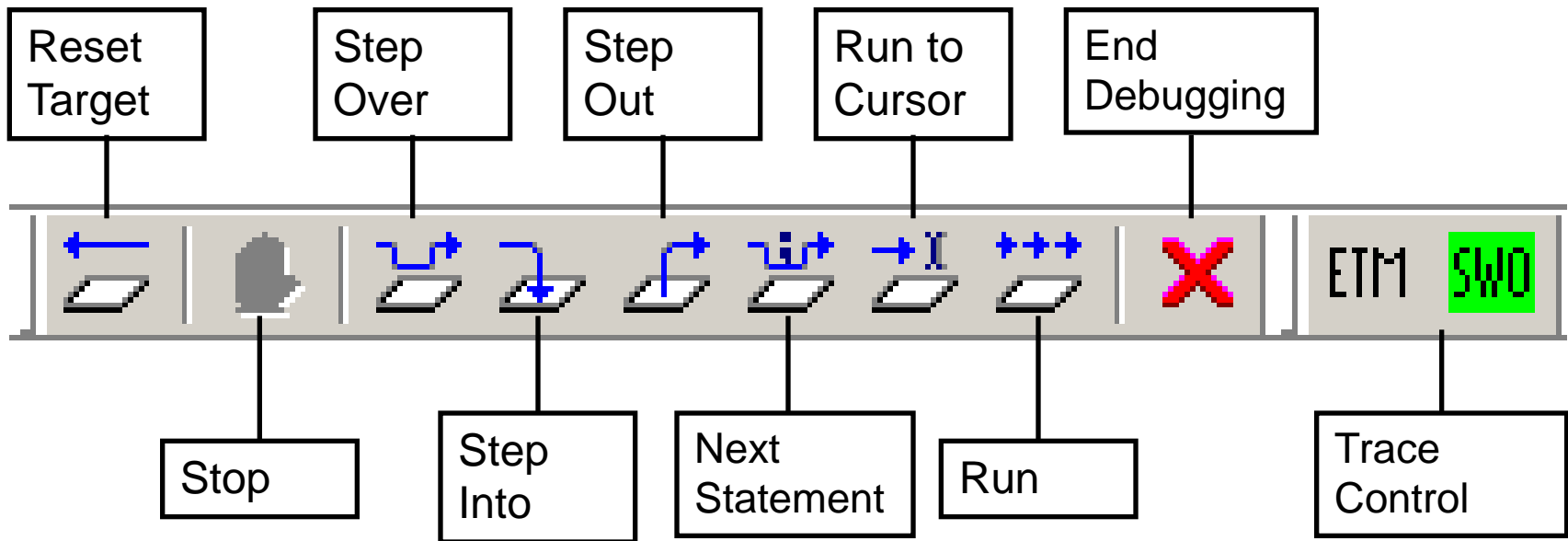
Making Project

- Use Make-Icon (), <F7> or Menu: Project→Make
- Check for no errors in Output window below
- Build errors are indicated by  or  in Output window and Source view



Download to Target and Start Debugging

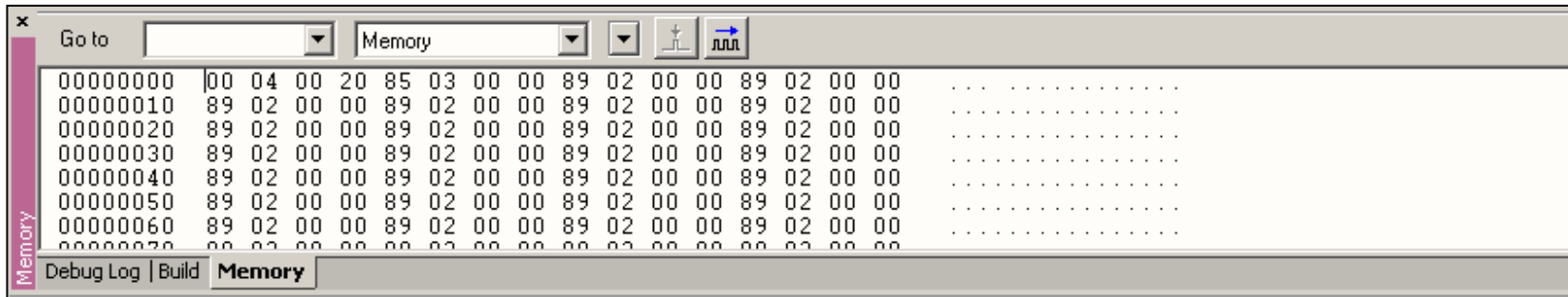
- Use  Icon, <Ctrl>-D, or *Project*→*Download and Debug*
- A new menu bar will occur on successful connection to target



Debug Windows

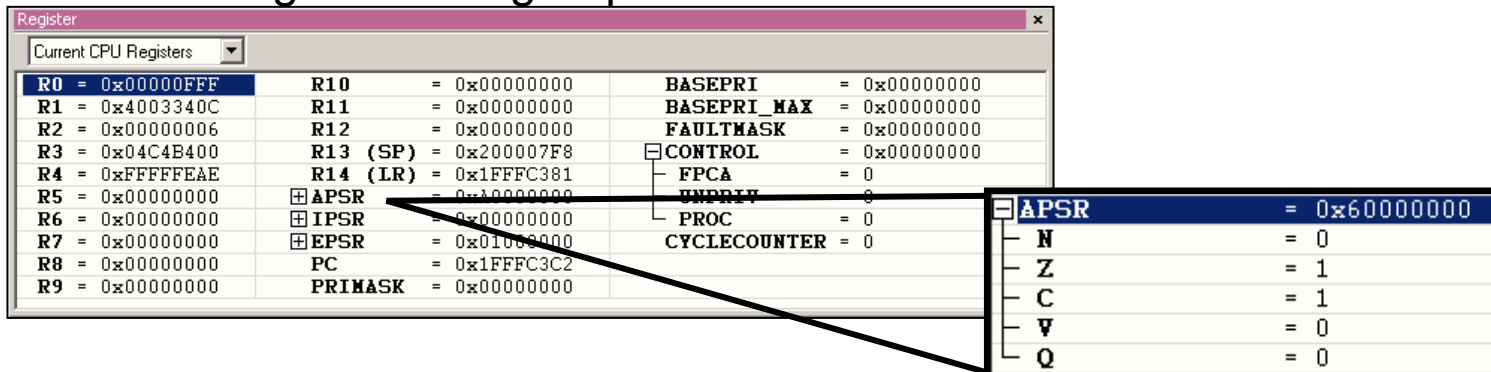
- Memory Window

- The Memory window is a tabbed part of the Output window



- Register View

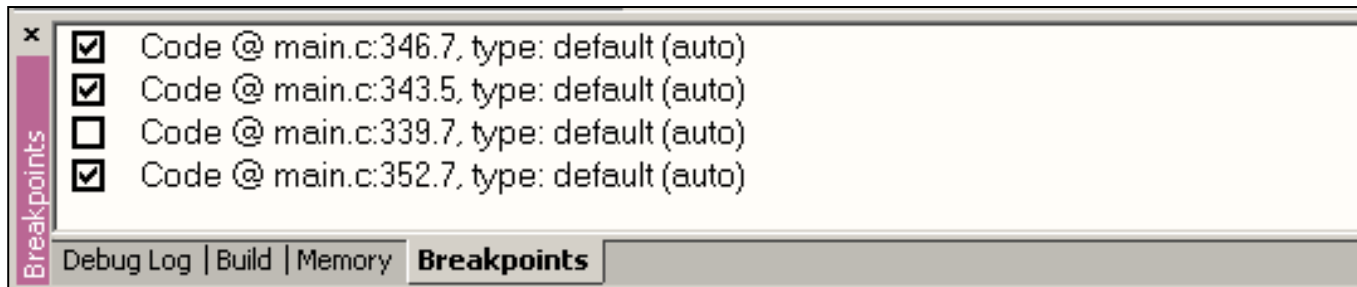
- Some Registers are grouped and can be unfolded



Debug Windows

■ Breakpoint Window

- The Breakpoint window is a tabbed part of the Output window



- Breakpoints can be enabled and disabled in
 - ◆ Source window (● enabled, ○ disabled)
 - ◆ Breakpoint window (enabled, disabled)

Watch Windows

■ Watch Windows

- Watch

- ◆ Expressions/Variables have to be added by user and are updated by Halt/Breakpoint

Expression	Value	Location	Type
Tmr1Tick	0	0x20000804	int

- Locals

- ◆ Functional local Expressions/Variables are added by Workbench itself, if PC is in function context

- Statics

- ◆ Functional local Expressions/Variables are added by Workbench itself, if PC is in function context

- Live Watch

- ◆ Expressions/Variables have to be added by user and are updated during runtime (with performance impact)

- Auto

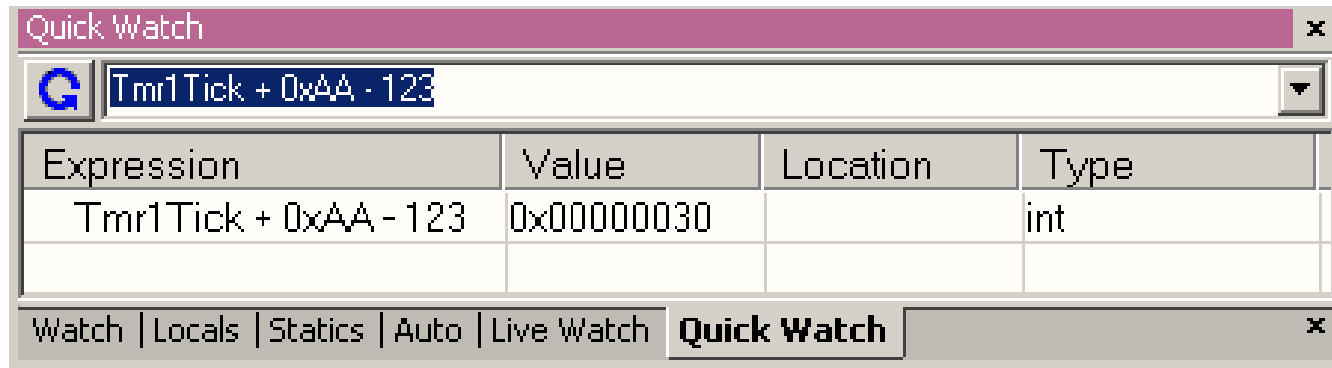
- ◆ Expressions/Variables are added by Workbench itself near the current PC in Halt/Breakpoint

Debug Windows

- Watch Windows

- Quick Watch

- ◆ The Quick watch allows the user to calculate and recalculate expressions even with variables



- ◆ The drop down menu memorizes the last typed contents

Debug Windows

- Symbolic Memory

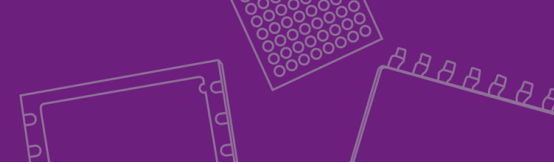
- References the project Symbols to a memory view

Location	Data	Variable	Value	Type
0x20000800	0x00	HD4478 Ctrl.DisplayPos	'I' (0x00)	Int8U
0x20000800	0x1500	HD4478 Ctrl.AC_Direction	1	Int16U
0x20000800	0x1500	HD4478 Ctrl.DisplayShift	0	Int16U
0x20000800	0x1500	HD4478 Ctrl.Line	1	Int16U
0x20000800	0x1500	HD4478 Ctrl.DotMode	0	Int16U
0x20000800	0x1500	HD4478 Ctrl.DisplayOn	1	Int16U
0x20000800	0x1500	HD4478 Ctrl.CursorOn	0	Int16U
0x20000800	0x1500	HD4478 Ctrl.CursorBlink	0	Int16U
0x20000802	0x0000			
0x20000804	0x00000001	Tmr1Tick	1	int

- Call Stack

- Can be displayed with or without called arguments
- Last called function (current) is marked with green arrow, callers are below

```
Call Stack
└─> HD44780_GetDDRamAdd
    HD44780_StrShow
    main
    [_call_main + 0x5]
```

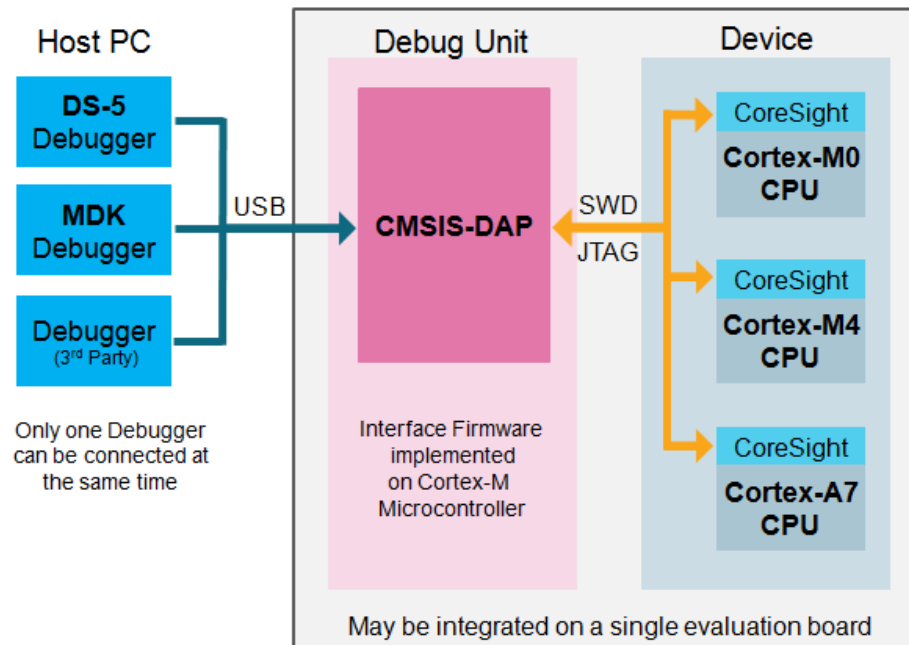


Debug Windows

- Stack
 - Show current Stack context with local variables (if existing), including graphical stack usage (if enabled)
- Terminal I/O
 - Allows debug information printed-out via `printf()` function
 - Log can be output to a file
- Code Coverage
 - Shows the percentage of code covered by application run
 - ◆ Needs ETM connection to Debugger (J-Trace)
- Profiling
 - Shows the number of calls of each project function by application run
 - ◆ Activated by „Show details“ and/or „Autorefresh“
- Symbols
 - Shows the project's symbols in a list with their address references

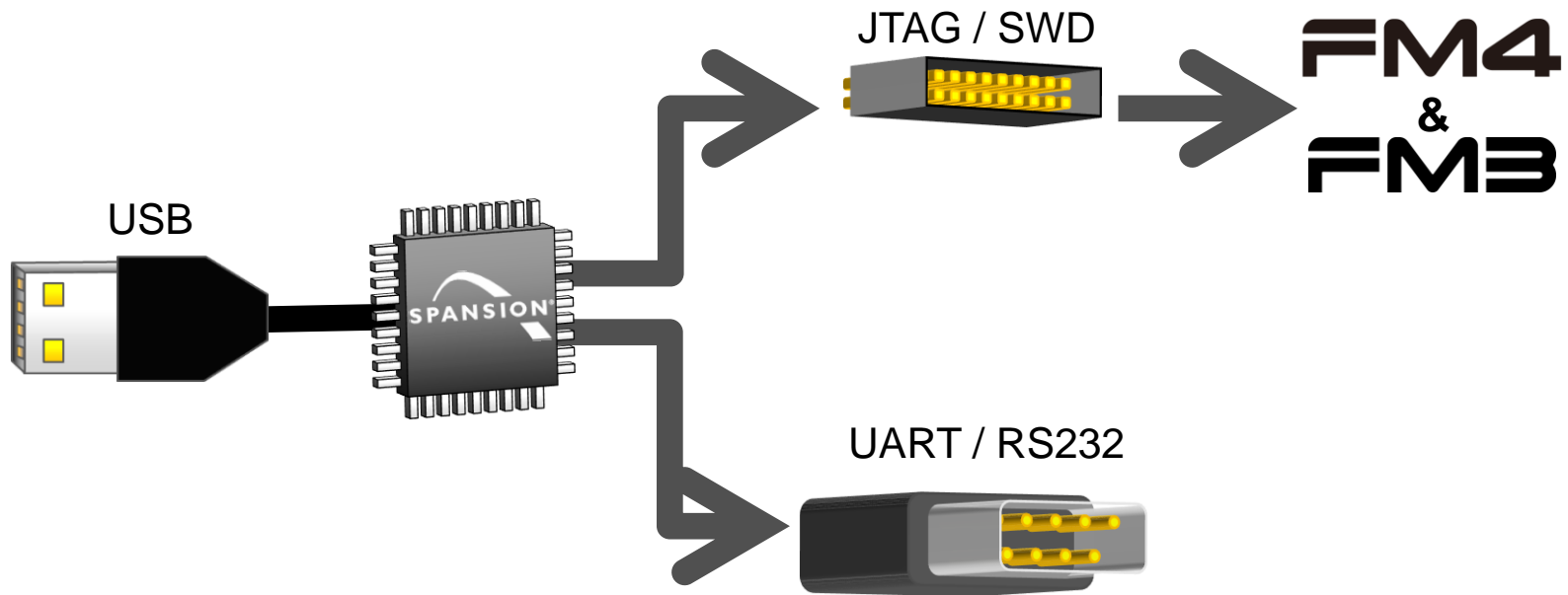
Definition (ARM-Webpage)

- CMSIS-DAP is the interface firmware for a Debug Unit that connects the Debug Port to USB. Debuggers, which execute on a host computer, connect via USB to the Debug Unit and to the Device that runs the application software. The Debug Unit connects via JTAG or SWD to the target Device. ARM Cortex processors provide the [CoreSight Debug and Trace Unit](#). CMSIS-DAP supports target devices that contain one or more Cortex processors.



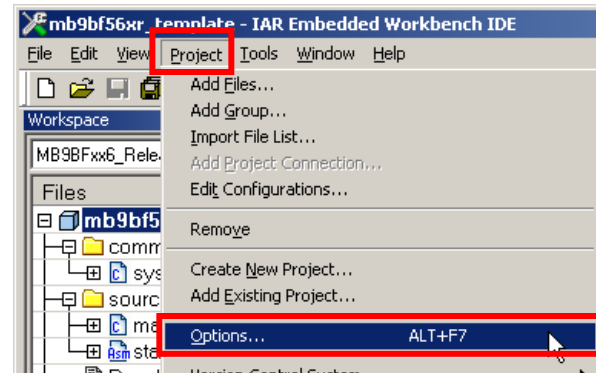
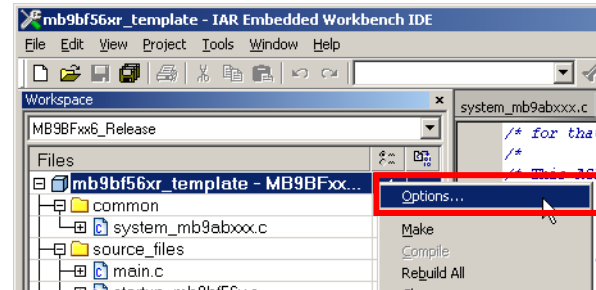
Additional Features

- Spansion CMSIS-DAP implementation offers
 - 1 channel JTAG or SWD (Single Wire Debug)
 - Additional 1 channel UART / RS232



Setup in IAR EWARM (1)

- Navigate to project options:
 - Via Files-List
 - ◆ Right-click at the project
 - ◆ Select „Options...“
 - Or via menu „Project“
 - ◆ Select „Options...“

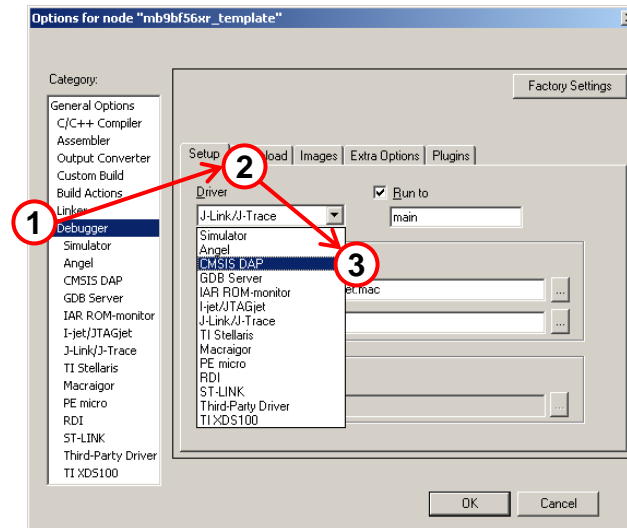


See also Chapter [Debugging \(IAR EWARM\)](#)

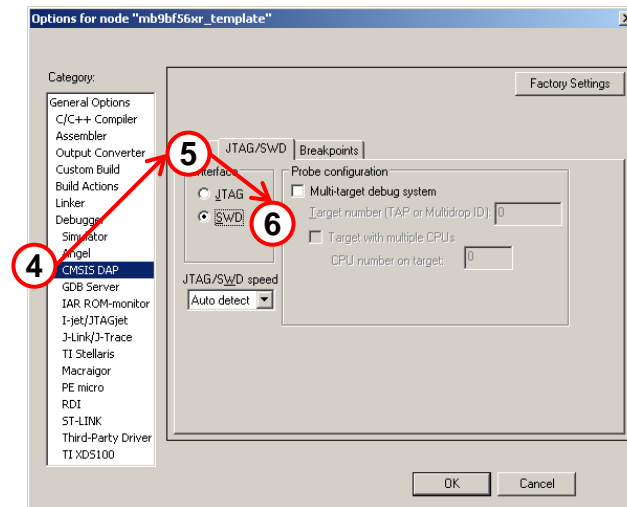
Setup in IAR EWARM (2)

■ Setup Project Debbuger Options

- (1) Navigate to Debugger
- (2) Select tab „Setup“
- (3) Select Driver „CMSIS-DAP“



- (4) Select in „CMSIS-DAP“
- (5) Select tab „JTAG/SWD“
- (6) Select SWD



See also Chapter [Debugging \(IAR EWARM\)](#)

JTAG Connection

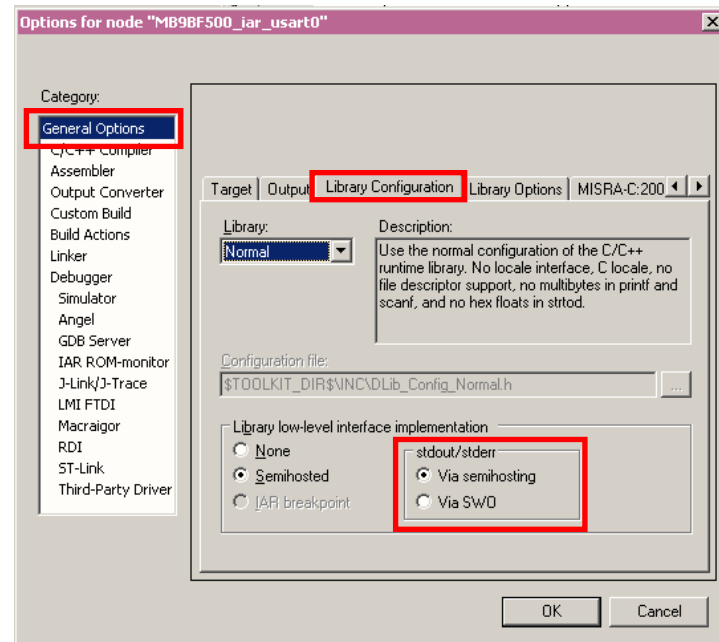
■ JTAG Connection Type (J-LINK)

– JTAG

– Serial Wire Debugging (SWD)

◆ Chose:
Options → *General Options*
→ *Library Configuration*
→ *Library Low-Level Interface Implementation*

◆ Check:
- *Via semihosting*
for JTAG and SWD
- *Via SWD*
for only SWD



JTAG Connection

- JTAG Connection Type (J-LINK)

- JTAG

- Serial Wire Debugging (SWD)

- ◆ Chose:

- Options* → *J-Link/J-Trace*

- *Connection*

- *Interface*

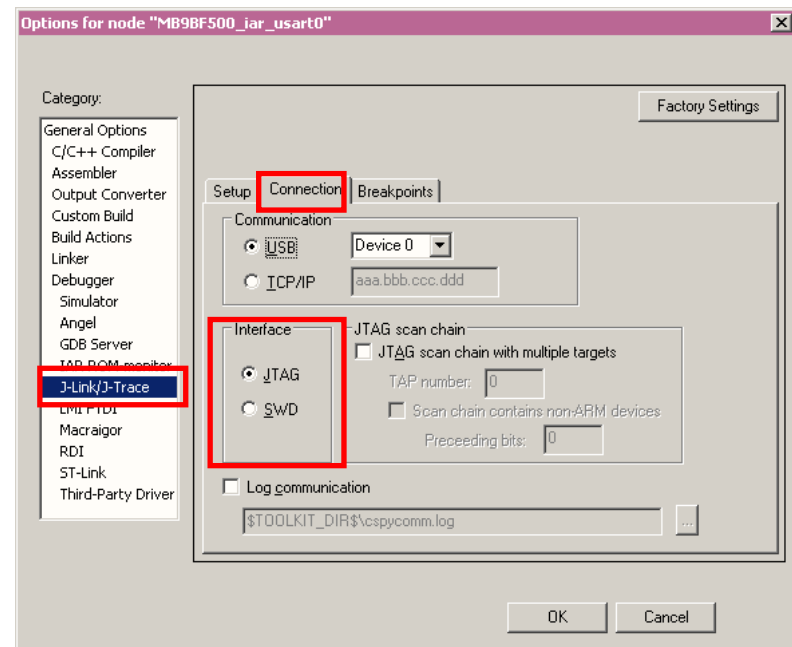
- ◆ Check:

- JTAG


- SWD

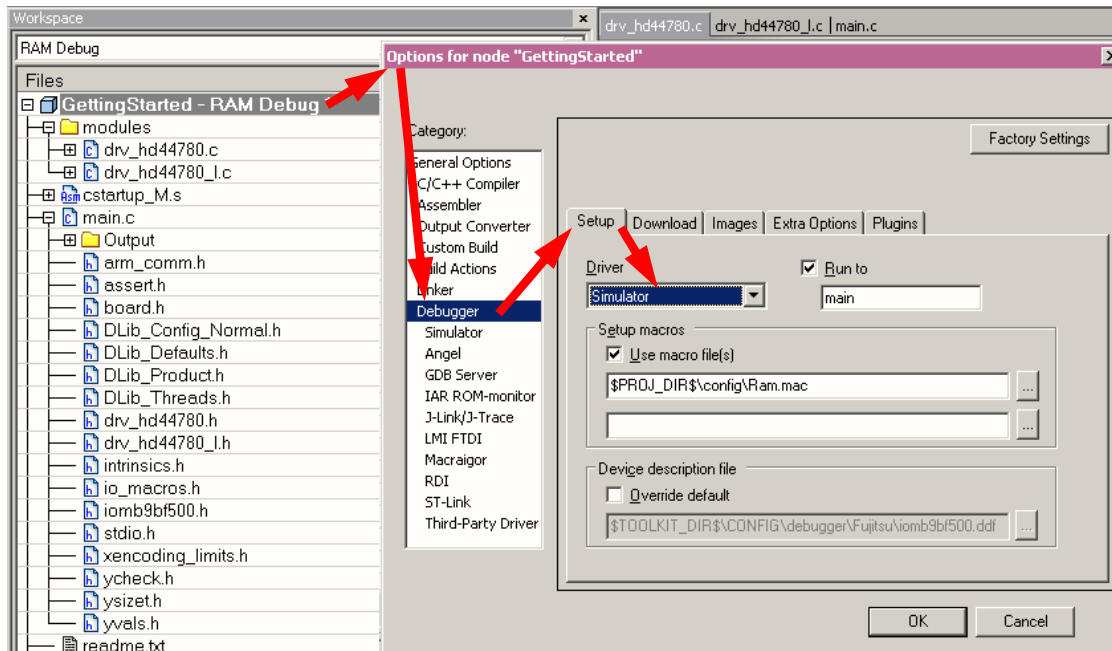
- when semihosting
was chosen

- Only SWD (greyed)
when SWD only was
chosen



Simulator

- Mark Project File in Workspace
- Choose *Project*→*Options*
- Choose Simulator in Debugger Setup
- Start Simulator with usual  Icon





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