# Installation and Quick Start of iSYSTEM's winIDEA Open in DAVE<sup>™</sup>

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#### About winIDEA Open

- ISYSYTEM provides a free version of its debugger IDE called winIDEA Open; it can use the Segger J-Link SW and J-Link HW to connect to the MCU target
  - □ <u>Debugger in a proprietary IDE plus the ARM GCC</u>
  - Eclipse plug-in to use the CDT debug perspective or the proprietary IDE
- The eclipse plug-in can be installed in DAVE to extend the debug capabilities of DAVE
- The winIDEA Open Debug IDE provides extended functionalities beyond the default DAVE debugger:
  - Real-time period update and graphical display of variables while the target MCU is running
  - □ RTOS Kernel aware debug e.g. FreeRTOS
  - □ Integrated unit test tool (without code instrumentation)
  - Process automation and integration, scripting (isystem.connect)



### Content of this Tutorial

- This tutorial provides a step by step description to
  - □ Install the winIDEA Open eclipse plug-in into DAVE
  - Create a very simple project for the XMC2 Go kit
    - Generation of a low frequency PWM signal using DAVE Apps to toggle a LED
  - Set up the debug configuration in DAVE to use winIDEA Open with the CDT debug perspective in DAVE
  - Set up the debug configuration in DAVE to use the winIDEA Open in its proprietary IDE started from DAVE
- Prerequisites
  - DAVE v3.1.10 or later should be installed
    - Including the latest version of the DAVE Apps libraries
  - □ Segger J-Link SW v4.80f or higher should be installed
  - □ XMC2 Go kit (or any other XMC kit with J-Link OBD)
    - If a different XMC kit is used the device selection (page 8) and the selected output pin for the PWM signal (page 1) may be different
    - If a XMC kit without J-Link OBD is used a separate J-Link debugger e.g. J-Link Lite is required

# Installation of the winIDEA Open eclipse plug-in into DAVE (I)



DAVE Debug	Welcome b(	1	Press in DAVE:
	Help Contents Search Dynamic Help		->Help ->Install New Software.
	Key Assist Ctrl+Shift+L Tips and Tricks	2	Press ->Add in "Work with".
đ	DAVE™ Online Support Mr Report Bug or Enhancement Mr Cheat Sheets	3	Enter any name, here, "iSystemWinIDEAopen" is used.
	Install DAVE Apps/Example Library Mi Check for DAVE App Updates Mi Uninstall DAVE App/Example Library Mi Check for Updates Mi Install New Software Mi	4	Copy in "Location" the below shown http link.
#d	About DAVE 3	http://www.isy	/stem.si/eclipseUpdate/debuggerHelios36
💺 Install	Committee and some local (		
Available Software Select a site or enter the locati	ion of a site.	2	5 Press ->OK
Work with: type or select a sit	e	✓ Add	
	Find more software by working with t	he <u>"Available Software Sites</u> " preferences.	
type filter text Name	Add Papository		
There is no site selected	Location: http://www.isystem.si/eclipseUpdate/debuggerHelios3	Cancel	
Select All Deselect	All		

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## Installation of the winIDEA Open eclipse plug-in into DAVE (II)



💺 Install					
Available	Software				
Check the i	items that you wish to install.				
Work with:	IDEA_open - http://www.isystem.si/eclipseUpdate/debuggerHelios36 👻 Add				
	Find more software by working with the <u>"Available Software Sites"</u> preferences.				
type filter te	ext				
Name	Version				
🔺 🔽 🚥 iSy	ystem Debugging				
1	iSystem Debug Core 1.0.152.i9_12_145_Indigo_37_35774				
L [] [] [] [] [] [] [] [] [] [] [] [] []					
Select A	II Deselect All 2 items selected				
Details					
	\$				
Show only	y the latest versions of available software 🔲 Hide items that are already installed				
🔽 Group ite	ms by category What is <u>already installed</u> ?				
Show only	y software applicable to target environment				
Contact all update sites during install to find required software					
?	< Back Next > Finish Cancel				

Select iSystem plug-in.

Press ->Next.

Then follow the further instructions, accept the terms of use and restart DAVE after successful installation of the plug-in.

#### http://www.isystem.si/eclipseUpdate/debuggerHelios36

## Installation of the winIDEA Open debug engine and IDE



Press in DAVE ->Window ->Preferences ->iSystem Then the below user interface will appear.





Then the installation control of winIDEA open will appear.

Follow/ accept subsequent installation prompts.

The winIDEA open debugger engine and IDE is then installed in the eclipse folder of the the DAVE installation.



## Create a very simple project for the XMC2 Go kit (I)



We will now generate as simple project using a PWM App to blink one of the LEDs of the XMC 2Go kit with the frequency of the PWM signal.

DAVE IDE - DAVE 3	Press in DAVE:
File Edit Navigate Search Project DAVE Debug Window Help	-> File ->New ->DAVE Project.
	, ,
DAVE Project	Select "DAVE CE Project".
Create a new C/C++ project for Infineon tool chains	
	3 Enter a project name, here:
Project Name: XMC 2GD PWM	XMC 2GO PWM
	XIIC_200_1 WIT
Use default location	
	4 Press -> Next.
Project Type: Tool Chain:	
Infineon XMC     ARM-GCC Application for XMC	
Easy Start Project	
B Empty Main Project ≣	
A DAVE CE Project	
Empty Project     ARM GCC Library for YMC Broject	
Empty Project	
Show project types and tool chains only if they are supported on the platform	
Show project types and toor chains only it they are supported on the platform	
(?) < Back Next > Finish Canc	

## Create a very simple project for the XMC2 Go kit (infineon (II)

controller for with	ich the project has to	be created	
▲ 🔽 XMC1100 Serie	s		
XMC1100-Q	040F0064		
XMC1100-Q	040F0032		
XMC1100-Q	040F0016		
XMC1100-T	038X0064		
XMC1100-T0	038F0064		
XMC1100-T0	038F0032		
1 XMC1100-TO	038F0016		
L XMC1100-Q	024F0064		
XMC1100-Q	024F0032		
XMC1100-Q	024F0016		
Device Features			
Package= PG-VQFN-24			
ROM= 64 KB Flash			
RAM= 16 KB RAM			
InOut= 22 digital I/O			
Further Options			
с			
Start up file preferences			
Add/Update start up file	25		
		_	
			2

1

Select the XMC1100 Q024F0064 If a different board is used select the appropriate target MCU



Finally a new project has been added into the workspace.

The project includes a very simple main.c that calls the DAVE init function, the target specific startup files and linker script file and the stubs for the c library.



## Adding and configuring a PWM App to generate the required PWM signal



App Selection View	Ent
1 Category F	at-List 🛛 🖻 🎽
Search filter PWM	
Category Based Tree	
🗁 Time Processing	
PWM Generation	S/V
2 PWMSP001 [1.0.3	2]
PWMSP003 [1.0.8]	
Peripheral Specific Apps	
Capture/Compare U	e nit 4 (CAP
PWMSP001 [1.0.3	21
PWMSP003 [1.0.8	j 🚽 📕 🥌 🗲
•	P 4
Show Latest Versions Only	
🔒 PWMSP001_0 🛛	
Timer Mode Settings	
Counting Mode	Timer Mode 5
Edge-Aligned Mode	Enable Single Shot Mode
Center-Aligned Mode	
Timer Con 6 ns	
CCU4 resolution 32000	nsec  Resolution 32

2014-05-02

ter in App Selection View of DAVE "PWM".

uble click on PWMSP001 to add this DAVE App to the project en this App plus additional required Apps can be seen in the N App Connectivity View. 3

uble Click on the PWMSP001 App to open the configuration GUI.

Change the marked settings in the configuration GUI.

Timer Mode Settings Counting Mode © Edge-Aligned Mode © Center-Aligned Mode	Timer Mode	5 ot Mode	Start	ng initializatio	on
Timer Cont 6 ns					
CCU4 resolution 32000	nsec 🝷	Resolution	32000	nsec	Ψ.
PW1 7 2	Hz 🔻	Period	3d08	hex	Ŧ
Duty Cycle 50	% 🔻	Compare	1e84	hex	~
Selected Timer mode No tim	er concatenation				
Interrupts					
Compare Match	Period Match	lization	External Star	t t initializatior	n
External Stop	Trap Interrupt				



### Assign the PWM signal to the required pin



DAVE provides a resource solver to map the appropriate chip resources to the DAVE Apps. To make sure that the PWM signal will be generated at the pin where the LED is connected we need to assign the required pin manually as constrain for the solver.

	🔒 S/W App Connecti	vity View 🖾 📑 H/W Connectivity View 🗉	1 Right mous	se click on the PWMSP001 App.		
1	PWMSP001	UIEditor	2 Select "Mar	nual Pin Assignment".		
	CCU4GLOBA	Remove Signal Connection	3 Select "pin_	pin_directoutput". P1.0/#14".		
		Manual Pin Assignment Manual Resource Assignment Add User Label	4 Select "P1.(			
		Properties	5 Press ->So	lve And Save.		
ſ	Ge Manual Pin Assignment	ing in the second				
	Filter PWMSP001/0 -			If a different board than the		
	A	pp Resource	Port-Pin/Pin Number	AMCZ OU KILIS USEU d		

	Арр	Resource		Port-Pin/Pi	n Number	
	PWMSP001/0	pin_directoutput     Not Selected	•	P1.0 / #14 Not Selected	4.	
5 Solve And Save Reset Close						

different pin has to be assigned.



## Generation of the PWM library, compilation, and creating a new debug configuration





Sebug Configurations	
Create, manage, and run configurat	ions
	Configure lau - Press the 'N
IFX GDB Debugging iSystem Debugger iSystem C/C++ Debugger	<ul> <li>i Press the</li> <li>i Press the</li> <li>i Press the</li> <li>i Press the</li> </ul>
	l e na

- Press "Generate Code".
- Press "Rebuild Active Project" Click on the project name in the workspace.
  - Press the combo box of "Debug Configuration".
- 4 Double Click on "iSystem Debugger" to create a new debug configuration.

#### Notes:

- We don't need to add any user code to call any PWM library function because main.c contains already a call of the DAVE init function which start the PWM signal with 2 Hz according to our configuration (page 9).
- Before we execute step3 it is important to select the project (click on the project name), otherwise the debug configuration will not be created with the correct project information (winIDEA does not use the active project functionality to determine the project).

### Correct setup of the debug configuration



- 1 The debug configuration should contain the correct project name and elf file.
- 2 Switch to the "iSystem Debugger" tab.
- 3 Press ->Configure.
- Confirm creation a win IDEA workspace folder and workspace file in the DAVE project.

Name: XMC_2GO_PWM Debug	Missing folder
B Main 🕸 iSystem Debugger 💱 Source 🦑 Refresh 🏁 Arguments 🖉 Environment 🔭	The folder 'D:\GH_SW_Projects\DAVE3\dave3110\WS7_isystem\XMC_2GO_PWM\winIDEA' doesn't exist do you wish to create it?
✓ Stop on startup at: main           Main	4 Yes No
Verbose log output	
Use Real Time Access	
I Launch an invisible winIDEA instance.	😼 New workspace file.
Workspace file: D:\GH_SW_Projects\DAVE3\dave3110\\ Browse Configure	winIDEA workspace file specified does not exist - creating it at D:\GH_SW_Projects\DAVE3\dave3110\WS7_isystem\XMC_2GO_PWM\winIDEA\workspace. xjrf



#### Selecting the MCU target

📄 Main	🏇 iSystem De	ebugger 🛛 🦆 Source 😵	Refresh 🕬 Arg	guments 📧 Er	nvironment	
Run cor	ntrol after dow	nload:				
Stop	on startup at:	main				
Main	7					
Main Vert Use Vau Veri Works	Dose log outpu Real Time Acco nch an invisible fy after downly pace file: D:\r	It Select Hardware Plug- isystem Develop StMicroelectror	In lopment Tools oment Tools nics Development OK	Tools		wir
		and the second second second		and the second second	-	
	😺 WinIDEA Co	nfiguration				
	Please click ite	em to open configuration di	alog.			
	Debug					
_2GO_PWN	Files	For Download				
System De	Deb	ug Options	her	nt 🗖 Common		
- (1	Segger					
after dowr	Opti	ons				
startup at	Z Sele	ct CPU				
	J-Lin	k Maintenance				
log output	J-	Link Info				~
I Time Acc	SEGGER J-Link V	/4.80f - Target device setting	gs			X
an invisible	Manufacturer Infir	neon 3		Little er	ndian 💌	Core #0 💌
iter downlo	Manufacturer	Device	Core	NumCores	Flash size	RAM size 🔺
e file: D:\C	Infineon	UMF5120	Cortex-M0	1	248 KB	16 KB
	Infineon	UMF5120 (allow security)	Cortex-M0	1	260 KB	16 KB
	Infineon	XMC1100-0008 XMC1100-0016	Cortex-M0	1	16 KB	16 KB =
<u></u>	Infineon	XMC1100-0032	Cortex-M0	1	32 KB	16 KB
	Infineon	XMC1100-0064	Cortex-M0	1	64 KB	16 KB —
	Infineon	XMC1200-0200	Cortex-M0	1	200 KB	16 KB
	Infineon	XMC1201-0016	Cortex-M0	1	16 KB	16 KB
	Infineon	XMC1201-0032	Cortex-M0	1	32 KB	16 KB
	Infineon	XMC1201-0064 VMC1201-0129	Cortex-MU	1	120 KB	16 KB
	Infineon	XMC1201-0120	Cortex-M0	1	200 KB	16 KB
	Infineon	XMC1202-0016	Cortex-M0	1	16 KB	16 KB
	Infineon	XMC1202-0032	Cortex-M0	1	32 KB	16 KB 👻
	•					4
shed bui	Select a device for	J-Link.				
	Selecting a device modification of flash	is not required for most devices, but allo n memory during a debug session as we	ows more efficient operational as unlimited breakpoints	on of J-Link as well as s in flash memory (Flash	flash d	Cancel
Build Fi	In case of doubt, se	elect the first entry in the list: "Unspecifi	ed Device''.	2 (* * ***	5	ОК
2014-0	5-02			Convr	iaht (c) Tr	fineon Ter

winIDEA Open doesn't take the selected device from the DAVE project, therefore the MCU target has to be assign once more.

After the winIDEA Open workspace file has been created the control to "Select Hardware Plug-In" will appear.

- Select "Segger Development Tools".
- Press ->Select CPU...
- 3 Select "Infineon" in Manufacturer combo box.
- 4 Select "XMC1100-0064".
- 5 Press ->OK.



#### Start the debug session

Debug Configurations		Sebug - XMC_2GO_PWM/Main.c - DAVE 3		
Create, manage, and ru	n configurations	File Edit Navigate Search Project Debug DAVE Window Help		
iSystem Debug Launcher		<ul> <li>ビーレー (100000)</li> <li>ビーレー (100000)</li> <li>ビーレー (100000)</li> <li>ビーレー (100000)</li> <li>ビーレー (100000)</li> <li>ビーレー (100000)</li> </ul>		
[] 🗎 🗙 🖻 🐡 ◄	Name: XMC_2GO_PWM Debug	Solution Debug 🛛 🔽 🖓 🖓	🕪= Variables 🛿	
type filter text	📄 Main 🏇 iSystem Debugger 🛛 🤟 Source 🤣 Refresh 🚧 Arguments 📼 Environment 🖾 Common	🕺 🖉 😒 🖬 🕹 🕹 🕨 🖩 🖉 🥺 🖓 🙀		
IFX GDB Debugging     Sustem Debugger	Run control after download:	🔺 🐱 XMC_2GO_PWM Debug [iSystem Debugger]	Name	
XMC 2GO PWM D	Stop on startup at: main	4 🖑 iSystem Debugger (30.03.14 19:20) (Suspended)		
TASKING C/C++ Debi 3	Main	Thread [si.isystem.eclipse.debug.IConThread, thread id = 1] (Suspended: Bread)		
	Verbose log output	= 1 main() Main.c:16 0x10001158		
	Use Real Time Access			
	Zuaunch an invisible winIDEA instance.			
	Verify after download			
	Workspace file:         D:\GH_SW_Projects\DAVE3\dave3110\WS7_isy         Browse         Configure	PWMSP001 0 🕅 Main.c 🕺		
		int main(void)		
< Ⅲ →	Apply	// status_t status; // Declaration of return variable for	r DAVE3 APIs (	
Filter matched 4 of 13 items	Αρριγ			
?		DAVE_Init(); // Initialization of DAVE Apps		
		. + - 1 - (1)		

Press ->Debug in the fully configured debug configuration to start the debug session.

Now a build will be started, the image will be downloaded to the target and a message to change to the debug perspective will be prompted. After confirmation, the debug perspective will open.





Press ->Resume in the debug perspective to run the program.

## Using winIDEA open IDE as debugger instead of the eclipse debug perspective



The winIDEA Open IDE provides more comprehensive debug features than implemented in the eclipse CDT debug perspective. Therefore it might make sense to use this debug user interface instead of the eclipse perspective.

Debug Configurations	Workspace - winIDEA Open
Create, manage, and run configurations	File View Project Segger Debug Test Plugins Tools Window Help
Image: and run configurations         Isystem Debug Launcher         Image: FX GDB Debugging         Image: System Debugger         Image: Display System Debugger	Project Segger Debug Test Plught Tools Window Rep   Project Workspace Test Plught Tools Window Rep Project Workspace Test Plught Tools Window Rep Project Workspace Test Plught Tools Window Rep Maine startup_XMC1100.s * Filter • XMC_2GO_PVM.eff • Modules • Types • Types • Types • Types • Globals • Constants
Uncheck "Launch an invisible winIDEA instance".	Symbols     Project       Output
3 Press ->Apply. 5	User interface of winIDEA Open as separate IDE. Press the "Run" button to start the program.
4 Press ->Debug to start a debug session.	If there is no run button the debug controls have to be enabled: ->View ->Toolbars ->Debug.



#### Further information

iSystem-EclipseDebugPlugin-UsersGuide.pdf

- <u>http://www.isystem.com/download/eclipse</u>
- iSystem-winIDEA Open extensive Help Menu
  - □ Accessible in the IDE of winIDEA Open





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