SOFTWARE INTEGRATION GUIDE (SWIG)

Ultra-Reliable MCUs for Industrial and Automotive Applications





SECURE CONNECTIONS FOR A SMARTER WORLD

EXTERNAL USE



• We will review how to install and create an application in CodeWarrior5.1 using Processor Expert to do the initialization of the modules.

• Will be used the DevKit-S12G128 for explanation purpose



Contents

- Installing CodeWarrior v5.1 IDE
 Download and Install the IDE
- Getting started with a New Project
 - -Create, build and debug the new project



INSTALLING CODEWARRIOR V5.1 IDE



Step-1

- Go to <u>www.nxp.com/codewarrior</u> and download the <u>Codewarriorv5.1</u> version
- From Downloads folder, run the installation file
- Click on Run if any administrative privilege issues results from unknown software publisher
- The next window will appear, click next to continue.





Step-2

 The "Location to Save Files" window will
 The installer window will appear, click be displayed, select the folder where you like to save your files and click next.

🖉 CodeWarrior Development Studio for S12(X) V5.1 - InstallShield Wizard				
Location to Save Files Where would you like to save your files?				
Please enter the folder where you want these files saved. If the folder does not exist, it will be created for you. To continue, click Next.				
Save files in folder:				
C:\Users\b52322\AppData\Local\Temp\CodeWarrior for S12(X) V5.1				
diama -				
Change				
InstallShield				
< <u>B</u> ack <u>N</u> ext > Cancel				

next to continue.







 Click next until you see the next window
 The next window will appear. Wait until and click Install

😼 CodeWarrior Development Studio for S12(X) V5.1 - InstallShield Wizard
Ready to Modify the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< <u>B</u> ack <u>Install</u> Cancel

the Codewarrior is been installed





Step-4

 Once Codewarrior was installed, click Finish.





GETTING STARTED WITH A NEW PROJECT



- Start program: Click on "CodeWarrior IDE" icon
- Go to: File New Project

Fi	eescale CodeWarrior			- • ×
File	Edit View Search	Project Processor	xpert Device Initialization Window Help	
	Startup Dialog		▶ 4 H = ♥ % = 0 III III III III III III III III III	
	New Text File	Ctrl+N		
	New Project	Ctrl+Shift+N		
	Open	Ctrl+O		
	Find and Open File	Ctrl+D		
	Close	Ctrl+W		



 Select your device and the type of connection and click Next



 Select the name of your project and click Next

Wizard Map	Please choose the set of languages to be	Project name:	
Device and Connection	supported initially. You can make multiple selections.	\$12G128.mcp	
Project Parameters	Absolute assembly	Location: C:\Users\b52322\Documents\CW5.1 Projects\	
Add Additional Files	Relocatable assembly		
Processor Expert	₩ C	Set	
C/C++ Options			
Memory model options	This will set up your application with an ANSI-C compliant startup code (doing		
PC-Lint	initialization of global variables).		
	T		



Click Next

Wizard Map	Add existing files to the project
Device and Connection Project Parameters Add Additional Files Processor Expert C/C++ Options Memory model options PC-Lint	Desktop Libraries Collazo Zepeda Atzel Alejanc Computer Network data-center-windows-x86_64 Documentos LowPowerDemo_MKW01_EU Documeter_sensor_bm Dources Image: Computer sensor_bm Image: Computer sensor_bm
	Select files to be added to the new project and press "Add" To copy the added files to the project folder, select "Copy Files to Project" To have the wizard generate default main.c and/or main.asm files, select "Create < Back Next > Einish Cancel

 In this part you can select if you want to use Processor Expert tool or not.

HC(S)12(X) Microcontrollers New	v Project
Wizard Map	Rapid Application Development
Device and Connection	Options:
Project Parameters	C None
Add Additional Files	C Device Initialization
Processor Expert	• Processor Expert
C/C++ Options	Processor Expert can generate for you all the device
PC-Lint	initialization code. It includes many low-level drivers.
	< <u>B</u> ack <u>N</u> ext > <u>F</u> inish Cancel



- In this window you can select between the CPU pin variants.
- Select your CPU and click Ok

Select CPUs				
Select CPU pin variants. See item's popup hint for detailed description of the corresponding CPU bean				
MC9S12G128CLL 100-pins LQFP				
MC9S12G128MLL 100-pins LQFP				
MC9S12G128VLL 100-pins LQFP				
MC9S12G128CLH 64-pins LQFP				
MC9S12G128MLH 64-pins LQFP				
MC9S12G128VLH 64-pins LQFP				
MC9S12G128CLF 48-pins LQFP				
MC9S12G128MLF 48-pins LQFP				
MC9ST2GT28VLF 48-pins LUFP				
All None	🗸 ОК			



- In this window you are ready to start to coding.
- In the Components Library window you can select which module you want to configure.
- In the Files tab you can find the .c and .h files





5 of 5

Build a Project

- To build a project follow one of the methods You can see if your project is built below:
 - Project Make 1.

lie Edit View Search	Project	Processor Expert	Device Initialization	Window
512G128.mcp	Ad Ad Cre	d Window d Files eate Group		
P&E USB BDM Multilink Files Link Order T	Cre Ch Pre	eate Target eck Syntax eprocess		Ctrl+;
 ✓ File ✓ Garage Sources ✓ Matapage.c ✓ Garage Project Settings 	Pre Co Dis	ecompile mpile assemble	Ctrl+5	Ctrl+F7 Shift+F7
 ⊕ □ Startup Code ⊕ □ Linker Files ⊡ □ Libs □ □ Libs □ □ □ Libs 	Bri Ma	ng Up To Date Ike		Ctrl+U F7
	Sto	op Build	Ctr	l+Break

successfully in the Console window



2. 🥙 Click on this symbol to build the project



Debug a Project

- Connect the board to the PC
 For DEVKIT's is used USB or BDM.
- Click on the sicon to start debugging.

P&E (USB BDM Multilink 🔄 🋱 🔝 🖋 餐 💺
Files	Link Order Targets Processor Expert



Debug Basics: Step, Start, Halt, Reset

- Single Step (F11)
- Step Over (F10)
- Step Out (Shift+F11)
- Assembly Step (Ctrl + F11)
- Start/Continue (F5)
- Halt (F6)
- Reset (Ctrl + R)





Debug Basics: View & Alter Variables

- View variables in "Data:2" tab.
- Click on a value to allow typing in a different value.

Data:2	
ADC_Read	Auto Hex Local
ADCPOT 0x3c2 unsigned int	

 To add a variable just right click and select "Add expression" and write the name of the variable.

Add Expression	
Set Range AB	+
Set Trigger Address A	+
Set Trigger Address B	+
Set Trigger Address C	+
Open Trigger Settings E)ialog
Trigger Module Usage	•
Zoom	•
Scope	•
Mode	+
Format	+
Options	+
Sort	+
Refresh	

Add Expression		×
Name of variable		
ОК	Cancel	



Debug Basics: View & Alter Registers

• View CPU registers in the "Register" tab



• View peripheral registers go to Component > Open and select "Mcuregisters"

	Open Window Component		MCURegisters	
Component Register Window Open Set Connection Fonts Background Color	Icon List Details Image: Assembly Command Commaster Coverage Dac Data Image: Assembly Command Commaster Coverage Dac Data Image: Ddemasl Hcs12xa Inspect Image: Base of the	OK Cancel Help Browse	Name MC9S12VR64 PMMC PMMC PMMISC PMMISC CPMU CMU SCI0 SCI1 SSI1 SSI1 CMU CMU CMU CMU CMU CMU CMU CMU	Value Details



2 of 2

Debug Basics: Breakpoints

- Add Breakpoint: Right click on the line where you want to set the breakpoint and select "Set Breakpint"
 - An arrow red will pop up that represents debugger breakpoint







SECURE CONNECTIONS FOR A SMARTER WORLD