

XC866 Getting Started on EasyKit & Toolkits

V1.0 March 2005



Never stop thinking.



DAvE

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- This "Getting Started" will get you started in using the XC866.
- You will be introduced to the following tools:

Code Generator

Compiler

Debugger

Flash Downloader

- : DAvE v2.1 r22
- KEIL C51
- Hitop
- : HiTOP or XC800 Flash Loader



DAvE

🖳 KEIL

HiTOP

XC800

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- The following topics will be covered in sequence:
 - 1. Introduction to EasyKit
 - 2. Tools Installation
 - I. DAvE Installation
 - II. Keil Installation
 - III. HiTOP Installation

- (code generator)
- (compiler)
- (debugger, downloader)

- 3. EasyKit Setup
- 4. Writing Codes for XC866
 - I. Using DAvE
 - II. Using Keil

(code generation) (writing user code)



DAvE

₩ KEIL

HiTOP

XC800_ FLOAD

- 5. Download Compiled code to EasyKit
 - I. XC800 Flash Loader
 - II. HiTOP
- 6. Debugging the Code using HiTOP
- 7. System Requirement



There will be an example to guide you through the process of EasyKit setup, code generation, compilation and debugging using BLINKY example

If you wish to run BLINKY example using the sample codes provided with the CD, proceed to Section 4 and Section 5.

Note

- 1) Please ensure that the necessary software are installed first before connecting the hardware setup.
- 2) References to **EK866_CDV1_0** refers to the CD drive of your PC
- 3) For more information on jumper **J3** and **J6** settings, please refer to the mini x-board User Manual on the CD



- Documentation References:
 - 1. XC866 User Manual (v0.2, January 2005)
 - 2. mini x-board User Manual (v0.1, March 2005)

Website Updates: <u>http://www.infineon.com/XC866</u>

Support & Assistance: Register for XC866 Product Support <u>https://www.infineon.com/cgi/ecrm.dll/ecrm/scripts/contact/contact.jsp</u>



1 - Introduction to EasyKit







Step1: Installing DAvE for the First Time

Navigate to DAvE setup folder: **EK866_CDV1_0\Tools\DAvE** Click on "**setup.exe**" and follow the instruction until installation is completed. You will see 2 new icons added on your desktop: and and a setup.

Step2: Run DAvE



Run DAvE by clicking on the icon





Step3.1: Updating DIP File

Click "Close this dialog" on the menu.



Navigate to "View" tab, click on "Setup Wizard" menu.







Step3.2: Updating DIP File

Select "Installation" radio button on DAvE Setup Wizard pop-out window and click "Forward" to continue.



DAvE Setup Wizard

Note

Select "I want to install products from DAvE's web site" radio button and click and click "Forward" to continue.

DAvE Setup Wizard		×
S T D D	Please select if you want to install products from the DAvE CD-RDM or if you want to install products from the DAvE's web site.	
	C I want to install products from the DAvE CD-ROM	
		_
	< <u>Back</u> Eorward> <u>Cancel</u>	





×

Step3.3: Updating DIP File

Under Directories drop down option, navigate to "EK866_CDV1_0\Tools\DAvE\" and click "Forward".

Select the "XC866"	check	box	and click	
'Forward ".				

Click "Install" and your dip file will be installed.

🗯 DAvE Setup Wizard	2	ĸ
	First you have to go to the DAVE's web site and download the file for the product of your choice. If you want to download more than one product store all the downloaded files in the same directory. Then select the directory with the downloaded files in it and press the forward button. Drives: Directories: Tools	
	e \Tools\DAvE	
Go to DAvE's web site	< Back Eaward > Cancel	I

A DAvE Setup Wizard

See the details for a product by clicking on it in the list. Select the products which have to be installed by checking the box on the left of each product.





2.ii - Keil Installation



Installing Keil for the First Time

Navigate to Keil setup folder: **EK866_CDV1_0\Tools\Keil\Brochure\C51**\ Click on "**C51_XC800.EXE**" and follow instruction until installation is completed.

You will see a new icon added to your desktop.







Installing HiTOP for the First Time

Navigate to Hitex setup folder: **EK866_CDV1_0\Tools\Hitex**

Click on "setup.exe" and follow the instruction.

In the middle of the installation, it will also install the DAS server for you.

Click "**OK**" to continue and when the installation is done, it will restart the computer.

The following icon will be shown on the desktop upon a successful installation.

Note

During installation of HiTOP, please select **both** monitor XC800 **and** Tantino XC800



3 - EasyKit Setup

Step1: Power up EasyKit

Power Red LED must light up

Step2: Connect PC's UART cable to EasyKit



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Step1: Run DAvE

Run DAvE by clicking on the icon

Step2: Start a New Project

Click "Create a new project" on the main menu

Step3: Select Controller

Select "8-Bit Microcontroller" tab and click "Create"





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Step4: Inspect General Settings

Inspect general settings. Close the interface by clicking

Step5.1: Configure UART Module

Click "**UART**" on DAvE main menu. On the UART (Serial Interface) menu that appears, Select the following radio buttons **Use pin P1.1**

Use pin P1.0

Enable Receiver









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Step5.2: Configure UART Module

Click BRG tab In Reload Value field, enter "**0xAD**"

Step5.3: Configure UART Module

Click Functions tab

Tick "UART_vInit" checkbox

Close the interface by clicking











Step6.1: Configure Port Module

Click "**Port**" on DAvE main menu On the GPIO menu that appears, click on "**Configure Port 3**" tab



Step6.2: Configure Port Module

On the Configure Port 3 menu that appears, Tick the checkbox for **P3.0 to P3.7** Select Port Direction radio buttons as "**Out**"

Part Function:	Post Directory	Pash Pull / Open Drain:	Output Value
Size F10 as general 10	C In 6 Dat	C Dave dian	E" High
Gas P11 as general ID	CHEQU	Core dan	E" Hat
Use P12 as person 10	C In F Dat	🗂 Dpen diwi	IT HUE
🖓 Use P1.1 as perenai Kl	C In F Dut	(T Dpen dran)	I" Hgt.
🖓 Use P1.4 as general 10	C In F Dut	T Open dram	I" Hot
🖓 Unio P315 as general 10	CHEDA	C Open dwin	I" Hat
Vice P116 as permited 10	THEOM	C Open den	I" Hot
Une P3.7 as general 10	T H T Dut	C Openition	17 High





Step6.3: Configure Port Module

Click ^{Pull Device} tab Ensure all fields are set to "**Tristate**" Close the interface by clicking



Step6.4: Configure Port Module

On the GPIO menu, click on Functions tab Tick following checkboxes

"IO_vInit" "IO_vWritePort"

"IO_vTogglePin" Close the interface by clicking



Initialization Function	0_vivi	Source File	po.c	
Function Library				
E ill utileatio	Distantion of the	-		
C ID vSePo	0.5480	-1		
E ID sheathn	O LEASTER	-		
F ID utilisedfor	D. AFRANCE	-		
PP 10 VelatePot	D viviaePot	5		
T ID_v5etirput	D. Vietnau	-		
F 10_v5etOutput	II. vSelluput	-1		
IV 10_vTogateFm	D_vTogglePie	>		
The search officer in	Lecturation in			





Step7: Generate Code & Save

Click *tab* to generate the code based on the settings for the XC866 you have just created.

Navigate to a directory of your choice to save the generated code.

Enter File Name as "**blinky**" to save your project as a DaVE project file (*.dav)

Step8: Successful Generation

Upon successful generation, DAvE will present a summary of the code generated.









Step9: Check Generated Code

You may click on the files on the left panel to expand or collapse the functions generated by DAvE.







Step10: View Saved Files

You will be able to see these 11 files generated by DAvE in the chosen directory where you have saved your DAvE project.

blinky.asm	blinky.rtf
IO.C	IO.H
MAIN.C	MAIN.H
UART.C	UART.H
blinky.dav	blinky.dpt
START_XC.A51	

Size Type Name 0 IO.C 7 KB C Source h] IO.H 6 KB C/C++ Header DAVE_Generated_File Imain.c 6 KB C Source h] MAIN, H 14 KB C/C++ Header START XC.A51 8 KB A51 File Select an item to view its description. C UART.C 6 KB C Source See also: h UART.H 3 KB C/C++ Header My Documents BLINKY.asm 30 KB Assembler Source My Network Places 3 BLINKY.dpt 29 KB DAVE Project Data SINN0286 BLINKY.rtf 9 KB Rich Text Format BLINKY.dav 32 KB DAV File

You can compare the files you have just created with the sample codes supplied with the Starter Kit in this location

EK866_CDV1_0\GettingStarted\BLINKY_ Example\DAVE_Generated_Files\





Step1: Run Keil

Run Keil by clicking on the icon. You will see this interface with Keil environment

Step2: Start a new project

Select "Project" tab and click "Open Project"

Change File of Type field to **Dave Project Files (*.dpt)**

Navigate to the directory where your generated DAvE files are saved. (refer to page 20, step 7)

Select "blinky.dpt" and open the file



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Step3.1: Configure Target Device

In Keil main window, click on Project tab and select "Select Device for Target 'Target 1'"

In CPU tab, select the following Use Extended Linker Use Extended Assembler

In Database window, ensure "**XC866**" device is selected.

 New Project...

 Import µVision1 Project...

 Open Project

 Close Project

 Components, Environment, Books...

 Select Device for Target 'Target 1'

 Remove Item

 Options for Target 'Target 1'

 Build target

 Rebuild all target files

 Translate C:\XC866\Product_Launch_Starter_Kit\AppHir

 Stop build







Step3.2: Configure Components

In Keil main window, click on Project tab and select "Components, Environment, Books"

You will see the following in Project Components tab

Project Target = Target 1

- Groups =
- Files
- = Dave Files & User Files
- = START_XC.a51, MAIN.C, IO.C & UART.C









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Step3.2: Configure Components

In <u>Project Targets</u> tab, double click on Target 1 and change it to "**blinky**"

In Groups: tab, double click on Dave Files and change it to "Source". Ensure that START_XC.A51, MAIN.C, UART.C and IO.C are included in Files tab.

In Groups: tab, double click on User Files and change it to "Header". Click on Add Files to include IO.H, MAIN.H and UART.H.

Note

You may find the files you need in the directory where your generated DAvE files are saved. (refer to page 20, step 7)









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Step3.3: Configure Target Options

In Keil main window, click on Project tab and select "**Options for Target 'blinky**"

Click on Output tab

Select the following "Create Hex File"

In Name of Executable field, change it to "blinky.abs"

Click on LX51 Locate tab

Insert the following code "CODE(C:0x0-C:0x2FFF,C:0xA000-C:0xAFFF), XDATA(X:0xF000-X:0xF1FF)" in User Class field

Select Polder Int Objects.	Name of Executable: Marky	
Cente Executable - Volinity of	*	
P Debug Information	F Bowee Information IT Involution	S. MAYN
Contention HDCFile HEXFor	HD-481	
		Giner .
Geare Library Minky obs.Lit	1	Ceate Earch File
ter blake		
Beep When Complete	T Stat Debugging	
Puin User Program #1:	- Andre State State State	Bone

Options for Target Talesty		×
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🖓 Use Head	ny Layevit Iran Target Diolog	
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Une CODEIC Deb	E0x2FFF.C.0x4080-C.0x4FFF1 XDATA0K0xF080 X.0xF1FF1	2
		1
Ujer Seguenta		2
		1
Linker TO Binky a some streg	6°	1
	CK Caroel Definali	Help





Step4: Update Startup File

Double click on **START_XC.A51** in Project Workspace window and expand "**Power-On Initialization of Memory**" option.

Make the following changes:

XDATA memory start address

= **0xF000**

XDATA memory length

= **0x0200**







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Step5: Insert Function Prototype

Click on MAIN.C and locate "@Prototypes of Local Functions"

Copy the local function prototype declarations from the sample code supplied in EK866_CDV1_0\GettingStarted\BLINKY_E xample\SourceCode\MAIN.C

Step6: Insert User Code

Click on MAIN.C and locate "USER CODE BEGIN (MAIN_Main,3)"

Copy the user application code from the sample code supplied in **EK866_CDV1_0\GettingStarted\BLINKY_E** xample\SourceCode\MAIN.C.









Step7: Insert Other User Code

Click on MAIN.C and locate "USER CODE BEGIN (MAIN_General,10)"

Copy the utility functions like delay and message function code from the sample code supplied in EK866_CDV1_0\GettingStarted\BLINK Y_Example\SourceCode\MAIN.C



Save the files by clicking on

Compile the code by clicking on



If there is no error, you should be able to see the generated file "**blinky.hex**" in the working directory



Build target 'blinky'
compiling MAIN.C...
compiling IO.C...
compiling UART.C...
linking...
Program Size: data=12.0 xdata=0 const=0 code=1040
creating hex file from "blinky"...
"blinky" - 0 Error(s), 0 Warning(s).

Build Command Find in Files





Step1: Run Flash Loader

Navigate to program folder: EK866_CDV1_0\Tools\FLOAD\XC800_ FLOAD_V3E\ Click on "XC800 FLOAD.EXE" to run

Step2: Select Hex File to Download

Click on Copen File to open hex file. Navigate to "**blinky.hex**" and click "**Open**" to select









Step3: Set Jumper on EasyKit

Short Jumper "**J6**" to enter Boot Strap Loader

Press "**Reset**" button on the mini X-Board (refer to page 6)





Step4: Download Hex File into EasyKit

Click to download the hex file. Select "**Yes**" to erase Bank 0 Sector 0 and Bank 3 Sector 0

You should see a "**Green**" COM status to show the EasyKit is connected to PC Click when completed. You should see a "**Red**" COM status.





Step5: Open COM Port

You may use Mtty, HyperTerminal or Terra Term to open COM1. (refer to EK866_CDV1_0\Tools\rs232\)

Configure these settings to COM1:

Port	=	COM1
Baud rate	=	9600
Data	=	8 Bit
Parity	=	None
Stop	=	1 Bit
Flow Control	=	None

Note

Ensure that COM1 is not in use

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Step6: Remove Jumper on EasyKit

Remove Jumper "J6" to enter User mode







	🛛 Tera Term - COM1 ¥T	_ 🗆 X
Step7: Run Downloaded Code	File Edit Setup Control Window Help	
Press " Reset " button on the mini X-Board (refer to page 6) Observe output on COM1 via chosen UART program	<pre>Microcontroller : Infineon XC866 Date Created : 31 Jan 2005 Created By : Infineon Technologies Welcome to example: BLINKY Press any key to START BLINKY BLINKY started Please check LED Press any key for NEXT example Please check LED and make sure it is all lighted Press any key to START toggling LED. Observe the LE Press any key to STOP toggling LED End of example: BLINKY Thank you for using XC866!</pre>	

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5.ii - Using HiTOP to Download Code



Option 1: Connecting with UART

To use the **UART** (monXC800) connection, Jumper **J3** will have to be shorted.





5.ii - Using HiTOP to Download Code



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Option 1: Connecting with UART

Connect the **UART** port on the mini Xboard to **PC COM1**

With UART connected, you may access the full debugging options from HiTOP.

Note

If the UART port on the Mini X-Board is used for debugging purposes, the UART features of the XC866 may not be used since it will interfere with the debug operations.





5.ii - Using HiTOP to Download Code



Option 2: Connecting with Tantino box

Connect the Tantino USB port to PC USB

Connect the OCDS connector to the OCDS ports on the mini X-Board



Note

Make sure the **Arrow** on the OCDS connector of the Tantino is connected to **Pin 1** of the OCDS port of the mini X-Board







- Please download your latest free debugger from HiTOP from the following link
- From Infineon Easy Kit EK866_CDV1_0 CD: EK866_CDV1_0\Tools\Hitex\setup.exe
- From Hitex Internet website: <u>http://www.hitex.com/xc800/</u>

Note

XC866 EasyKit Getting Started V1.0 Page 38 If you are using **monitor XC800** from HiTOP to debug your program, you will **NOT** be able to debug programs that uses the UART feature of the XC866. For example, **BLINKY** program that is included with the CD. Kindly use another example program from Hitex folder. (e.g **CLOCK**)



7 - System Requirement

PC Requirement

Intel Pentium M Processor @ 1400MHz 522,456 KB RAM Microsoft Windows 2000 Operating System

Other Software Requirement

TerraTerm Mtty HyperTerminal





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