Infineon

XC866

Getting Started on EasyKit & Toolkits

V1.0 March 2005

Never stop thinking.

Overview

- This “Getting Started” will get you started in using the XC866.

- You will be introduced to the following tools:

Code Generator	:	DAvE v2.1 r22
Compiler	:	KEIL C51
Debugger	:	HiTOP
Flash Downloader	:	HiTOP or XC800 Flash Loader

DAvE

KEIL

HiTOP

XC800_FLOAD

Overview

- The following topics will be covered in sequence:

1. Introduction to EasyKit
2. Tools Installation
   - I. DAvE Installation (code generator)
   - II. Keil Installation (compiler)
   - III. HiTOP Installation (debugger, downloader)
3. EasyKit Setup
4. Writing Codes for XC866
   - I. Using DAvE (code generation)
   - II. Using Keil (writing user code)

DAvE

KEIL

HiTOP

XC800_FLOAD

Overview


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

Overview

- 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

Overview

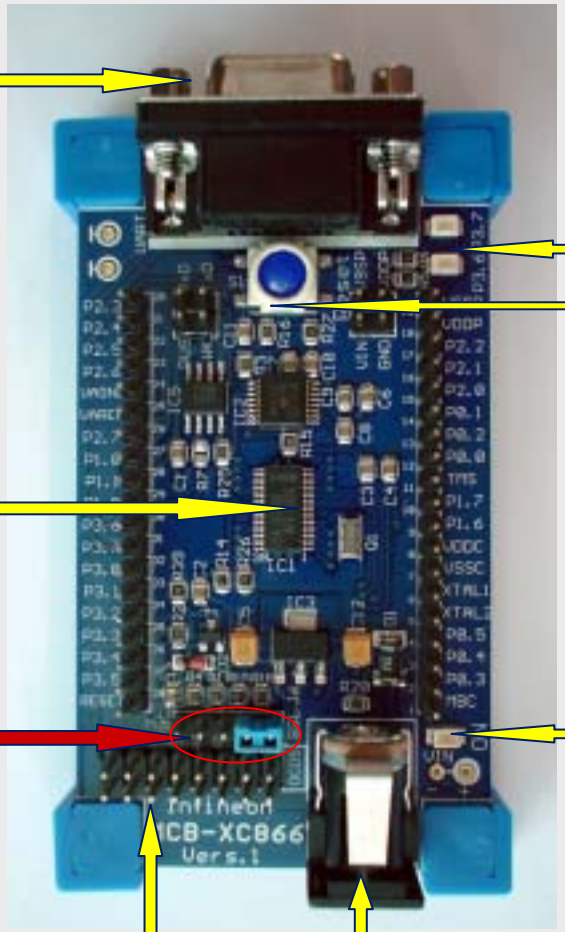
- Documentation References:
  1. XC866 User Manual (v0.2, January 2005)
  2. mini x-board User Manual (v0.1, March 2005)

- Website Updates: http://www.infineon.com/XC866

- Support & Assistance: Register for XC866 Product Support

https://www.infineon.com/cgi/ecrm.dll/ecrm/scripts/contact/contact.jsp

1 - Introduction to EasyKit



2.i - DAvE Installation

- **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 

- **Step2: Run DAvE** 

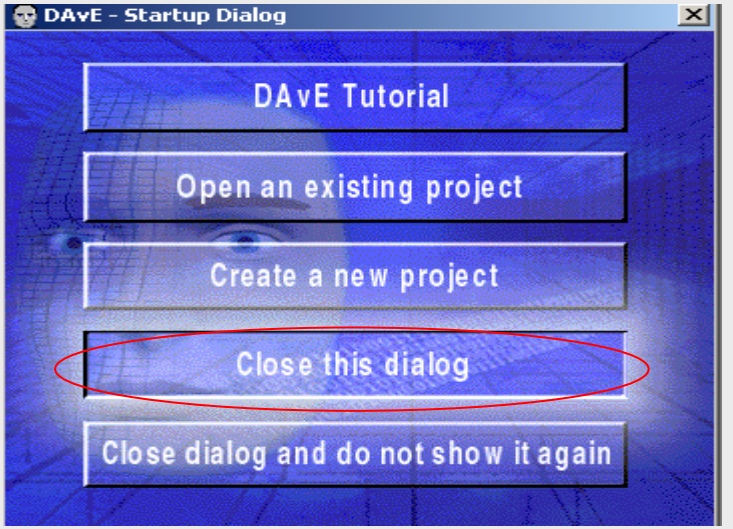
  Run DAvE by clicking on the icon

2.i - DAvE Installation

DAvE

- **Step3.1: Updating DIP File**

  Click "**Close this dialog**" on the menu.



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

2.i - DAvE Installation

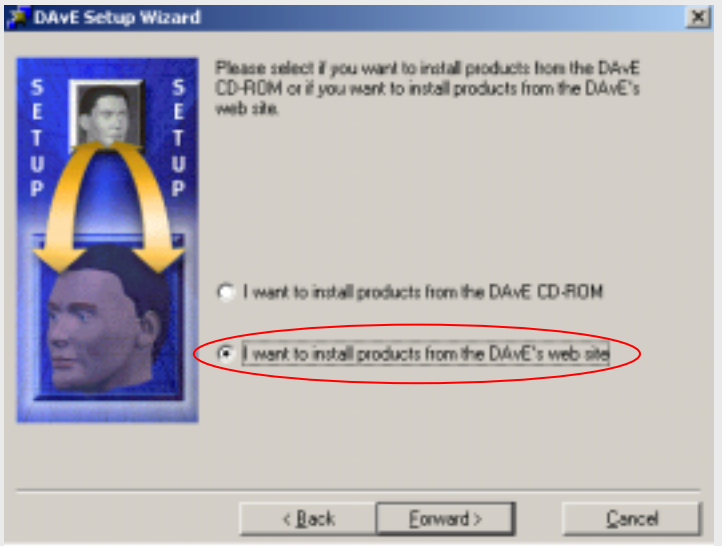
DAvE

Step3.2: Updating DIP File

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

Note

Select “**I want to install products from DAvE’s web site**” radio button and click and click “**Forward**” to continue.

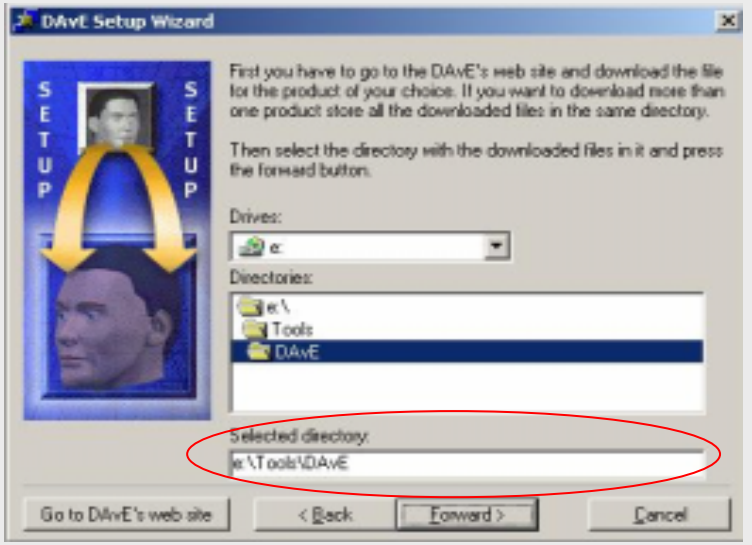


2.i - DAvE Installation

DAvE

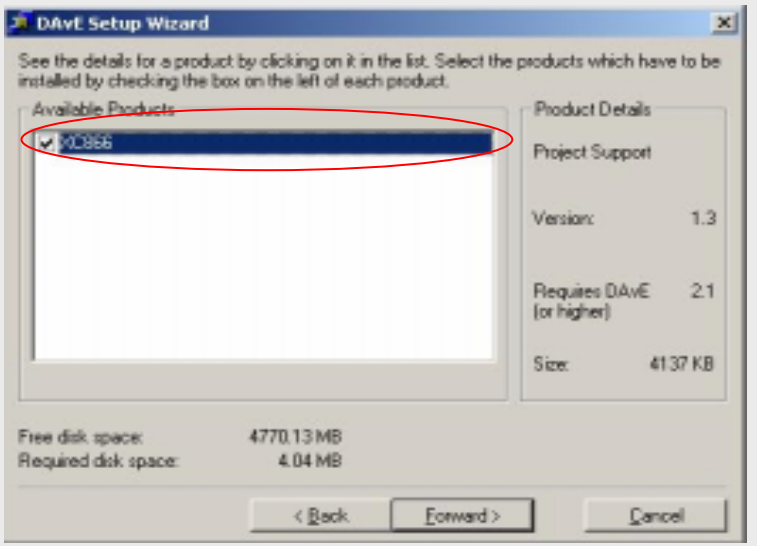
- **Step3.3: Updating DIP File**

  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.



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. 

2.iii - HiTOP Installation

HiTOP

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

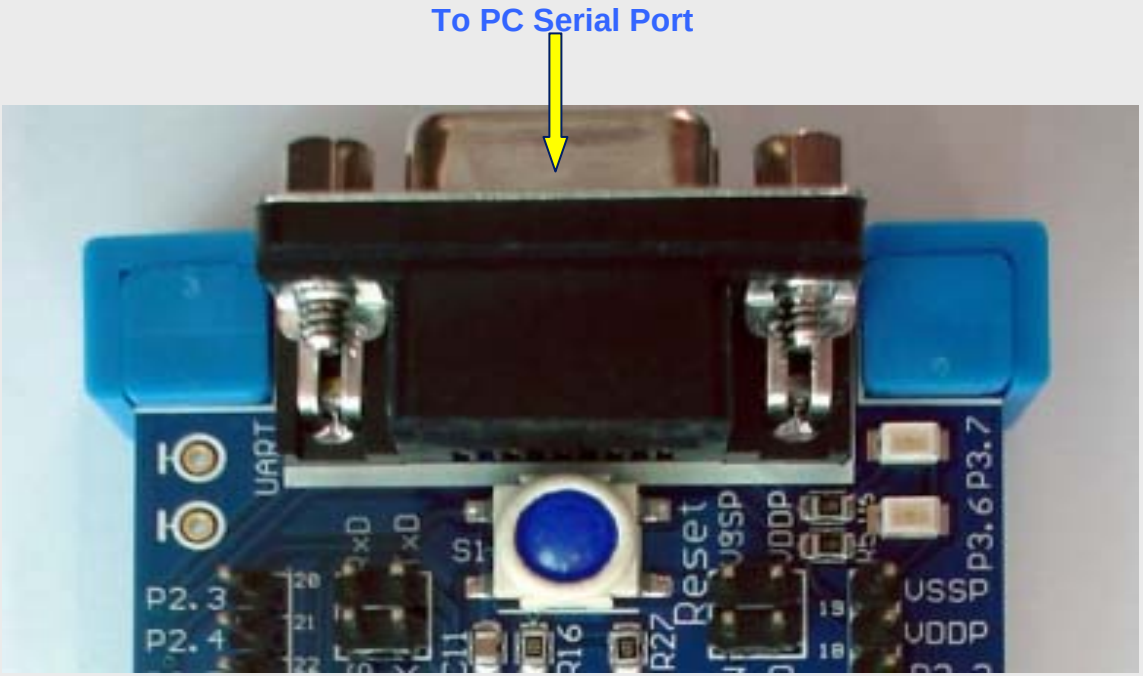
During installation of HiTOP, please select **both** monitor XC800 **and** Tantino XC800

3 - EasyKit Setup

- **Step1: Power up EasyKit**

  Power **Red** LED must light up

- **Step2: Connect PC's UART cable to EasyKit**



4.i - Using DAvE (BLINKY Example)

DAvE

- **Step1: Run DAvE**

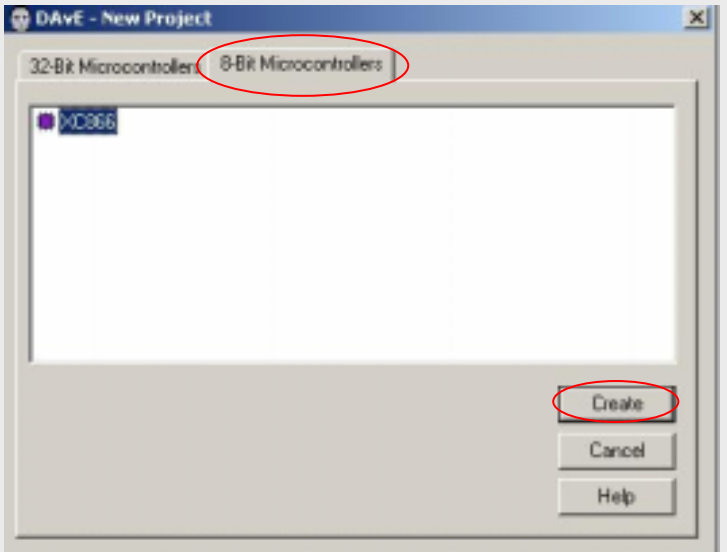
  Run DAvE by clicking on the icon

- **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**"



4.i - Using DAvE (BLINKY Example)

DAvE

- **Step4: Inspect General Settings**

  Inspect general settings. Close the interface by clicking 

- **Step5.1: Configure UART Module**

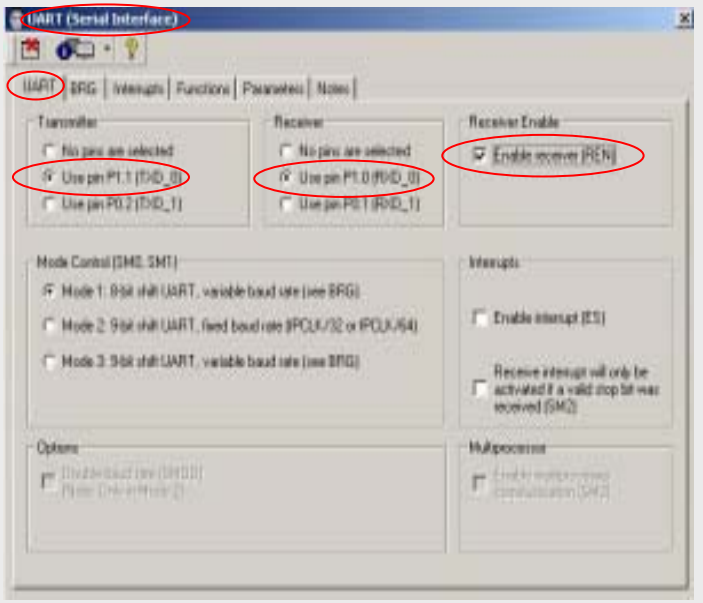
  Click "**UART**" on DAvE main menu.

  On the UART (Serial Interface) menu that appears, Select the following radio buttons

  Use pin P1.1

  Use pin P1.0

  Enable Receiver



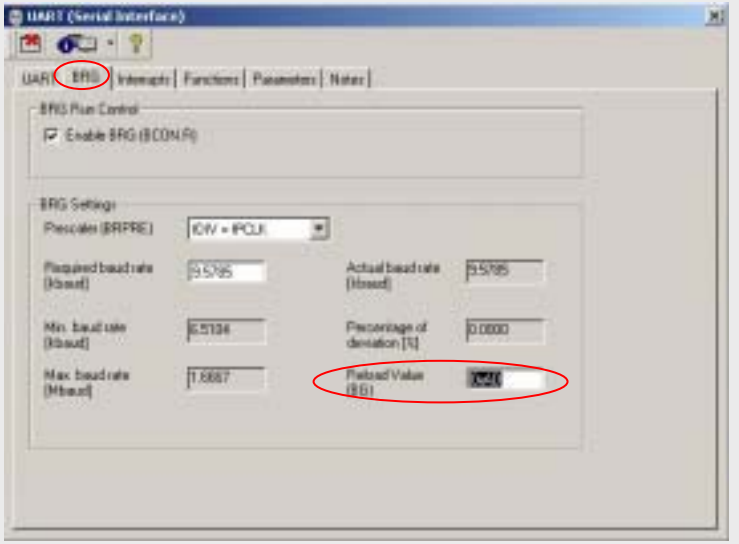
4.i - Using DAvE (BLINKY Example)

DAvE

- **Step5.2: Configure UART Module**

  Click BRG tab

  In Reload Value field, enter "**0xAD**"

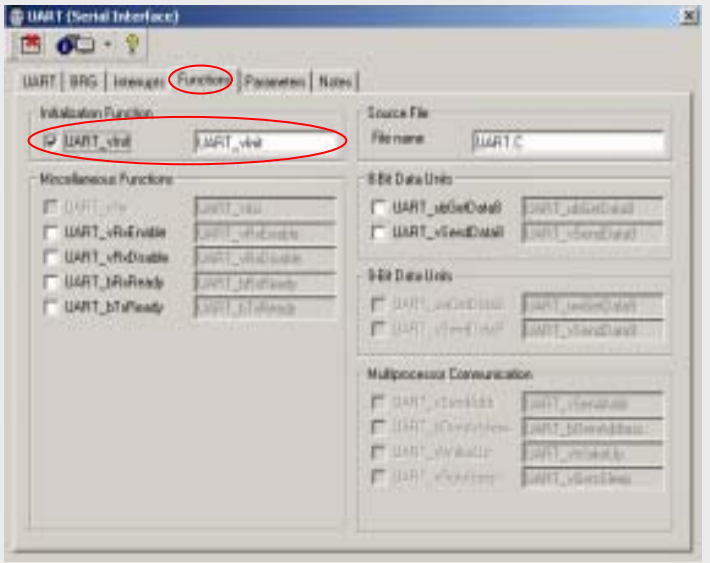


- **Step5.3: Configure UART Module**

  Click Functions tab

  Tick "**UART_vInit**" checkbox

  Close the interface by clicking 



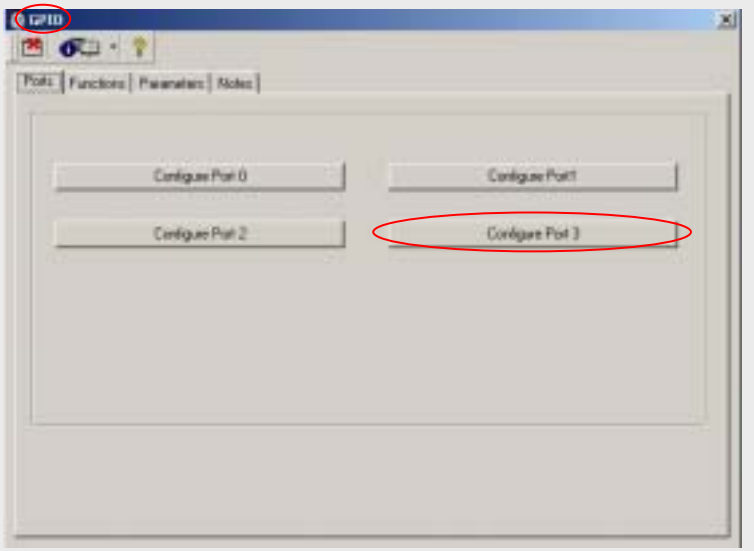
4.i - Using DAvE (BLINKY Example)

DAvE

- **Step6.1: Configure Port Module**

  Click “**Port**” on DAvE main menu

  On the GPIO menu that appears, click on “**Configure Port 3**” tab

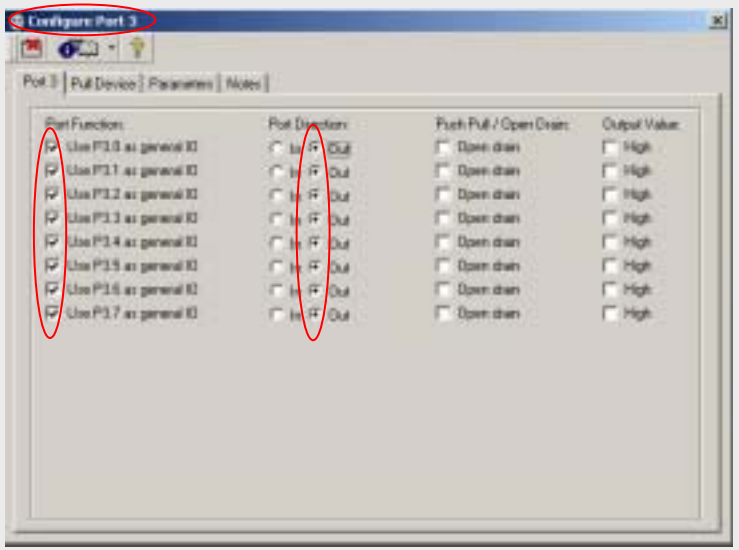


- **Step6.2: Configure Port Module**

  On the Configure Port 3 menu that appears,

  Tick the checkbox for **P3.0 to P3.7**

  Select Port Direction radio buttons as “**Out**”



4.i - Using DAvE (BLINKY Example)

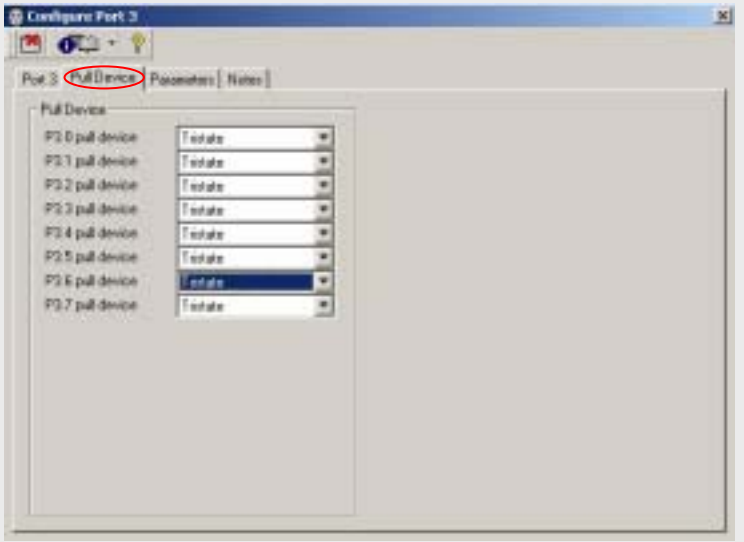
DAvE

- **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

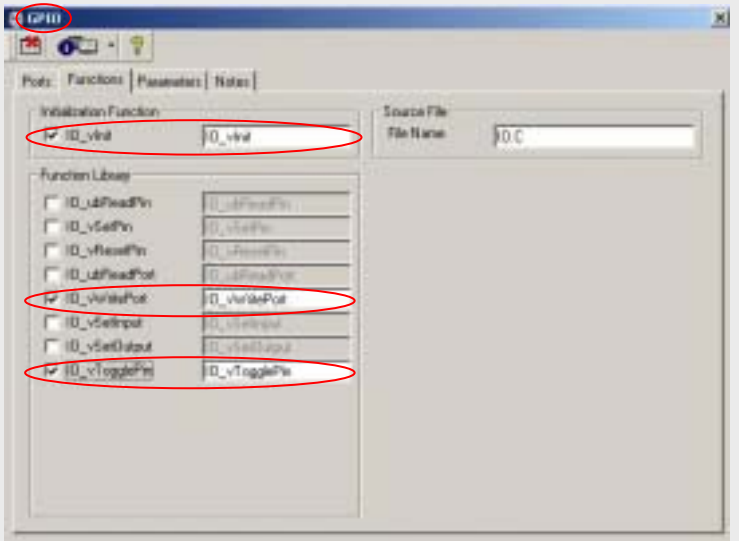
  Tick following checkboxes

  "**IO_vInit**"

  "**IO_vWritePort**"

  "**IO_vTogglePin**"

  Close the interface by clicking



4.i - Using DAvE (BLINKY Example)

DAvE

- **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**

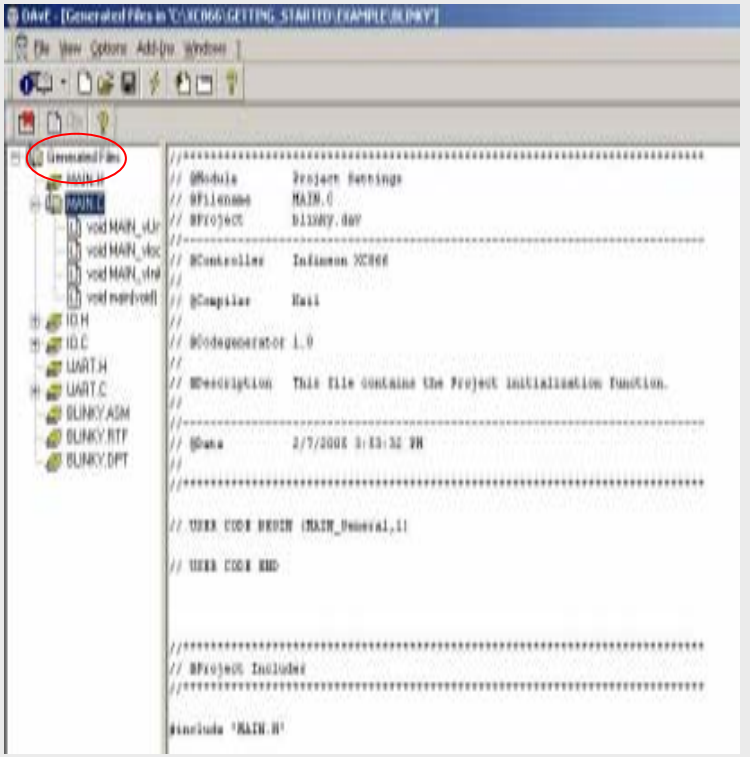
  Upon successful generation, DAvE will present a summary of the code generated.

4.i - Using DAvE (BLINKY Example)

DAvE

- **Step9: Check Generated Code**

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



4.i - Using DAvE (BLINKY Example)

DAvE

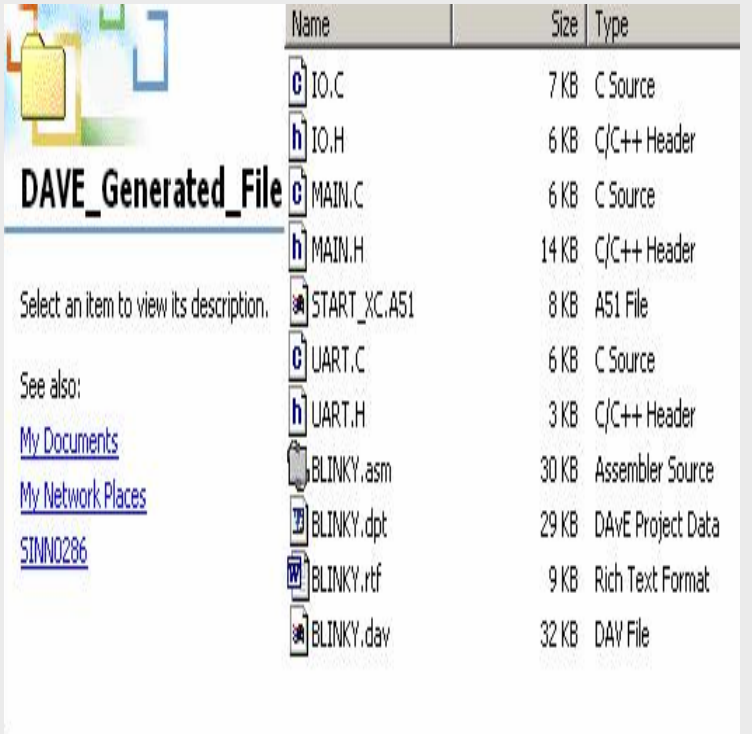
- **Step10: View Saved Files**

  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	

  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

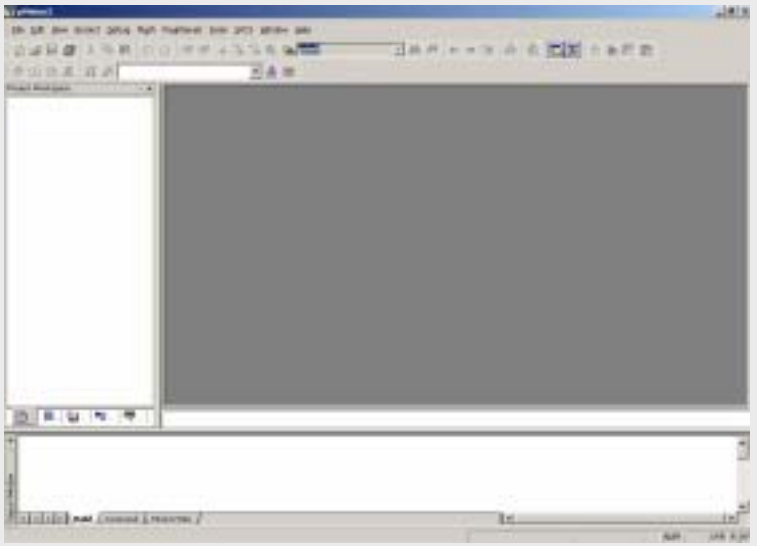


4.ii - Using Keil (BLINKY Example)

- **Step1: Run Keil**

  Run Keil by clicking on the icon.

  You will see this interface with Keil environment



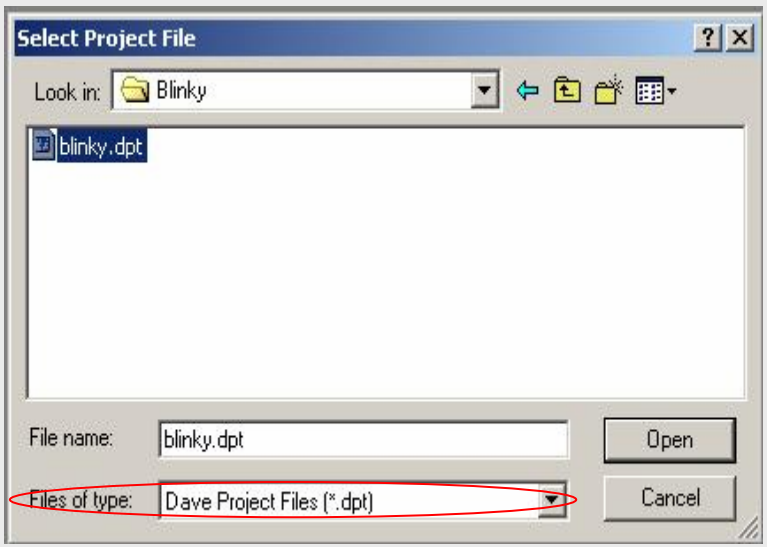
- **Step2: Start a new project**

  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)

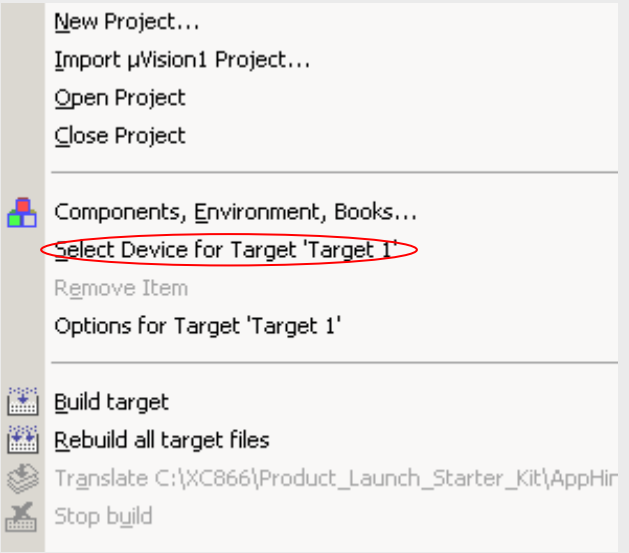
  Select "**blinky.dpt**" and open the file



4.ii - Using Keil (BLINKY Example)

- **Step3.1: Configure Target Device**

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

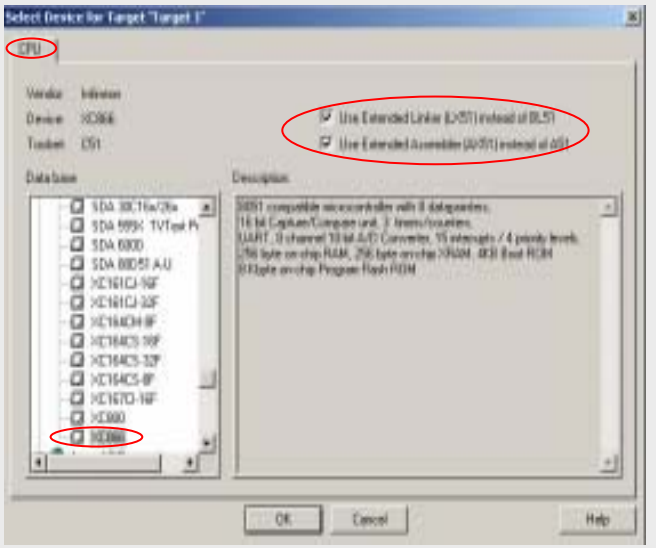


In CPU tab, select the following

Use Extended Linker

Use Extended Assembler

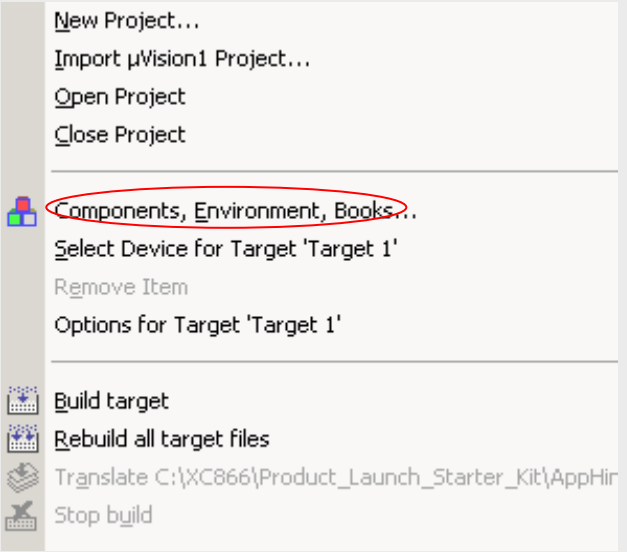
In Database window, ensure "**XC866**" device is selected.



4.ii - Using Keil (BLINKY Example)

Step3.2: Configure Components

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

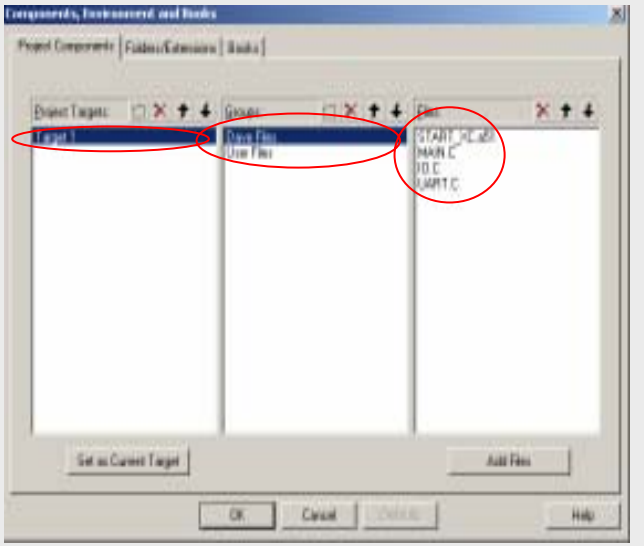


You will see the following in Project Components tab

Project Target = Target 1

Groups = Dave Files & User Files

Files = START_XC.a51, MAIN.C, IO.C & UART.C

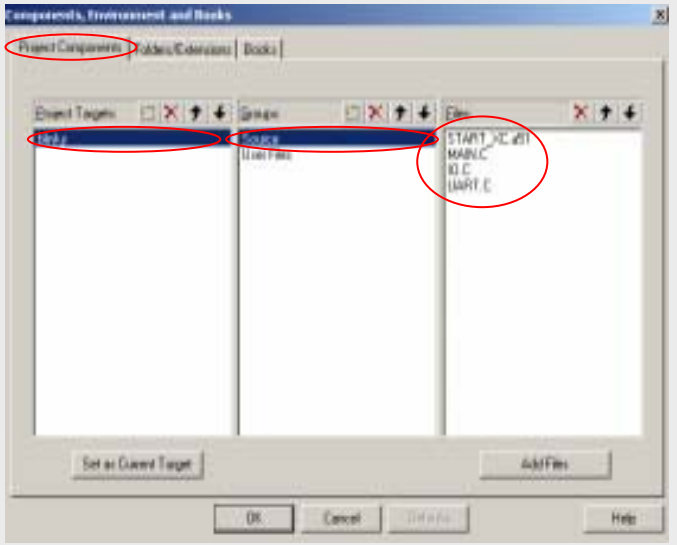


4.ii - Using Keil (BLINKY Example)

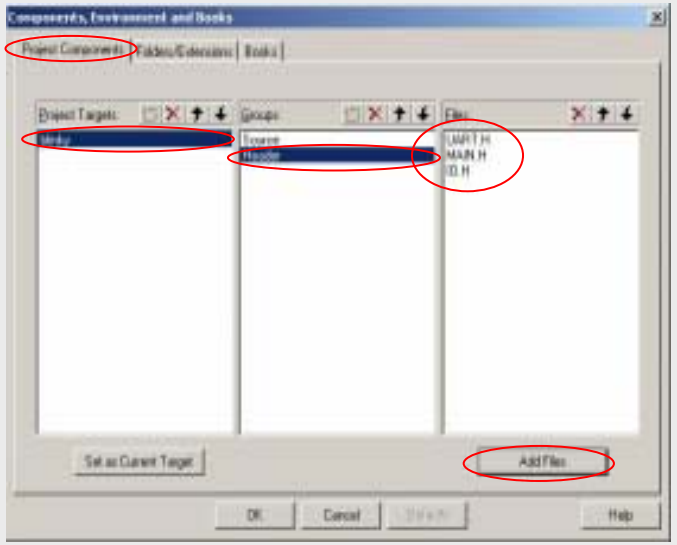
Step3.2: Configure Components

In Project Targets: 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)

4.ii - Using Keil (BLINKY Example)

- **Step3.3: Configure Target Options**

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

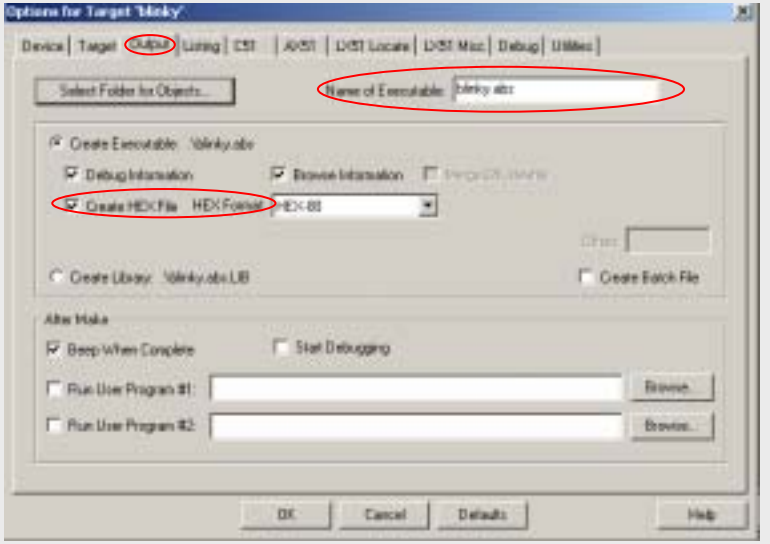
  Click on Output tab

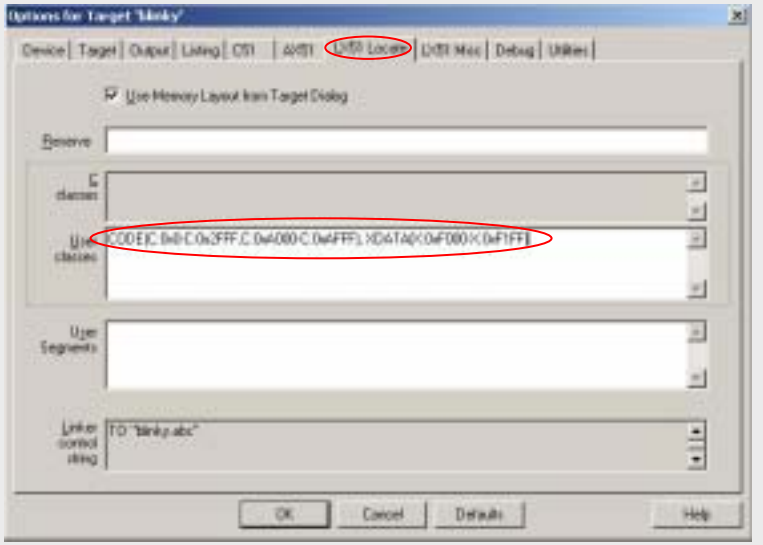
  Select the following "**Create Hex File**"

  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





4.ii - Using Keil (BLINKY Example)

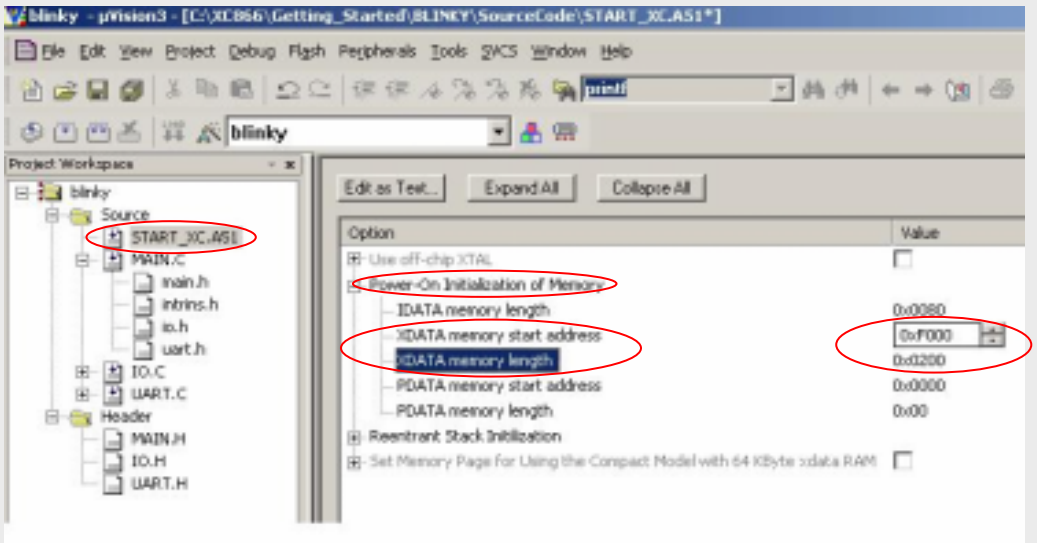
Step4: Update Startup File

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**

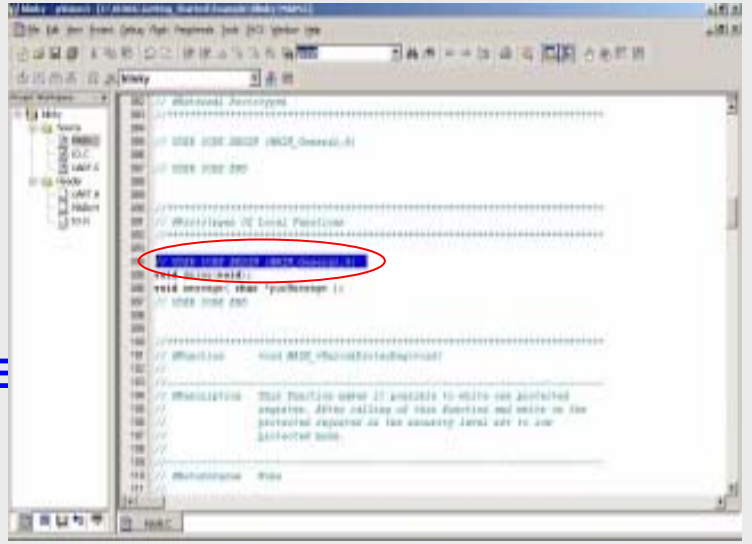


4.ii - Using Keil (BLINKY Example)

- **Step5: Insert Function Prototype**

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

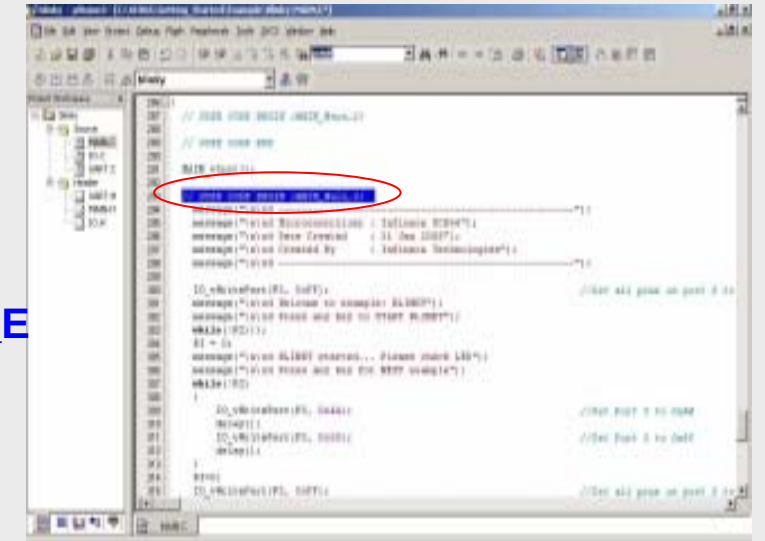
  Copy the local function prototype declarations from the sample code supplied in **EK866_CDV1_0\GettingStarted\BLINKY_Example\SourceCode\MAIN.C**



- **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_Example\SourceCode\MAIN.C**.

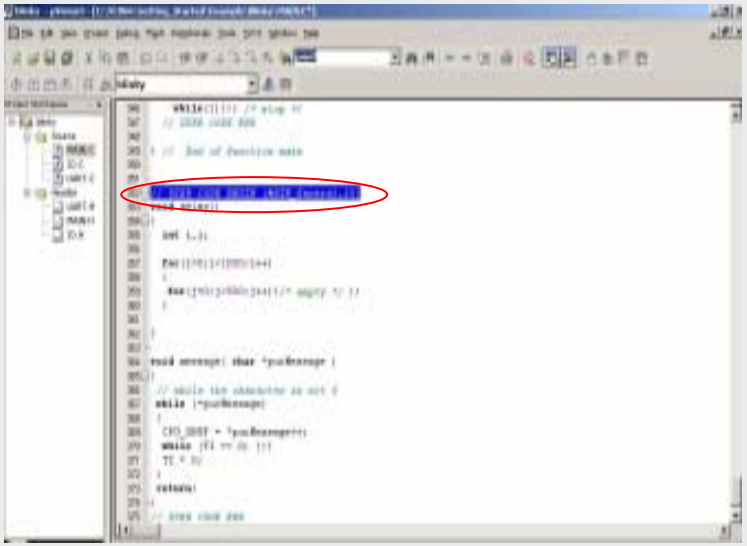


4.ii - Using Keil (BLINKY Example)

- **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\BLINKY_Example\SourceCode\MAIN.C**



- **Step8: Save/Compile the Code**

  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

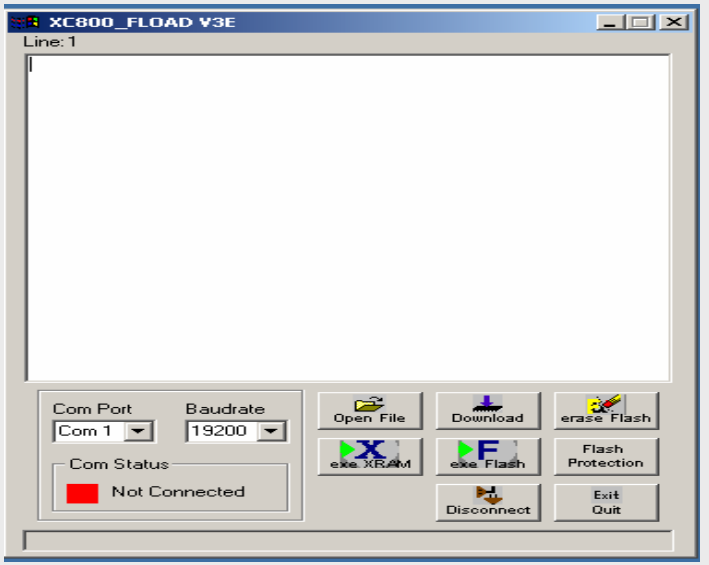
5.i - Using Flash Loader to Download Code

XC800_FLOAD

- **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 

to open hex file.

  Navigate to "**blinky.hex**" and click "**Open**" to select

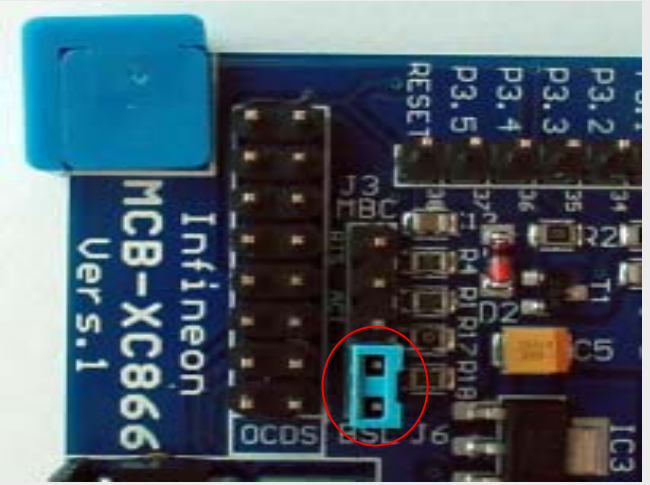
5.i - Using Flash Loader to Download Code

XC800_FLOAD

- **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.

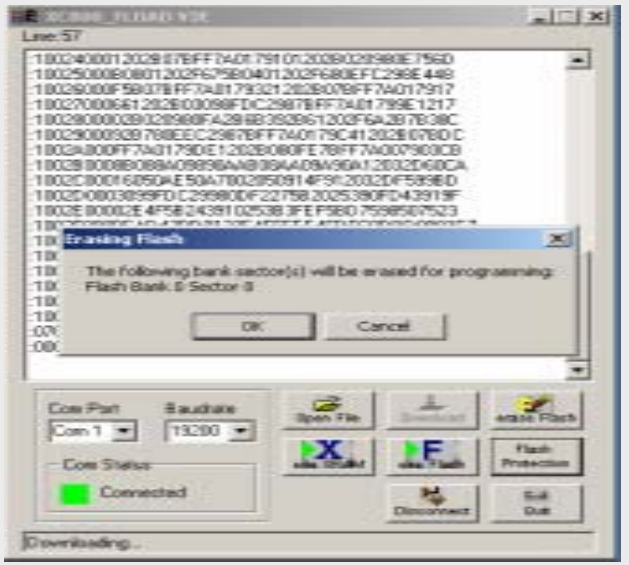
  Select "**Yes**" to erase Bank 0 Sector 0 and Bank 3 Sector 0

  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.



5.i - Using Flash Loader to Download Code

XC800_FLOAD

Step5: Open COM Port

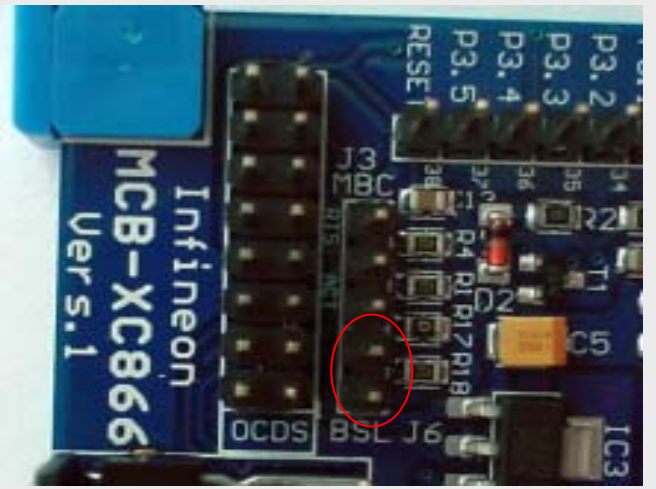
You may use Mtty, HyperTerminal or Terra Term to open COM1. (refer to **EK866_CDV1_0\Tools\rs232**)

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



Step6: Remove Jumper on EasyKit

Remove Jumper "**J6**" to enter User mode

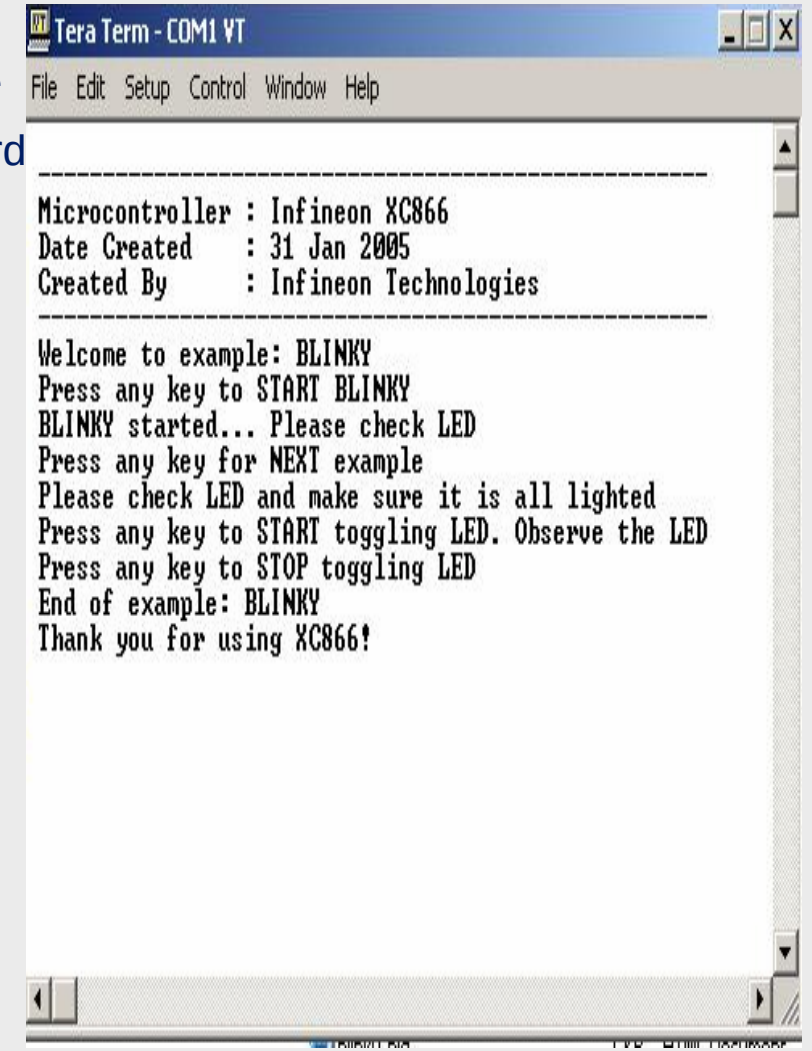
5.i - Using Flash Loader to Download Code

XC800_FLOAD

- **Step7: Run Downloaded Code**

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

  Observe output on COM1 via chosen UART program



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

- **Option 1: Connecting with UART**

  Connect the **UART** port on the mini X-board 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

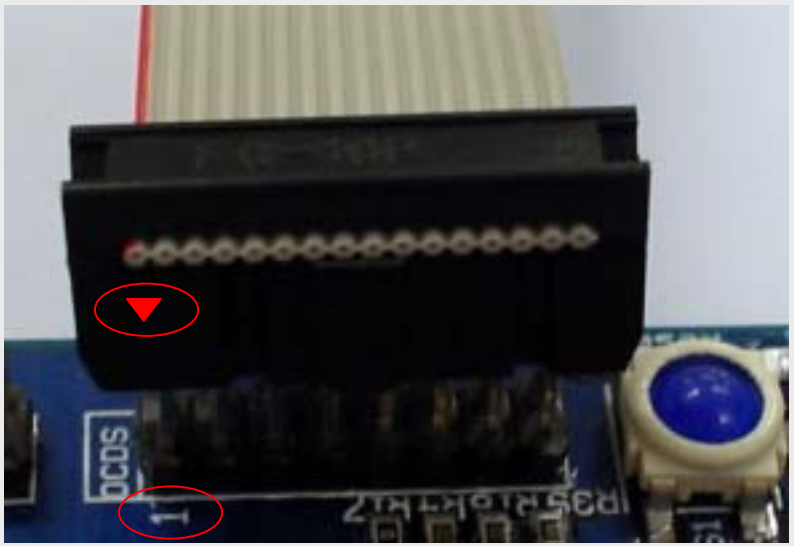
- **Option 2: Connecting with Tantino box**

  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



6 – Debugging Using HiTOP

- 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:

  http://www.hitex.com/xc800/

  Note

  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

Infineon
technologies

Never stop thinking.