

This Start-Up Guide describes all necessary steps for successful OCDS debugging with the C166/ST10 toolset v7.5r6. It applies to the Infineon XC16x boards, but part of the information can also be used for configuring your own hardware design. The hints and instructions in this guide are based on the Eight Queens example (queenss), included in the product.

EXAMPLES RUNNING FROM EXTERNAL RAM

The following steps should be taken to run the Queens (queenss) example from external RAM. Settings are given for both a multiplexed and a non multiplexed bus.

DIP-Switch Settings

The correct board switch settings are:

For Multiplexed Bus (MUX):

Switch	1	2	3	4	5	6	7	8
S101	Off	Off	Off	Off	Off	On	On	Off
S102	Off	Off	On	Off	Off	Off	Off	Off
S103	Off	Off	Off	Off	Off	Off	Off	Off
S104	On	On	Off	Off	Off	Off	Off	Off
S105	Off	Off	On	On	On	On	On	On
S106	Off	Off	Off	On				

For Non Multiplexed Bus (MUX):

Switch	1	2	3	4	5	6	7	8
S101	Off	On	On	Off	Off	Off	Off	Off
S102	Off	Off	On	Off	Off	Off	Off	Off
S103	Off	On	Off	Off	Off	Off	Off	Off
S104	On	On	Off	Off	Off	Off	Off	Off
S105	Off	Off	On	On	On	On	On	On
S106	Off	Off	Off	On				

Note: the **bold blue** switches mark deviations from the default settings as given in the Infineon XC16x Board Manual (v1.2, Oct. 2002).



VERSIONS

This Start-Up Guide is based on the following versions:

- TASKING C166/ST10 toolset, v7.5r6
- Infineon XC161CJ Evaluation Board, rev 200
- Infineon XC164CS Evaluation Board, rev 202B
- Infineon XC167CI Evaluation Board, rev 200

Startup Register Settings

The correct system register settings for the Bus Configuration, External Bus Controller and address selection should be set as follows:

Register	Multiplexed Bus	Non Multiplexed Bus
SYSCON0	0000h	0000h
SYSCON1	0000h	0000h
VECSEG	0000h	0000h
CPUCON1	0007h	0007h
CPUCON2	8FBBh	8FBBh
EBCMOD0	4022h	6040h
FCONCS0	0031h	0021h
TCONCS0	7A68h	6240h

These registers should be set at two places:

1. In the system startup code

The settings are needed to get the application running once it is loaded in the debugger. These settings are done through the EDE as described in the next paragraph.

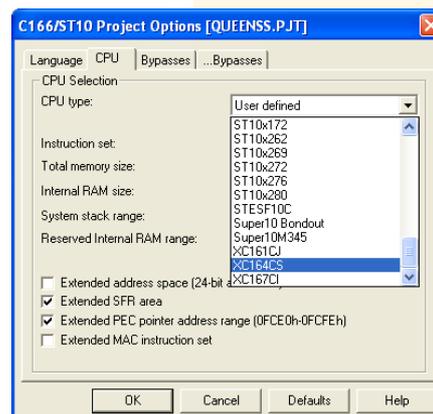
2. In the CrossView Pro configuration

To start the board and download the application in memory, CrossView Pro needs to set the registers properly. The values of the registers are listed in a so-called configuration file. The appropriate configuration can be selected from EDE before starting CrossView Pro. This is also described in the next paragraph.

EDE Quick Start

From EDE processor and target board must be selected. The application must be configured so that the register values are set to match the board settings and memory must be configured. The following steps must be taken to achieve these settings and to get a successful debugger connection to the target board.

- Open the Queenss project
 - Select the **Project** menu
 - Select **Set Current** and set queenss.pjt as active project
 - or Right-click on the queenss project in the Project bar at the left
 - Select **Set as Current Project**
- Enable Expert Mode
 - Select the **EDE** menu
 - If there is no tick mark before **Expert Mode**: Select **Expert Mode**
- Select the processor
 - Select the **EDE** menu
 - Select **Project Options...**
 - Select the **CPU** tab
 - Set **CPU Type** to the XC16x processor that you use
 - Click on **OK**
- Add the system startup code to the project. This is necessary to allow registers to be set as required:
 - Select the **EDE** menu
 - Select **CPU Configuration...**
 - Select the **Configuration** tab
 - Enable **Add system startup code to project**
 - Do not leave this dialog and continue with the next step.



5. Set the register values for CPU configuration
 - a. Select the **Advanced** tab
 - b. Set the checkbox **Enable direct register setting**
 - c. Set registers as follows:

CPUCON1	7
CPUCON2	8FBBh

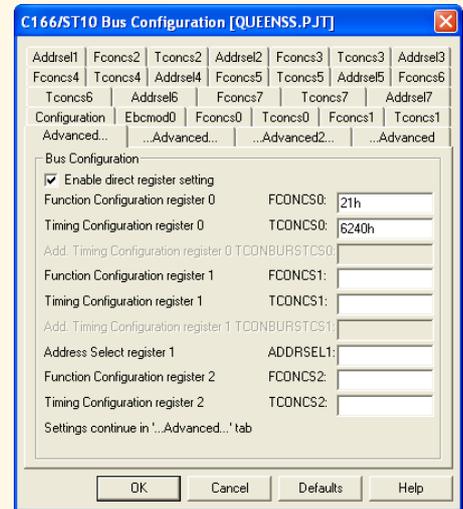
 All other registers should not be filled in.
 - d. Click on **OK**

6. Set the register values for bus configuration
 - a. Select the **EDE** menu
 - b. Select **Bus Configuration...**
 - c. Select the **Advanced...** tab
 - d. If you want to use a multiplexed bus, set the registers as follows:

FCONCS0	31h
TCONCS0	7A68h

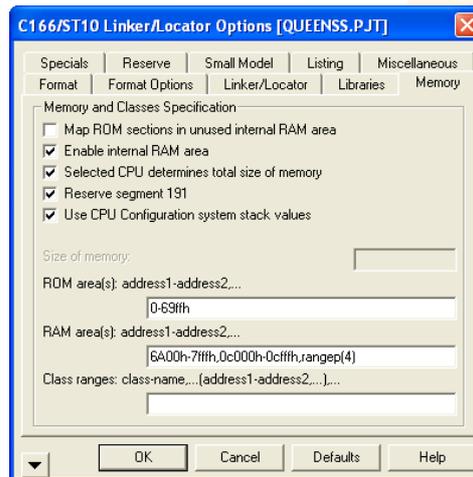
 If you want to use a non-multiplexed bus, set the registers as follows:

FCONCS0	21h
TCONCS0	6240h
 - e. Select the **...Advanced** tab
 - f. If you want to use a multiplexed bus, set EBCMOD0 to 4022h
If you want to use a non-multiplexed bus, set EBCMOD0 to 6040h
 - h. Click on **OK**

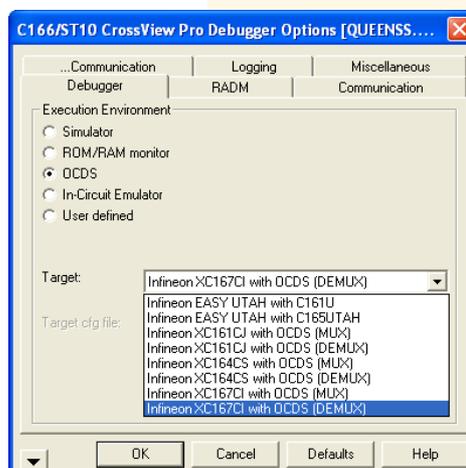


7. Specify ROM and RAM ranges
 - a. Select **EDE** menu
 - b. Select **Linker/Locator Options...**
 - c. Select the **Memory** tab
 - d. Set the **ROM area(s)** to: 0-69FFh
 - e. Set the **RAM areas(s)** to: 6A00h-7FFFh,0C000h-0CFFFh,RANGE(4)
 - f. Select the **Small Model** tab
 - g. Select **Paged: 48k paged near data in any 3 pages and 16k in page 3**
 - h. Fill in the page numbers:

Page number for DPP0:	0
Page number for DPP1:	1
Page number for DPP2:	4
 - i. Click on **OK**



8. Select CrossView Pro configuration
 - a. Select **EDE** menu
 - b. Select **CrossView Pro Options...**
 - e. Select the **Debugger** tab
 - f. Select **OCDS**
 - g. Select the target configuration you are using from the **Target** popup list. For each Infineon XC16x board a configuration for multiplexed bus (MUX) and non-multiplexed bus (DEMUX) is available.
 - h. Click on **OK**



9. Rebuild the application
 - a. Select the **Project** menu
 - b. Select **Rebuild**

10. You can now start debugging with CrossView Pro.
 - a. Select the **Project** menu
 - b. Select **Debug**

HARDWARE AND SOFTWARE BREAKPOINTS

In versions of the C166/ST10 product older than v7.5r5, only Hardware breakpoints are operable. Ask for the latest OCDS debug instrument DLL when you want to use software breakpoints and you are using a version older than v7.5r5.

The OCDS only has four hardware breakpoints available, which is often too limited for debugging an application. With software breakpoints this limitation does not exist. The usage of OCDS software breakpoints is limited to 64k breakpoints. A software breakpoint is set by injecting DEBUG instructions into the memory, so this is only possible within RAM. For debugging code in EEPROM or FLASH memory only hardware breakpoints can be used.

From CrossView Pro you can configure the use of hardware and software breakpoints:

- a. Select **Breakpoints** menu
- b. Select **Breakpoints...**
- c. Click on **Preferences...**
- d. You will now see the dialog from which you can configure the use of breakpoints.
- e. If your application is allocated in FLASH memory, select **Hardware breakpoints only**
If your application is allocated in RAM, select **First hardware breakpoints then software**
- f. Click **OK**
- g. Click **OK**

TROUBLE SHOOTING

1. CrossView Pro issues the following error:
GdiInitIO(): OCDS module can't be enabled (connect cable or correct jumper setting)

Solution: Set JP501 off -> on

2. CrossView Pro issues the following error:
GdiInitIO(): No valid JTAG cable found (target could be in Bootstrap mode)

Solution: Set S103.4 on -> off

3. Check the TASKING support web: www.tasking.com/support/C166-ST10



NOTE

By default the peripherals will not be stopped upon a breakpoint. To make peripherals also stop on breakpoints, a modification in the target configuration file is needed. Target configuration files are located in the etc directory of the installed product. Open the `inf_xc16*.cfg` file, matching your configuration, in a text editor. Add the following line to this file:

```
PeripheralsStop: 1
```

When starting CrossView Pro again peripherals will be stopped when hitting a breakpoint.



NOTE

The OCDS has a limited number of hardware breakpoints:

- 4 code or data write breakpoints, of which one can be used for a code range or data range read or write breakpoint
- or 1 value write breakpoint



NOTE

For data breakpoints, CrossView Pro will always use hardware breakpoints.