This Start-Up Guide describes all necessary steps for successful OCDS debugging with the C166/ST10 toolset v8.0r1. 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 (queens), 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):

<table>
<thead>
<tr>
<th>Switch</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>S101</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>On</td>
<td>On</td>
<td>Off</td>
</tr>
<tr>
<td>S102</td>
<td>Off</td>
<td>Off</td>
<td>On</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
</tr>
<tr>
<td>S103</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
</tr>
<tr>
<td>S104</td>
<td>On</td>
<td>On</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
</tr>
<tr>
<td>S105</td>
<td>Off</td>
<td>Off</td>
<td>On</td>
<td>On</td>
<td>On</td>
<td>On</td>
<td>On</td>
<td>On</td>
</tr>
<tr>
<td>S106</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
</tr>
</tbody>
</table>

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

For Non Multiplexed Bus (DEMUX):

<table>
<thead>
<tr>
<th>Switch</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>S101</td>
<td>Off</td>
<td>On</td>
<td>On</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
</tr>
<tr>
<td>S102</td>
<td>Off</td>
<td>Off</td>
<td>On</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
</tr>
<tr>
<td>S103</td>
<td>Off</td>
<td>On</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
</tr>
<tr>
<td>S104</td>
<td>On</td>
<td>On</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
</tr>
<tr>
<td>S105</td>
<td>Off</td>
<td>Off</td>
<td>On</td>
<td>On</td>
<td>On</td>
<td>On</td>
<td>On</td>
<td>On</td>
</tr>
<tr>
<td>S106</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
</tr>
</tbody>
</table>

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, v8.0r1
- Infineon XC161CJ Evaluation Board, rev 200
- Infineon XC164CS Evaluation Board, rev 202B
- Infineon XC167CI Evaluation Board, rev 200

**NOTE**

A Start-Up Guide for v7.5r6 of the TASKING toolset is available in the C166 support section of the TASKING website.
Startup Register Settings

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

<table>
<thead>
<tr>
<th>Register</th>
<th>Multiplexed Bus</th>
<th>Non Multiplexed Bus</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYSCON0</td>
<td>0x0000</td>
<td>0x0000</td>
</tr>
<tr>
<td>SYSCON1</td>
<td>0x0000</td>
<td>0x0000</td>
</tr>
<tr>
<td>VECSEG</td>
<td>0x0000</td>
<td>0x0000</td>
</tr>
<tr>
<td>CPUCON1</td>
<td>0x0007</td>
<td>0x0007</td>
</tr>
<tr>
<td>CPUCON2</td>
<td>0x8FBB</td>
<td>0x8FBB</td>
</tr>
<tr>
<td>EBCMOD0</td>
<td>0x4022</td>
<td>0x6022</td>
</tr>
<tr>
<td>FCONCS0</td>
<td>0x0031</td>
<td>0x0021</td>
</tr>
<tr>
<td>TCONCS0</td>
<td>0x7A68</td>
<td>0x6240</td>
</tr>
</tbody>
</table>

These registers are automatically set when the execution environment is selected as described in the next paragraph.

EDE Quick Start

In the EDE the 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.

1. Open the Queens project
   a. Select the **Project** menu
   b. Select **Set current** and set queens.pjt as active project or right-click on the queens project in the Project bar at the left
   c. Select **Set as Current Project**

2. From the **Project** menu, select **Project Options...**

2.1 a. In the left pane expand the **Application** entry and select **Processor**
   b. Set **Processor** to the XC16x processor that you use
   c. When the popup window shows up Click **Yes** to set the registers to default values

2.2 a. In the left pane select **Memory Model**
   b. Set **Memory Model** to: small
   c. Set **Small model memory layout** to: Paged
   d. Fill in the page numbers:
      - DPP0: 0
      - DPP1: 1
      - DPP2: 4
2.3 a. In the left pane expand the Linker/Locator entry and select Memory
b. Set Type=ROM, Start=0x0, End=0x0069FF
   Set Type=RAM, Start=0x006A00, End=0x007FFF
   Set Type=RAM, Start=0x00C000, End=0x00CFFF
   Set Type=RAM, Start=0x010000, End=0x01FFFF

2.4 a. In the left pane expand the CrossView Pro entry and select Execution Environment
b. Set the Manufacturer to: Infineon
c. Set the Execution environment to the evaluation board and configuration you use
d. When the popup window shows up click Yes to set the startup registers to new values

2.5 Click on OK

3. Rebuild the application
   a. Select the Build menu
   b. Select Rebuild

4. You can now start debugging with CrossView Pro
   a. Select the Build menu
   b. Select Debug

Output of the queens example, shown by CrossView Pro Debugger

HARDWARE AND SOFTWARE BREAKPOINTS
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.

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
- 1 value write breakpoint

NOTE
By default the peripherals will not be stopped upon a breakpoint.

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