TE0703 TRM
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Figure 1: TE0703 (REV 01).
Overview

Features

1. VG96 Connectors (Mounting Holes and Solder Pads)
2. Carrier Controller CPLD (Lattice LCMXO2-1200HC)
3. SD Card level-shifter
4. Micro SD Card Connector
5. LEDs
6. Mini USB Connector FT2232H
7. User Push Button
8. RJ45 GbE Connector
9. USB Host Connector
10. Barrel jack for 5V Power Supply
11. 4A High-Efficiency DC-DC Step-Down Converter for 3.3V Power Supply
12. Trenz 4x5 Module Socket (3x Samtec LSHM Series Connectors)
13. USB JTAG and UART Interface (FTDI FT2232H), compatible with Xilinx Tools
14. DIP Switch

⚠️ Note: TE0703 must be powered by a 5V power supply!
User I/O Connectors

Note: VCCIO for FPGA banks is has no default fixed connection to power supply. Those the bank VCCIO must be supplied to externally, or optionally 0 ohm resistors can be soldered onto TE0703 to set fixed 3.3V voltages.

Example wiring that powers ALL banks with 3.3V - those connections should be present on the base board, in this drawing 3 banks are have VCCIO supplied over connector and 4th bank is connected to 3.3V with jumper J5.

TE0715-30 modification
REMOVE jumper J5, add wires as on picture for VCCIO=1.8V for all banks.
UART

FT2232H USB interface Channel B is normally used as UART, in default CPLD configuration UART pins are routed to Module connector to location of default UART pins.

<table>
<thead>
<tr>
<th>FT2232H Channel B</th>
<th>B2B</th>
<th>TE0715</th>
<th>TE0720</th>
<th>TE0710</th>
<th>TE0711</th>
<th>TE0712</th>
<th>TE0713</th>
<th>TE0741</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>TXD</td>
<td>JM1.92</td>
<td>MIO14</td>
<td>MIO14</td>
<td>A8</td>
<td>N17</td>
<td>P16</td>
<td>A10</td>
<td>J21</td>
<td>Module input</td>
</tr>
<tr>
<td>RXD</td>
<td>JM1.85</td>
<td>MIO15</td>
<td>MIO15</td>
<td>B8</td>
<td>R10</td>
<td>U18</td>
<td>C11</td>
<td>G24</td>
<td>Module output</td>
</tr>
</tbody>
</table>
LEDS

Two LED’s (those closer to mini-USB Connector) are connected to the 4x5 B2B Connector pins. Those LEDs can be controlled by FPGA Module.

<table>
<thead>
<tr>
<th>LED</th>
<th>Net Name</th>
<th>Color</th>
<th>B2B/Module</th>
<th>TE0710</th>
<th>TE0711</th>
<th>TE0712</th>
<th>TE0713</th>
<th>TE0715</th>
<th>TE0720</th>
<th>TE0741</th>
</tr>
</thead>
<tbody>
<tr>
<td>D3</td>
<td>FLED1</td>
<td>Red</td>
<td>JM2.100</td>
<td>U8</td>
<td>F5</td>
<td>J16</td>
<td>U8</td>
<td>H6</td>
<td>U7</td>
<td>U21</td>
</tr>
<tr>
<td>D4</td>
<td>FLED2</td>
<td>Green</td>
<td>JM2.89</td>
<td>K6</td>
<td>J5</td>
<td>M17</td>
<td>K6</td>
<td>H5</td>
<td>R7</td>
<td>Y20</td>
</tr>
</tbody>
</table>

⚠️ The bank where LED’s are is not powered when TE0703 is used in standalone mode. VCCIO for this bank must be supplied back to the TE0703 connectors. TE0703 header Pin J2.B1 must have some valid I/O voltage or the LED’s will not be lit. To connect 3.3V to this bank install 0R or solder bridge to empty place of R26 on the bottom of the PCB.

⚠️ If the Bank where LED’s are has VCCIO 1.8V then the LED’s will lit with very low intensity.

Two LED’s closer to the micro SD Card are connected to CPLD and not Module Connectors, their function depends on the CPLD Version.

<table>
<thead>
<tr>
<th></th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1</td>
<td>ULED1 Red FTDI UART Receive activity</td>
</tr>
<tr>
<td>D2</td>
<td>ULED2 Green FTDI UART Transmit activity</td>
</tr>
</tbody>
</table>

Default function of the User LED’s. Note the function of this LEDs is controlled by the CPLD and can be changed.
### I2C Level Shifter

TE0703 has an I2C level shifter IC on-board, there are however no I2C devices on TE0703. Those pins that go through level shifter can be used I2C bus, or as GPIO.

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>SCL</td>
<td>JM1.95</td>
<td>MIO10</td>
<td>R10</td>
<td>M13</td>
<td>T21</td>
<td>B9</td>
<td>L22</td>
<td></td>
</tr>
<tr>
<td>SDA</td>
<td>JM1.93</td>
<td>MIO11</td>
<td>L18</td>
<td>L18</td>
<td>Y22</td>
<td>A9</td>
<td>K21</td>
<td></td>
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</table>
Micro SD Card Socket

The Micro SD Card Socket do not include a Card detect signal and Write Protect signal. It is not directly connected to the 4x5 B2B Connector pins, but through a SDIO port expander, TI TXS02612. This device is used for voltage translation, due to the different voltage levels between Micro SD Card and MIO Bank 501 on the Zynq 7000. (The Micro SD Card is 3.3V, but the MIO Bank 501 is set to 1.8V.)

<table>
<thead>
<tr>
<th>Signal Name</th>
<th>Description</th>
<th>Net Name</th>
<th>B2B/Module</th>
<th>TE0715</th>
<th>TE0720</th>
</tr>
</thead>
<tbody>
<tr>
<td>DATA[3]</td>
<td>Data</td>
<td>DAT3</td>
<td>JM1.17</td>
<td>MIO45</td>
<td>MIO45</td>
</tr>
<tr>
<td>DATA[2]</td>
<td>Data</td>
<td>DAT2</td>
<td>JM1.19</td>
<td>MIO44</td>
<td>MIO44</td>
</tr>
<tr>
<td>DATA[1]</td>
<td>Data</td>
<td>DAT1</td>
<td>JM1.21</td>
<td>MIO43</td>
<td>MIO43</td>
</tr>
<tr>
<td>DATA[0]</td>
<td>Data</td>
<td>DAT0</td>
<td>JM1.23</td>
<td>MIO42</td>
<td>MIO42</td>
</tr>
<tr>
<td>CMD</td>
<td>Command</td>
<td>CMD</td>
<td>JM1.25</td>
<td>MIO41</td>
<td>MIO41</td>
</tr>
<tr>
<td>CLK</td>
<td>Clock</td>
<td>S_CLK</td>
<td>JM1.27</td>
<td>MIO40</td>
<td>MIO40</td>
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DIP Switch settings

<table>
<thead>
<tr>
<th>Mode</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>MODE = LOW</td>
<td>MODE = HIGH</td>
</tr>
<tr>
<td>3</td>
<td>Normal mode</td>
<td>CC Update mode</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
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</tr>
</tbody>
</table>

Function of MODE pin is module dependent!

Carrier Controller Update Mode

Carrier Controller JTAG port is enabled by setting switch 3 on DIP switch S2 on TE0703 to "OFF" position. This setting is only useful when updating Carrier Controller firmware! In this mode Module JTAG is not accessible.

⚠️ Switch 3 on DIP switch S2 must be moved to "ON" position for normal operation! Otherwise the JTAG on the module would not be accessible at all.

Configuring B34 Bank Supply for TE0720 Zynq SoC Module

J5 Jumper can be used to power TE0720 bank 34 from TE0720 3.3V output rail. If J5 is installed TE0720 will boot also in the case bank 34 supply is not delivered from the VG96 /Pin headers. If TE0720 bank supply of 3.3V is required it is recommended to insert the jumper. Optionally, 3.3V or any other valid IO voltage can be supplied from the TE0703 pins.

Use with TE0715

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Revision History

REV 04

- corrected Pull up on U10
- PCB cosmetic changes
Document Change History

<table>
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<th>revision</th>
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<th>description</th>
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<td>0.1</td>
<td>Antti Lukats, Sven-Ole Voigt</td>
<td>Work in progress</td>
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<tr>
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