

# HW Getting Started Guide

## MPC8349E MDS Processor Board

May 2005: rev 8



MPC8349E MDS Processor Board HW Getting Started Guide	
<p><b>Step 1: Check HW kit contents.</b></p> <ol style="list-style-type: none"> <li>1. MPC8349E MDS processor board</li> <li>2. AC/DC 5V/5A universal power supply kit</li> <li>3. RS232 standard serial cable with two 9-pin connectors—extends the Freescale adaptor cable</li> <li>4. Freescale adaptor cable (joined) with one RJ45 and two RS232 connectors:               <ol style="list-style-type: none"> <li>a) RJ45 10-pin plug</li> <li>b) RS232 9-pin D-type connector</li> </ol> </li> <li>5. USB adaptor and connector:               <ol style="list-style-type: none"> <li>a) mini USB adaptor: 5-pin (male) and 4-pin (female)</li> <li>b) USB cable with two connectors: standardA and miniB</li> </ol> </li> <li>6. Ethernet cables (2) with RJ45-8 connectors               <ul style="list-style-type: none"> <li>• four sets of plastic spacers (male/female)</li> <li>• one Allen key—to replace chip in Tyco socket</li> <li>• CodeWarrior SW kit (includes JTAG connectivity unit)</li> <li>• MPC8349E MDS processor board errata</li> </ul> </li> </ol>	<p>The photograph shows the hardware kit components laid out on a light surface. Item 1 is the MPC8349E MDS processor board. Item 2 is the AC/DC 5V/5A universal power supply kit. Item 3 is the RS232 standard serial cable. Item 4 is the Freescale adaptor cable. Item 5a is the mini USB adaptor, and item 5b is the USB cable. Item 6 is the Ethernet cables.</p>

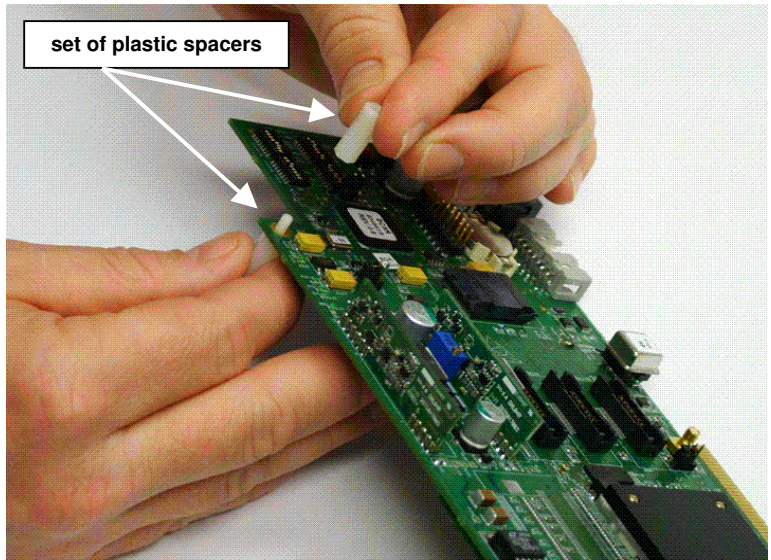
<b>Abbreviations and Definitions</b>	
BCSR	board control and status register
BMS	boot memory space
CFG_RS	bit in RCW register
CLKDIV	clock division
CLKIN	clock input
COP	debug port in PowerPC
DDR	double data rate DRAM
DIP	dual in-line package
I2C ©	Philips serial port
JTAG	IEEE standard 1149.1
LED	light emission diode
PCI	peripheral component interconnect
PCI_SYNC_OUT	chip pin
PIB	platform interface board
PLL	phase lock loop
RCW	reset configuration words
ROM	read-only memory
SHMOO	sweep test (of frequency and core voltage)
TLE	bit in RCW register
TSEC	triple speed Ethernet controller

**Step 2: Connect plastic spacers.**

Four sets of plastic spacers screw into holes located at (approximately) the four corners of the board.

The spacers raise and stabilize the board.

1. From under the board, insert a male spacer into one of the board's four spacer holes.
2. Attach a female spacer onto the male spacer.
3. Repeat for the three remaining pairs of spacers.

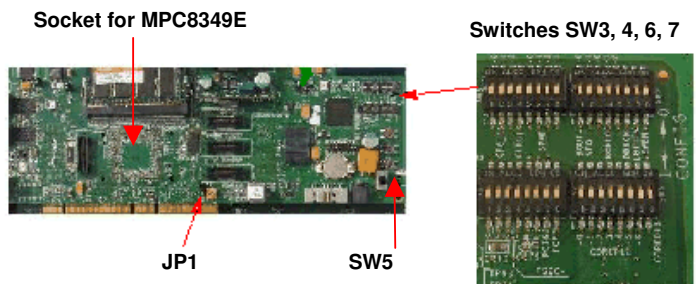
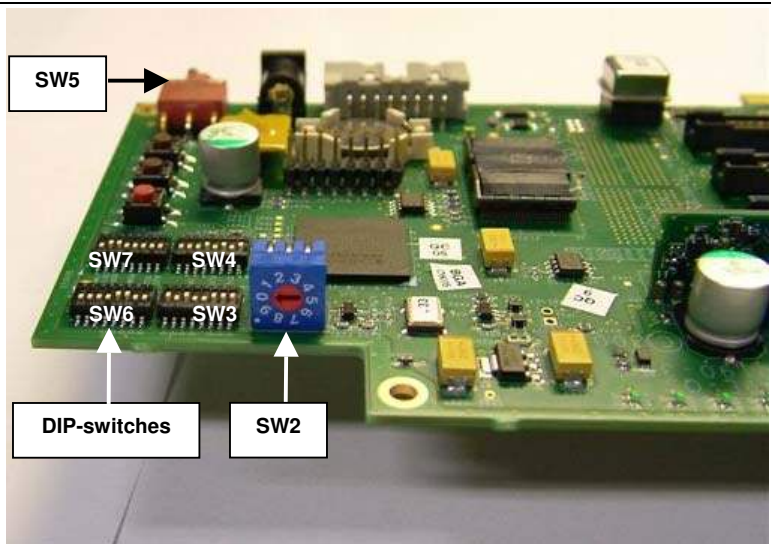


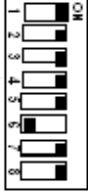


**Step 3: Check switches and jumper.**


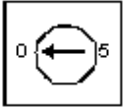

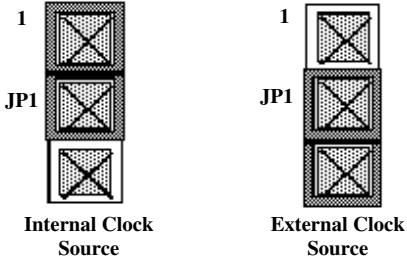
The MPC8349E MDS processor board has two rows of Dual-In-Line Package (DIP) switches.

The default DIP-switch positions set-up the MPC8349E MDS processor board clock mode as shown in the table below:

MPC8349E MDS Processor Board Clock Mode	
e300 Core Frequency	533 MHz
CCB	266 MHz
DDR	266 MHz
Local Bus	133 MHz



<p><b>Switches: SW3 Configuration Set 1</b></p> <p>1: CFG_RS0          2: CFG_RS1          3: CFG_RS2          4: CLKDIV          5: SPMF0          6: SPMF1          7: SPMF2          8: SPMF3</p>  <p>1 &lt;-&gt; 0</p> <p><b>Note!</b> A DIP-switch in the <b>ON</b> position creates a zero-value signal.</p>	<p><b>SW3.1-SW3.3</b></p> <ul style="list-style-type: none"> <li>CFG_RS sets the RCW source.</li> <li><b>ON</b>: value of zero.</li> <li>Factory setting: '000' when RCW fetched from the local bus.</li> <li>DIP-switch SW4.8 FCFG: chooses between BCSR or Flash RCW source.</li> </ul> <p><b>SW3.4</b></p> <ul style="list-style-type: none"> <li>CLKDIV selects the relationship between CLKIN and PCI_SYNC_OUT.</li> <li>If the MPC8349E MDS processor board is configured as a PCI Agent (factory setting) then CLKDIV is set to zero.</li> </ul> <p><b>SW3.5-SW3.8</b></p> <ul style="list-style-type: none"> <li>SPMF: select System PLL Multiplication Factor.</li> <li>Factory setting: '0100'.</li> <li>Clock ratio: <math>csb\_clk/CLKIN = 4</math> (<math>csb\_clk = 266MHz</math>) or <math>csb\_clk/PCI\_CLK = 4</math>.</li> </ul>
<p><b>Switches: SW4 Configuration Set 2</b></p> <p>1: TSEC1-0          2: TSEC1-1          3: TSEC2-0          4: TSEC2-1          5: BMS          6: TLE          7: PCI64          8: FCFG</p>  <p>1 &lt;-&gt; 0</p>	<p><b>SW4.1,2-SW4.3,4: TSEC1/TSEC2</b></p> <ul style="list-style-type: none"> <li>Select the protocol used by the two port TSEC controller.</li> <li>Factory setting: enters GMII mode when TSEC1 and TSEC2 initiate similar 2'b10.</li> </ul> <p><b>SW4.5 BMS: Selects boot memory space</b></p> <ul style="list-style-type: none"> <li>Factory setting is '1' when boot memory resides in upper eight Mbytes at 0xFF80_0000 to 0xFFFF_FFFF.</li> </ul> <p><b>SW4.6 TLE: Selects endian mode</b></p> <ul style="list-style-type: none"> <li>Factory setting: '0'; big endian mode.</li> </ul> <p><b>SW4.7 PCI64: Selects PCI width</b></p> <ul style="list-style-type: none"> <li>32-bit PCI port factory setting: '0'.</li> </ul> <p><b>SW4.8 FCFG: Sets RCW source on local bus</b></p> <ul style="list-style-type: none"> <li>'0': BCSR source; setting is effective from DIP-switches SW3-SW6.</li> <li>'1': Flash source—setting is burned in flash.</li> <li>Factory setting: '1'; configured from flash.</li> </ul>
<p><b>Switches: SW6 Configuration Set 3</b></p> <p>1: BOOT SEQ0          2: BOOT SEQ1          3: ROMLOC0          4: ROMLOC1          5: ROMLOC2          6: DDRCM          7: LBIUCM          8: SWEN</p>  <p>1 &lt;-&gt; 0</p>	<p><b>SW6.1-SW6.2: Boot sequencer configuration</b></p> <ul style="list-style-type: none"> <li>Boot sequencer loads configuration data from the serial ROM.</li> <li>Factory setting: '00'; disables access to I2C ROM.</li> </ul> <p><b>SW6.3-SW6.5: Boot ROM location</b></p> <ul style="list-style-type: none"> <li>Factory setting: '110'; provides flash boot on local bus.</li> </ul> <p><b>SW6.6 DDR: Clock mode</b></p> <ul style="list-style-type: none"> <li>Factory setting: '0'; operates with DDR clock (identical to <math>csb\_clk</math>).</li> </ul> <p><b>SW6.7: Local bus clock mode</b></p> <ul style="list-style-type: none"> <li>Factory setting: '1'; operates with local bus clock—half of <math>csb\_clk</math>.</li> </ul> <p><b>SW6.8: Software watchdog</b></p> <ul style="list-style-type: none"> <li>Factory setting: '0'; with software watchdog disabled.</li> </ul>

<p><b>Switches: SW7 Configuration Set 4</b></p> <p>1: CORPLL0 2: CORPLL1 3: CORPLL2 4: CORPLL3 5: CORPLL4 6: CORPLL5 7: CORPLL6 8: COREDIS</p> 	<p><b>SW7.1-SW7.7: Core PLL setting</b></p> <ul style="list-style-type: none"> <li>• Sets the ratio between the e300 core clock and the internal csb_clk.</li> <li>• Factory setting: '00001000' for core_clk = 533 MHz.</li> <li>• Recommended secondary setting: '00000110' for core_clk = 500 MHz.</li> </ul> <p><b>SW7.3-SW7.5: Core disable</b></p> <ul style="list-style-type: none"> <li>• Factory setting: '0'; core enabled for boot operation.</li> </ul>
<p><b>Switches: SW2 Software Option</b></p> 	<p><b>SW2: Software option</b></p> <ul style="list-style-type: none"> <li>• Software BCD rotary-switch SW2 positions (0-7) enable program flow change.</li> <li>• Switch status is seen in BCSR10 bits 2-4.</li> <li>• Factory setting: '0'</li> </ul>
<p><b>Switches: SW5 Power Switch</b></p> 	<p><b>SW5: Power switch</b></p> <ul style="list-style-type: none"> <li>• <b>ON:</b> power from an external 5V power supply via the P11 power jack for standalone mode.</li> <li>• Combined mode: power from +5V on PIB power supply through riser connectors (regardless of SW5 position).</li> <li>• Board used as a PCI add-in card: PC internal power supply provides 5V via PCI edge connector (regardless of SW5 position).</li> </ul>
<p><b>Jumper: JP1</b></p> 	<p><b>JP1</b></p> <ul style="list-style-type: none"> <li>• Selects the source for CLOCKIN signal.</li> <li>• If a jumper is located between JP1 pins 1-2 (factory setting) then the processor is clocked from the on-board clock oscillator U21 socket.</li> <li>• The SHMOO mode clock source is I2C; manually programmed clock synthesizer residing on the PIB.</li> <li>• Close JP1 pins 2-3 to supply clock to a processor from an external generator via P5.</li> </ul>

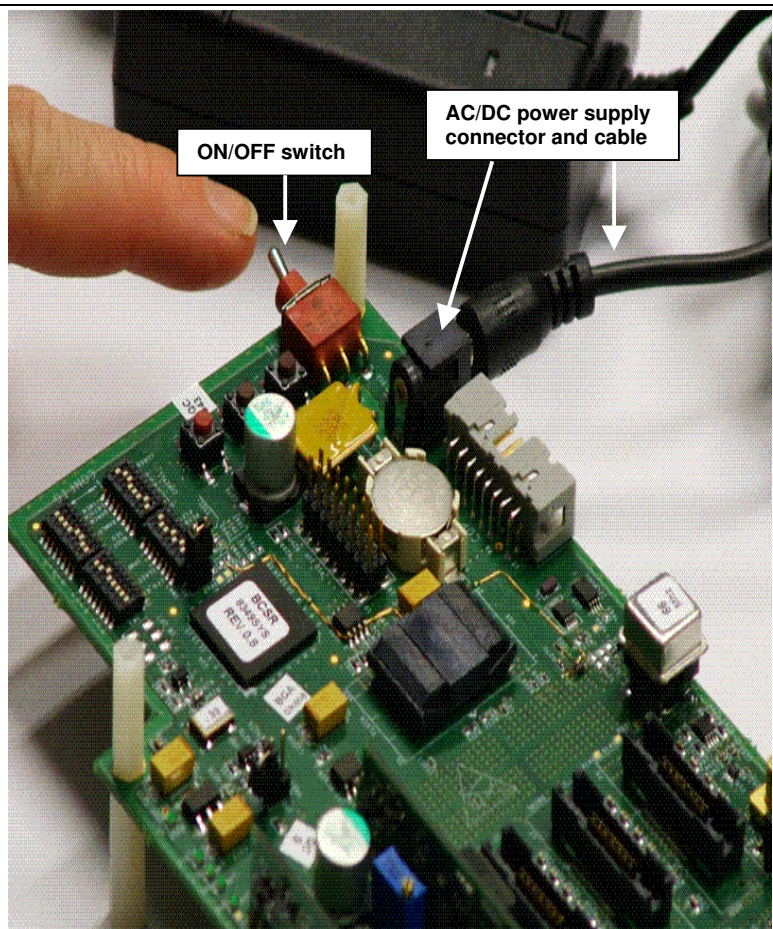
**Step 4: Assemble and connect the power supply kit.**

**Note! Move the power switch to OFF.**

Assemble the AC/DC power supply kit:

- power cable with country-specific wall outlet plug
- power supply unit and cable with jack (for board connection)

1. Connect the AC/DC power supply cable with jack to the board.
2. Plug the power cable into the wall outlet.



**Step 5: Initial board power up.**

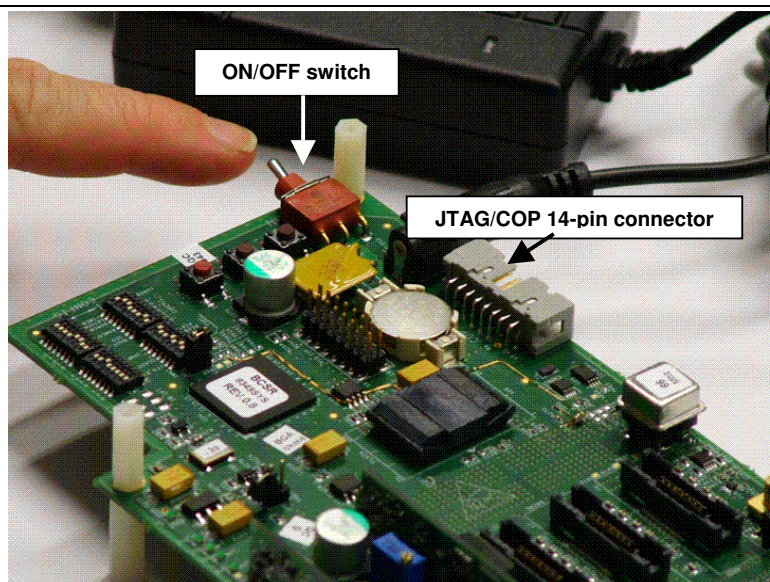
**Note! To prevent damage to the JTAG connectivity unit (part of the CodeWarrior SW kit) connect the unit only after initial board reset.**

1. Move the power switch to ON—LED13 displays green light.
2. Check for completion of the reset sequence—indicated by a single flash of LED1 (green) and LED2 (red). The location of LED1 and LED2 is marked on the Step 7 image.
3. Shut off the power—move the power switch to OFF.

**Step 6: Connect the JTAG connectivity unit to the board.**

The JTAG connectivity unit (included as part of the CodeWarrior SW kit) lets CodeWarrior SW work with the board.

1. Connect the JTAG connectivity unit to the JTAG/COP 14-pin connector.
2. Move the power switch to ON.
3. Check for completion of the reset sequence (see Step 5, part 2).
4. Continue as per the instructions in the CodeWarrior SW Quick Start (in progress).



<p><b>Step 7: Attach remaining cables to the board as per specifications.</b></p>	
<p>Connect the remaining cables to the board as per user specifications and planned board use:</p> <ol style="list-style-type: none"> <li>1. JTAG/COP connector for JTAG connectivity unit—included in the CodeWarrior SW kit</li> <li>2. Serial port for the joined Freescale adaptor cable with one RJ45 and two RS232 connectors:       <ol style="list-style-type: none"> <li>a) RJ45 10-pin plug—plugs into the serial port</li> <li>b) RS232 9-pin D-type connector</li> </ol> </li> <li>3. USB port for USB adaptor and connector:       <ol style="list-style-type: none"> <li>a) mini USB adaptor: 5-pin (male) and 4-pin (female)</li> <li>b) USB cable with two connectors: standardA and miniB.</li> </ol> </li> <li>4. Ethernet ports for the two Ethernet cables with RJ45-8 pin connectors.</li> </ol>	



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