HW Getting Started Guide

PQ-MDS-PIB

January 2006: Rev. 0.4

freescale™
semiconductor

Step 1: Check kit contents

1. PQ- MDS- PIB (Platform I/O Board, or "PIB")
2. Power cable extension with on-off switch
3. 25 Pin IEEE 1284 Parallel cable
4. Serial cable 10cm D25M to IDC10
5. Parallel cable 10cm D25M to IDC26F
6. RJ45 to IDC8F Cable (2 pcs)
7. LC Loop back 62.5/125Fiber (2 pcs)
8. USB Cable StndA Plug to MiniB 1Meter
9. USB Cable MiniA Plug to StndB 1.5Meter
10. PMC Board assembly spacers
11. AC/DC Power Supply 48V/2.7A (Input 120-230VAC)
12. PQ- MDS- PIB Getting started guide
13. PQ- MDS- PIB Board Errata
14. PQ- MDS- PIB Documentation CD
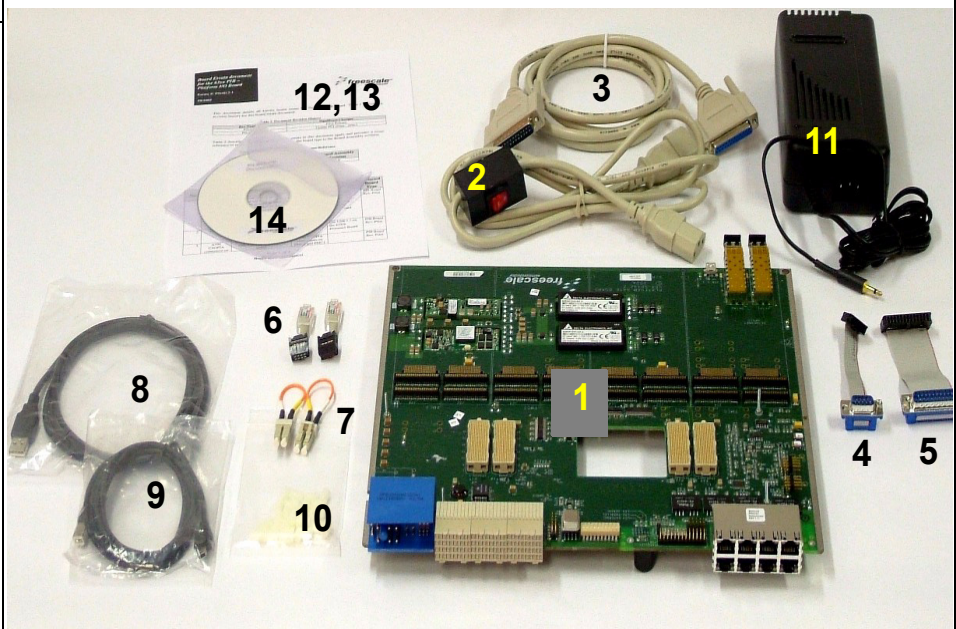
The steps on the following pages describe how to connect various peripheral devices to the PIB, and how to configure the PIB to work with them. Each device is sold separately. Instructions for working with them are found in their user documentation.

PQ-MDS-PIB HW Getting Started Guide, Rev. 0.4

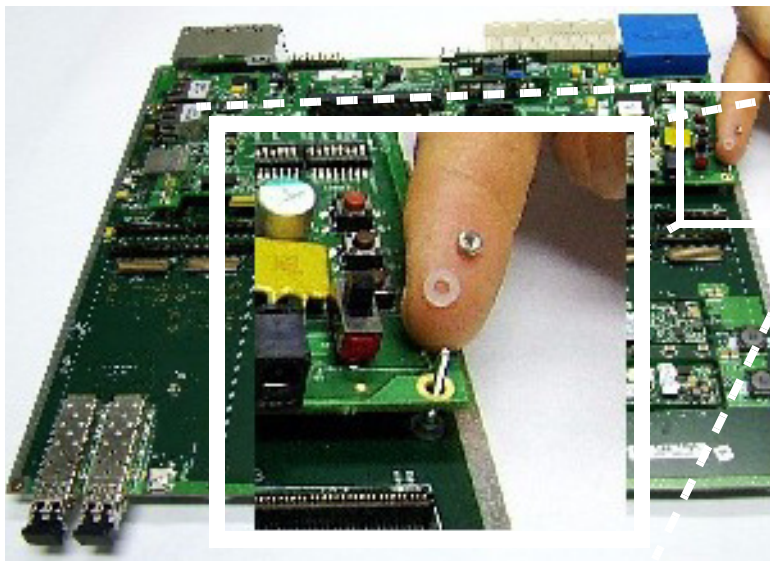|	
Step 2: Attach Processor Board to PIB (MPC83xx processor board is sold separately) **Step 2.a: Remove protective covers from the 300-pin connectors on the bottom side of the Processor board**	 *Underside of processor board* Remove protective covers by hand
Step 2.b: Remove protective covers from the 300-pin connectors on the PIB.	*Protective Covers* *PIB*
Step 2.c: Connect Processor board to PIB board as shown. Ensure a tight fit by pressing down on the Processor board *by hand only* until the pins engage	 Press down to fasten
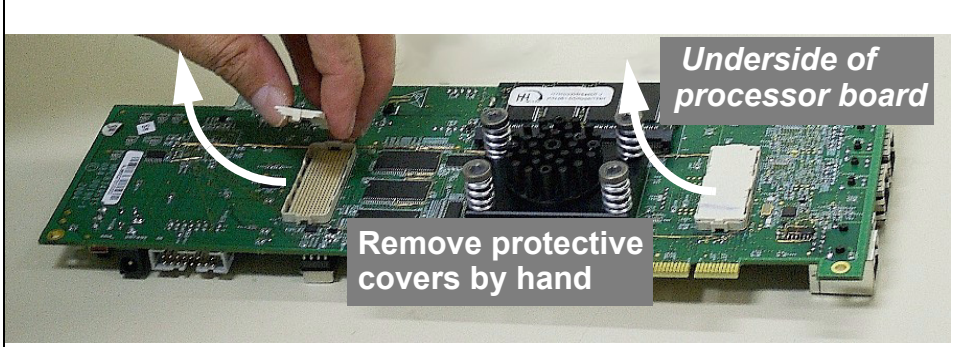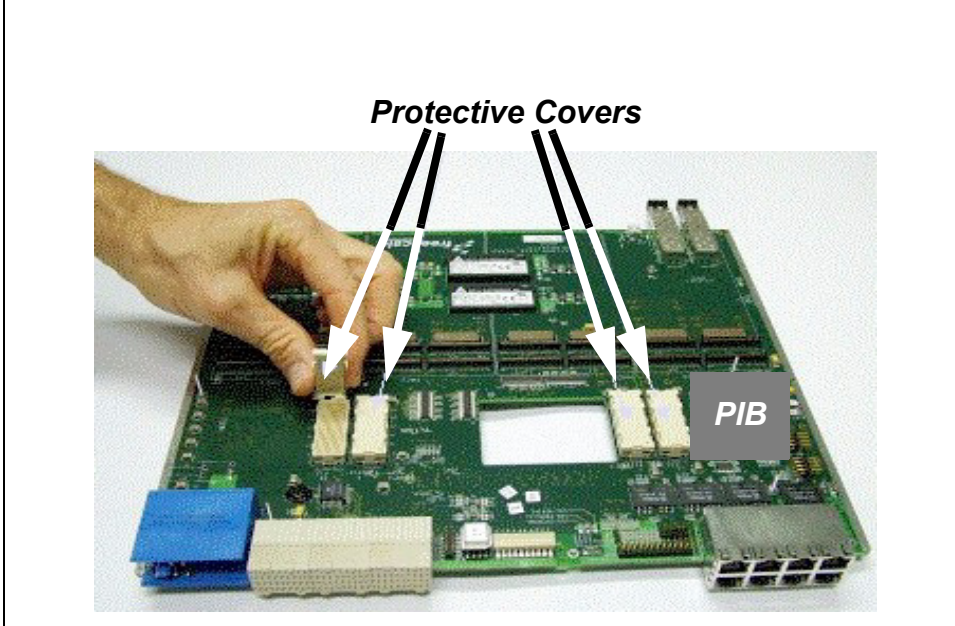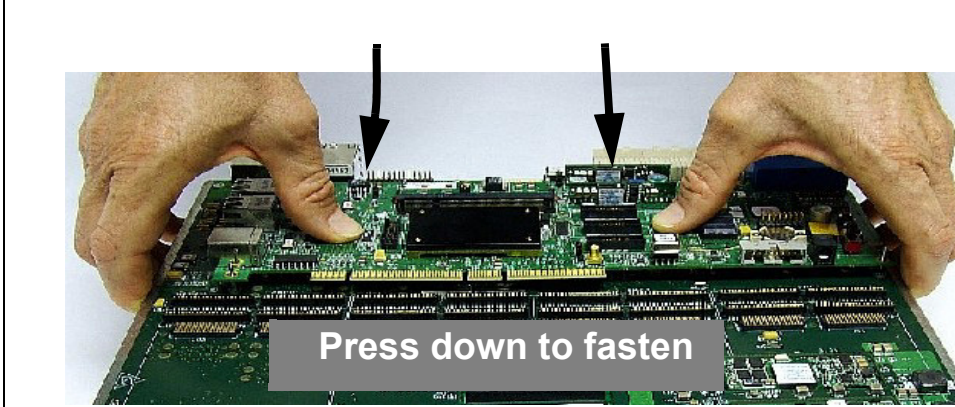
|	
Step 2.d: Manually fasten the four screws as shown.	
Step 2.e: If you wish GETH signals to traverse either a back plane connection, or a front plane optical connection, connect the two GETH sockets on the Processor board with sockets on the PIB board as shown. Note that if you do not do this, you can still connect GETH cables directly to the Processor board's sockets, if they are accessible in your application's configuration.	 Processor Board on PIB GETH Sockets GETH Inter-connecting Cables (RJ45 to IDC8F)
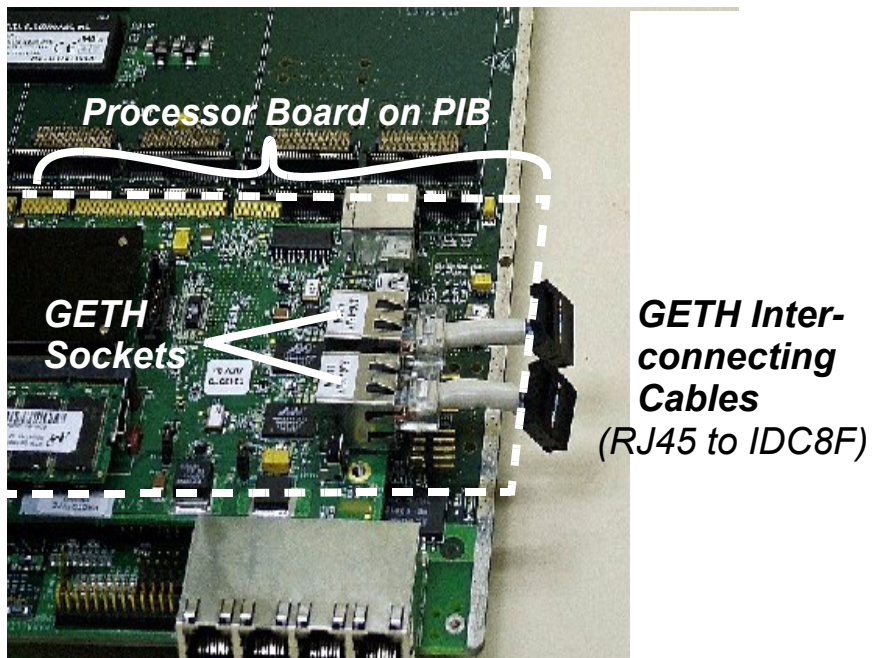
The figure at right shows one of the GETH interconnecting cables connected to the GETH socket on the Processor board, and its counterpart on the PIB.

Processor Board on PIB

GETH Inter-connecting Cable connected
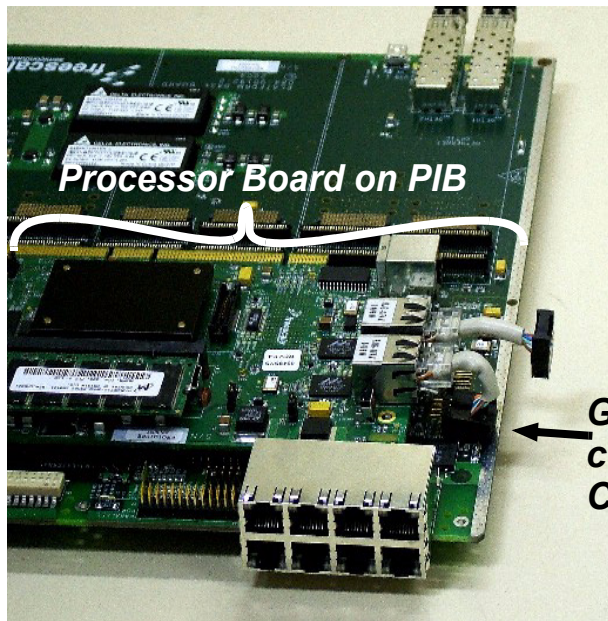
Step 2.f: If you are working with the PIB in a "table-top" configuration, connect the power supply to the voltage input as shown.
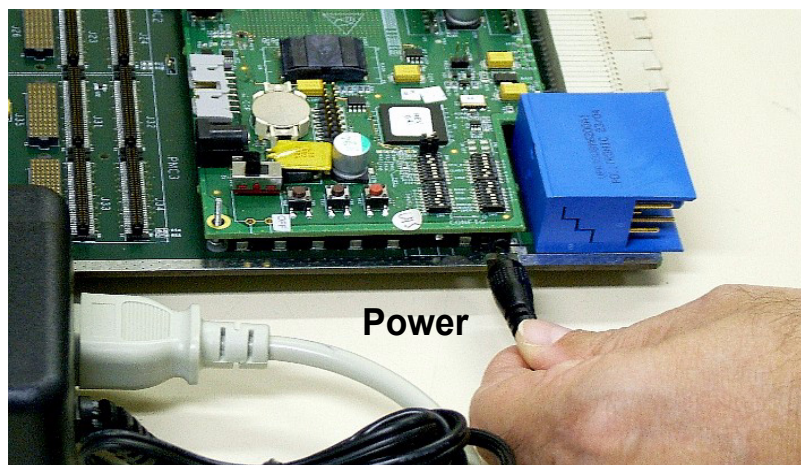
Power

Step 3: Use host chip on processor board to configure PIB according to your developmental needs	Configure the I/O Expanders

Step 3: Use host chip on processor board to configure PIB according to your developmental needs

If you will be working with agent modules, you must configure the PIB to accomodate these modules before these can be attached (see table at right). Once this is done, then install either the PMC-PCI adaptors (if using up to two agents) in Step 4 on page 6, or the Expansion Adaptor (if using up to four agents) in Step 5 on page 9.

Configure the I/O Expanders (communication devices on the PIB) via the I2C block on the MPC83xx chip. For a more detailed explanation of the I/O Expanders, see the PIB User's Manual.

The table below shows each communication option available: which PMC slot is used (for PMC-PCI adaptors), whether the Expansion Adaptor is used, which bus is used (PCI1, PCI2) and its size (32 vs. 64 bits). Note that there are values that must always be set.

The values must be written, via the I2C, to a register on the I/O Expander device. For example, to connect an agent board to the PMC1 slot, using the PCI1 bus at 32 bits, write the value 0xFFFF to the I2C address 0x26, register 2.

It is important to note that the values indicated in the first five lines of the table must **always** be written.

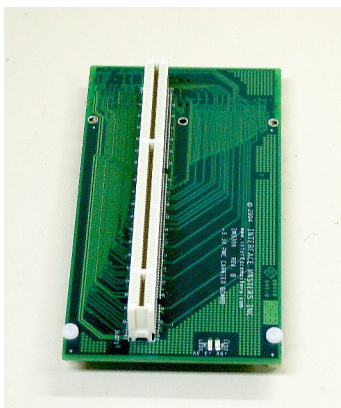| Communication Option	I2C Addr	Reg #	Value
Always set:	0x23	6	0
Always set:	0x26	6	0x0034
Always set:	0x27	6	0
Always set:	0x23	2	0xFFFF
Always set:	0x27	2	0xFFEF
PCI1 - Expansion Adaptor 64 bit	0x26	2	0xFCFF
PCI1 - Expansion Adaptor 32 bit	0x26	2	0xF8FF
PCI1 - 64bit on PMC2[1]	0x26	2	0xF4FF
PCI1 - PMC1 32bit	0x26	2	0xFFFF
PCI1 - PMC1 & PMC2 32bit	0x26	2	0xF7FF
PCI1 - PMC1, PMC2 & PMC3 32bit	0x26	2	0xF3FF
PCI1 - PMC1 & PMC2 32bit PCI2 - PMC3 32bit	0x26	2	0xF5FF
PCI2 - PMC3 32bit	0x26	2	0xFDFF
PCI2 - PMC2 & PMC3 32bit	0x26	2	0xF9FF

[1] If PCI1 can be 64 bits in size. This depends on the specific MPC83xx host model. Refer to its User's Manual for specifications.
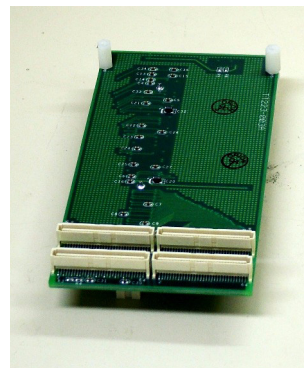
|	
Step 4: Attach PMC-PCI (PQ-MDS-PMCPCI) adaptors to PIB (PMC-PCI adaptors are sold separately) • Each PMC-PCI adaptor can accommodate one PCI board as an agent. • To work with *up to two* PCI-format boards as agents at the same time (on two different PCI buses), use PMC-PCI modules to attach them to the PIB • To work with more than two agents, use the expansion adaptor, shown in . • For the exact possible configurations and combinations of agent locations (not all slots can be used for every situation), bus name(s), host and agent modules, see the PIB User's Manual or the relevant Processor Board's User's Manual.	 PMC-PCI adaptor (view from above) PMC-PCI adaptor (view from below)
Step 4.a: Connect each PMC-PCI adaptor as shown, and press in firmly (by hand) until it clicks in place. The PMC-PCI adaptors can be inserted into the PMC1, PMC2, or PMC3 slots. The PMC0 slot is reserved for non-PCI modules.	 Connect as shown Tighten by hand PMC0 PMC1 PMC2 PMC3
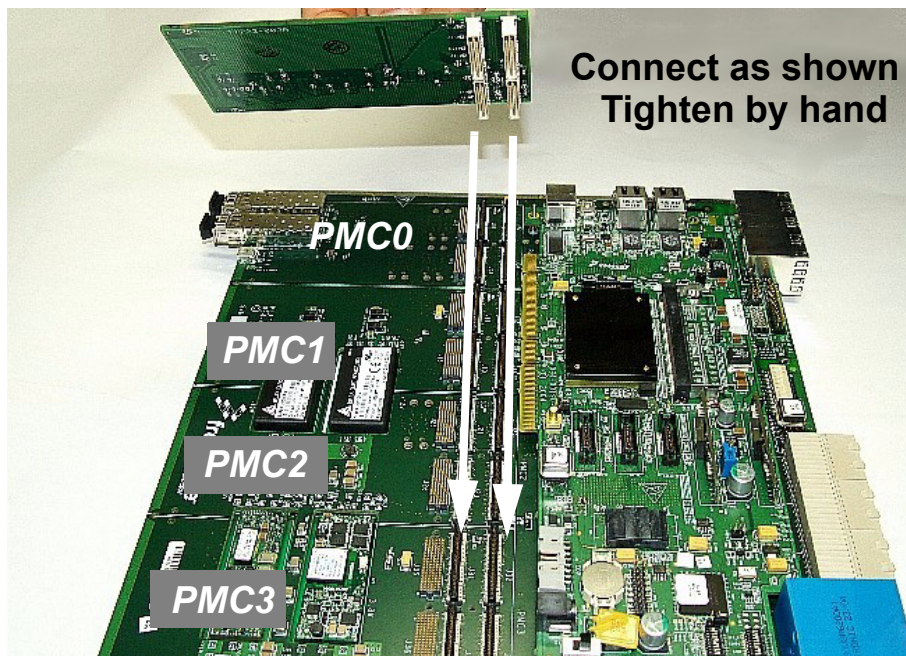
Step 4.b: Insert spacers between the PMC-PCI adaptors and the PIB, and tighten them using a screwdriver.
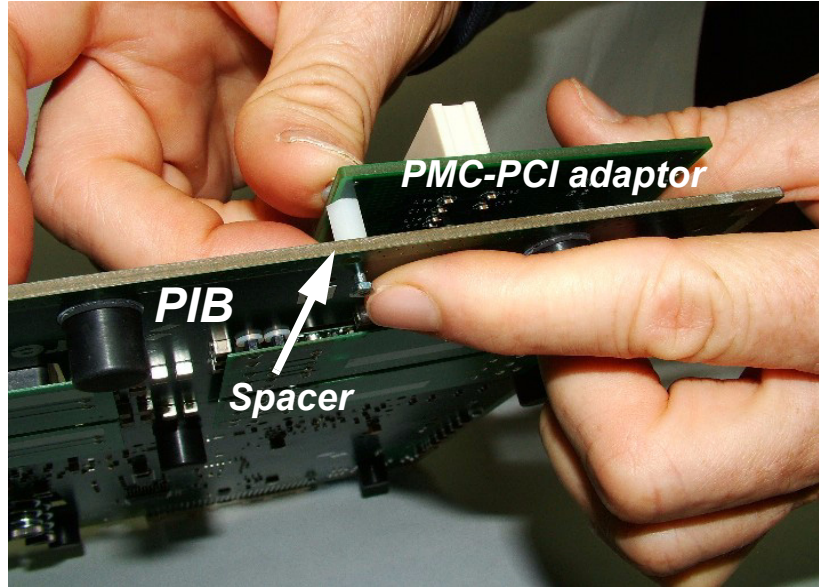
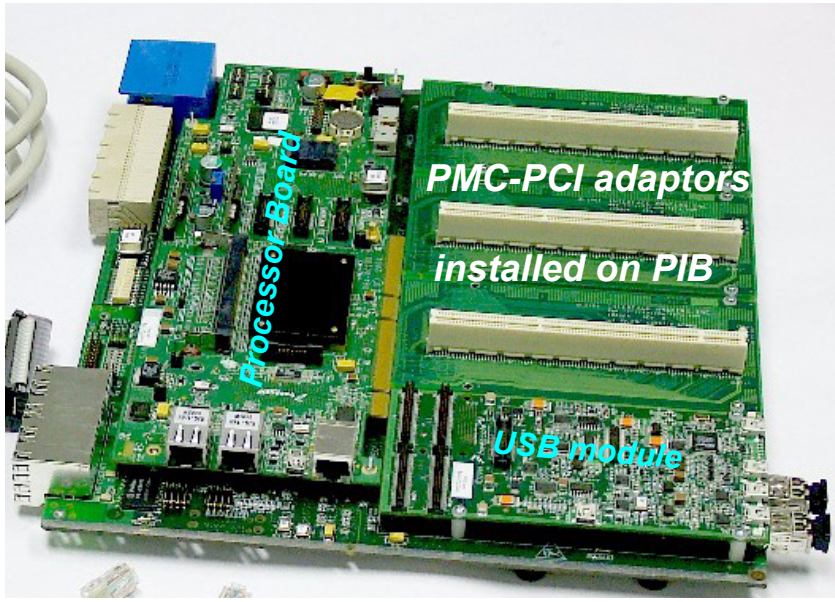The figure at right shows a close-up view of a PMC-PCI adaptor installed on the PIB.


PQ-MDS-PIB HW Getting Started Guide, Rev. 0.4
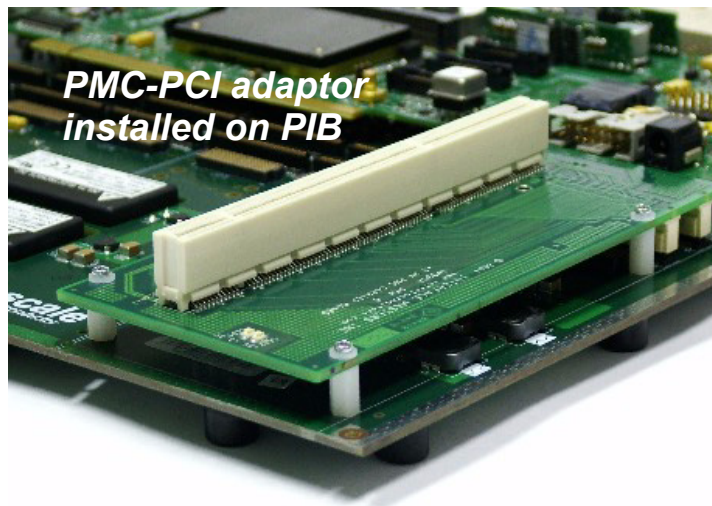
The figure at right shows three PMC-PCI adaptors installed on the PIB. A processor board and a USB module are also shown installed on the PIB.	 *Processor Board* *PMC-PCI adaptors* *installed on PIB* *USB module*
Step 4.c: Insert a PCI-compatible board as an agent into the slot on the PMC-PCI adaptor.	 *MPC83xx board as agent* *PMC-PCI adaptor* *MPC83xx board as host*
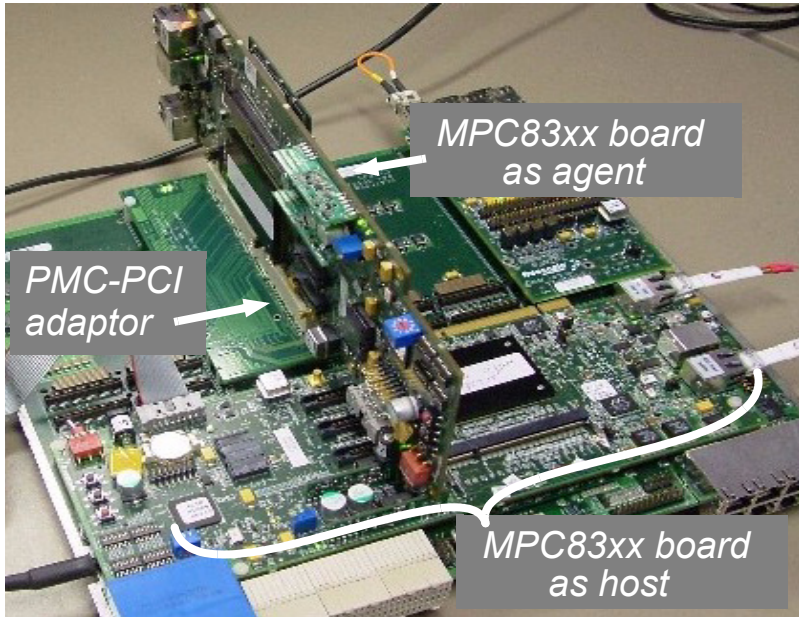
Step 5: **If you wish to use more than two agents, attach the expansion adaptor (PQ-MDS-PCIEXP) to the PIB.** (the expansion adaptor, including the riser cards and its own dedicated power supply, is sold separately)

- The expansion adaptor is used *instead* of the PMC-PCI modules if more than two agent modules are needed.
- The expansion adaptor can accommodate *up to four* PCI boards (working at the same time, on the same bus) as agents.
- For the exact possible configurations and combinations of agent locations (not all slots can be used for every situation), bus name(s), host and agent modules, see the PIB User's Manual or the relevant Processor Board's User's Manual.

Step 5.a: **If using a module in the PMC0 slot, insert riser cards on PIB**

These riser cards are used to raise the expansion adaptor to the proper height when a module is installed in the PMC0 slot (the figures show this slot with no module installed).

Insert the three riser cards as shown, starting from the PMC3 slot, and continuing to the PMC1 slot.

Press each riser card firmly in until it clicks in place.

Platform I/O Board (PIB)

PMC0 slot

Riser card (not installed)

PMC1

PMC2

Riser cards (installed)

PMC3
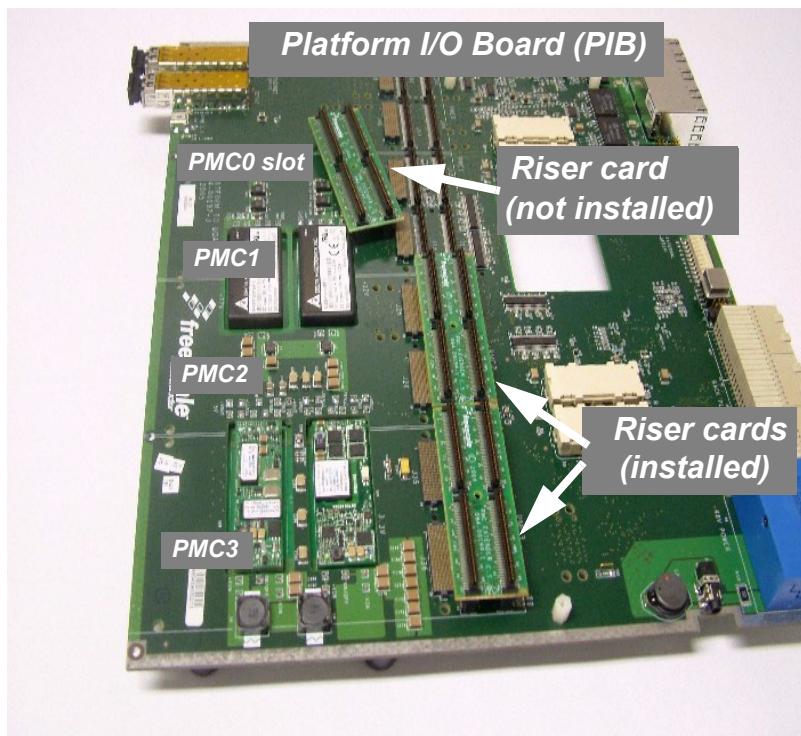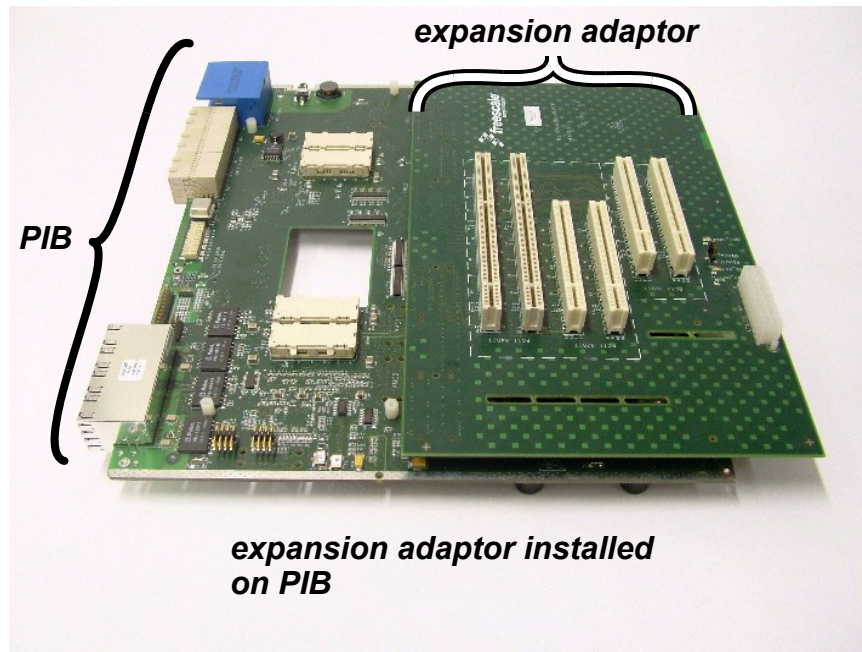
Step 5.b: Connect expansion adaptor to PIB

Connect the expansion adaptor (PQ-MDS-PCIEXP) to the PIB as shown. If no module is used in the PMC0 slot, the riser cards are not needed, as shown in the figure.

If a module (such as a USB module or a QOC3 module) is installed in the PMC0 slot, the riser cards must be used (refer to Step 5.a on page 9 for instructions).

Press the PQ-MDS-PCIEXP in firmly until it clicks in place.

Expansion adaptor

Connect expansion adaptor as shown

PMC0 slot

Platform I/O Board (PIB)
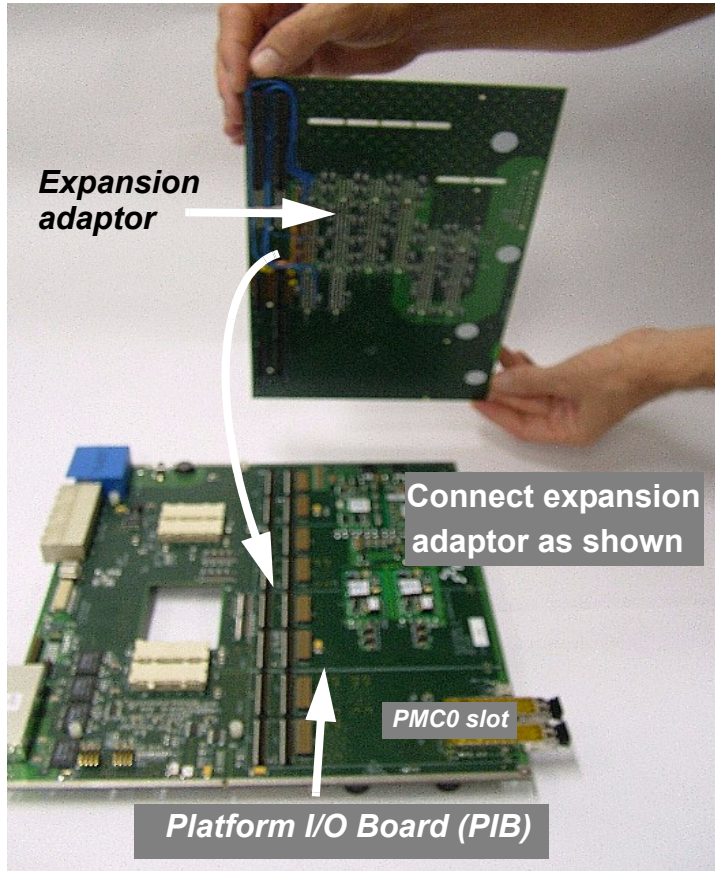
The figure at right shows an expansion adaptor installed on the PIB.

expansion adaptor

PIB

expansion adaptor installed on PIB

PQ-MDS-PIB HW Getting Started Guide, Rev. 0.4

Page 10 of 14

Freescale Semiconductor

Step 5.c: Connect power supply to the expansion adaptor (PQ-MDS-PCIEXP). Use the 20-pin connecter only. This is a dedicated power supply, included in the expansion adaptor kit. (Note that the PIB must also be connected to its own power supply. See Step 2.f on on page 4)	 *expansion adaptor* **Power supply cord (20 pin)**
Step 5.d: Insert a PCI-format module(s) as an agent on the expansion adaptor as shown (MPC83xx board shown). Up to four agent modules can be inserted at any one given time.	 *MPC83xx Agent board installed* *PIB* *expansion adaptor*
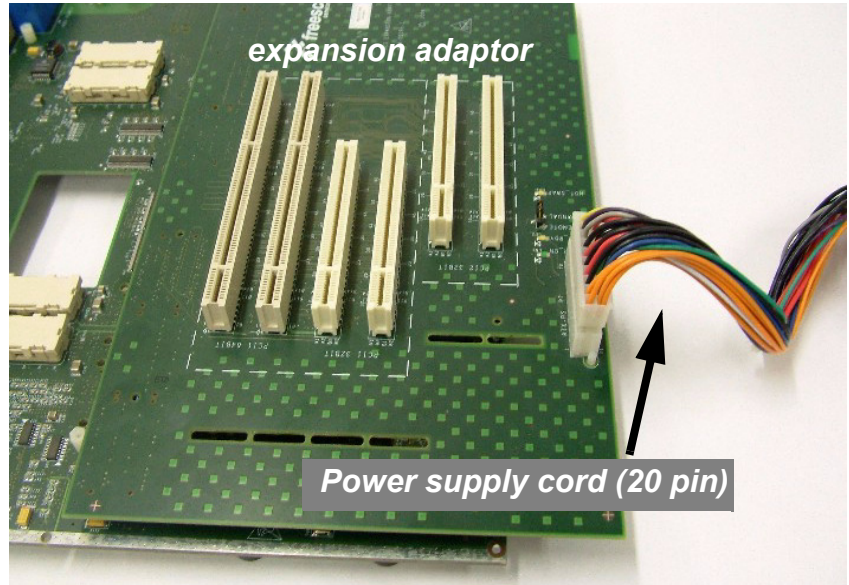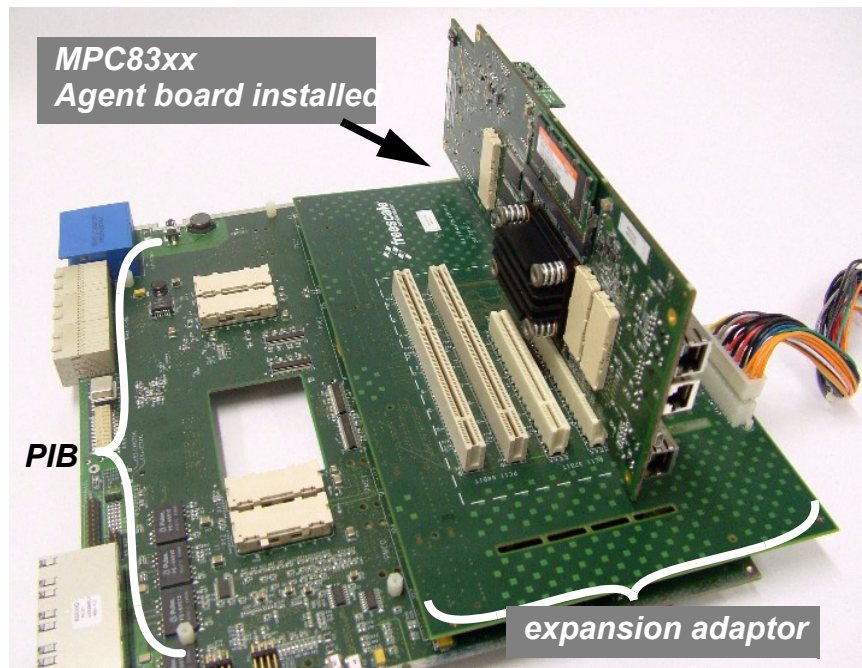
Step 6:   If working with the USB module, attach it to the PIB and press in firmly (by hand) until it clicks in place. (USB module is sold separately)

USB module can only be used in slot PMC0.

USB Module

PMC0 slot

PMC1

PMC2

**Connect as shown
Tighten by hand**
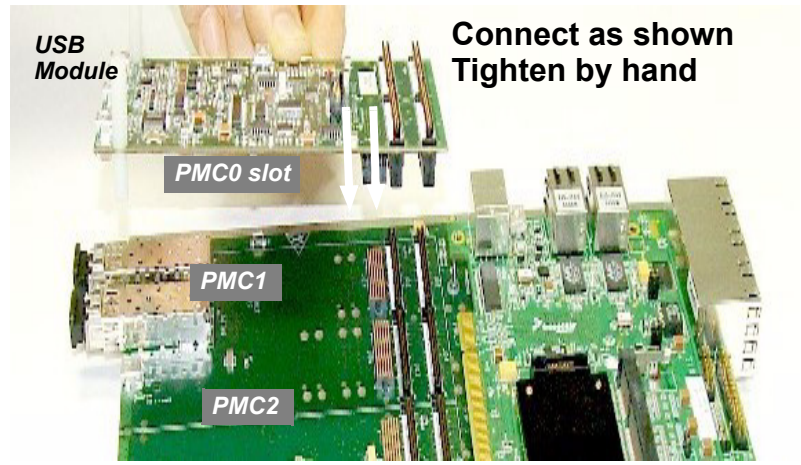
Step 7: If working with the QOC3 module (PQ-MDS-QOC3), attach it to the PIB and press in firmly (by hand) until it clicks in place. (QOC3 module is sold separately)

The QOC3 can be connected to the PMC0 and/or the PMC1 slot on the PIB.

Use the metal spacers (provided in the QOC3 kit) to hold the QOC3 Module in position on the PIB. The metal spacers are optional, and can be removed if necessary.

Position QOC3 Module above PMC slot

PMC1 slot

PMC0 slot

Press down until module snaps in place
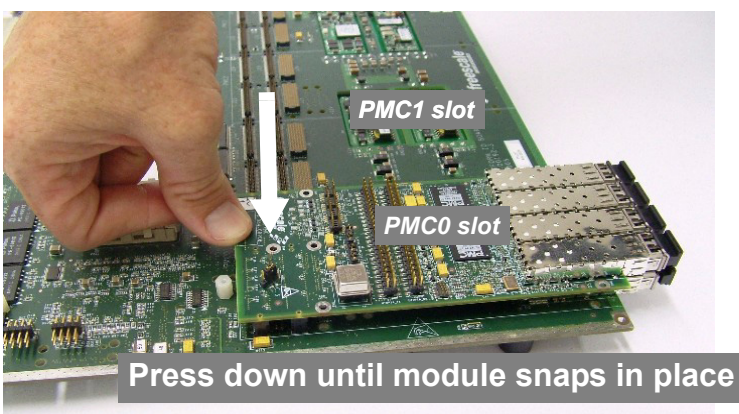
The figure at right shows a QOC3 module installed on the PIB.

MPC83xx board as agent

PQ-MDS-QOC3 module installed on PIB

MPC83xx board as host

PQ-MDS-PIB HW Getting Started Guide, Rev. 0.4

PQ-MDS-PIB HW Getting Started Guide, Rev. 0.4