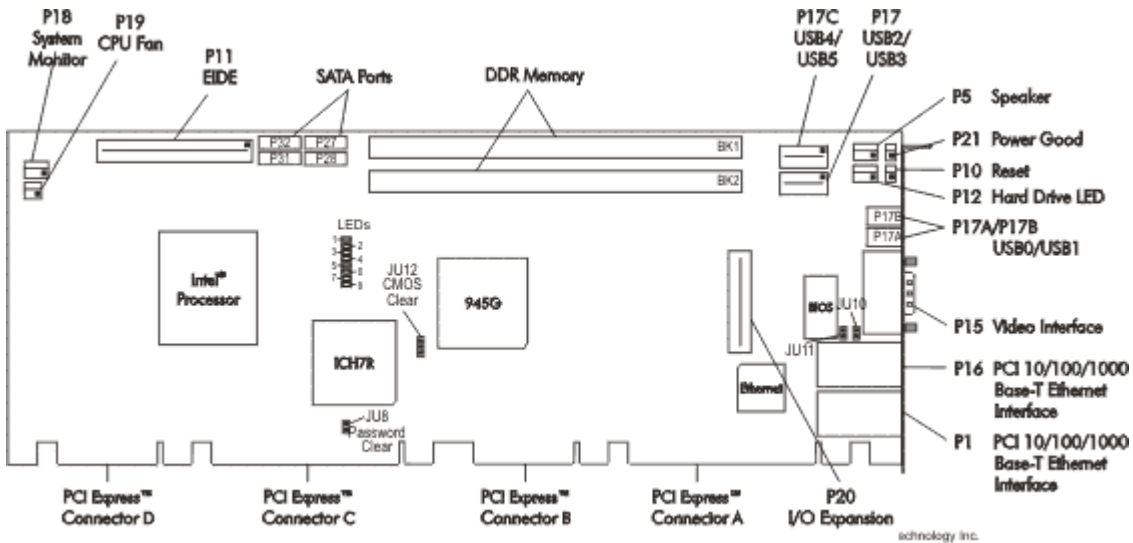




## Technical Information – Jumpers, Connectors and Memory TML (6490-xxx) System Host Board

### Layout Diagram



### Jumpers & LEDs

The setup of the configuration jumpers on the SHB is described below. An asterisk (\*) indicates the default value of each jumper.

**NOTE:** For two-position jumpers (3-post), "TOP" is toward the memory sockets; "BOTTOM" is toward the edge fingers.

#### JU8 Password Clear

Install for one power-up cycle to reset the password to the default (null password).  
 Remove for normal operation. \*

#### JU10/11 System Flash ROM Operational Modes

The Flash ROM has two programmable sections: the Boot Block for "flashing" in the BIOS and the Main Block for the executable BIOS and PnP parameters. Normally only the Main Block is updated when a new BIOS is flashed into the system.

	JU10	JU11
All Blocks Write Enabled	Remove *	Remove *
Boot Block Write Protected	Install	Remove
Block 2-16 Write Protected	Remove	Install

#### JU12 CMOS Clear

Install on the TOP to clear.  
 Install on the BOTTOM to operate. \*

**NOTE:** To clear the CMOS, power down the system and install the jumper on the TOP. Wait for at least two seconds, move the jumper back to the BOTTOM and turn the power on. When AMIBIOS displays the "CMOS Settings Wrong" message, press F1 to go into the BIOS Setup Utility, where you may reenter your desired BIOS settings, load optimal defaults or load failsafe defaults.



## **Jumpers & LEDs (continued)**

### **Ethernet LEDs**

I/O bracket connector P1 consists of two RJ-45 network connectors for Ethernet LAN1 and LAN2. Each LAN interface connector has two LEDs that indicate activity status and Ethernet connection speed. Listed below are the possible LED conditions and status indications for LAN1 and LAN2:

<b>LED/Connector</b>	<b>Description</b>
Activity LED	Orange LED which indicates network activity. This is the upper LED on the LAN connector (i.e., toward the memory sockets).
Off	No current network transmit or receive activity
On (flashing)	Indicates network transmit or receive activity.
Speed LED	Bi-color (green/orange) LED which identifies the connection speed. This is the lower LED on the LAN connector (i.e., toward the edge connectors).
Green	Indicates a valid link at 1000-Mb/s
Orange	Indicates a valid link at 100-Mb/s
Off	Indicates a valid link at 10-Mb/s.
RJ-45 Network Connectors	The RJ-45 network connector requires a Connectors category 5 (CAT5) unshielded twisted-pair (UTP) 2-pair cable for a 100-Mb/s network connection or a category 3 (CAT3) or higher UTP 2-pair cable for a 10-Mb/s network connection. A category 5e (CAT5e) or higher UTP 2-pair cable is recommended for a 1000-Mb/s (Gigabit) network connection.

### **Backplane LAN LED**

The backplane LAN LED (LED10) indicates the status of communication between the SHB and the backplane, as shown below:

<b>LED Status</b>	<b>Description</b>
Off	Indicates the LAN is inactive and link communications have not been established.
On (flashing)	Indicates that data is being transferred between the SHB and the backplane.
On (solid)	Indicates the LAN has a valid link and is ready for data transfers.

### **POST Code LEDs**

As the POST (Power On Self Test) routines are performed during boot-up, test codes are displayed on Port 80 POST code LEDs 1 through 8, which are located in the center of the board to the right of the processor and are numbered from top (1) to bottom (8). Refer to the board layout earlier in this chapter for the exact location of the POST code LEDs.

These POST codes may be helpful as a diagnostic tool. Specific error codes are listed in Appendix A - BIOS Messages section of the TML Technical Reference Manual, along with a chart to interpret the LEDs into hexadecimal format.



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## **Jumpers & LEDs (continued)**

### **CPU Throttling LED**

The CPU throttling LED (LED9), which is located in the upper left corner of the TML, indicates the status of CPU thermal shutdown, as shown below:

<b>LED Status</b>	<b>Description</b>
Off	Indicates the CPU is operating within acceptable thermal levels.
On (flashing)	Indicates the CPU is throttling down to a lower operating speed due to rising CPU temperature.
On (solid)	Indicates the CPU has reached the thermal shutdown threshold limit. The SHB is still operating, but a thermal shutdown may soon occur.

**NOTE:** When a thermal shutdown occurs, the LED will stay on in systems using non- ATX/EPS power supplies. The CPU will cease functioning, but power will still be applied to the SHB. In systems with ATX/EPS power supplies, the LED will turn off when a thermal shutdown occurs because system power is removed via the ACPI soft control power signal S5. In this case, all SHB LEDs will turn off; however, stand-by power will still be present.



## Connectors

### **NOTE:**

Pin 1 on the connectors is indicated by the square pad on the PCB.

### **P1 - 10/100/1000Base-T Ethernet Connectors - LAN2**

8 pin shielded RJ-45 connector, Belfuse #0826-1X1T-23-F

PIN	SIGNAL
1	TRP1+
2	TRP1-
3	TRP2+
4	TRP3+
5	TRP3-
6	TRP2-
7	TRP4+
8	TRP4-

### **P5 - SPEAKER PORT CONNECTOR**

4 pin single row header, Amp #640456-4

PIN	SIGNAL
1	Speaker Data
2	Key
3	Gnd
4	+5V

### **P10 - External Reset Connector**

2 pin single row header, Amp #640456-2

PIN	SIGNAL
1	External Reset In (Low Active)
2	Gnd

### **P18 - System Hardware Monitor Connector**

4 pin single row header, AMP #640456-4

PIN	SIGNAL
1	Gnd
2	GPO (General Purpose Output)
3	CI (Chassis Intrusion Input)
4	OVT (Over Temperature)

### **P19 - CPU FAN**

3 pin single row header, Molex #22-23-2031

PIN	SIGNAL
1	Gnd
2	+12V
3	Fan Tach

### **P20 - I/O Expansion Mezzanine Card Connector**

76 pin controlled impedance connector, Samtec #MIS-038-01-FD-K

PIN	SIGNAL	PIN	SIGNAL
1	+12V	2	+5V_STANDBY
3	NC	4	+5V_STANDBY
5	NC	6	+5V_DUAL
7	NC	8	+5V_DUAL
9	NC	10	NC
11	NC	12	NC
13	ICH_SMI#	14	ICH_RCIN#
15	ICH_SIOPME#	16	ICH_A20GATE
17	Gnd	18	Gnd
19	L_FRAME#	20	L_AD3
21	L_DRQ1#	22	L_AD2
23	L_DRQ0#	24	L_AD1
25	SERIRQ	26	L_AD0



**Connectors (Continued)**

**P11 - ATA/100 Hard Drive Connector**

40 pin dual row header, Amp #1-1761610-3

PIN	SIGNAL	PIN	SIGNAL
1	Reset	2	Gnd
3	Data 7	4	Data 8
5	Data 6	6	Data 9
7	Data 5	8	Data 10
9	Data 4	10	Data 11
11	Data 3	12	Data 12
13	Data 2	14	Data 13
15	Data 1	16	Data 14
17	Data 0	18	Data 15
19	Gnd	20	NC
21	DRQ 0	22	Gnd
23	IOW	24	Gnd
25	IOR	26	Gnd
27	IORDY	28	SELPDP
29	DACK 0	30	Gnd
31	IRQ 14	32	NC
33	Add 1	34	PCBL DET*
35	Add 0	36	Add 2
37	CS 1P	38	CS 3P
39	IDEACTP	40	Gnd

27	Gnd	28	Gnd
29	PCLK14SIO	30	PCLK33LPC
31	Gnd	32	Gnd
33	SMBDATA_RESUME	34	IPMB_DAT
35	SMBCLK_RESUME	36	IPMB_CLK
37	SALRT#_RESUME	38	IPMB_ALRT#
39	Gnd	40	Gnd
41	EXP_CLK100	42	EXP_RESET#
43	EXP_CLK100#	44	ICH_WAKE#
45	Gnd	46	Gnd
47	C_PE_TXP4	48	C_PE_RXP4
49	C_PE_TXN4	50	C_PE_RXN4
51	Gnd	52	Gnd
53	C_PE_TXP3	54	C_PE_RXP3
55	C_PE_TXN3	56	C_PE_RXN3
57	Gnd	58	Gnd
59	C_PE_TXP2	60	C_PE_RXP2
61	C_PE_TXN2	62	C_PE_RXN2
63	Gnd	64	Gnd
65	C_PE_TXP1	66	C_PE_RXP1
67	C_PE_TXN1	68	C_PE_RXN1
69	Gnd	70	Gnd
71	+3.3V	72	+5V
73	+3.3V	74	+5V
75	+3.3V	76	+5V

**P21 - POWER GOOD LED**

2 pin single row header, Amp #640456-2

PIN	SIGNAL
1	LED -
2	LED +

\* For ATA/66 and ATA/100 drives, which should be set for Cable Select for proper speed operation. If other drives are detected, pin definition is Gnd.



**Connectors (Continued)**

**P12 - HARD DRIVE LED CONNECTOR**

4 pin single row header, Amp #640456-4

PIN	SIGNAL
1	LED +
2	LED -
3	LED -
4	LED +

**P15 - VIDEO INTERFACE CONNECTOR**

15 pin HD15 connector, Amp #1-1470250-3

PIN	SIGNAL	PIN	SIGNAL	PIN	SIGNAL
1	Red	6	Gnd	11	NC
2	Green	7	Gnd	12	EEDI
3	Blue	8	Gnd	13	HSYNC
4	NC	9	+5V	14	VSYNC
5	Gnd	10	Gnd	15	EECS

**P16 - 10/100/1000Base-T Ethernet Connectors - LAN1**

8 pin shielded RJ-45 connector, Belfuse #0826-1X1T-23-F

PIN	SIGNAL
1	TRP1+
2	TRP1-
3	TRP2+
4	TRP3+
5	TRP3-
6	TRP2-
7	TRP4+
8	TRP4-

**P27 - SATA PORT1**

7 pin vertical connector, Molex #67491-0031

PIN	SIGNAL	PIN	SIGNAL
1	Gnd	5	RX-
2	TX+	6	RX+
3	TX-	7	Gnd
4	Gnd		

**P28 - SATA PORT2**

7 pin vertical connector, Molex #67491-0031

PIN	SIGNAL	PIN	SIGNAL
1	Gnd	5	RX-
2	TX+	6	RX+
3	TX-	7	Gnd
4	Gnd		

**P31 - SATA PORT3**

7 pin vertical connector, Molex #67491-0031

PIN	SIGNAL	PIN	SIGNAL
1	Gnd	5	RX-
2	TX+	6	RX+
3	TX-	7	Gnd
4	Gnd		

**P32 - SATA PORT4**

7 pin vertical connector, Molex #67491-0031

PIN	SIGNAL	PIN	SIGNAL
1	Gnd	5	RX-
2	TX+	6	RX+
3	TX-	7	Gnd
4	Gnd		



## **Connectors (Continued)**

### **P17 - Universal Serial Bus (USB) Connector**

10 pin dual row header, AMP #1761610-3  
(+5V fused with self-resetting fuses)

<b>PIN</b>	<b>SIGNAL</b>	<b>PIN</b>	<b>SIGNAL</b>
1	+5V - USB2	2	+5V - USB3
3	USB2-	4	USB3-
5	USB2+	6	USB3+
7	Gnd - USB2	8	Gnd - USB3
9	Chassis Gnd	10	Chassis Gnd

### **P17A - UNIVERSAL SERIAL BUS (USB) CONNECTOR**

USB vertical connector, Molex #47500-0001  
(+5V fused with self-resetting fuse)

<b>PIN</b>	<b>SIGNAL</b>
1	+5V - USB1
2	USB1-
3	USB1+
4	Gnd - USB1

### **P17B - UNIVERSAL SERIAL BUS (USB) CONNECTOR**

USB vertical connector, Molex #47500-0001  
(+5V fused with self-resetting fuse)

<b>PIN</b>	<b>SIGNAL</b>
1	+5V - USB0
2	USB0-
3	USB0+
4	Gnd - USB0



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### **Connectors (Continued)**

#### **P17C - Universal Serial Bus (USB) Connector**

10 pin dual row header, AMP #1761610-3

(+5V fused with self-resetting fuses)

<b>PIN</b>	<b>SIGNAL</b>	<b>PIN</b>	<b>SIGNAL</b>
1	+5V - USB4	2	+5V - USB5
3	USB4-	4	USB5-
5	USB4+	6	USB5+
7	Gnd - USB4	8	Gnd - USB5
9	Chassis Gnd	10	Chassis Gnd



## Memory

The Double Data Rate (DDR2) memory interface is a dual-channel interface which supports up to 4GB of memory and supports memory transfer rates of 400MHz, 533MHz and 667MHz. Each of the channels (A and B) terminates at a dual in-line memory module (DIMM) socket. The System BIOS automatically detects memory type, size and speed.

The SHB uses industry standard gold finger memory modules, which must be PC2-3200, PC2-4200 or PC2-5300 compliant and have the following features:

- Gold-plated contacts
- Non-ECC (64-bit) DDR2 memory
- Unbuffered configuration

The following DIMM sizes are supported:

FSB	DIMM Type	Width	Component Density
1066	PC2-4200	x8, x16	256MB, 512MB, 1GB
1066	PC2-5300	x8, x16	256MB, 512MB
800	PC2-3200	x8, x16	256MB, 512MB, 1GB
800	PC2-4200	x8, x16	256MB, 512MB, 1GB
800	PC2-5300	x8, x16	256MB, 512MB
533	PC2-3200	x8, x16	256MB, 512MB, 1GB
533	PC2-4200	x8, x16	256MB, 512MB, 1GB

**NOTE:** To maximize system performance and reliability, Trenton recommends using DIMMs that support the Serial Presence Detect (SPD) data structure. All memory modules must have gold contacts.

Memory modules can be installed in one or both DIMM sockets. If only one DIMM module is used, it may be populated in either DIMM socket (BK1 or BK2). To operate at maximum bandwidth, two DIMMs of the same size must be installed, but the DIMMs may differ in technology (component density) and/or device width.

The SHB provides two types of memory operation, depending on how the DIMMs are populated. Asymmetric mode occurs when only one DIMM is installed or when two DIMMs are installed but differ in size. In the latter case, memory addressing begins with channel A, and when the top of channel A is reached, addressing starts at the bottom of channel B. The total system memory is the total installed in both channels, but accesses occur only at a width of 64 bits.

Interleave mode enables the highest memory interface speed and bandwidth throughput capacity. This is achieved by using two DIMM modules of the same memory size, although the DIMMs may vary in technology and/or device width. If the DIMMs are of different speeds, the slower memory module determines the memory interface speed.

For example, with a single PC2-5300 DIMM installed, the memory interface operates with a theoretical memory bandwidth of up to 5.4GB/s. If two PC2-5300 DIMMs which are identical in size are installed, they operate in interleave mode, where both DIMM channels are accessed simultaneously for a 128-bit wide memory subsystem access. This theoretically doubles the memory interface bandwidth to 10.7GB/s.

[TML Product Detail](#)