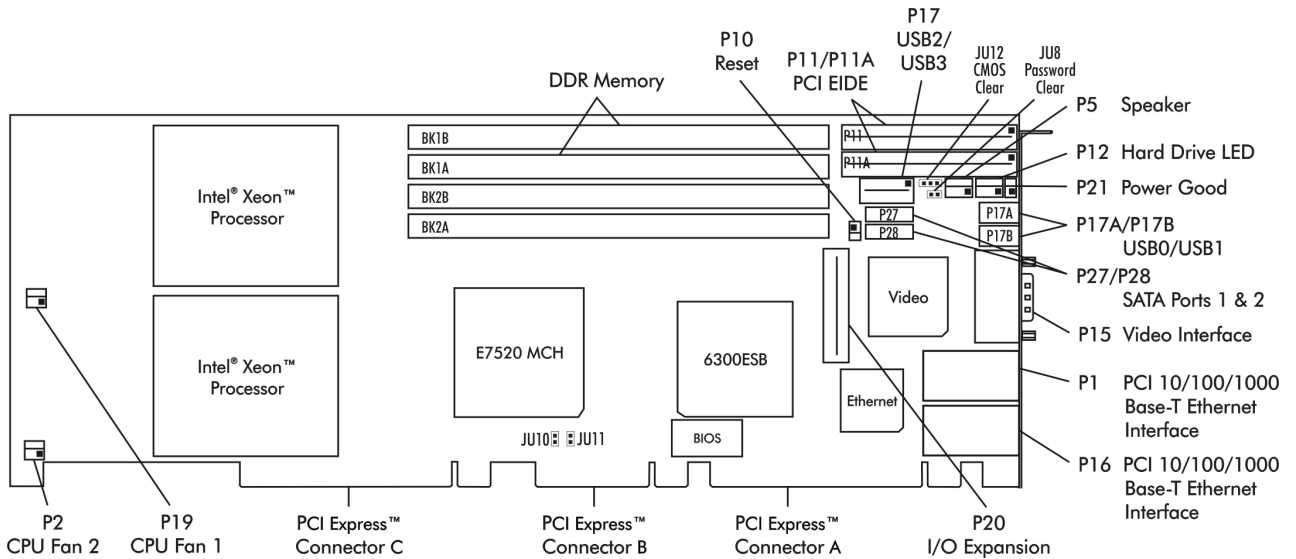# Technical Information – Jumpers, Connectors and Memory
NLT (6313-xxx) System Host Board

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), "RIGHT" is toward the bracket end of the board; "LEFT" is toward the processor.

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 LEFT to operate. *
Install on the RIGHT to clear.

NOTE: To clear the CMOS, power down the system and install the jumper on the RIGHT. Wait for at least two seconds, move the jumper back to the LEFT 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

Each Ethernet interface has two LEDs for status indication and an RJ-45 network connector.

LED/Connector	Description
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 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.

TRENTON Technology Inc.
2350 Centennial Drive • Gainesville, Georgia 30504
Sales (800) 875-6031 • Phone (770) 287-3100 • Fax (770) 287-3150

Connectors

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

P1 - 10/100/1000Base-T Ethernet Connectors - LAN2
Dual RJ-45 connector, Belfuse #0826-1X1T-23

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

P7 - UNIVERSAL SERIAL BUS (USB) CONNECTOR
8 pin dual row header, Molex #702-46-0821
(+5V fused with self-resetting fuses)

PIN	SIGNAL	PIN	SIGNAL
1	+5V - USB2	2	+5V - USB3
3	USB2-	4	USB3-
5	USB2+	6	USB3+
7	Gnd - USB2	8	Gnd - USB3

P10 - External Reset Connector
2 pin single row header, Amp #640456-2

P16 - 10/100/1000Base-T Ethernet Connectors - LAN1
Dual RJ-45 connector, Belfuse #0826-1X1T-23

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

P17A - UNIVERSAL SERIAL BUS (USB) CONNECTOR
4 USB vertical connector, Molex #67-329-0000
(+5V fused with self-resetting fuse)

PIN	SIGNAL
1	+5V - USB0
2	USB0-
3	USB0+
4	Gnd - USB0

P17B - UNIVERSAL SERIAL BUS (USB) CONNECTOR
4 USB vertical connector, Molex #67-329-0000
(+5V fused with self-resetting fuse)

PIN	SIGNAL
1	+5V - USB1
2	USB1-
3	USB1+
4	Gnd - USB1

P19 - CPU FAN 1
3 pin single row header, Molex #22-23-2031

PIN	SIGNAL
1	Gnd
2	+12V

Connectors (Continued)

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

P11 - PRIMARY IDE HARD DRIVE CONNECTOR
40 pin dual row header, 3M #30340-6002HB

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

3 Fan Tach

P2 - CPU FAN 2
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
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

Connectors (Continued)

P11A - SECONDARY IDE HARD DRIVE CONNECTOR
40 pin dual row header, 3M #30340-6002HB

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 1	22	Gnd
23	IOW	24	Gnd
25	IOR	26	Gnd
27	IORDY	28	SELPDS
29	DACK 1	30	Gnd
31	IRQ15	32	NC
33	Add 1	34	SCBL DET *
35	Add 0	36	Add 2
37	CS 1S	38	CS 3S
39	IDEACTS	40	Gnd

** 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.

P12 - HARD DRIVE LED CONNECTOR
4 pin single row header, Amp #640456-4

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

PIN	SIGNAL	PIN	SIGNAL
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 +

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+

Connectors (Continued)

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

PIN	SIGNAL	PIN	SIGNAL
3	TX-	7	Gnd
4	Gnd		

Memory

The Double Data Rate 2 (DDR2) memory interface supports up to 8GB of memory and can operate as either a single-channel or dual-channel interface. Each of the channels (A and B) terminates in two dual in-line memory module (DIMM) sockets. The System BIOS automatically detects memory type, size and speed.

The SHB uses industry standard 72-bit wide ECC gold finger memory modules in four 240-pin sockets. The DIMMs must be PC2-3200 compliant and have the following features:

- 240-pin with gold-plated contacts
- ECC (72-bit) DDR2 memory
- Dual rank or single rank DIMMs
- Registered configuration

The following DIMM sizes are supported:

DIMM Size	DIMM Type	ECC
256 MB	Registered	32M x 72
512 MB	Registered	64M x 72
1 GB	Registered	128M x 72
2 GB	Registered	256M x 72

NOTE 1: With the bracket end of the board to the right, the DIMM sockets are numbered 1B, 1A, 2B and 2A, from top to bottom. All memory modules must have gold contacts.

NOTE 2: Populating identical DIMMs in pairs (one each in the A and B channels) results in dual-channel operation. In dual-channel mode, the DIMM pair operates in lockstep, theoretically doubling the memory bandwidth.

NOTE 3: When a single DIMM is used, it should be installed in DIMM socket 1B. With this configuration, the interface operates as a single-channel interface with a theoretical memory bandwidth of 3.2GB/s. Installing two DIMMs which are identical in type, size and rank in DIMM sockets 1B and 1A results in dual-channel operation, which doubles the theoretical memory interface bandwidth to 6.4GB/s. Installing additional DIMMs in sockets 2B and 2A also results in the higher bandwidth. In this case, the DIMMs installed in sockets 2B and 2A must be identical in type, size and rank to each other, but may be different in size from the pair installed in sockets 1B and 1A. If the modules in channel B and channel A (e.g., 1B and 1A) differ in size, the BIOS will use the size of the smallest DIMM. Installing DIMMs only in sockets 1B and 2B results in single-channel mode, since both DIMMs are in the B channel. If the DIMMs are identical in type and size, they should be populated in sockets 1B and 1A to operate in dual-channel mode.

NOTE 4: The NLT supports a DDR2-400 memory interface speed. If modules of higher speeds are used, they will clock down to a DDR2-400 memory interface speed.
DDR2 memory modules are available as either single rank or dual rank DIMMs. A rank refers to the 72-bit unit of devices or DRAM chips that make up the PC2-3200 ECC registered 240-pin DDR2 DIMM. Single or dual rank memory modules must be placed in the SHB's DIMM sockets using prescribed population rules to ensure proper memory interface operation and performance.
The following table explains the DDR2 DIMM population rules:

	1B - Top Most DIMMM	1A	2B	2A	OPERATIONAL MODE
1 Single Rank DIMM	SINGLE	empty	empty	empty	Single Channel
1 Dual Rank DIMM	DUAL	empty	empty	empty	Single Channel
2 Single Rank DIMMS	SINGLE	empty	SINGLE	empty	Single Channel
2 Dual Rank DIMMS	DUAL	empty	DUAL	empty	Single Channel
2 Single Rank DIMMS	SINGLE	SINGLE	empty	empty	Dual Channel
2 Dual Rank DIMMS	DUAL	DUAL	empty	empty	Dual Channel
1 Dual & 1 Single Rank DIMM	DUAL	empty	SINGLE	empty	Single Channel
4 Single Rank DIMMS	SINGLE	SINGLE	SINGLE	SINGLE	Dual Channel
4 Dual Rank DIMMS	DUAL	DUAL	DUAL	DUAL	Dual Channel
2 Dual & 2 Single Rank DIMMs	DUAL	DUAL	SINGLE	SINGLE	Dual Channel