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Safety Information

When installing, operating, or performing maintenance on this equipment, the following safety precautions should always be observed in order to reduce the risk of fire, electric shock, and personal injury.

- Read and understand all instructions.
- Observe warnings and instructions marked on the product.
- For proper mounting instructions, please consult the User’s Manual provided with this product.
- Do NOT place this product on an unstable cart, stand, table or uneven surface that might cause the product to fall and sustain serious damage.
- Only install the equipment identified in the User’s Manual. Use of other equipment could cause improper connection of circuitry and may result in fire or personal injury.
- This product should only be operated with the type of power source indicated on the marked label. If you are uncertain about which type of power supply is used in your area, consult your dealer or local Power Company.
- Disconnect the power supply module before removing power from the system.
- Unplug this product from the wall outlet before cleaning. Use a damp cloth for cleaning. Do not use liquid cleaners or aerosol cleaners.
- Do not use this product near a water source, such as a faucet.
- Never spill liquids of any kind on this product.
- Never shove objects of any kind into this product’s open slots, as they may touch dangerous voltage points or short out parts and could result in fire or electric shock.
- Do not block or cover slots and openings in this unit, as they were made for ventilation and prevent this unit from overheating. Do not place this product in a built-in installation unless proper ventilation is available.
- Do not disassemble this product. This product should only be taken apart by trained personnel. Opening or removing covers and circuit boards may expose you to electric shock or other risks. Incorrect reassembly can also cause electric shock when the unit is subsequently used.
- Risk of explosion is possible if battery is replaced with an incompatible type. Dispose of used batteries accordingly.
- This product is equipped with a three-wire grounding type plug, a plug with a third (grounding) pin. As a safety feature, this plug is intended to fit only into a grounding type power outlet. If you are unable to insert the plug into the outlet, contact your electrician to replace the outlet. Do not remove the grounding type plug or use a 3-Prong To 2-Prong Adapter to circumvent the safety feature; doing so may result in electric shock and/or damage to this product.
About This User Manual

This document provides a detailed description of the SB201-TO including:

- General Features of the Product
- Hardware Setup
- Motherboard Settings
- BIOS Configuration and Settings
- BMC Configuration and Settings
1.1 General Information

SB201-TO, a 2U Storage Server Barebone, supports dual Intel® Xeon® processors E5-2600 V2 series. SB201-TO has 24 x 2.5” (front) + 2 x 2.5” size (rear) HDD bays as system drive bays. SB201-TO harnesses MAX I/O™ technology and maximize the usage of off-the-shelf expansion cards (up to 8) in the barebone.

System Package Contents

Check your package for the following items:

<table>
<thead>
<tr>
<th>Motherboard</th>
<th>Tolimon (PSG-M-TODPPATS-110)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Components</td>
<td>1200W 1+1 Hot-swap Redundant Power Supply</td>
</tr>
<tr>
<td></td>
<td>24 x Hot-Swap 2.5” HDD Trays (front)</td>
</tr>
<tr>
<td></td>
<td>2 x Hot-Swap 2.5” HDD Trays (rear)</td>
</tr>
<tr>
<td></td>
<td>1 x MAX I/O Main Riser Card</td>
</tr>
<tr>
<td></td>
<td>4 x System Fans</td>
</tr>
<tr>
<td>Accessories</td>
<td>2 x Power Cords</td>
</tr>
<tr>
<td></td>
<td>1 x 2.5” Screw kit</td>
</tr>
<tr>
<td></td>
<td>2 x Internal SATA Cables</td>
</tr>
<tr>
<td></td>
<td>1 x 28” Rail (28” inner; 26” outer)</td>
</tr>
<tr>
<td></td>
<td>2 x Heatsinks</td>
</tr>
</tbody>
</table>
1.2 System Specifications

<table>
<thead>
<tr>
<th>Dimensions (with chassis ears/protrusions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>W x D x H mm: 482.6 x 711 x 88.8</td>
</tr>
<tr>
<td>inches: 19 x 28 x 3.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Motherboard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motherboard: Tolimon (PSG-M-TODPPATS-110)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Processor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor Support: Dual LGA2011 (Socket –R) to support two Intel® 2S Xeon® processors E5-2600 V2 series (Support Ivy Bridge Platform)</td>
</tr>
<tr>
<td>QPI/DMI Speeds: 8 GT/s, 7.2 GT/s, 6.4GT/s</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chipset</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chipset Support: Intel® C606 PCH chipset</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System Memory</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Memory: • 4 memory channels per CPU socket, 2 channels with 2DPC + 2 channels with 1DPC</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Front Panel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controls: • Power ON/OFF</td>
</tr>
<tr>
<td>• System Reset</td>
</tr>
<tr>
<td>LEDs: • Power</td>
</tr>
<tr>
<td>• HDD</td>
</tr>
<tr>
<td>• LAN</td>
</tr>
<tr>
<td>• Alert</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Drive Bays</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive Bays: • 24 x 2.5&quot; hot-swap SAS/SATA/SSD HDD bays</td>
</tr>
<tr>
<td>• 2 x 2.5&quot; hot-swap SATA/SAS/SSD HDD bays (rear)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Expansion Slots</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expansion Slots: • 8 x PCIe x8 Gen3 slots</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Riser Card (included)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSG-RC-TO2U-80-110 (PSG Code: PE2U20)</td>
</tr>
<tr>
<td>2U Gold finger PCIe Gen3 x16 to 8 PCIe Gen3 x8 riser for Tolimon</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SATA/SAS Backplane</th>
</tr>
</thead>
<tbody>
<tr>
<td>SATA/SAS BP: • 1 x SAS/SATA 6G 24-in-1 BP with SGPIO support</td>
</tr>
<tr>
<td>• 1 x SAS/SATA 2-HDD backplane for rear drives</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System BIOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOS Type: • AMI EFI BIOS</td>
</tr>
<tr>
<td>• SPI (Serial Peripheral Interface) FLASH Interface</td>
</tr>
<tr>
<td>BIOS Features: • EFI 2.3 BIOS</td>
</tr>
<tr>
<td>• ACPI 2.0/3.0/4.0</td>
</tr>
<tr>
<td>• PXE 2.0</td>
</tr>
<tr>
<td>• WOL</td>
</tr>
<tr>
<td>• AC loss recovery</td>
</tr>
<tr>
<td>• IPMI KCS interface</td>
</tr>
<tr>
<td>• SMBIOS 2.6</td>
</tr>
<tr>
<td>• Serial console redirection</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>On-Board Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAS: Built-in 3G SAS RAID controller on Intel® C606 PCH chipset</td>
</tr>
<tr>
<td>• 2 Mini SAS connectors (4 SAS ports per connector)</td>
</tr>
<tr>
<td>SATA: Built-in SATA RAID controller on Intel® C606 PCH chipset</td>
</tr>
<tr>
<td>• 4 x SATA2 ports</td>
</tr>
<tr>
<td>• 2 x SATA3 ports</td>
</tr>
</tbody>
</table>
| **IPMI** | Aspeed AST2150 BMC  
| --- | --- |
|  | • Intelligent Platform Management Interface 2.0 (IPMI 2.0)  
|  | • iKVM, Media Redirection, IPMI over LAN, Serial over LAN  
| **Network Controllers** | • Intel® 82599 10 GbE controller  
|  | • Intel® 82574 PCIe single-port GbE controller  
|  | • Intel® 82579 GbE PHY  
| **Graphics** | AST2150 Mainstream PCIe Graphics and Remote Management Processor  
|  | • PCIe x1 VGA/2D controller  
|  | • 1600x1200@60Hz 16bpp  
| **Super I/O** | Winbond W83627DHG  
| **Rear I/O** |  
| LAN | 2 x SFP+ (10 GbE)  
|  | 2 x RJ45 ports  
| USB | 2 x USB ports  
| VGA | 1 x VGA port  
| Serial Port | 1 x external DB-9 serial port  
| **Power Supply** |  
| Power Supply | 1200W 1+1 hot-swap redundant 80+ PSU  
|  | 90-264VAC, 47-63 Hz  
| **System Cooling** |  
| System Cooling | 4 x 60x38 hot-swap fans  
| **System Management** |  
| System | • IPMI 2.0 compliance  
| Management | • KVM support (KVM over IP)  
|  | • Media redirection  
|  | • Smart fan speed control  
|  | • Remote power on/off/reset  
|  | • Temperature, fan, voltage, PSU sensor monitor  
|  | • System ID / System fail indicator  
|  | • SEL message alarm through mail  
|  | • SNMP support  
|  | • Intel NM  
| **Operating Environment** |  
| Environmental Specifications | • Operating temperature: 0 ~ 35°C  
|  | • Operating altitude condition: 0 ~ 10K feet  
|  | • Storage temperature: -20° ~ 60°C  
|  | • System relative humidity: 5% to 95% (38°C) non-condensing
1.3 Front View of SB201-TO

<table>
<thead>
<tr>
<th>Controls</th>
<th>Icon</th>
<th>Color</th>
<th>System Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power LED</td>
<td><img src="image" alt="Power LED Icon" /></td>
<td>Green</td>
<td>Solid: System On Off: System Off</td>
</tr>
<tr>
<td>HDD LED</td>
<td><img src="image" alt="HDD LED Icon" /></td>
<td>Green</td>
<td>Blink: Activity</td>
</tr>
<tr>
<td>LAN1 LED</td>
<td><img src="image" alt="LAN LED Icon" /></td>
<td>Green</td>
<td>Light: Link Blink: Activity</td>
</tr>
<tr>
<td>LAN2 LED</td>
<td><img src="image" alt="LAN LED Icon" /></td>
<td>Green</td>
<td>Light: Link Blink: Activity</td>
</tr>
<tr>
<td>Alert LED</td>
<td><img src="image" alt="Alert Icon" /></td>
<td>Red</td>
<td>Light: System Alert</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Controls</th>
<th>Icon</th>
<th>System Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power ON/OFF</td>
<td><img src="image" alt="Power ON/OFF Icon" /></td>
<td>Push for Power On or Off</td>
</tr>
<tr>
<td>System Reset</td>
<td><img src="image" alt="System Reset Icon" /></td>
<td>Push for System Reset Non-maskable interrupt</td>
</tr>
</tbody>
</table>

1.4 Rear View of SB201-TO
The barebone server includes basic components shown as below.

2.5" HDD Trays

- Hot-swap Fans
- Tolimon Motherboard
- Power Supply
- 2.5" HDD
- Rear I/O
- Expansion Bracket
Chapter 2.
Hardware Setup

This section demonstrates maintenance procedures for replacing a defective part once the SB201-TO appliance is installed and operational.

2.1 Chassis Cover

2.1.1 Removing the Chassis Cover

1. Release the two thumbscrews on the rear panel to open the rear cover from chassis.

2. Release four screws on both sides and top to open the mid-top cover.
2.1.2 Removing the rear cover

1. Release six screws from each side of rear cover.

2. Slide the cover backward to remove the rear cover from chassis.

2.2 Central Processing Unit (CPU)

Caution: When unpacking a processor, hold the processor only by its edges to avoid touching the contacts.
2.2.1 Installing the CPU

A. Open the Socket Lever

NOTE: Release the levers in the order as shown

1. Push down the lever handle on the OPEN 1st side and away from the socket to release it.

2. Repeat the steps to release the lever on the other side.

B. Open the Load Plate

1. Press the locking lever slightly to raise the load plate. Open the load plate all the way.

Caution: The underside of the processor has components that may damage the socket pins if installed improperly. Processor must align correctly with the socket opening before installation. DO NOT DROP processor into the socket!
C. Install the Processor

1. Take the processor out of the box and remove the protective shipping cover.
2. Orient the processor with the socket so that the processor cutouts match the four orientation posts on the socket.
3. Note location of gold key at corner of processor.

Caution: When unpacking a processor, hold by the edges only to avoid touching the gold contact.

2.2.2 Installing the CPU Heatsink

Note: Apply thermal paste to the bottom of heatsink and spread in an even thin layer before installing the heatsink.

1. Place the heatsink on top of the CPU, ensuring that the four fasteners match the holes on the motherboard.
2. Tighten the four screws in a diagonal sequence, a couple of turns at a time, until all four screws are secure and the heatsink is securely fastened to the chassis.
2.3 System Memory

This server board supports up to twelve DDR3 800/1066/1333 Registered ECC SDRAM (recommended)/ Unbuffered ECC SDRAM.

1. Populate DIMMs in the following order:

<table>
<thead>
<tr>
<th>DIMM Numbers</th>
<th>DIMM arrangement</th>
</tr>
</thead>
<tbody>
<tr>
<td>JCPU0</td>
<td>JCPU1</td>
</tr>
<tr>
<td>2 DIMMs</td>
<td>JDIMM_A0 JDIMM_G0</td>
</tr>
<tr>
<td></td>
<td>JCPU0 JCPU1</td>
</tr>
<tr>
<td>4 DIMMs</td>
<td>JDIMM_A0 JDIMM_G0</td>
</tr>
<tr>
<td></td>
<td>JDIMM_B0 JDIMM_H0</td>
</tr>
<tr>
<td></td>
<td>JCPU0 JCPU1</td>
</tr>
<tr>
<td>6 DIMMs</td>
<td>JDIMM_A0 JDIMM_G0</td>
</tr>
<tr>
<td></td>
<td>JDIMM_B0 JDIMM_H0</td>
</tr>
<tr>
<td></td>
<td>JDIMM_C JDIMM_E</td>
</tr>
</tbody>
</table>
### DIMM Numbers

<table>
<thead>
<tr>
<th>DIMM Numbers</th>
<th>DIMM arrangement</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 DIMMs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>JCPU0</td>
</tr>
<tr>
<td></td>
<td>JDIMM_A0</td>
</tr>
<tr>
<td></td>
<td>JDIMM_D</td>
</tr>
<tr>
<td></td>
<td>JDIMM_B0</td>
</tr>
<tr>
<td></td>
<td>JDIMM_C</td>
</tr>
<tr>
<td>10 DIMMs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>JCPU0</td>
</tr>
<tr>
<td></td>
<td>JDIMM_A0</td>
</tr>
<tr>
<td></td>
<td>JDIMM_A1</td>
</tr>
<tr>
<td></td>
<td>JDIMM_B0</td>
</tr>
<tr>
<td></td>
<td>JDIMM_C</td>
</tr>
<tr>
<td></td>
<td>JDIMM_D</td>
</tr>
<tr>
<td>12 DIMMs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>JCPU0</td>
</tr>
<tr>
<td></td>
<td>JDIMM_A0</td>
</tr>
<tr>
<td></td>
<td>JDIMM_A1</td>
</tr>
<tr>
<td></td>
<td>JDIMM_B0</td>
</tr>
<tr>
<td></td>
<td>JDIMM_B1</td>
</tr>
<tr>
<td></td>
<td>JDIMM_D</td>
</tr>
<tr>
<td></td>
<td>JDIMM_C</td>
</tr>
</tbody>
</table>

2. Unlock a DIMM socket by pressing the retaining clips outward.

![Unlock DIMM socket](image)

3. Insert module vertically and press down until it snaps into place.

*Note: DIMM notch and socket bump must align as shown.*
2.4 Drive Bays

2.4.1 Installing or Replacing 2.5" Hot-swap SAS/SATA HDD

1. Release a drive tray by pushing the unlock button to open the latch.
2. Firmly grasp the tray latch and pull the drive out of the drive slot.
3. Place one 2.5" HDD on the tray and then secure it with four screws on both sides of HDD tray.
4. Insert the drive carrier into its bay. Push the tray lever until it clicks. Make sure the drive tray is correctly secured in place when its front edge aligns with the bay edge.
5. Repeat steps from 1 to 4 to install the rest of the HDDs.
2.5 Riser Card

2.5.1 Riser card

<table>
<thead>
<tr>
<th>RISER CARD PN (PSG CODE)</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSG-RC-TO2U-80-110</td>
<td>2U Gold finger PCIe Gen3 x16 to 8 PCIe Gen3 x8 riser for Tolimon</td>
</tr>
</tbody>
</table>

### RISER CARD DIAGRAM

**Front view**

![Front view diagram](image1)

**Rear View**

![Rear view diagram](image2)

### Slot Bandwidth

<table>
<thead>
<tr>
<th>Slot</th>
<th>Bandwidth</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCIE8</td>
<td>X8</td>
</tr>
<tr>
<td>PCIE7</td>
<td>X8</td>
</tr>
<tr>
<td>PCIE6</td>
<td>X8</td>
</tr>
<tr>
<td>PCIE5</td>
<td>X8</td>
</tr>
<tr>
<td>PCIE12</td>
<td>X8</td>
</tr>
<tr>
<td>PCIE11</td>
<td>X8</td>
</tr>
<tr>
<td>PCIE10</td>
<td>X8</td>
</tr>
<tr>
<td>PCIE9</td>
<td>X8</td>
</tr>
</tbody>
</table>
2.6 System Fans

2.6.1 Removing or Replacing the System Fans

Hold the fan lever firmly and pull the fan out of the server chassis to remove the fan module from the server chassis.

2.7 Power Supply

2.7.1 Removing or Replacing the Power Supply Module

1. Release two thumb screws from the PSU module.
2. Hold the PSU lever and firmly pull the PSU out of the server chassis.
Chapter 3.
Motherboard Settings

This section describes the jumpers, internal connectors, and internal LEDs setting on the Tolimon (PGS-M-TODPPATS-101) motherboard. Motherboard layout and important jumper settings are listed below.

3.1 Motherboard layout

3.2 Motherboard block diagram
3.3 Motherboard Feature Summary

2. Supports power level up to 8 Core processors.
3. 4 DDR3 channels per processor. Supports data transfer rates of 800, 1066, 1333, and 1600 MT/s, 64-bit wide channels plus 8-bits of ECC support for each channel. 1-Gb, 2-Gb, and 4-Gb DDR3 DRAM technologies supported for these devices:
   - UDIMMs x8, x16
   - RDIMMs x4, x8
   - LRDIMM x4, x8
4. 12 memory slots. Maximal can support up to 96/384/384 GB memory capacity. (8GB UDIMM x12, 32GB RDIMM x12, 32GB LRDIMM x12)
5. Four PCI Express gold finger support for PCI Express® Gen 3 (8.0 GT/s), Gen 2 (5.0 GT/s), and Gen 1 (2.5 GT/s) that are configurable for up to 16 independent ports
6. Non-Transparent Bridge (NTB) is supported by PCIe Port3a/IOU1. For more details on NTB mode operation refer to PCI Express® Base Specification 3.0:
   - x4 or x8 widths at Gen 1, Gen 2, or Gen 3 speeds
   - Two usage models; NTB attached to a Root Port or NTB attached to another NTB
   - Supports three 64-bit BARs
   - Supports posted writes and non-posted memory read transactions across the NTB
   - Supports INTx, MSI, and M
7. Integrated Serial Attached SCSI host controllers at transfer rates up to 3Gb/s on up to eight ports that are compliant with SAS Specification, and all ports support rates up to 3.0 Gb/s. All 8 ports are also independently configurable and compliant with SATA Gen3 and support data transfer rates of up to 3.0 Gb/s.
8. Integrated Serial ATA host controllers with independent DMA operation on up to six ports and supports data transfer rates of up to 6.0 Gb/s (600 MB/s) on up to two ports (Port 0 and 1 Only). All ports support rates up to 3.0 Gb/s (300 MB/s) and up to 1.5 Gb/s (150 MB/s).
9. Integrated 10/100/1000 Gigabit Ethernet MAC with Intel® 82579LM PHY.
10. Intel® 82574L single port GbE controller.
11. Intel® 82599ES dual port SFP+ 10 GbE controller.
12. Integrated high-speed USB 2.0 allows data transfers up to 480 Mb/s; 4 front USB supported by two 5x2 Headers; external USB support by one Standard Type A with dual stack connector.
13. KVM/Serial Over Lan (SOL) Function.
15. Rear I/O: 1xVGA/1xSerial/2xUSB/2xRJ45/2xSFP+
### 3.4 Internal Connectors

<table>
<thead>
<tr>
<th>PIN Name</th>
<th>Function</th>
<th>PIN Picture</th>
<th>Description</th>
</tr>
</thead>
</table>
| JPWR2     | Power Supply | ![PIN Picture](image1) | 5.12V 1.GND  
6.12V 2.GDN  
7.12V 3.GDN  
8.12V 4.GDN |
| JPWR1     | Power Supply | ![PIN Picture](image2) | 8.12V 1.GND  
9.12V 2.GDN  
10.12V 3.GDN  
11.12V 4.GDN  
12.12V 5.GDN  
13.5VSB 6.GND  
14.PSOK 7.PSON |
| JFRNT_IO  | Front IO   | ![PIN Picture](image3) | B1.SW_PWR_BTN# A1.GND  
B2.SW_RST_BTN# A2.GND  
B3.FP_NMI_BTN A3.GND  
B4.UID_SW_IN N A4.GND  
B5.+3.3V_DUAL A5.UID_LED#  
B6.+3.3V A6.HD_LED#  
B7.STD_LED A7.SYS_HEALTH#  
B8.PWR_LED A8.GND  
B9.+3.3V A9.LAN1_TRAFFIC#  
B10.+3.3V A10.LAN2_TRAFFIC#  
B11.+3.3V_DUAL A11.LAN3_TRAFFIC#  
B12.+3.3V_DUAL A12.LAN4_TRAFFIC#  
B13.PWM1 A13.HW_PWM1  
B14.PWM2 A14.HW_PWM2  
B15.PWM3 A15.HW_FAN1_TACH  
B16.PWM4 A16.HW_FAN2_TACH  
B17.FAN1_TACH A17.HW_FAN3_TACH  
B18.FAN2_TACH A18.HW_FAN4_TACH  
B19.FAN3_TACH A19.GND  
B20.FAN4_TACH A20.I2C5SCL  
B21.FAN5_TACH A21.I2C5SSDA  
B22.FAN6_TACH A22.PSU_SMBCLK_SU  
B23.FAN7_TACH A23.PSU_SMBDAT_SU  
B24.FAN8_TACH A24.I2C1SDA  
B25.+5V_AUX A25.I2C1SDA |
<table>
<thead>
<tr>
<th>PIN Name</th>
<th>Function</th>
<th>PIN Picture</th>
<th>Description</th>
</tr>
</thead>
</table>
| DOM_PWR   | DOM Power       | ![PIN Picture](image1) | 1.+5V  
|           |                 |             | 2.GND                     |
| JSPKR     | Speaker         | ![PIN Picture](image2) | 1.Buzzer+(5V)  
|           |                 |             | 2.Buzzer-                  |
| JCMOS     | Clear CMOS Jumper | ![PIN Picture](image3) | 1-2 NORMAL  
|           |                 |             | 2-3 CLEAR  
|           |                 |             | OPEN INVALID               |
| J2        | BMC Function    | ![PIN Picture](image4) | 1-2 ARM DISABLE  
|           |                 |             | OPEN ENABLE                |
| J1        | ME Mode         | ![PIN Picture](image5) | 1.GPIO57  
|           |                 |             | 2.GND                      |
| JPMBUS    | PMBUS           | ![PIN Picture](image6) | 1.I2C_CLK  
|           |                 |             | 2.I2C_DATA  
|           |                 |             | 3.ALERT_N  
|           |                 |             | 4.GND  
|           |                 |             | 5.+3.3V                    |
| JUSB1     | Front USB       | ![PIN Picture](image7) | 1.+5V  
|           |                 |             | 2.+5V  
|           |                 |             | 3.USB3D-  
|           |                 |             | 4.USB2D-  
|           |                 |             | 5.USB3D+  
|           |                 |             | 6.USB2D+  
|           |                 |             | 7.GND  
|           |                 |             | 8.GND  
|           |                 |             | 9.GND  
|           |                 |             | 10.NC                      |
| JUSB2     | Front USB       | ![PIN Picture](image8) | 1.+5V  
|           |                 |             | 2.+5V  
|           |                 |             | 3.USB9D-  
|           |                 |             | 4.USB8D-  
|           |                 |             | 5.USB9D+  
|           |                 |             | 6.USB8D+  
|           |                 |             | 7.GND  
|           |                 |             | 8.GND  
|           |                 |             | 9.GND  
|           |                 |             | 10.NC                      |
## Internal Connectors (Continued)

<table>
<thead>
<tr>
<th>PIN Name</th>
<th>Function</th>
<th>PIN Picture</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>JVGA_INT</td>
<td>VGA</td>
<td><img src="image1" alt="J VGA INT PIN Picture" /></td>
<td><img src="image2" alt="J VGA INT Description" /></td>
</tr>
<tr>
<td>JLPC_DBG</td>
<td>LPC Debug Port</td>
<td><img src="image3" alt="J LPC_DBG PIN Picture" /></td>
<td><img src="image4" alt="J LPC_DBG Description" /></td>
</tr>
<tr>
<td>JBMC_DBG</td>
<td>BMC Debug Port</td>
<td><img src="image5" alt="J BMC_DBG PIN Picture" /></td>
<td><img src="image6" alt="J BMC_DBG Description" /></td>
</tr>
<tr>
<td>JLCM</td>
<td></td>
<td><img src="image7" alt="J JLCM PIN Picture" /></td>
<td><img src="image8" alt="J JLCM Description" /></td>
</tr>
<tr>
<td>JBMC_RST</td>
<td>BMC Reset Jumper</td>
<td><img src="image9" alt="J BMC_RST PIN Picture" /></td>
<td><img src="image10" alt="J BMC_RST Description" /></td>
</tr>
<tr>
<td>JBMC_GPIO</td>
<td>GPIO</td>
<td><img src="image11" alt="J BMC_GPIO PIN Picture" /></td>
<td><img src="image12" alt="J BMC_GPIO Description" /></td>
</tr>
</tbody>
</table>
### 3.5 Jumpers

<table>
<thead>
<tr>
<th><strong>CMOS Jumper Setting</strong></th>
<th><strong>JMOS Setting</strong></th>
<th><strong>Pin 1-2</strong></th>
<th><strong>Normal (Default)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Pin 2-3</strong></td>
<td><strong>Clear CMOS</strong></td>
<td></td>
</tr>
<tr>
<td><strong>2 1</strong></td>
<td><strong>J2 Setting</strong></td>
<td><strong>Short</strong></td>
<td><strong>Disable</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Open</strong></td>
<td><strong>Normal (Default)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>BMC Reset Jumper Setting</strong></td>
<td><strong>JBMC_RST Setting</strong></td>
<td><strong>Short</strong></td>
<td><strong>Reset BMC</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Open</strong></td>
<td><strong>Normal (Default)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>2 1</strong></td>
<td><strong>J3 Setting</strong></td>
<td><strong>Short</strong></td>
<td><strong>Inactive Power OK</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Open</strong></td>
<td><strong>Normal (Default)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>ME Jumper Setting</strong></td>
<td><strong>J1 Setting</strong></td>
<td><strong>Short</strong></td>
<td><strong>Clear ME to default</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Open</strong></td>
<td><strong>Normal (Default)</strong></td>
<td></td>
</tr>
</tbody>
</table>
3.6 LEDs

3.6.1 Rear chassis LEDs

<table>
<thead>
<tr>
<th>JRJ45 (Upper Right)</th>
<th>Green (Blinking)</th>
<th>NIC1 activity detected</th>
</tr>
</thead>
<tbody>
<tr>
<td>JRJ45 (Upper Left)</td>
<td>Off</td>
<td>NIC1 is not active, LAN cable no connect</td>
</tr>
<tr>
<td>JRJ45 (Lower Right)</td>
<td>Status LED 1G: Orange, 100M: Green 10M/No connect: Off</td>
<td></td>
</tr>
<tr>
<td>JRJ45 (Lower Left)</td>
<td>Green (Blinking)</td>
<td>NIC2 activity detected</td>
</tr>
<tr>
<td></td>
<td>Off</td>
<td>NIC2 is not active, LAN cable no connect</td>
</tr>
</tbody>
</table>

| JRJ45 (Upper Right) | Status LED 1G: Orange, 100M: Green 10M/No connect: Off |
| JRJ45 (Upper Left)  | Yellow (Blinking) | NIC3 1G link detected, activity detected |
| JRJ45 (Lower Right) | Yellow (Blinking) | NIC4 1G link detected, activity detected |
| JRJ45 (Lower Left)  | Green (Blinking)  | NIC3 10G link detected, activity detected |
| JRJ45 (Lower Left)  | Green (Blinking)  | NIC4 10G link detected, activity detected |

3.6.2 Internal LEDs

<table>
<thead>
<tr>
<th>UID LED (LED1)</th>
<th>On (Blinking)</th>
<th>UID activity detected.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Off</td>
<td>UID not activity detected.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Heart Bit (LED4)</th>
<th>On</th>
<th>BMC activity normal.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Off</td>
<td>BMC is not active</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standby OK (LED7)</th>
<th>On</th>
<th>AC in, standby power ready.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Off</td>
<td>AC out, standby power off.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Power OK (LED8)</th>
<th>On</th>
<th>Power on, system power ready.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Off</td>
<td>Power off.</td>
</tr>
</tbody>
</table>
Caution: When Quiet Boot IS enabled, OEM LOGO WILL BE displayed INSTEAD OF POST MESSAGES.

4.1 BIOS Setting

1. Press DEL to run the setup procedure.

2. There will be a message "Entering SETUP" displayed on the diagnostics screen.

Caution: For the official released version, the last digit of the BIOS Version must be a "0."
3. Identify the BIOS Version

4. Load Optimal Default setting

5. Save the setting and exit the BIOS setup utility.
4.2 Updating BIOS

**Important Notes:**

To identify the current BIOS version, please check out on BIOS setup.

There are two methods to update the latest BIOS.

1. Update by Messiah Flash utility during POST.

2. Update by AMI AFUDOS utility under DOS environment.

**Update by Messiah Flash utility during POST**

1. Prepare a USB mass storage device.
2. Put BIOS bin file and mflash.cfg in Root directory.
3. Plug the USB mass storage device into a USB port of the target computer.
4. Turn on system.
5. Boot to BIOS POST screen, you will see hint messages:
   - Press <S> key to dump system BIOS information
   - Press <F> key to update BIOS
   - Press <I> key to post system information
   - Press <F4> key to open POPUP menu
6. Please press <F> key to enter Messiah Flash utility.
7. Follow the instructions until the message “Update Flash successfully” is displayed.
8. Reboot system.
**Update by AMI AFUDOS utility under DOS environment**

If you need to update Flash in the DOS environment, please use AFUDOS utility. To use this utility, you must include the flash.bat, AFUDOS.exe, and bin file in the same folder. Please follow the instructions to update the whole flash part:

1. Execute `flash.bat` to update Flash in the DOS environment.

2. Reboot system.

```bash
Microsoft(R) Windows 98
 (C)Copyright Microsoft Corp 1981-1999.
C:\>cd tolis090
C:\TOLIS090>flash
C:\TOLIS090>afudos TOLIS090.rom /p /b /n /k
Reading flash ............ done
- FTS checksums ......... ok
Erasing Boot Block ....... done
Updating Boot Block ...... done
Verifying Boot Block ..... done
Erasing Main Block ........ 0x00050000 (2%)

C:\>cd tolis090
C:\TOLIS090>flash
C:\TOLIS090>afudos TOLIS090.rom /p /b /n /k
Reading flash ............ done
- FTS checksums ......... ok
Erasing Boot Block ....... done
Updating Boot Block ...... done
Verifying Boot Block ..... done
Erasing Main Block ........ done
Verifying Main Block ...... done
Erasing NVRAM Block ...... done
Verifying NVRAM Block .... done
Erasing NCB Block ......... done
Updating NCB Block ...... done
Verifying NCB Block ....... done
```
Insert Ethernet LAN cable into the BMC LAN port. There are two methods to setup BMC IP:

5.1 Method 1 (Use the BIOS setup)

1. BIOS SETUP → Server Mgmt → BMC network configuration → Configuration Address source → Static
2. Input IP address. Set static IP.

3. Input subnet mask address.
5.2 Method 2 (Use a Dos tool - Syscheck)

1. Type: `sc -lanset`.

```
\sc\> sc -lanset
```

2. Modify IP setting.

```
\sc\> sc -lanset
```

```
Set LNM configuration
Internet Protocol Please input 1 or 2
 I : Static IP enable
 2: DHCP enable
IP : 192.168.0.2
Submask : 255.255.255.0
Gateway : 0.0.0.0
Do you want to Modify? (Y or y to Modify / any key to Exit) Y

Internet Protocol
1 : Static IP enable / 2 : DHCP enable
(Please input 1 or 2):1
```

**Note:** type 1 for selecting static IP mode or type 2 for selecting DHCP mode.

3. Input IP address.

```
\sc\> sc -lanset
```

```
Present LNM Configuration:
DHCP: disable
Static IP: enable
IP : 192.168.22.22
Submask : 255.255.255.0
Gateway : 0.0.0.0
Do you want to Modify? (Y or y to Modify / any key to Exit) Y

Internet Protocol
1: Static IP enable / 2: DHCP enable
(Please input 1 or 2):2
```

```
Modify IP address?
(Y or y to Modify / any key to Check Next) Y
IP: 192.168.22.22
```
4. Input submask address.

Below IP address is an example using a default IP setting. User is allowed to change the IP address for realistic use.

```
Present LAN Configuration:
DHCP : disable
Static IP : enable
IP : 192.168.22.22
Submask : 255.255.255.8
Gateway : 0.0.0.0

Do you want to Modify? (Y or y to Modify / any key to Exit) Y

Internet Protocol
1. Static IP enable / 2 (DHCP enable)
(Please input 1 or 2): 1
Check DHCP: 1

Modify IP address?
(Y or y to Modify / any key to Check Next) y
IP : 192.168.22.22
The IP Address: 192.168.22.22 is valid

Modify Submask address?
(Y or y to Modify / any key to Check Next) y
Submask : 255.255.255.8

C:\>
```

5. Finish BMC IP configuration.

```
Do you want to Modify? (Y or y to Modify / any key to Exit) Y

Internet Protocol
1. Static IP enable / 2 (DHCP enable)
(Please input 1 or 2): 1
Check DHCP: 1

Modify IP address?
(Y or y to Modify / any key to Check Next) y
IP : 192.168.22.22
The IP Address: 192.168.22.22 is valid

Modify Submask address?
(Y or y to Modify / any key to Check Next) y
Submask : 255.255.255.8
The Submask: 255.255.255.8 is valid

Modify Gateway address?
(Y or y to Modify / any key to Exit) +
Completed.

C:\>
```

Note: Type sc.exe –langet command to obtain BMC IP and MAC address.
5.3 Connect to BMC

Note: This feature works with JAVA 6 runtime installed console environment.

Below is an example using the default IP setting. User is allowed to change the IP address for realistic use.

1. Open the browser and enter the default BMC IP address: 192.168.22.22

2. Use the default user name and password for first-time login to BMC WEB GUI.

   Field: Default
   Username: admin
   Password: admin

Note: The default user name and password are in lower-case characters.

Note: Users who login with the root user name and password will have full administrative power. The root password can be changed after login.
3. Information of firmware.

4. Server Health - Sensor Readings:
5. Configuration

Please refer to AIC BMC User Guide for more information on AIC BMC.

Mouse Mode setting:

- For Windows OS environment, set mode to absolute.
- For Linux OS environment, set mode to relative.
6. Remote Control:

Environmental setting:

Press “ALT+C” for local and remote OS mouse control switching.
5.4 Updating BMC Firmware

1. Boot to the DOS (MS-DOS or Free DOS is workable).

2. Enter BMC firmware directory [XXXXXZYY]; XXXX: project name; YY: firmware version; Z: Identify character (C for official, B for Beta).

3. Execute a.bat batch file to update the BMC firmware.

   Example:

   A:>cd SB201C01

   A:\SB201C01>a.bat

   This is just an example. The latest BMC firmware version is available from the FAE or AIC website.

4. After updating BMC firmware, please power off and then power on system.

Notes:

1. DO NOT USE EMM386 IN DOS ENVIRONMENT WHEN UPDATING FIRMWARE OR YOU WILL RECEIVE A FAILURE.

2. IN SOME CRITICAL CONDITION, AFTER UPDATING BMC FIRMWARE OR CONFIG FILE, YOU MIGHT NEED TO UNPLUG AC POWER CORD FOR 5 SECONDS AND THEN PLUG IT BACK IN TO RESET BMC. THE NEW UPDATED FUNCTION CAN NOW WORK PROPERLY.
Chapter 6.
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