

# MITAC Desktop Board PD11TI

## Product Guide

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# Desktop Board Features

This chapter briefly describes the features of Desktop Board PD11TI.

Table 1 summarizes the major features of the Desktop Board.

## Feature Summary

**TABLE 1. MITAC DESKTOP BOARD PD11TI FEATURES**

<b>Form Factor</b>	Low-profile Mini-ITX (20 millimeters [0.79 inches] x 170.18 millimeters [6.7 inches] x 170.18 millimeters [6.7 inches])
<b>Processor</b>	Fanlessly-cooled, soldered-down dual-core Atom™ Processor N2800 with integrated graphics and memory controller
<b>Chipset</b>	NM10 Express Chipset
<b>Memory</b>	<ul style="list-style-type: none"> <li>● Two 204-pin Double Data Rate 3 (DDR3) Small Outline Dual Inline Memory Module (SO-DIMM) sockets</li> <li>● Support for DDR3 800 MHz and DDR3 1066 MHz SO-DIMMs Note: Higher speed SO-DIMMs operate at 1066 MHz if supported by the memory module.</li> <li>● Support for up to 4 GB of system memory on a single SO-DIMM (or two 2 GB SO-DIMMs)</li> </ul>
<b>Graphics</b>	<ul style="list-style-type: none"> <li>● Integrated graphics:             <ul style="list-style-type: none"> <li>■ Digital displays (High Definition Multimedia Interface* (HDMI*))</li> <li>■ Analog displays (VGA)</li> <li>■ Internal flat panel displays:                 <ul style="list-style-type: none"> <li>◆ LVDS</li> <li>◆ Embedded DisplayPort* eDP*</li> </ul> </li> </ul> </li> <li>● External graphics support via a PCI Express 1.0a x1 graphics add-in card connector</li> </ul>

Continued

**Table 1. Feature Summary (continued)**

<b>Audio</b>	<ul style="list-style-type: none"><li>● 2 + 2 Channel High Definition Audio ( HD Audio) using a Realtek* ALC888S audio codec supporting:<ul style="list-style-type: none"><li>■ Analog stereo line-out (back panel jack)</li><li>■ In-chassis stereo speakers support (3 W/3 Ω via an internal header)</li><li>■ S/PDIF digital audio output (internal header)</li><li>■ DMIC digital microphone input (internal header)</li><li>■ Analog line-in (back panel jack)</li><li>■ Front panel MiTAC HD Audio/AC'97 headphones/mic support (internal header)</li></ul></li><li>● 8-channel (7.1) HD Audio via the HDMI interface</li></ul>
<b>Expansion Capability</b>	<ul style="list-style-type: none"><li>● One PCI Express 1.0a x1 add-in card connector</li><li>● One PCI Express Full-/Half-Mini Card slot</li><li>● One PCI Express Half-Mini Card slot</li></ul>
<b>Peripheral Interfaces</b>	<ul style="list-style-type: none"><li>● Eight exposed USB 2.0 ports including:<ul style="list-style-type: none"><li>■ Four front panel ports (via two internal headers; one header supports an Z-U130 USB Solid-State Drive (or compatible device))</li><li>■ Two ports are implemented with stacked back panel connectors (black)</li><li>■ Two high-current/fast-charging ports implemented through stacked back panel connectors (yellow)</li></ul></li><li>● Two SATA ports:<ul style="list-style-type: none"><li>■ One internal SATA 3.0 Gb/s port (Port 0, black)</li><li>■ One internal SATA 3.0 Gb/s port (multiplexed with an mSATA port, routed to the PCI Express Full-/Half-Mini Card slot) (Port 1, gray)</li></ul></li></ul>
<b>Legacy I/O</b>	<ul style="list-style-type: none"><li>● Legacy I/O Controller (Nuvoton* W83677DHG) that provides:<ul style="list-style-type: none"><li>■ Two serial ports via onboard headers</li><li>■ One parallel port via an onboard header</li><li>■ Hardware management support</li></ul></li></ul>
<b>LAN Support</b>	82579L Gigabit (10/100/1000 Mb/s) Ethernet LAN controller including an RJ-45 back panel connector with integrated status LEDs
<b>BIOS</b>	<ul style="list-style-type: none"><li>● BIOS resident in a Serial Peripheral Interface (SPI) Flash device</li><li>● Support for Advanced Configuration and Power Interface (ACPI), Plug and Play, and System Management BIOS (SMBIOS)</li></ul>
<b>Instantly Available PC Technology</b>	<ul style="list-style-type: none"><li>● Suspend to RAM support</li><li>● Wake on PCI Express, LAN, front panel, serial, and USB ports</li></ul>

continued

**Table 1. Feature Summary (continued)**

<b>Hardware Management</b>	Nuvoton W83677DHG based subsystem, including: <ul style="list-style-type: none"><li>● Voltage sense to detect out of range power supply voltages</li><li>● Thermal sense to detect out of range thermal values</li><li>● One 3-pin system fan header with speed control</li><li>● Support for Platform Environmental Control Interface (PECI)</li></ul>
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# Desktop Board Components

Figure 1 shows the approximate location of the major components on the top side of MiTAC Desktop Board PD11TI.

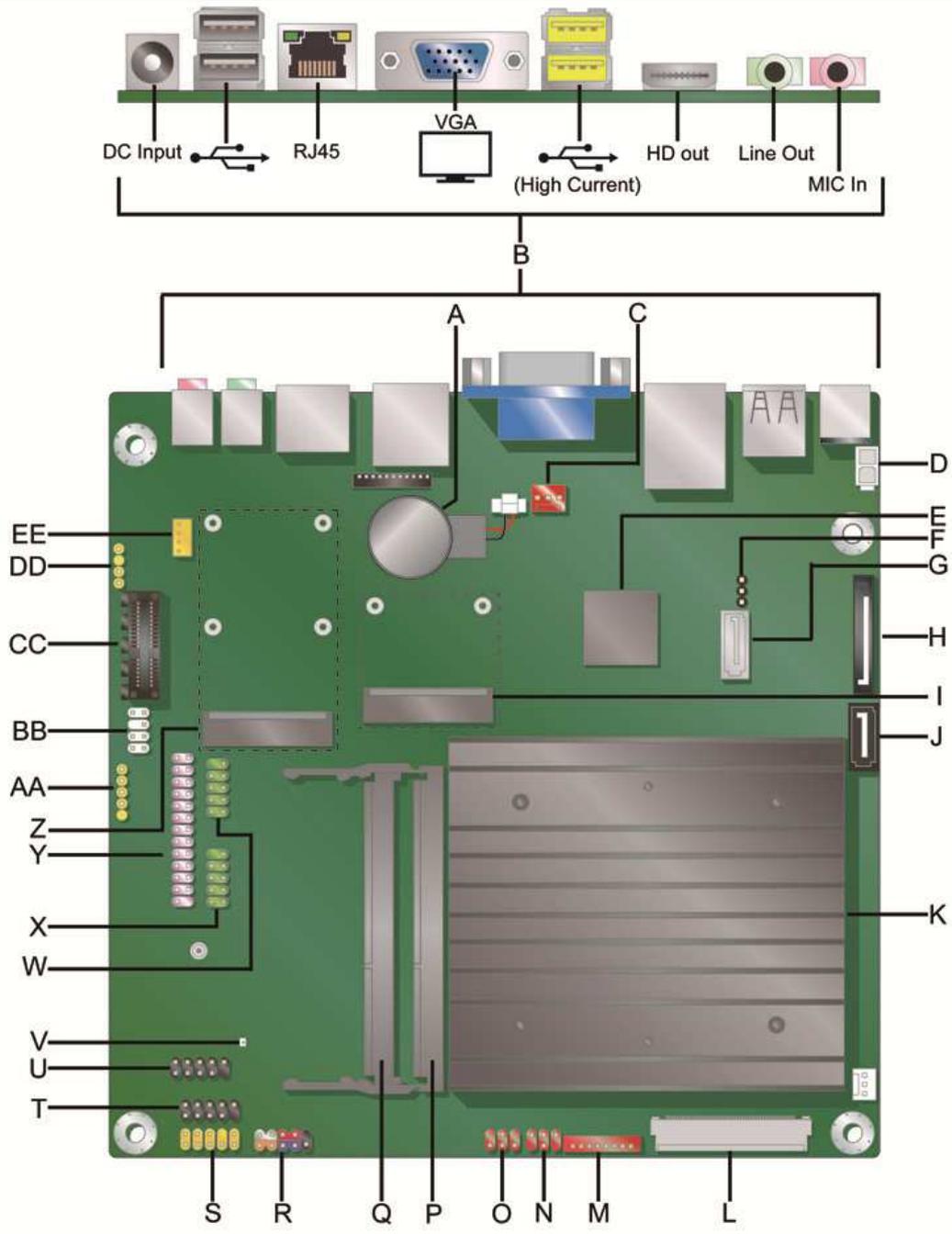


Figure 1. MiTAC Desktop Board PD11TI Components (Top)

**TABLE 2. MiTAC DESKTOP BOARD PD11TI COMPONENTS (SHOWN IN FIGURE 1)**

<b>Label</b>	<b>Description</b>
A	Battery
B	Back panel connectors
C	System fan header
D	Internal DC power connector
E	MiTAC NM10 Express Chipset
F	BIOS configuration jumper block
G	SATA 3.0 Gb/s Port 1 connector
H	SATA power connector
I	PCI Express Half-Mini Card slot
J	SATA 3.0 Gb/s Port 0 connector
K	MiTAC Atom processor with fanless heat sink
L	LVDS connector
M	FPD brightness connector
N	Flat Panel voltage selection header
O	Backlight inverter voltage selection header
P	DDR3 SO-DIMM 0 socket
Q	DDR3 SO-DIMM 1 socket
R	Front panel header
S	Front panel audio header
T	Front panel USB 2.0 header
U	Front panel USB 2.0 header (with flash drive support)
V	Standby power indicator LED
W	Serial port header (COM1)
X	Serial port header (COM2)
Y	Parallel port header
Z	DMIC header
AA	PCI Express Full-/Half-Mini Card slot
BB	Custom solutions header
CC	PCI Express 1.0a x1 add-in card connector
DD	S/PDIF header
EE	Internal stereo speakers connector



**Figure 2. MiTAC Desktop Board PD11TI Components (Bottom)**

**TABLE 3. MITAC DESKTOP BOARD PD11TI COMPONENTS (BOTTOM) (SHOWN IN FIGURE 2)**

<b>Label</b>	<b>Description</b>
A	eDP connector

## Processor

MiTAC Desktop Board PD11TI includes a passively-cooled, dual-core Intel Atom processor with integrated graphics and memory controller. The processor is soldered to the Desktop Board and is not customer upgradeable.



### NOTE

*The board is designed to be passively cooled in a properly ventilated chassis. Chassis venting locations are recommended above the processor heatsink area for maximum heat dissipation effectiveness.*

## System Memory



### NOTE

*To be fully compliant with all applicable SDRAM memory specifications, the board should be populated with DIMMs that support the Serial Presence Detect (SPD) data structure. If your memory modules do not support SPD, you will see a notification to this effect on the screen at power up. The BIOS will attempt to configure the memory controller for normal operation.*

The Desktop Board has two 204-pin DDR3 SO-DIMM sockets with gold-plated contacts. These sockets support:

- Support for DDR3 1066/1333/1600 MHz SO-DIMMs (DDR3 1333 MHz and DDR3 1600 MHz SO-DIMMs operate at 1066 MHz only)
- Serial Presence Detect (SPD) memory only
- Non-ECC memory
- Up to 4 GB of memory

# Connecting to the Internal Headers and Connectors

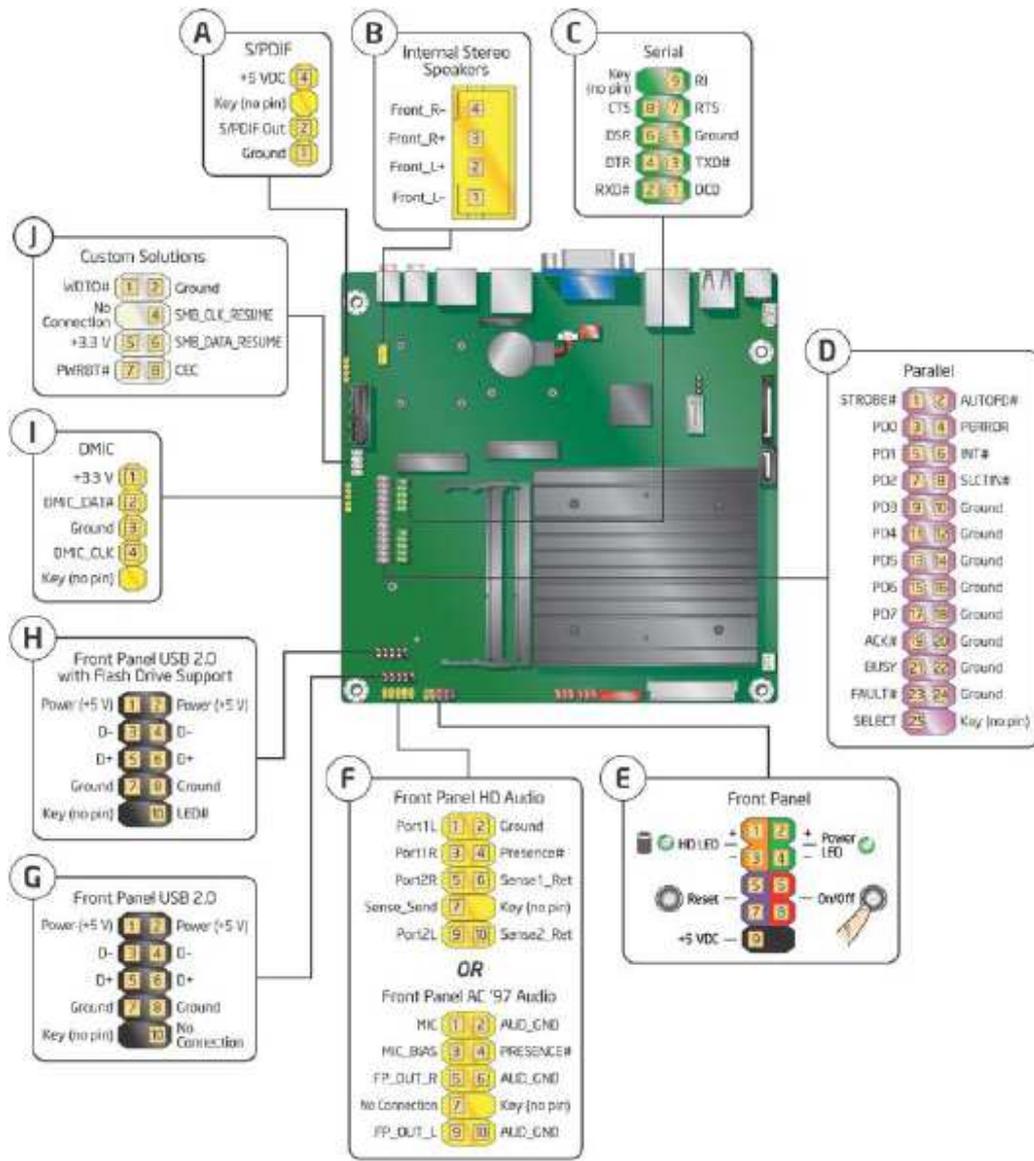


Figure 2. Internal Headers and Connectors

# Updating the BIOS

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The BIOS Setup program can be used to view and change the BIOS settings for the computer. You can access the BIOS Setup program by pressing the F2 key after the Power-On Self-Test (POST) memory test begins and before the operating system boot begins.

This chapter tells you how to update the BIOS, and how to recover the BIOS if an update fails.

## Updating the BIOS Using the F7 Function Key

To use this BIOS update method:

1. Download and save the Recovery BIOS (.BIO) file to a temporary directory.
2. Copy the .BIO file to a USB thumb drive.
3. Plug the thumb drive into a USB port of the target computer.
4. Shut down the target computer.
5. Enable the F7 prompt display:
  - a. Power the computer on.
  - b. Enter the BIOS Setup by pressing the F2 key during boot.
  - c. Go to the Advanced > Boot Configuration menu.
  - d. Enable Display F7 to Update BIOS
  - e. Press the F10 key to save and exit.
6. During boot, when the F7 prompt is displayed, press the F7 key to enter the BIOS Flash Update tool.
7. Select the USB thumb drive and press Enter.
8. Select the .BIO file and press Enter
9. Confirm you want to update the BIOS by pressing Enter.
10. Wait 2-5 minutes for the update to complete.
11. Remove the thumb drive.
12. Restart the computer.



### **CAUTION**

*Do not interrupt the process or the system may not function properly.*

**NOTE**

*Review the instructions distributed with the update utility before attempting a BIOS update.*

**CAUTION**

*Do not interrupt the process or the system may not function properly.*

1. Uncompress the BIOS update file and copy the .BIO file, to a bootable USB flash drive or other bootable USB media.
2. Configure the BIOS or use the F10 key option during POST to boot to the USB device.

**CAUTION**

*DO NOT POWER DOWN YOUR COMPUTER before the update is complete. The update may take up to 5 minutes.*

## Recovering the BIOS

It is unlikely that anything will interrupt the BIOS update; however, if an interruption occurs, the BIOS could be damaged. Due to BIOS size and recovery requirements, a CD-R with the .BIO file in the root directory will be required.

# A Error Messages and Indicators

This appendix describes error messages generated by the Desktop Board's BIOS. The BIOS indicates these error messages with LED blink codes, speaker beep codes, and by text displayed on the PC monitor.

## Front-panel Power LED Blink and Speaker Beep Codes

Whenever a recoverable error occurs during POST, the BIOS provides basic status and error messages through front-panel power LED blink codes (Table 16) as well as through audible beep codes (Table 17).

**TABLE 3. BIOS FRONT-PANEL POWER LED BLINK CODES**

Type	Pattern	Frequency
BIOS update in progress	Off when the update begins, then on for 0.5 second, and then off for 0.5 second. The pattern repeats until the BIOS update is complete.	
Video error <small>(Note)</small>	On-off (1.0 second each) two times, then a 2.5-second pause (off); the entire pattern repeats (blinks and pause) until the system is powered off.	When no VGA option ROM is found.
Memory error	On-off (1.0 second each) three times, then a 2.5-second pause (off); the entire pattern repeats (blinks and pause) until the system is powered off.	
Thermal trip warning	Each beep will be accompanied by the following blink pattern: 0.25 second on, 0.25 second off, 0.25 second on, 0.25 second off. This results in a total of 16 blinks followed by system shut down.	

**TABLE 4. BIOS SPEAKER BEEP CODES**

Type	Pattern	Frequency
BIOS update in progress	None	
Video error <small>(Note)</small>	On-off (1.0 second each) two times, then a 2.5-second pause (off); the entire pattern repeats (beeps and pause) once and the BIOS will continue to boot.	932 Hz When no VGA option ROM is found.
Memory error	On-off (1.0 second each) three times, then a 2.5-second pause (off); the entire pattern repeats (beeps and pause) until the system is powered off.	932 Hz
Thermal trip warning	Alternate high and low beeps (1.0 second each) for eight beeps, followed by system shut down.	High beep 2000 Hz Low beep 1500 Hz

Note: Disabled by default BIOS Setup option.

## BIOS Error Messages

The BIOS may also display an error message on the PC monitor when certain recoverable error occurs during POST. Table 18 gives an explanation of the BIOS error messages.

**TABLE 5. BIOS ERROR MESSAGES**

Error Message	Explanation
CMOS Battery Low	The battery may be losing power.
CMOS Checksum Bad	The CMOS checksum is incorrect. The CMOS memory may have been corrupted. Run Setup to reset values.
Memory Size Decreased	Memory size has decreased since the last boot. If no memory was removed, then memory may be bad.
No Boot Device Available	System did not find a device to boot.

## Battery Caution

There is insufficient space on this Desktop Board to provide instructions for replacing and disposing of the Lithium ion coin cell battery. For system safety certification, the statement below or an equivalent statement is required to be permanently and legibly marked on the chassis near the battery.

A suitable caution label is included with MiTAC Desktop Board PD11TI.

### **CAUTION**

*Risk of explosion if the battery is replaced with an incorrect type. Batteries should be recycled where possible. Disposal of used batteries must be in accordance with local environmental regulations.*

For information about replacing the battery, go to page 39.