

# MXE-1500 Series

Intel<sup>®</sup> Celeron® N3160/N3060 Fanless Embedded Computer with Integrated I/O



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Leading EDGE COMPUTING



# **Revision History**

Revision Release Date		Description of Change(s)	
1.0	2018-04-03	Initial Release	
1.1	2021-01-27	Update RS-422 pinouts	

## Preface

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Take note of the following conventions used throughout this manual to make sure that users perform certain tasks and instructions properly.



Additional information, aids, and tips that help users perform tasks.



Information to prevent *minor* physical injury, component damage, data loss, and/or program corruption when trying to complete a task.



Information to prevent *serious* physical injury, component damage, data loss, and/or program corruption when trying to complete a specific task.

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## 1 Introduction

### 1.1 Overview

The Matrix MXE-1500 is powered by the quad-core Intel® Celeron® Processor N3160 and dual-core N3060, supports Windows 7, and is also the first entry level platform to support independent 3-display interface, with improved graphics performance over previous generation systems.

The MXE-1500's rich I/O provides three Intel® Ethernet Controller I211, up to six serial ports, six external USB, one internal USB dongle, and optional features including amplifier, TPM 2.0 and either LVDS or 2nd DisplayPort for the flexibility to fulfill the demands of a wide array of applications.



## 1.2 Specifications

	MXE-1501	MXE-1502				
	System Core					
Processor	Intel® Celeron® N3160	Intel® Celeron® N3060				
Cores	4	2				
Threads	4	2				
CPU Base Frequency	1.6 GHz	1.6 GHz				
CPU Burst Frequency	2.24 GHz	2.48 GHz				
L2 Cache	21	ИВ				
TDP	6	W				
Memory	2x DDR3L SODIMM up to 8GB (memory frequency supports up to 1600MHz)					
External I/O						
Display	<ul> <li>3 independent displays supported</li> <li>1x VGA, up to 1920x1200 @60Hz</li> <li>1x DisplayPort 1.1a, up to 2560x1600 @60Hz</li> <li>Optional LVDS or DisplayPort</li> <li>LVDS: converted by PTN3460, 18/24-bit single CH, 6/8-bit panel switch by jumper, LVDS power 3.3/5/12 V by jumper, backlight power 5/12 V by jumper</li> <li>DisplayPort, up to 2560x1600 @60Hz, shared location with</li> </ul>					
Ethernet	3 GbE (Int	el I211AT)				
Serial Port	erial Port COM1/2: RS-232, COM1 supports console redirection COM3/4: RS-232/422/485, switched by BIO Optional COM5/6: RS-232/422/485, switched BIOS (shared location with optional Display					
USB 3.0	2 ports (shared 1.8A)					

Table 1-1: MXE-1500	Specifications
---------------------	----------------

	MXE-1501	MXE-1502
USB 2.0	4 ports (500mA/port, 2 by USB hub located along with Ethernet 3, 2 by native USB located with Ethernet 2)	
DI/O	4 DI + 4 DO (TTL typ	e, controlled by SoC)
CFast	1 (support	s hot plug)
USIM	1	
Audio	ALC269Q, Li (optional	ne-out/Mic-in amplifier)
	Internal I/O	
USB2.0 I <sup>2</sup> C	1 dongle (500mA, by USB hub) 1 (with 3.3V power)	
ТРМ	TPM 2.0	
Expansion	<ul> <li>1x full size Mini PCIe socket with PCIe and USB interface (PCIe signal supports gen 2, USB signal by USB hub)</li> <li>3.3/5 V wafer for GPS Mini PCIe module power input</li> </ul>	
2.5" SATA storage Supports 1x SAT		ATA 3.0 drive
Manageability		
Watchdog Timer	Watchdog Timer Yes, programmable	
SEMA SEMA3.5		A3.5
Power Supply		
DC Input	Built-in 6-36VDC wide range power input, 3-pin pluggable Phoenix connector with latch (V-, GND, V+)	
AC Input	Optional 90W industrial grade AC/DC adapter	
Physical		
Dimensions	210 (W) x 170 ( (8.3 x 6.75	D) x 53 (H) mm 5 x 2.1 in.)
Weight	1.5 kg (3.31 lb.)	
Mounting VESA 100		A 100



	MXE-1501	MXE-1502		
Environmental				
Operating	► Standard: 0 to 50° HDD)	C (32 to 122 ) (w/		
Temperature	<ul> <li>Extended: -20 to 7 industrial SSD/CFa</li> </ul>	0°C (-4 to 158°F (w/ ast)		
Storage Temperature	-40 to 85°C (	-40 to 185°F)		
Humidity	Approx. 95% @4°C	C (non-condensing)		
Vibration	w/ CFast/SSD: operating, 5Grms, 5-500Hz, 3 axes, 60min/axis			
	w/ HDD: operating, 0.3Grms, 5-500Hz, 3 axes, 60min/axis			
Shock	w/ CFast/SSD: operating	ı, 100Grms		
ESD	Contact ±4 KV, Air ±8 KV			
EMC	CE, FCC Class A (EN61000-6-4/-2)			
Safety	UL by CB			
Power Consumption				
Power Off	3.9W 3.5W			
System Idle	7.9W 9.1W			
Processor Full Load	11.3W 11.2W			
System Full Load	17.7W 15.3W			

Table	1-1:	<b>MXE-1500</b>	Specifications
-------	------	-----------------	----------------



Figure 1-1: MXE-1500 Functional Block Diagram

## 1.3 Unpacking Checklist

Before unpacking, check the shipping carton for any damage. If the shipping carton and/or contents are damaged, inform your dealer immediately. Retain the shipping carton and packing materials for inspection. Obtain authorization from your dealer before returning any product to ADLINK. Ensure that the following items are included in the package.

- MXE-1500
- Screw pack for VESA 100 wall-mounting and 2.5" SSD/HDD installation



## 1.4 Mechanical Drawings



All dimensions shown are in millimeters (mm) unless otherwise stated.



Figure 1-2: Top View



Figure 1-3: Underside View



Figure 1-4: Front View





Figure 1-5: Rear View





## 1.5 Front Panel I/O Connectors

The front panel of the MXE-1500 provides the following I/O connections, as labeled.



Figure 1-7: Front Panel I/O

- Power Button
- Reset Button
- LED Indicators
- Mic in
- ► Speaker/headphone out
- Remote Power On/Off
- DisplayPort
- CFast/USIM port
- ▶ USB 3.0 A type
- ▶ USB 2.0 A type
- ▶ 10/100/1000 Ethernet
- VGA out



#### 1.5.1 Power Button

The power button is a non-latched push button with blue LED indicator. The system is turned on when the button is pressed, and the power LED lights. To shut down, the OS can be issued a shutdown command can be issued or the power button used. If the system hangs, pressing and holding the button for 5 seconds manually turns the system off.

#### 1.5.2 Reset Button

The reset button is used to perform hard reset for the MXE-1500.

#### 1.5.3 LED indicators

In addition to the power button, three LED indicators on the front panel as follows.

Indicator	Color	Description	
Watchdog (WDT)	Yellow	When Watchdog Timer is started, flashes and lights when timer is expired.	
Hard disk drive	Red	When the SATA interface device is active, blinks.	
Diagnostic	Green	<ul> <li>If no physical storage device is connected to the system, remains lit</li> </ul>	
		<ul> <li>If no memory is installed in the SO-DIMM sockets, blinks.</li> </ul>	

Table 1-2: LED Indicators

#### 1.5.4 Mic & Headphone Jacks

The MXE-1500 implements Intel High Definition audio on the REALTEK ALC269Q chip, with support up to 24-bit, 192 KHz sample rate high quality headphone output and microphone input.

#### 1.5.5 Remote Power On/Off

The remote Power ON/OFF connector on the panel is reserved for connection of an external power On/Off signal. The function shorts pins 1 and 2 to send the power ON/OFF signal to the system, with behavior the same as the onboard power button.



Figure 1-8: Remote Power ON/OFF Connector

Pin	Signal	
1	PWRBTN#_CN	
2	GND	

Table 1-3: Remote Power ON/OFF Pin Assignment

#### 1.5.6 DisplayPort

The DisplayPort v1.1 connection supports up to 2560x1600 32bit (60, 75Hz).



Figure 1-9: DisplayPort Connector



Pin	Signal	Pin	Signal
1	CN_DP0_P	2	GND
3	CN_DP0_N	4	CN_DP1_P
5	GND	6	CN_DP1_N
7	CN_DP2_P	8	GND
9	CN_DP2_N	10	CN_DP3_P
11	GND	12	CN_DP3_N
13	CN_CAD-L	14	CN_CEC
15	CN_AUX_P	16	GND
17	CN_AUX_N	18	DDP_HPD
19	GND	20	P3V3

Table 1-4: DisplayPort Pin Assignment

### 1.5.7 CFast/USIM Slot

A Type-II push–push CFast slot, connecting to the host controller by SATA interface, provides transfer rates up to 3.0Gb/s (300MB/s)/1.5Gb/s(150MB/s). The host SATA controller provides a legacy operating mode using I/O space, and an AHCI operating mode using memory space. The CFast card can function as a storage device for system installation.

The slot supports USIM cards and push-push insertion.

#### 1.5.8 USB 3.0 Connectors

USB 3.0 supporting Type A connection is compatible with Super-Speed, Hi-Speed, full-speed and low-speed USB devices, with support for multiple boot devices, including USB flash, USB external HDD, and USB CD-ROM drivers, with priority and device configuration in BIOS.



When using USB CD-ROM via USB 3.0 port to re-install or repair the OS, cold boot should be utilized.

#### 1.5.9 USB 2.0 Connectors

The MXE-1500 provides a total of two USB 3.0 ports and five USB 2.0 ports using Type A USB connectors. All are compatible with Hi-Speed, full-speed, and low-speed USB devices. The MXE-1500 supports multiple boot devices, including USB flash drive, USB external hard drive, USB floppy, USB CD-ROM and etc. The boot priority and boot device can be configured in BIOS setting.

#### 1.5.10 Gigabit Ethernet (Intel® i211-AT)

3 Gigabit Ethernet ports on the front panel, supporting the Intel i211-AT GbE controller, provide

- ▶ IEEE 802.3az Energy Efficient Ethernet
- ▶ IEEE 1588/802.1AS precision time synchronization
- IEEE 802.3Qav traffic shaper
- ► Interrupt moderation, VLAN support, IP checksum offload
- PCIe OBFF (Optimized Buffer Flush/Fill) for improved system power management
- ▶ Four transmit and four receive queues
- RSS and MSI-X to lower CPU utilization in multi-core systems
- ► ECC error correcting memory in packet buffers
- ► Wake-on-LAN
- NC-SI for increased bandwidth passthrough
- Preboot eXecution Environment (PXE) flash interface
- ► Jumbo frame support



### 1.5.11 Active/Link & Speed LEDs



Figure 1-10: Active/Link & Speed LEDs

Color	Status	Description
	OFF	Ethernet port is disconnected
Yellow	ON	Ethernet port is connected and no data transmission is underway
	Flashing	Ethernet port is connected and transmitting/receiving data.

Table 1-5: Active/Link LED Legend

Color	Status	Description
	OFF	10 Mbps
Green/Orange	Green	100 Mbps
	Orange	1000 Mbps

Table 1-6: Speed LED Legend

#### 1.5.12 VGA Out

Supports VGA display resolutions up to 1920 x 1200 at 60Hz 24bpp.

## 1.6 Rear Panel I/O Connectors

The rear panel of the MXE-1500 provides the following I/O connections, as labeled.



Figure 1-11: Rear Panel I/O

- ► DC power supply connector
- Antenna plugs
- USB2.0 A type
- 10/100/1000 Ethernet
- ► DI/O connector (4CH in/4CH out)
- COM ports

## 1.6.1 DC Power Supply Connector

The DC power supply connector consists of three pins, V+, chassis ground, and V- from right to left respectively. V+ and V- pins are for DC power input and chassis ground pin grounds the chassis for better EMC compatibility. DC power input of the MXE-1500 allows a voltage input range from DC 6 to 36V, with UVP (under voltage protect of 6V), OVP (over voltage protect of 36V), and reversed polarity protection.



Please ensure that DC power supply is within the input voltage range defined in the specification, stable and low-noise, and provides sufficient operating current.

Over- or under-voltage, unstable, or insufficiently powered DC power supply may cause system instability and physical damage.



#### 1.6.2 Antenna Connector

The MXE-1500 provides two SMA type antenna connectors suitable for Wireless LAN and Wireless WAN modules of an internal Mini PCI Express card.

#### 1.6.3 USB 2.0 Connectors

The MXE-1500 provides a total of six USB 2.0 ports using Type A USB connectors, with two ports on the front and two on the rear panel. All are compatible with Hi-Speed, full-speed, and low-speed USB devices. The MXE-1500 supports multiple boot devices, including USB flash drive, USB external hard drive, USB floppy, USB CD-ROM and etc. The boot priority and boot device can be configured in BIOS setting.

#### 1.6.4 Gigabit Ethernet (Intel i211-AT)

The Gigabit Ethernet port on the rear panel, supporting the Intel i211-AT GbE controller, provides

- ▶ IEEE 802.3az Energy Efficient Ethernet
- ► IEEE 1588/802.1AS precision time synchronization
- ▶ IEEE 802.3Qav traffic shaper
- ► Interrupt moderation, VLAN support, IP checksum offload
- PCIe OBFF (Optimized Buffer Flush/Fill) for improved system power management
- ► Four transmit and four receive queues
- RSS and MSI-X to lower CPU utilization in multi-core systems
- ► ECC error correcting memory in packet buffers
- Wake-on-LAN
- NC-SI for increased bandwidth passthrough
- Preboot eXecution Environment (PXE) flash interface
- ► Jumbo frame support

#### 1.6.5 Active/Link & Speed LEDs



Figure 1-12: Active/Link & Speed LEDs

Color	Status	Description
	OFF	Ethernet port is disconnected
Yellow	ON	Ethernet port is connected and no data transmission is underway
	Flashing	Ethernet port is connected and transmitting/receiving data.

#### Table 1-7: Active/Link LED Legend

Color	Status	Description
	OFF	10 Mbps
Green/Orange	Green	100 Mbps
	Orange	1000 Mbps

#### Table 1-8: Speed LED Legend



#### 1.6.6 Digital I/O Connector

The MXE-1500 provides four channel non-isolation digital input circuits and four digital non-isolation output circuits through a terminal slot of pitch 3.81mm. Spec and connector pin numbering and definitions are as follows.

4-Channel Digital Input 4-Channel Digital Output	
Logic high: 2 to 5.25 V	Output type: Open drain N-channel MOSFET driver with internal pull high of 200 $\Omega$ resistance
	Output high: 2.4 to 5 V
Logic low: 0 to 0.8 V	Output low: 0 to 0.5 V
	Source/Sink current for all channels: 24 mA



Figure 1-13: DI/O Connector Pin Numbering

Pin	Description	Pin	Description
1	DI 0	6	DO 0
2	DI 1	7	DO 1
3	DI 2	8	DO 2
4	DI 3	9	DO 3
5	GND	10	GND

Table 1-9: DI/O Connector Pin Definition











#### 1.6.7 COM Ports

The MXE-1500 provides 4 COM ports on the rear panel in the form of D-sub 9P connectors, configured as follows. COM3 & COM4 ports can support RS232/RS422/RS485 mode as set in BIOS. See "Serial Port 1 to 4 Configuration" on page 56.



- 2x Software-programmable RS-232/422/485 (COM3 & COM4) by DB9 connectors
- ▶ 2x RS-232 (COM1 & COM2) by DB9 connectors

PIN	Signal name		
	RS-232	RS-422	RS-485
1	DCD#	TXD422n	485n
2	RXD	TXD422p	485p
3	TXD	RXD422p	N/S
4	DTR#	RXD422n	N/S
5	GND	N/S	N/S
6	DSR#	N/S	N/S
7	RTS#	N/S	N/S
8	CTS#	N/S	N/S
9	RI#	N/S	N/S

Table 1-10: COM 3/4 Ports Pin Assignments



## 1.7 Internal I/O Connectors

Figure 1-16: Internal I/O

Α	Internal I <sup>2</sup> C interface
В	3.3V GPS
С	5V GPS
D	LVDS +12V Power Jumper
Е	LVDS +5V Power Jumper
F	LVDS +3.3V Power Jumper
G	Internal USB2.0 interface
н	Mini PCIE slot (full size)
I	Jump select for LVDS inverter 12V power
J	Jump select for LVDS Inverter 5V power

Table 1-11: MXE-1500 Internal I/O Legend



К	LVDS backlight control
L	LVDS
М	SATA
Ν	Clear CMOS jumper
0	LVDS 18/24-bit select jumper
Ρ	Speaker
Q	COM port (COM 5/6)

Table 1-11: MXE-1500 Internal I/O Legend

## 1.7.1 Internal I<sup>2</sup>C interface

 $I^2C$  and +3.3/5v power are provided with cable.



Figure 1-17: Internal I<sup>2</sup>C Connector

Pin	Signal	
1	GND	
2	SOC_I2C_PWR	
3	SOC_INTERRUPT_3V3	
4	SOC_I2C0_SCL_3V3	
5	SOC_I2C0_SDA_3V3	

 Table 1-12: Internal I<sup>2</sup>C Connector Pin Assignment
### 1.7.2 3.3V/5V GPS

Internal +3.3V and +5V connectors support up to 1A current of +3.3V and +5V to the Mini PCI Express card via cable, if needed, such as for wireless WAN or GPS card.



Figure 1-18: +3.3V and +5V GPS Connectors

Pin	Description	
1	+5V	
2	GND	
3	+3.3V	
4	GND	

Table 1-13: +3.3V and +5V GPS Pin Assignments



### 1.7.3 LVDS Voltage Selection Jumpers

The MXE-1500 provides power to the LVDS interface (+LVDS\_VCC) selected by internal jumper, from among +3.3V, +5V, and +12V, as follows.

CN17	+12V	
CN41	+5V	
CN40	+3.3V	



Figure 1-19: LVDS Voltage Selection Jumpers

### 1.7.4 Internal USB2.0 Interface

Supports a USB2.0 type-A device.

# 1.7.5 Mini PCIE Slot (full size)

The MXE-1500 features a Mini PCI Express slot providing functional expansion to, for example, wireless LAN module, wireless WAN module, GPS module, and others, conforming to PCI Express Mini Card Electromechanical Specification Rev. 1.2.

### 1.7.6 LVDS Inverter 5V/12V Power Jumpers



Figure 1-20: 5V/12V Power Jumpers

	Pin	Signal	
5\/	1	P_+5V0_S0	
50	2	P_+INVER_PWR	
12V	1	P_+12V0_S0	
	2	P_+INVER_PWR	

Table 1-14: 5V/12V Power Jumpers Pin Assignments

### 1.7.7 LVDS Backlight Power Connector (optional)

The MXE-1500 internal LVDS backlight power connector supports +3.3V.



Figure 1-21: LVDS Backlight Power Connector

Pin	Description	
1	LVDS_BKTEN_3V3	
2	LVDS_BKLTCTL_3V3	
3	P_+INVER_PWR	
4	GND	

Table 1-15: LVDS Backlight Power Connector Pin Definition



# 1.7.8 LVDS Connector



Figure 1-22: LVDS Connector

Pin	Signal	Pin	Signal
1	CON_LVDS_A_TX3_N	11	GND
2	CON_LVDS_A_TX0_N	12	GND
3	CON_LVDS_A_TX3_P	13	CON_LVDS_I2C_DAT
4	CON_LVDS_A_TX0_P	14	CON_LVDS_A_TX2_N
5	GND	15	CON_LVDS_I2C_CLK
6	GND	16	CON_LVDS_A_TX2_P
7	CON_LVDS_A_CLK_P	17	P_CON_+LVDS_PWR
8	CON_LVDS_A_TX1_N	18	GND
9	CON_LVDS_A_CLK_N	19	P_CON_+LVDS_PWR
10	CON_LVDS_A_TX1_P	20	P_CON_+LVDS_PWR

Table 1-16: LVDS Connector Pin Assignment

### 1.7.9 SATA Connector



Figure 1-23: SATA Connector Pin Assignment

### 1.7.10 Clear CMOS Jumper

Upon encountering an abnormal condition preventing the MXE-1500 from booting, the jumper can clear the BIOS content stored in CMOS and restore default settings. To clear CMOS, short pin #1 to pin #2 of CN20 and then return to normal mode (short pin #3 to pin #2).



Figure 1-24: Clear CMOS Jumper

Pin	Signal	
1	SOC_RTEST-L	
2	GND	
3	GND	
4	SOC_SRTCRST-L	

Table	1-17:	Clear	CMOS	Pin	Assignment
-------	-------	-------	------	-----	------------



# 1.7.11 LVDS 18/24-bit Select Jumper

18-bit LVDS	Short pins 1 and 2	
24-bit LVDS	Short pins 2 and 3	

Table 1-18: LVDS 18/24-bit Jumper Settings



Figure 1-25: LVDS 18/24-bit Select Jumper

Pin	Signal	
1	GND	
2	PTN3460_CFG2	
3	P_+3V3_3460	

Table 1-19: LVDS 18/24-bit Select Jumper Pin Assignments

### 1.7.12 Speaker Connector



Figure 1-26: Speaker Connector

Pin	Signal
1	ALC269_SPK_L_P
2	ALC269_SPK_L_N
3	ALC269_SPK_R_P
4	ALC269_SPK_R_N

Table 1-20: Speaker Connector Pin Assignment

### 1.7.13 COM Port (COM 5/6)

COM port mode is switchable in BIOS.



Figure 1-27: COM Port

DIN	Signal			
FIN	RS-232	RS-422	RS-485	
1	DCD#	TXD422n	485n	
2	RXD	TXD422p	485p	
3	TXD	RXD422p	N/S	
4	DTR#	RXD422n	N/S	
5	GND	N/S	N/S	
6	DSR#	N/S	N/S	
7	RTS#	N/S	N/S	
8	CTS#	N/S	N/S	
9	RI#	N/S	N/S	

Table 1-21: COM 5/6 Port Pin Assignment



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# 2 Getting Started

This chapter demonstrates installation of a hard disk drive and CFast card. In addition to connection and use of DI/O, wall-mount-ing instruction is also provided.

# 2.1 Installing a Hard Disk Drive

Before installing a hard disk drive, remove the bottom cover of the chassis as follows.

1. Use a #3 hex wrench to unscrew all 6 screws (M3 hex bolts) from the front panel.



2. Remove the 2 fixing members from the front panel and remove the panel.





3. Remove the 6 screws from the rear panel.



4. Remove the 8 fixing members from the rear panel and remove the panel.



5. Remove the bottom chassis by sliding it off the top chassis.



6. The MXE-1500 ships with an attached empty HDD bracket. Unscrew the 4 screws and remove the HDD bracket.





7. Secure the 2.5" HDD or SSD to the bracket using the four supplied M3-F screws and four anti-vibration jacks.



8. Connect the drive to the SATA connector.



9. Fasten the 4 screws to fix the HDD bracket to the fixing members.



10.Align the sliding parts as shown and reassemble the bottom chassis to the top chassis.





11. Reinstall the front and rear panels and fasten 10 screws (M3 hex bolts) and 12 fixing members into the front and rear panels.

# 2.2 Installing a CFast/USIM Card

The external CFast/USIM slot accommodates one CFast/USIM card for additional storage. To install the card:

1. Remove the 2 screws from the CFast/USIM cover and remove the cover.



2. Gently insert the CFast/USIM card until it is firmly seated in the slot.



3. Replace the CFast/USIM cover and refasten the screws.

# 2.3 Connecting a DI/O Device

The MXE-1500 series controller provides 4 digital input and 4 digital output ports. The two pluggable terminals provided enable connection to the DI/O device.



Connect the two pluggable terminals to the DI/O connector on the rear panel. Fix the pluggable terminal using the 2 screws.



For DI/O pin definitions, see "Internal I/O Connectors" on page 21.

# 2.4 Installing a Mini-PCI-E Device

- 1. Remove the front and rear panels and slide the bottom chassis off the top chassis.
- 2. Insert the mini-PCI-E wireless module into the bracket at an angle.



3. Depress the module into place and fix with the 4 M2.5-P-head-L5 screws.



4. Rejoin the chassis and replace the front and rear panels, with all screws and fixing members in place.

# 2.5 Connecting DC power



Before providing DC power to the MXE-1500, ensure voltage and polarity provided are compatible with the DC input. Improper input voltage and/or polarity can be responsible for system damage.

The MXE-1500 DC power input connector utilizes V+, V-, and chassis ground pins, and accepts input voltage as discussed.

Connect the DC power connector and fix using the 2 screws.





# 2.6 Wall-mounting the MXE-1500

The MXE-1500 is shipped with a VESA 100 wall-mount brackets and accessory screws. The bracket has four M4 mounting holes with a pitch of 100 mm, allowing fixture to any VESA 100 compatible mounting mechanism. The mounting bracket enables the MXE-1500 series controller to be mounted on a wall or the back of a monitor. To wall-mount the MXE-1500:



1. Remove the four M4 screws on the bottom cover.

- 2. Replace with the 4M4.0,I-head screws.
- 3. Prepare the wall-mount brackets and 4 M4 screws provided.

4. Fasten the 4 screws to fix the bracket to the desired mounting surface (wall or monitor) as shown.







5. Depress the MXE-1500 until a click is heard. The chassis is now locked to the mounting bracket.



# 2.7 Cooling Configuration

Heat-generating components of the MXE-1500 (such as CPU and PCH) are all situated on the left side of the system. These components directly contact the heat sink via thermal pads and dissipate heat generated by the components. To maximize efficiency of heat dissipation, maintain a minimum of 2 inches (5 cm) clearance on the top of the MXE-1500.

# 2.8 Driver Installation

Download requisite drivers for your system from http:// www.adlinktech.com and install.

The following drivers must be installed:

- ► Chipset
- ► Graphic
- Audio
- ► Intel TXE
- Intel Serial I/O
- ► Intel USB3.0 (Windows 7 only)
- LAN
- ► TPM (Optional)



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# Appendix A DI/O with API/Windows

Matrix DI/O API library files and a demo program (incl. source code) are located on the included driver CD or downloaded from http://www.adlinktech.com.

To use the DI/O function library for MXE-1500, include the header file matrix\_dio.h and linkage library matrix\_dio.lib in the C++ project.

DI/O functions are as follows.

# GPIO\_Init

Reserves system resources for digital input/output API service. It is necessary to call this function before using other MXE-1500 DI/O functions.

#### @ Syntax

C/C++

```
I16 GPI0_Init(void)
```

#### @ Parameters

None

### @ Return code

```
NoError
ErrorOpenDriverFailed
ErrorDeviceIoctl
```

# GPI\_Read()

Reads the digital logic state of the digital input line.

### @ Syntax

C/C++

```
I16 GPI_Read(U16 *pwState)
```

### @ Parameters

pwState



Returns the digital logic state of MXE-1500 digital input channels  $1\sim4$  (bit  $0\sim3$ )

#### @ Return code

```
NoError
ErrorOpenDriverFailed
ErrorDeviceIoctl
```

# GPO\_Write()

Sets the digital logic state of the digital output line.

#### @ Syntax

C/C++

I16 GPO\_Write(U16 wState)

#### @ Parameters

State

Sets the digital logic state of MXE-1500 digital output channels  $1\sim4$  (bit  $0\sim3$ ) to 0 or 1.

### @ Return code

NoError ErrorOpenDriverFailed ErrorDeviceIoctl

# GPO\_Read()

Reads the digital logic state of the digital output line.

### @ Syntax

C/C++

I16 GPO\_Read(U16 \*pwState)

### @ Parameters

pwState

Returns the digital logic state of MXE-1500 digital output channels  $1 \sim 4$  (bit  $0 \sim 3$ ).

### @ Return code

NoError ErrorOpenDriverFailed ErrorDeviceIoctl



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# Appendix B BIOS Setup



BIOS options in the manual are for reference only, and are subject to configuration. Users are welcome to download the latest BIOS version from the ADLINK website.

The Basic Input/Output System (BIOS) is a program that provides a basic level of communication between the processor and peripherals. In addition, the BIOS also contains codes for various advanced features applied to the MXE-1500. The BIOS setup program includes menus for configuring settings and enabling features of the MXE-1500 series. Most users do not need to use the BIOS setup program, as the MXE-1500 ships with default settings that work well for most configurations.



Changing BIOS settings may lead to incorrect controller behavior and possible inability to boot. In such a case, Section 1.7.10 on page 27 provides instruction on clearing the CMOS and restoring default settings

Enter BIOS setup by selecting DEL when the system is powered on the POST (Power On Self Test) message is displayed.The MXE-1500 controller supports one-time Boot Menu allowing selection of boot device. Enter the Boot Menu by selecting F7 at POST.



- BIOS options listed are for reference only.
- Different configurations can affect BIOS behavior.
- Displayed material may reflect only the BIOS version corresponding to initial release and may differ from that of the purchased motherboard.

# B.1 Main

Contains basic system information for the MXE-1500.



Aptio Setup Main Advanced Chipset	o <b>Utility – Copyright (C) 2017 American</b> Security Boot Save & Exit	Megatrends, Inc.
BIOS Information BIOS Vendor BIOS Version Build Date MRC Version GOP Version TXE FW Version	American Megatrends 0.13.10 10/12/2017 09:56:54 0.34.20.1 8.0.1041 02.00.05.3117	Board Information
System Information Project Name Hardware version CPU Brand String CPU Frequency Total Memory Memory Frequency PCH SKU	MXE1500 A1 Intel(R) Celeron(R) CPU N3160 @ 1.60GHz 1.60GHz 2048 MB(DDR3L) 1600 MHz D1 Stepping	++: Select Screen 14: Select Item Enter: Select +/-: Change Dpt. F1: Seneral Help
▶ Board Information System Date System Time	[Thu 10/12/2017] [11:19:36]	F8: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Access Level	Administrator	
Version 2.	18.1264. Copyright (C) 2017 American M	egatrends, Inc.

### **BIOS Information**

Shows vendor, version, build date, MRC Version, GOP Version, and TXE FW Version for active BIOS.

#### **System Information**

Shows current system project name, hardware version, CPU brand string, CPU frequency, total memory, memory frequency and PCH SKU.

#### System Time/System Date

Allows adjustment of system time and date, as follows.

- Highlight System Time or System Date using the up and down <Arrow> keys
- 2. Enter new values using the keyboard and select <Enter>

3. Select < Tab > to move between fields.

$\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{$	►	The date must be entered in MM/DD/YY format, and the time in HH:MM:SS.
NOTE:	•	The time is in 24-hour format. For example, 5:30 A.M. appears as 05:30:00, and 5:30 P.M. as 17:30:00.

### **Access Level**

Displays the current access level for BIOS setup.

### **B.1.1** Board Information

Aptio Setup U Main	tility – Copyright (C) 2017 An	merican Megatrends, Inc.
Board Information Serial Number Manufacturing Date Last Repair Date MAC ID Runtime Statistics Total Runtime Current Runtime Power Cycles Boot Cycles Boot Reason	N/A N/A N/A 242h 19m Oh 07m 09s 67 218 Software-reset	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.18	.1264. Copyright (C) 2017 Amer	rican Megatrends, Inc.

### **Board Information**

Displays Serial Number, Manufacturing Date, Last Repair Date, and MAC ID for the installed board.



### **Runtime Statistics**

Displays total runtime, current runtime, power cycles, boot cycles, and boot reason for the system.

# **B.2** Advanced



Setup may cause system malfunction CAUTION:

Accesses advanced options of the MXE-1500.

•

# B.2.1 CPU Configuration

Aptio Setup Utility - Advanced	- Copyright (C) 2018 Americar	n Megatrends, Inc.
CPU Configuration		Disabled for Windows XP
Intel(R) Celeron(R) CPU N3060 @ 1.6 CPU Signature Microcode Patch Max CPU Speed Min CPU Speed Processor Cores Intel HT Technology Intel VT-x Technology L1 Data Cache L2 Cache L3 Cache L3 Cache L3 Cache L3 Cache L3 Cache L3 Cache L1 Dit Virtualization Technology EIST Turbo Mode CPU C state Report DTS	006H2 406C4 410 1600 MH2 480 MH2 2 Not Supported 24 kB × 2 32 kB × 2 1024 kB × 2 1024 kB × 2 Not Present [Disabled] [Enabled] [Enabled] [Enabled]	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Defaults F10: Save &amp; Exit ESC: Exit</pre>
Version 2 18 1264 (	Conuright (C) 2018 American M	Megatrends Inc

# Limit CPUID Maximum

Disabled for Windows XP.

### Intel Virtualization Technology

When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

### **Turbo Mode**

Enables/disables Turbo Mode.

### EIST

Enables/disables Intel SpeedStep.



### **CPU C state Report**

Enables/disables CPU C state report to OS.

# DTS

Enables/disables Digital Thermal Sensor.

### B.2.2 Memory Configuration

Aptio Setup Utility – Advanced	Copyright (C) 2017 American	Megatrends, Inc.
Memory Configuration		Maximum Value of TOLUD.
Total Memory Memory Frequency Memory Voltage Memory Slot0 Memory Slot2	2048 MB (DDR3L) 1600 MHz 1.35V 2048 MB (DDR3L) Not Present	
Max TOLUD		
		<pre>+: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Defaults F10: Save &amp; Exit ESC: Exit</pre>
Version 2.18.1264. Co	pyright (C) 2017 American M	egatrends, Inc.

Displays total memory, memory frequency, memory voltage, memory slot0, and slot2.

# Max TOLUD

Maximum Value of TOLUD.

# B.2.3 Onboard Device Configuration

Aptio Setup Utility - Advanced	- Copyright (C) 2017 America	n Megatrends, Inc.
Serial Port Configuration		▲ Select COM3 mode. RS232, RS422 or RS485
COM1 Device Settings	IO=3F8h; IRQ=4;	
COM2 Device Settings	IO=2F8h; IRQ=3;	
COM3 Device Settings	IO=3E8h; IRQ=5;	
COM4 Device Settings	IO=2E8h; IRQ=7;	
COM4 Control	[RS232]	
Lan Port Configuration		
LAN #1 (Intel I211AT)	[Enabled]	
LAN #1(I211AT) Launch PXE OpROM	[Disabled]	
LAN #2 (Intel I211AT)	[Enabled]	
LAN #2(I211AT) Launch PXE OpROM	[Disabled]	↔: Select Screen
LAN #3 (Intel I211AT)	[Enabled]	T∔: Select Item
LAN #3(I211AT) Launch PXE OpROM	[Disabled]	Enter: Select
PCIe Wake	[Enabled]	+/-: Change Opt.
Wake On Ring	[Enabled]	F1: General Help E8: Previous Values
SATA Configuration		F9: Optimized Defaults
SATA Controller	[Enabled]	F10: Save & Exit
		ESC: Exit
USB Configuration		
USB Devices:		
1 Drive, 1 Keyboard, 1 Hub		<b>V</b>

/ersion 2.18.1264. Copyright (C) 2017 American Megatrends, Inc

Aptio Setup Utility - Advanced	Copyright (C) 2017 Ameri	ican Megatrends, Inc.
COM4 Device Settings	IO=2E8h; IRQ=7;	▲ Enables Legacy USB support.
COM4 Control	[RS232]	AUTO option disables legacy
Lan Port Configuration		connected. DISABLE option will
LAN #1 (Intel I211AT)	[Enabled]	keep USB devices available
LAN #1(I211AT) Launch PXE OpROM	[Disabled]	only for EFI applications.
LAN #2 (Intel I211AT)	[Enabled]	
LAN #2(I211AT) Launch PXE OpROM	[Disabled]	
LAN #3 (Intel I211AT)	[Enabled]	
LAN #3(I211AT) Launch PXE OpROM	[Disabled]	
PCIe Wake	[Enabled]	
Wake On Ring	[Enabled]	
SATA Confiduration		the Salact Sensor
SATA Controller	[Enabled]	11: Select Item
Sinn controller	[Endbied]	Enter: Select
USB Configuration		+/-: Change Ont
USB Devices:		F1: General Help
1 Drive, 1 Keyboard, 1 Hub		F8: Previous Values
Legacy USB Support		F9: Optimized Defaults
XHCI Hand-off	[Enabled]	F10: Save & Exit
USB hardware delays and time-outs:		ESC: Exit
USB transfer time-out	[20 sec]	
Device reset time-out	[20 sec]	
Device power-up delay	[Auto]	▼
Version 2.18.1264. C	opyright (C) 2017 America	an Megatrends, Inc.



### Serial Port 1 to 4 Configuration

Sets port type (RS-232/422/485) for serial ports 3 and 4.

# LAN #1 (Intel I211AT)

Enables/disables onboard Intel I211AT LAN controller.

# LAN #1(I211AT) Launch PXE OpROM

Enables/disables execution of LAN boot-rom to add boot option for legacy network devices.

# LAN #2 (Intel I211AT)

Enables/disables onboard Intel I211AT LAN controller.

# LAN #2(I211AT) Launch PXE OpROM

Enables/disables execution of LAN boot-rom to add boot option for legacy network devices.

# LAN #3 (Intel I211AT)

Enables/disables onboard Intel I211AT LAN controller.

# LAN #3(I211AT) Launch PXE OpROM

Enables/disables execution of LAN boot-rom to add boot option for legacy network devices.

# **PCIe Wake**

Enables/disables PCI Express Slot wake capability

# Wake On Ring

Enables/disables RI ping for Wake On Ring function

# **SATA Controller**

Enable/Disable SATA Device

### Legacy USB Support

Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.

# **XHCI Hand-off**

A workaround for OS with no XHCI hand-off support. XHCI ownership change should be claimed by XHCI driver.

### **USB** transfer time-out

Time-out value for Control, Bulk, and Interrupt transfers.

#### **Device reset time-out**

USB mass storage device Start Unit command time-out.

### Device power-up delay

Maximum time the device will take before it properly reports itself to the Host Controller. 'Auto' uses default value: for a Root port it is 100 ms, for a Hub port the delay is taken from Hub descriptor.



# B.2.4 Power Management

Aptio Setup Utility – Advanced	Copyright (C) 2017 American	Megatrends, Inc.
Power Management		Select AC power state when power is re-applied after a
Restore AC Power Loss RTC Wake system from S5 Power-Up Watchdog ATTENTION: Pressing F12 during sta the Power Up Watchdog.	[Last State] [Disabled] [Disabled] rt up disables	power failure.
Emulation AT/ATX	[ATX]	
Power consumption		
		++: Select Screen
		T∔: Select Item Enter: Select
		+/-: Change Opt. F1: General Help
		F8: Previous Values
		F10: Save & Exit
		ESC: Exit
Version 2.18.1264. Co	pyright (C) 2017 American M	egatrends, Inc.

### **Restore AC Power Loss**

Selects AC power state when power is re-applied after a power failure.

### **RTC Wake system from S5**

Enables/disables System Wake on Alarm event, with Select Fixed-Time waking system on the hr/min/sec specified, and Select DynamicTime System waking on the current time + increased minute(s)

### **Power-Up Watchdog**

Power Up Watchdog resets the system a set amount of time after power up, disabled by pressing F12 during startup.
## **Emulation AT/ATX**

Setting to [Emulation AT] stops BIOS from reporting suspend functions to ACPI OS, and in windows XP, displays shutdown message during system shutdown.

## **Power Consumption**

Aptio Setup Utility Advanced	∣ – Copyright	(C) 2017	American	Megatrends,	Inc.
Power Consumption					
Current Input Current Current Input Power	0.330A 3.960W				
VCORE VBFX VDDQ V12 SV0_S0 3V3_S0 SV0_A 3V3_A RTC	0.845¥ 0.719¥ 1.351¥ 12.309¥ 4.953¥ 3.324¥ 4.971¥ 3.328¥ 2.861¥			++: Select : 11: Select Enter: Selec F1: General F8: Previou F9: Optimiz F10: Save & ESC: Exit	Screen Item Ct Opt. Help s Values ed Defaults Exit
Version 2.18.1264.	Copyright (	C) 2017 A	merican M	egatrends, I	nc.



## B.2.5 SATA Configuration

Aptio Setup Advanced	Utility – Copyright	(C) 2017 American	Megatrends, Inc.
SATA Configuration			Determines how SATA controller
SATA Mode Selection SATA Interface Speed	[AHCI] [Gen3]		uperate.
SATA PortO Not Present	[Epobled]		
SATA Port1	(chapied)		
Port 1	[Enabled]		
			++: Select Screen
			I↓: Select Item Enter: Select
			+/−: Change Opt. F1: General Help
			F8: Previous Values
			F10: Save & Exit
			ESC: Exit
Version 2.	18.1264. Copyright (C	) 2017 American M	egatrends, Inc.

## **SATA Mode Selection**

Sets SATA controller operating mode.

#### **SATA Interface Speed**

Selects SATA interface speed.

## SATA Port 0 to 1

Enables/disables SATA ports 0 and 1.

## B.2.6 Serial Console Redirection



## **Console Redirection**

Enables console redirection on COM 1, SOL, and EMS COM.

## Legacy Console Redirection Settings

Selects a COM port on which to display redirection of Legacy OS and Legacy OPROM messages

#### **Console Redirection Settings**

Sets miscellaneous parameters for COM Port 1, SOL, and EMS COM.



## B.2.7 CSM Configuration

Aptio Setup Utility – Copyright (C) 2017 American Megatrends, Inc. <mark>Advanced</mark>			
Compatibility Support Module Confi	guration	Enable/Disable CSM Support.	
CSM Support			
CSM16 Module Version	07.79		
GateA20 Active	[Upon Request]		
Boot option filter	[UEFI and Legacy]		
Option ROM execution			
Network Storage Video Other PCI devices	[Do not launch] [Legacy] [UEFI] [UEFI]	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Defaults F10: Save &amp; Exit ESC: Exit</pre>	
Version 2.18.1264.	Copyright (C) 2017 American M	legatrends, Inc.	

## **CSM Support**

Enables/disables CSM support.

#### **GateA20 Active**

Setting UPON REQUEST disables GA20 while using BIOS services, and ALWAYS prevents disabling GA20, useful when any RT code is executed over 1MB.

#### **Boot option filter**

Controls legacy/UEFI ROM priority.

#### Network

Controls execution of UEFI and legacy PXE OpROM

### Storage

Controls execution of UEFI and legacy Storage OpROM.

## Video

Controls execution of UEFI and legacy video OpROM.

## **Other PCI devices**

Determines OpROM execution policy for devices other than network, storage, or video.

## B.2.8 Trusted Computing

Aptio Setup Utilit Advanced	y – Copyright (C) 20	017 American Megatrends, Inc.
Configuration Security Device Support NO Security Device Found		Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INTIA interface will not be available.
		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Defaults F10: Save &amp; Exit ESC: Exit</pre>
Version 2.18.1264	. Copyright (C) 201	7 American Megatrends, Inc.

## **Security Device Support**

Enables/disables BIOS support for security device, where OS does not show Security Device, and TCG EFI protocol and INT1A interface are not available.



## B.2.9 Network Stack Configuration

Aptio : Advanced	Setup Utility – Copyright (C) 2017 Am	erican Megatrends, Inc.
Network Stack Config	uration	Enable/Disable UEFI Network
Network Stack		
		1: Select Tem Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Defaults
		F10: Save & Exit ESC: Exit
Versi	on 2.18.1264. Copyright (C) 2017 Amer	ican Megatrends, Inc.

## **Network Stack**

Enables/disables UEFI network stack.

# B.2.10 System Management

Aptio Setu Advanced	up Utility – Copyright (C) 2017 Americar	n Megatrends, Inc.
System Management Version: 1.00		SEMA Features
SEMA Firmware Build Date SEMA Bootloader Build Date	BMC MXE-1500 0v4 Aug 14 2017 bl_MXE-1500 5v1 Jul 25 2017	
▶ SEMA Features ▶ Flags		
		++: Select Screen 11: Select Item Enter: Select +(-: Change Ont
		F1: General Help F8: Previous Values F9: Optimized Defaults F10: Save & Exit
		ESU: EXIT
Version 2	2.18.1264. Copyright (C) 2017 American ⊧	Megatrends, Inc.



## **SEMA Supported Features**

Aptio Setup Utility – Copyright (C) Advanced	2017 American Megatrends, Inc.
SEMA Supported Features Uptime & Power Cycles Counter System Restart Event 1024 Bytes User-Flash Watchdog Temperatures Voltage Monitor Power-Up Watchdog Power Monitor (current sense) Boot Counter DTS register available DTS offset registers programmable TIVA BMC PEC protocol	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt, F1: General Help F6: Previous Values F9: Optimized Defaults F10: Save &amp; Exit ESC: Exit</pre>
Version 2.18.1264. Copyright (C) 2	017 American Megatrends, Inc.

## Flags

Aptio Setup Utility - Advanced	– Copyright (C) 2017 American	Megatrends, Inc.
Flags		
BMC Flags BIOS Select ATX/AT-Mode Exception Code	0x40 Standard BIDS ATX-Mode 0x00	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.18.1264.	Copyright (C) 2017 American M	egatrends, Inc.



# **B.2.11** Thermal Management

Aptic Advanced	o Setup Utility – Copyright	(C) 2017 American	Megatrends, Inc.
Temperatures			
Board Temperatures Current Startup Min Max	440 250 220 610		++: Select Screen 1: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Ven	sion 2.18.1264. Copyright (	C) 2017 American M	egatrends, Inc.

# **B.3 Chipset**

Aptio Setup Utility - Main Advanced <mark>Chipset</mark> Security	Copyright (C) 2017 American Boot Save & Exit	Megatrends, Inc.
Primary Display DVMT Pre-Allocated DVMT Total Gfx Mem Aperture Size Primary IGFX Boot Display	(Auto) [32M] [256MB] [256MB] [Auto]	Select which of IGD/PCI Graphics device should be Primary Display.
		<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Defaults F10: Save &amp; Exit ESC: Exit</pre>
Version 2.18.1264. Co	pyright (C) 2017 American M	egatrends, Inc.

## **Primary Display**

Designates which IGD/PCI Graphics device is Primary Display.

#### **DVMT Pre-Allocated**

Sets DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.

#### **DVMT Total Gfx Mem**

Sets DVMT 5.0 Total Graphic Memory size used by the Internal Graphics Device.

#### **Aperture Size**

Sets Aperture Size



## **Primary IGFX Boot Display**

Selects the Video Device to be activated during POST.

## **B.4 Security**



If only the Administrator password is set, access s limited and the password requested on Setup. If User password is set, it acts as a power-on password and must be entered to boot or enter setup. In Setup the user receives

#### **Administrator Password**

Sets Administrator Password.

#### **User Password**

Sets User Password.

## B.4.1 Secure Boot Menu

Aptio Setup Utility – Security	Copyright (C) 2017 American	Megatrends, Inc.
Secure Boot		Secure Boot can be enabled if 1.System running in User mode with encolled Platform Key(PK)
System Mode	User	2.CSM function is disabled
Secure Boot	Not Active	
Secure Boot Control		
		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Defaults F10: Save &amp; Exit ESC: Exit</pre>
Version 2.18.1264. Co	pyright (C) 2017 American M	egatrends, Inc.

## **Secure Boot Control**

Can be enabled if running in User mode with enrolled Platform Key (PK) and CSM function is disabled.



## B.5 Boot

Aptio Setup Utility - Main Advanced Chipset Security	· Copyright (C) 2017 American Boot Save & Exit	Megatrends, Inc.
Boot Configuration Setup Prompt Timeout Bootup NumLock State Quiet Boot Fast Boot	1 [On] [Enabled] [Disabled]	Number of seconds to wait for setup activation key. 65535(OxFFFF) means indefinite waiting.
BOM Config Boot mode select	[Legacy System] [LEGACY]	
Boot Configuration Boot Option #1 Boot Option #2 Boot Option #3 Boot Option #4 Boot Option #5 Boot Option #6 Boot Option #7 Boot Option #8 > USB Key Drive BBS Priorities	[Hard Disk] [CD/DVD] [USB Hard Disk] [USB CD/DVD] [USB Key:PNY USB 3.0] [USB Floppy] [USB Lan] [Network]	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F6: Previous Values F9: Optimized Defaults F10: Save &amp; Exit ESC: Exit</pre>
Version 2.18.1264. C	opyright (C) 2017 American M	legatrends, Inc.

#### **Setup Prompt Timeout**

Number of seconds before setup activation key is launched, with 65535(0xFFFF) setting indefinite waiting.

#### **Bootup Num-Lock State**

Sets keypad Number Lock status following boot.

## **Quiet Boot**

Option	Description	
Disabled	Directs BIOS to display POST messages	
Enabled	Directs BIOS to display the OEM logo.	

#### Fast Boot

Option	Description	
Disabled	Directs BIOS to perform all POST tests.	
Enabled	Directs BIOS to skip certain POST tests to boot faster.	

While enabling Fast Boot can reduce system ready time, some prerequisites can reduce effectiveness.

## **BOM Config**

Sets relative parameters according to target OS.

#### **Boot mode select**

Selects boot mode from LEGACY and UEFI.

#### **Boot Configuration**

Specifies the priority of boot devices, all of which are detected during POST and displayed. Target Boot Option # and click to select the desired device



# B.6 Save & Exit

Aptio Setup Utility – Copyright (C) 2017 American Main Advanced Chipset Security Boot <mark>Save &amp; Exit</mark>	Megatrends, Inc.
Save Changes and Exit Discard Changes and Exit Save Changes and Reset Discard Changes and Reset Save Options Save Changes Discard Changes Restore Defaults Save as User Defaults Restore User Defaults	Exit system setup after saving the changes.
Boot Override UEFI: PNY USB 3.0 FD PMAP, Partition 1 Launch EFI Shell from filesystem device	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Defaults F10: Save &amp; Exit ESC: Exit</pre>

#### Save Changes and Exit

Exits system setup after saving changes.

#### **Discard Changes and Exit**

Discards all changes and exits BIOS setup.

#### Save Changes and Reset

Saves all changes and reboots the system, with new settings taking effect.

#### **Discard Changes and Reset**

Resets system setup without saving any changes.

## **Save Changes**

Saves changes made so far to any of the setup options.

## **Discard Changes**

Discards changes made so far to any of the setup options.

## **Restore Defaults**

Returns all BIOS options to default settings, maximizing system stability at less than maximum performance. Select if the computer encounters system configuration problems.

## Save as User Defaults

Saves all changes to this point as user defaults.

## **Restore User Defaults**

Restores user defaults to all setup options.

### Launch EFI Shell from filesystem device

Attempts to Launch EFI Shell application (Shell.efi) from one available filesystem device.



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# **Important Safety Instructions**

For user safety, please read and follow all instructions, Warnings, Cautions, and Notes marked in this manual and on the associated device before handling/operating the device, to avoid injury or damage.

S'il vous plaît prêter attention stricte à tous les avertissements et mises en garde figurant sur l'appareil, pour éviter des blessures ou des dommages.

- Read these safety instructions carefully
- ► Keep the User's Manual for future reference
- Read the Specifications section of this manual for detailed information on the recommended operating environment
- The device can be operated at an ambient temperature of 50°C (powered by DC source) or 40°C (powered by AC-DC adapter)
- When installing/mounting or uninstalling/removing device; or when removal of a chassis cover is required for user servicing (See "Getting Started" on page 31.):
  - ▷ Turn off power and unplug any power cords/cables
  - > Reinstall all chassis covers before restoring power
- ▶ To avoid electrical shock and/or damage to device:
  - ▷ Keep device away from water or liquid sources
  - > Keep device away from high heat or humidity
  - Keep device properly ventilated (do not block or cover ventilation openings)
  - Always use recommended voltage and power source settings
  - Always install and operate device near an easily accessible electrical outlet
  - Secure the power cord (do not place any object on/over the power cord)
  - Only install/attach and operate device on stable surfaces and/or recommended mountings



- If the device will not be used for long periods of time, turn off and unplug from its power source
- Never attempt to repair the device, which should only be serviced by qualified technical personnel using suitable tools
- A Lithium-type battery may be provided for uninterrupted backup or emergency power.



Risk of explosion if battery is replaced with one of an incorrect type; please dispose of used batteries appropriately. *Risque d'explosion si la pile est remplacée par une autre de type incorrect. Veuillez jeter les piles usagées de façon appropriée.* 

- The device must be serviced by authorized technicians when:
  - ▷ The power cord or plug is damaged
  - ▷ Liquid has entered the device interior
  - The device has been exposed to high humidity and/or moisture
  - The device is not functioning or does not function according to the User's Manual
  - The device has been dropped and/or damaged and/or shows obvious signs of breakage
- Disconnect the power supply cord before loosening the thumbscrews and always fasten the thumbscrews with a screwdriver before starting the system up
- It is recommended that the device be installed only in a server room or computer room where access is:
  - Restricted to qualified service personnel or users familiar with restrictions applied to the location, reasons therefor, and any precautions required
  - Only afforded by the use of a tool or lock and key, or other means of security, and controlled by the authority responsible for the location



### **BURN HAZARD**

Touching this surface could result in bodily injury. To reduce risk, allow the surface to cool before touching.

#### **RISQUE DE BRÛLURES**

Ne touchez pas cette surface, cela pourrait entraîner des blessures.

Pour éviter tout danger, laissez la surface refroidir avant de la toucher.



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# **Getting Service**

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