MXE-110i

IoT Gateway

User's Manual



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Part No: 50-1Z233-1000

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Revision History

Revision	Release Date	Description of Change(s)
2.00	Apr. 7, 2017	Initial Release

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Preface

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Conventions

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

ADLINK's new Matrix MXE-110i ultra-compact embedded IoT gateway, based on the Intel® Quark™ SoC processor X1021, delivers reliable I/O design for maximum connectivity. A full aluminum alloy enclosure with industry-class construction makes it the embedded system of choice for industrial automation and applications demanding reliability in harsh environments.

Combined with ADLINK's embedded SEMA Cloud solution, the MXE-110i delivers manageability and robustness required by mission critical operations. In addition, the MXE-110i fully supports Intel® Gateway Solutions for the Internet of Things (IoT), integrated Wind River® Intelligent Device Platform XT, and McAfee Embedded Control, together guaranteeing the cornerstone manageability and security critical to IoT-ready platforms.

With two Fast LAN, two COM, and two USB 2.0 host ports, optional four isolated DI and four isolated DO, dual mini PCIe slots and USIM socket supporting communication with connections such as WiFi, BT, 3G, 4G, optional 802.15.4 Zigbee, 6LowPAN and LoRa, the MXE-110i enables seamless interconnection, ensuring interoperability between systems. Matrix's proven rugged construction assures operation in harsh environments with operat-

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ing shock tolerance up to 100 G and an extended optional operating temperature range of -20°C to 70°C.

Implementing the Intel® IoT Gateway Solution with ADLINK's SEMA, the MXE-110i maximizes manageability and security for a world of applications, delivering efficient remote monitoring of system activity and health in real time, complete control over a robust secured channel, and fully manageable utilization of system resources. All told, the MXE-110i presents an intelligent, robust embedded system supporting wide application development and easy service deployment, for outstanding performance in facility management, industrial automation, and IoT applications.

1.2 Features

- Intel® Quark™ SoC processor X1021
- Extremely compact 120 (W) x 100 (D) x 50 (H)mm housing
- Rich I/O:
  - 2 x USB 2.0, 2x Fast Ethernet ports, 2x COM ports, optional 4 isolated DI/O
  - 2x mPCIe slots, 1x USIM socket
- Optional DIN-rail/wall mounting
- Wireless support for Wifi, BT, 3G, 4G, LoRa, Optional 802.15.4 Zigbee, 6LowPAN
- Included ADLINK SEMA Cloud solution
- Full support for Intel® Gateway Solutions for the Internet of Things (IoT)

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1.3 Specifications

System Core	
Processor	Intel® Quark™ X1021
Chipset	SoC with processor
Console	Output via RS-232(COM1)
Memory	512MB/1GB DD3 800MHz memory down
I/O Interface	
Ethernet	2 Fast Ethernet
Serial Ports	1x RS-232 (COM1) 1x BIOS-programmable RS-232/422/485 (Serial)
USB	2 x USB 2.0
DI/O	4 optional DI/O w/ 1.5KV isolation
Mini PCIe	2 internal PCIe mini card sockets
USIM	1 USIM socket for 3G or 4G communication (used for a 3G or 4G-miniPCIe module)
WDT	Supports watchdog timer
Zigbee	802.15.4 RF module, ZigBee & 6loWPAN
Power Supply	
DC Input	Built-in 6-36 VDC wide-range DC input 3P pluggable connectors with latch (GND, V-, V+)
AC Input	Optional 40W external AC-DC adapter for AC input
Storage	
eMMC	5.0 4/8/16/32GB
Physical	
Dimensions	120(W) x 100(D) x 50(H)mm (4.68” x 3.9” x 2.17”)
Weight	650 g (1.43 lbs)
Mounting	DIN rail / Wall-mount kit
Environmental	
Operating Temperature	Standard: 0°C to 50°C

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Extended Temperature	-20°C to 70°C (w/ industrial SD)
Storage Temperature	-40°C to 85°C (excl. HDD/SDD/CFAST)
Humidity	~95% @ 40°C (non-condensing)
Vibration	Operating, 5 Grms, 5-500 Hz, 3 axes (w/ eMMC)
ESD	Contact +/-4 KV and Air +/-8 KV
Shock	Operating, 100 G, half sine 11 ms duration (w/ eMMC)
EMC & Safety	CE-LVD & UL by CB, CCC


NOTE:

Cold boot of the system at -20°c and operation with 100% loading at 70°c is provided when the industrial solid-state drive storage option is implemented.

Power Consumption		
Power off	0.3W	In shutdown mode with DC input and only USB keyboard/mouse
System Idle	4.3W	Under OS with no application programs executed
Processor full load	6.7W	Under OS with 100% CPU utilization
System full load	8.3W	Under OS with 100% CPU utilization and simultaneous access to all I/O devices
Recommended power supply	80W	With consideration of voltage de-rating under high environmental temperature

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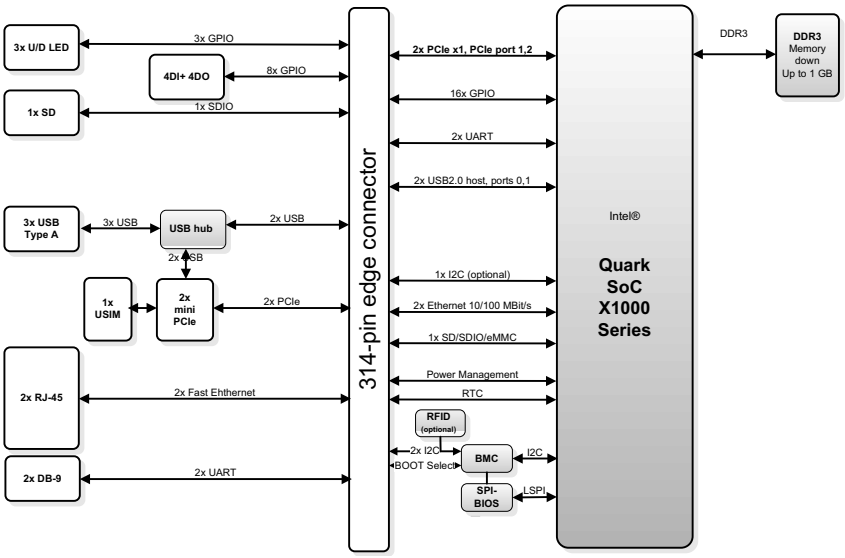


Figure 1-1: MXE-110i Functional Block Diagram

1.4 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-110i unit
- DIN rail/wall-mounting brackets
- Screw pack for DIN rail/wall-mounting and storage fixing
- Quick Start Guide

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1.5 Mechanical Drawings

NOTE:

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

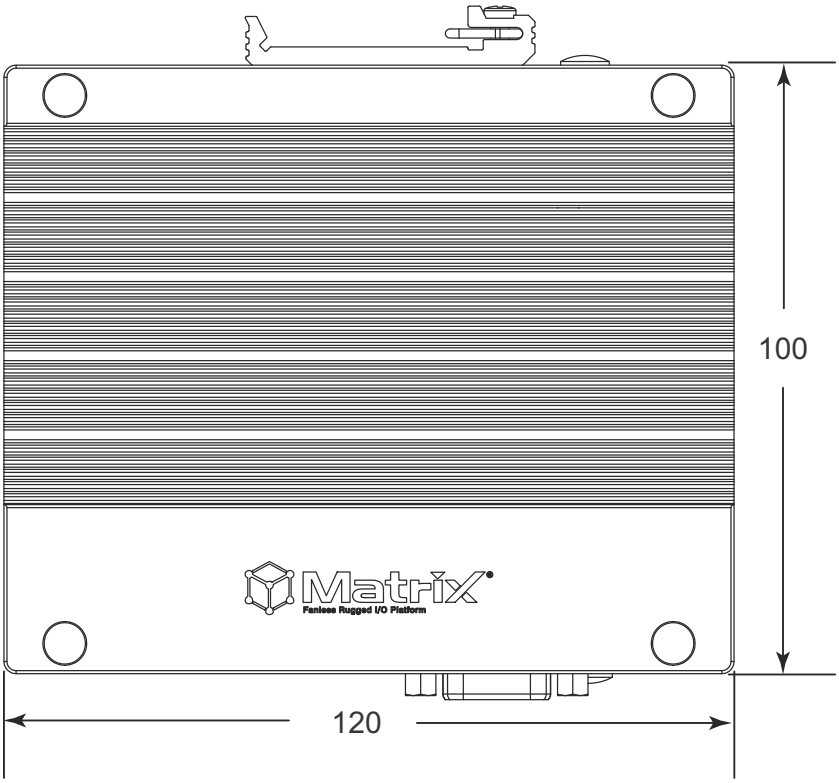


Figure 1-2: MXE-110i Top View

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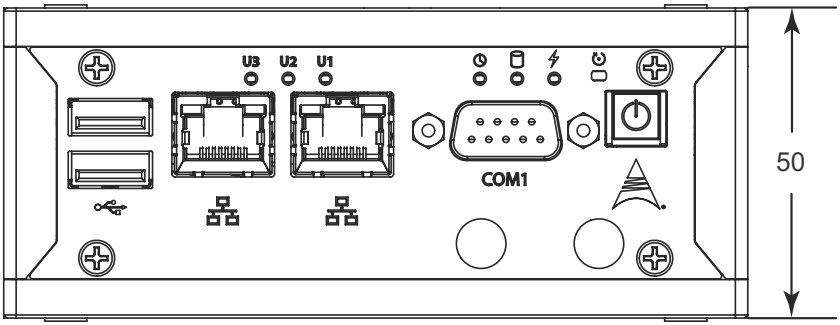


Figure 1-3: MXE-110i Front View

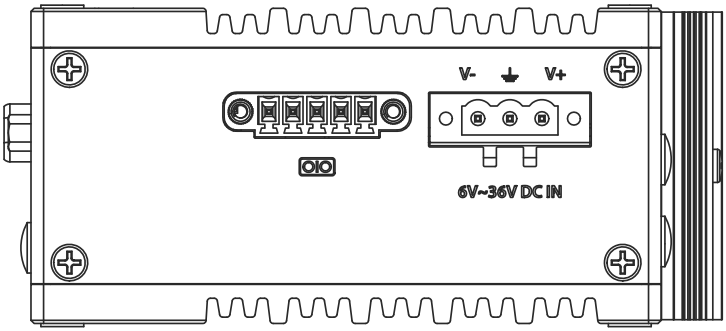


Figure 1-4: MXE-110i (Right) Side View

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1.6 Front Panel I/O Connectors

This section describes the I/O connectors located on the front panel of the MXE-110i.

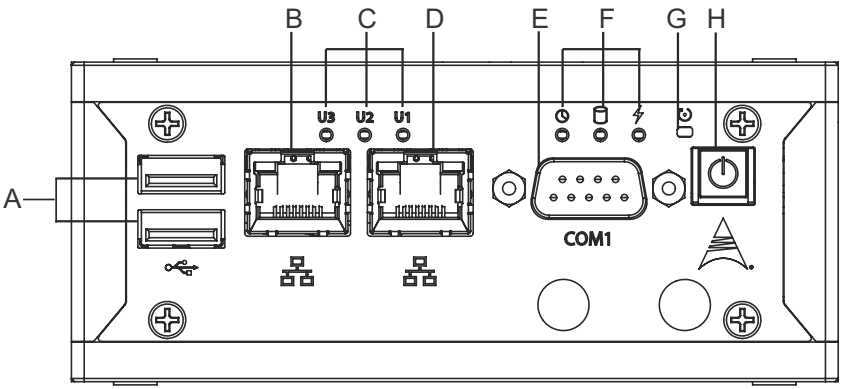


Figure 1-5: MXE-110i Front Panel I/O

A	USB2.0 x2 (Type A)	**E**	COM port (RS232)
B	10/100 Ethernet	**F**	LED indicators (function)
C	LED indicators (configurable)	**G**	Reset
D	10/100 Ethernet	**H**	Power

Table 1-1: MXE-110i Front Panel I/O Connector Legend

1.6.1 Power Button

The power button is a non-latched push button with a blue LED indicator. System is turned on when button is pressed, and the power LED lit. If the system hangs, depressing the button for 5 seconds powers down the system.

The power button LED indicates system power status.

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LED Display	System Status
Lit	Idle on OS
Off	Power Off
Flashing	Sleep (S3)

Table 1-2: LED Indicator (Power Button) Legend

1.6.2 LED Indicators

In addition to the LED of the power button, three LEDs on the front panel indicate operation status.

Indicator	Color	Description
Watchdog (WDT)	Yellow	Indicates watchdog timer status. Flashes when watchdog timer starts, and when timer is expired, system will auto-reboots.
Hard disk drive	Orange	When blinking, indicates the SATA hard driver is active
Standby	Blue	Indicates the system is in power standby mode

Table 1-3: LED Indicator (Operation) Legend

Another set of three can be configured by the user.

1.6.3 Reset Button

The reset button executes hard reset for the MXE-110i.

1.6.4 Dual Fast Ethernet Ports

The two Fast Ethernet ports on the front panel are based on X1021 MAC and Ti DP83848 PHY.

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LED	LED Color	Status	Description
Active/Link	Yellow	OFF	Ethernet port is disconnected
		ON	Ethernet port is connected with no activity
		Flashing	Ethernet port is connected and active
Speed	Green	OFF	10 Mbps
		Green	100 Mbps

Table 1-4: Gigabit Ethernet Port LED Function

1.6.5 COM Port Connector

COM port through D-sub 9-pin connector, with COM1 supporting only RS-232.

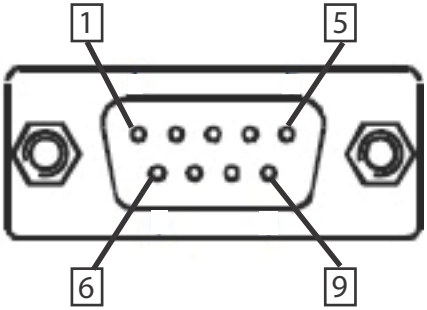


Figure 1-6: COM Port

Pin	Signal	Pin	Signal
1	DCD#	2	RXD
3	TXD	4	DTR#
5	GND	6	DSR#
7	RTS#	8	CTS#
9	RI#		

Table 1-5: COM Port Pin Assignment

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1.7 (Right) Side Panel I/O Connectors

This section describes I/O connectors located on the side panel of the MXE-110i.

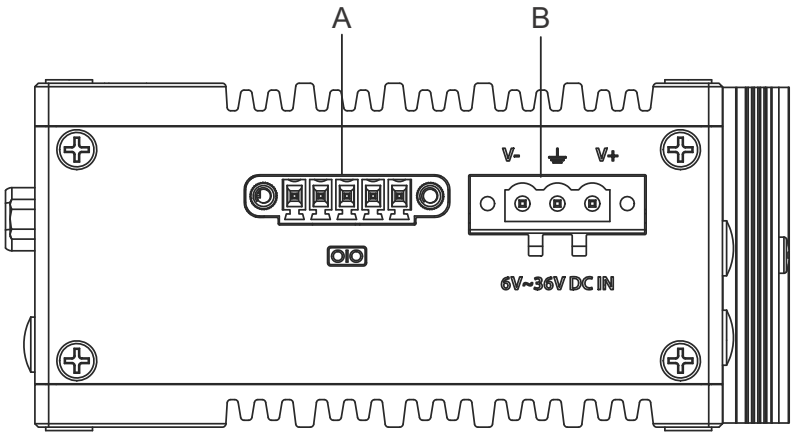


Figure 1-7: MXE-110i (Right) Side Panel I/O

A	COM Port(RS232/422/485)
B	DC power supply connector

Table 1-6: MXE-110i Rear Panel I/O Connector Legend

1.7.1 COM Port through Terminal Connector

The COM port through terminal connector supports RS-232/422/485 modes based on BIOS setting.

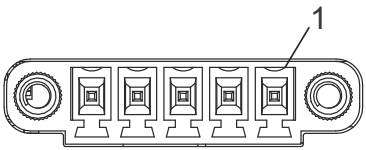


Figure 1-8: COM through Terminal Connector

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Pin	Signal		
	RS232	RS422	RS485
1	RXD	TXD422p	485p
2	TXD	RXD422p	N/S
3	RTS#	RXD422n	N/S
4	CTS#	TXD422n	485n
5	GND	GND	GND

Table 1-7: COM through Terminal Connector Pin Definitions

1.7.2 DC Power Supply Connector

DC power supply connector consists of V+, chassis ground, and V- pins. V+ and V- pins accept DC power input and the chassis ground pin grounds the chassis for better EMC compatibility. DC power input allows voltage input from 6V DC to 36V DC and reverse voltage protection from 6V DC to 36V DC.

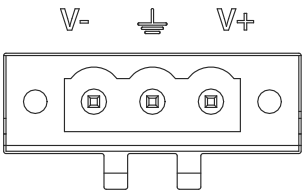


Figure 1-9: DC Power Supply Connector

Pin	Signal
1	V+ (DC_IN)
2	GND (CHGND)
3	V- (DGND)

Table 1-8: MXE-110i Rear Panel I/O Connector Legend

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1.8 Internal I/O Connectors

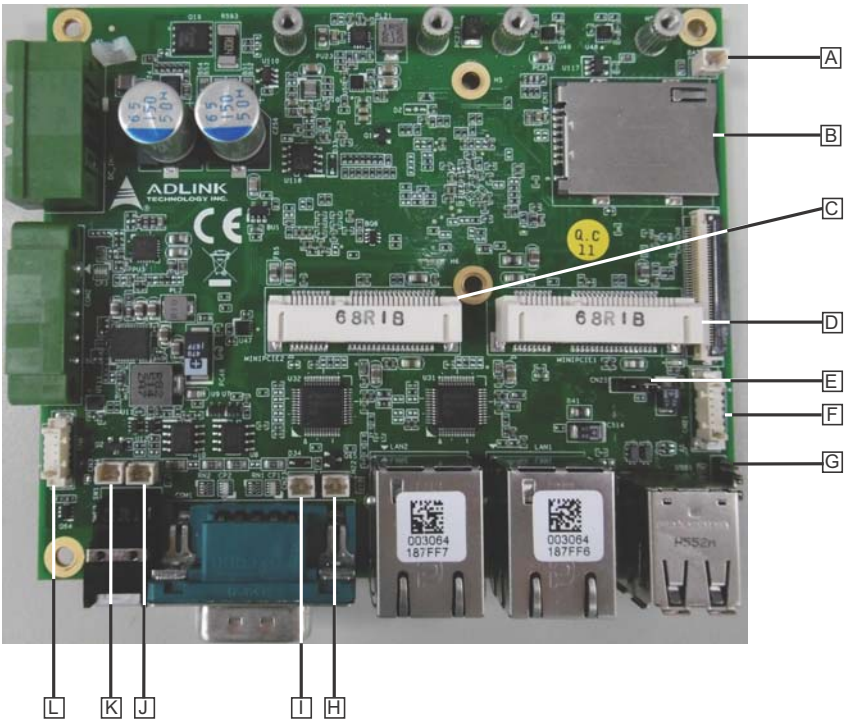


Figure 1-10: MXE-110i Mainboard Connectors

A	RTC Battery Connector
B	USIM Socket for Mini PCIe Slot 1
C	Mini PCIe Slot 2 (Full Size)
D	Mini PCIe Slot 1(Full Size)
E	ATX & AT Mode Jumper
F	Internal USB2.0 Interface Connector
G	Clear CMOS Pin Header
H	5V GPS Connector
I	3.3V GPS Connector

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J	Reset Button Box Header
K	Power Button Box Header
L	Internal I2C Interface Connector

Table 1-9: Internal I/O Legend

1.8.1 RTC Battery Connector

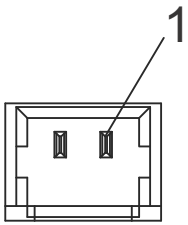


Figure 1-11: RTC Battery Connector

The RTC battery provides 3V power for system RTC function.

Pin	Signal
1	+3V3_VBAT
2	GND

Table 1-10: RTC Battery Connector Pin Assignments

1.8.2 USIM Socket for Mini PCIe Slot 1

A USIM socket connected to mini PCIe Slot 1 accepts a SIM card and 3G/4G mini PCIe module to facilitate 3G/4G communication.

1.8.3 Mini PCIe Slot 2 (Full Size)

Supports full size Mini PCIe cards.

1.8.4 Mini PCIe Slot 1 (Full Size)

Supports full size Mini PCIe cards.

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1.8.5 ATX & AT Mode Jumper

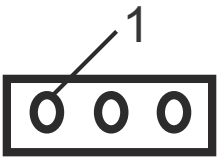


Figure 1-12: ATX/AT Mode Jumper

Pin	Signal
1	S5-PGOOD
2	BMC_S5-PGOOD
3	GND

Table 1-11: ATX/AT Mode Jumper Pin assignments

1.8.6 Internal USB2.0 Interface Connector‘

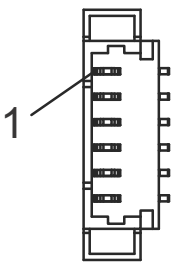


Figure 1-13: Internal USB2.0 Connector

Pin	Signal
1	+5V0
2	USB_C_P0
3	USB_C_N0
4	GND
5	P_+3V3_S3

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Pin	Signal
6	ZIGBEE_RST#

Table 1-12: Internal USB2.0 Connector Pin Assignments

1.8.7 Clear CMOS Pin Header

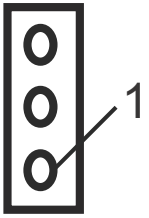


Figure 1-14: Clear CMOS Pin Header

Pin	Signal
1	NC
2	RTCRST-L
3	GND

Table 1-13: Clear CMOS Pin Header Pin Assignments

1.8.8 5V GPS Connector

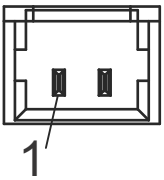


Figure 1-15: 5V GPS Connector

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Pin	Signal
1	+V5_GPS
2	GND

Table 1-14: 5V GPS Connector Pin Assignments

1.8.9 3.3V GPS Connector

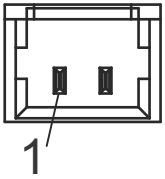


Figure 1-16: 3.3V GPS Connector

Pin	Signal
1	+V3.3_GPS
2	GND

Table 1-15: 3.3V GPS Connector Pin Assignments

1.8.10 Reset Button Box Header

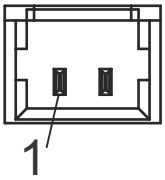


Figure 1-17: Reset Button Header

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Pin	Signal
1	RESET-L
2	GND

Table 1-16: Reset Button Header Pin Assignments

1.8.11 Power Button Box Header

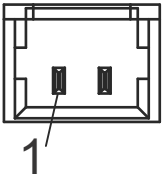


Figure 1-18: Power Button Header

Pin	Signal
1	PWR_BTN-L
2	GND

Table 1-17: Power Button Header Pin Assignments

1.8.12 Internal I2C Interface Connector

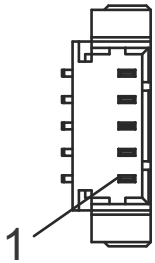


Figure 1-19: Internal I2C Connector

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For DI/O external signals from I2C, with cable provides I2C, +3.3v, and 5v power.

Pin	Signal
1	GND
2	I2C_ CK
3	I2C_ DAT
4	+3V3
5	+5V0

Table 1-18: Internal I2C Connector Pin Assignments

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2 Getting Started

This chapter discusses installation of a Mini PCIe module and mSATA. Wall-mount installation is also described.

2.1 Installing a Mini-PCIe Device

Before installing, remove the chassis underside as follows.

1. Remove the 8 screws as shown.



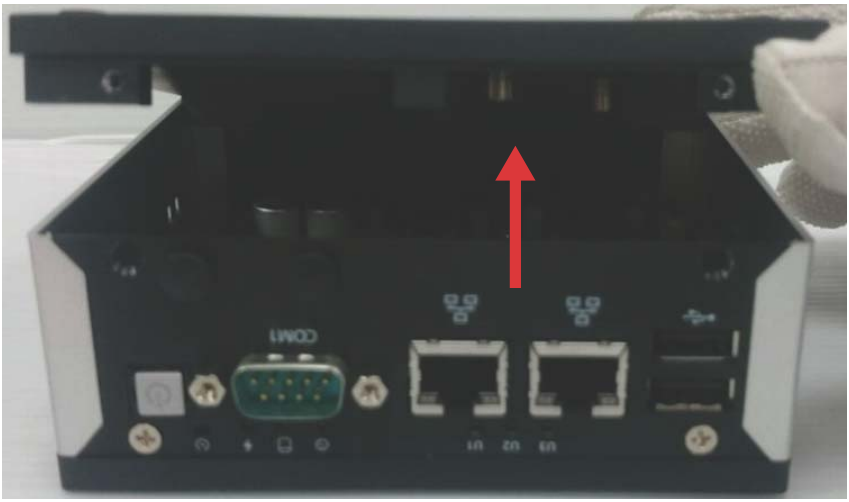
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V-
V+
6V~36V DC IN



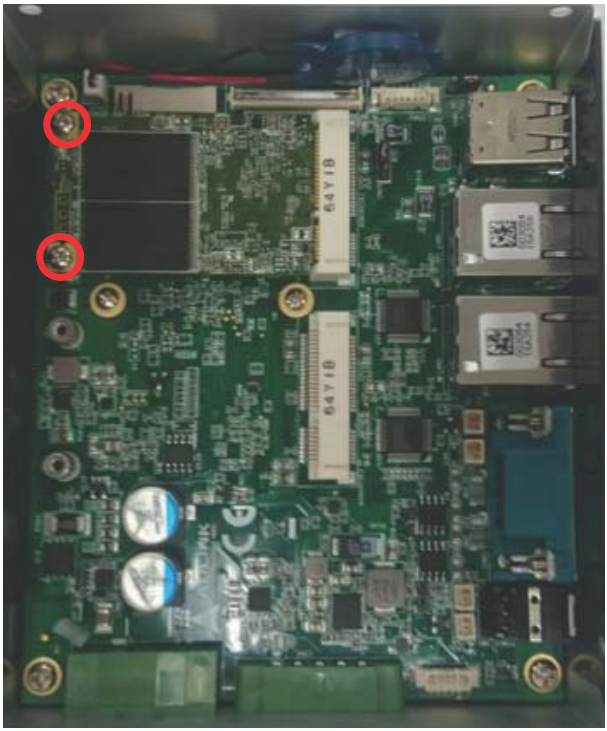
2. Remove the chassis underside.



3. Insert the mini-PCIe module into the slot at an angle



4. Depress the mini-PCI-E module until seated and fix with two 2 M2.5-P-head-L5 screws.



5. Insert the mini-PCIe wireless module into the slot at an angle.



6. Depress the mini-PCI-E wireless module until seated and fix with two 2 M2.5-P-head-L5 screws.



2.2 Connecting DC power

WARNING:

Before providing DC power to the MXE-110i, ensure the voltage and polarity provided are compatible with the DC input. Improper input voltage and/or polarity can be responsible for system damage.

The DC power input connector of the MXE-110i utilizes V+, V- , and chassis ground pins, and accepts input voltage as shown previously.

1. Connect DC power cables as shown.
2. Fix the DC connector using the 2 screws.

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2.3 DIN rail mounting of the MXE-110i

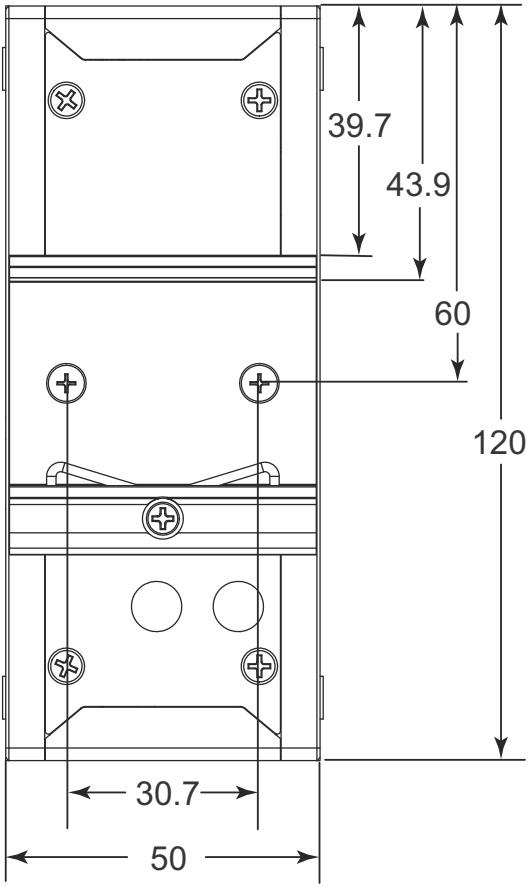
The MXE-110i controller is shipped with DIN rail mounting brackets and accessory screws, with mounting procedures as follows.

1. Prepare the one DIN rail mount brackets and 2 M4-F head screws included in the package.



2. Use the 2 included M4-F head screws to fix the DIN rail mount brackets to the chassis, according to the spacing dimensions of the screw holes and brackets, as shown.

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2.4 Cooling Considerations

Heat-generating components of the MXE-110i (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-110i.

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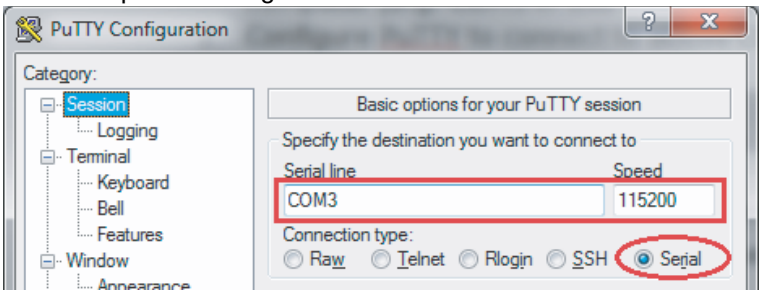
Appendix A Using IDP

A.1 MXE-110i Setup

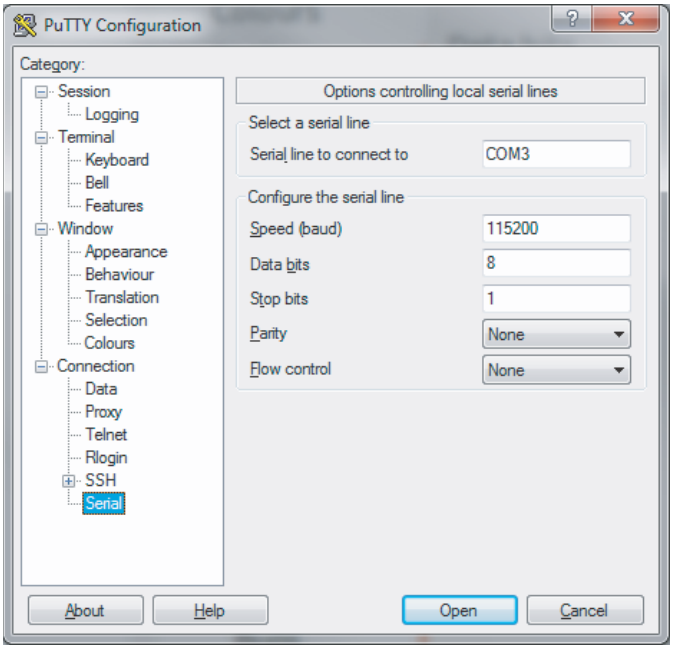
The platform is designed for headless operation and does not support keyboard, mouse or video output. Connection must be made remotely using terminal over serial connection (RS232).

NOTE: The following procedure is based on a system on which PuTTY has been installed. PuTTY for Windows is available for download at: http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html

1. Connect the RS-232 console port on the MXE-110i to the host computer with the USB DB-9 to USB adapter. A COM port (COM3 in this example) appears in the host computer's listings as follows.



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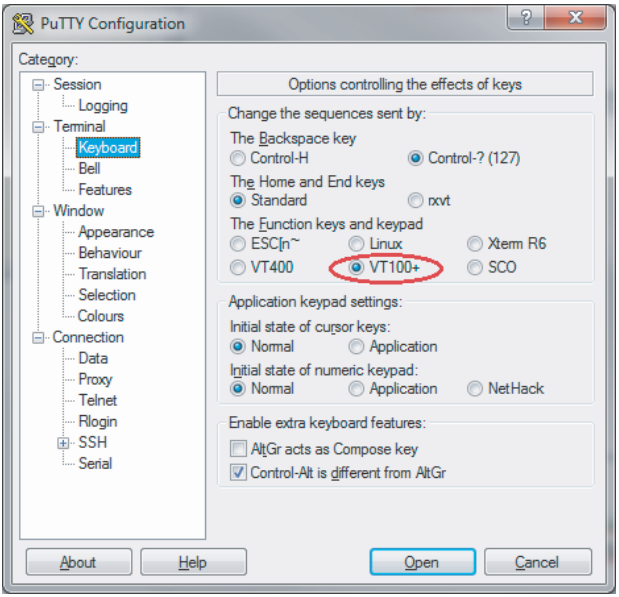


2. Configure PuTTY to connect to the new COM port with settings as follows:

Serial line	COM3 (in this example)
Speed	115200
Data bits	8
Stop bits	1
Parity	None
Flow control	None

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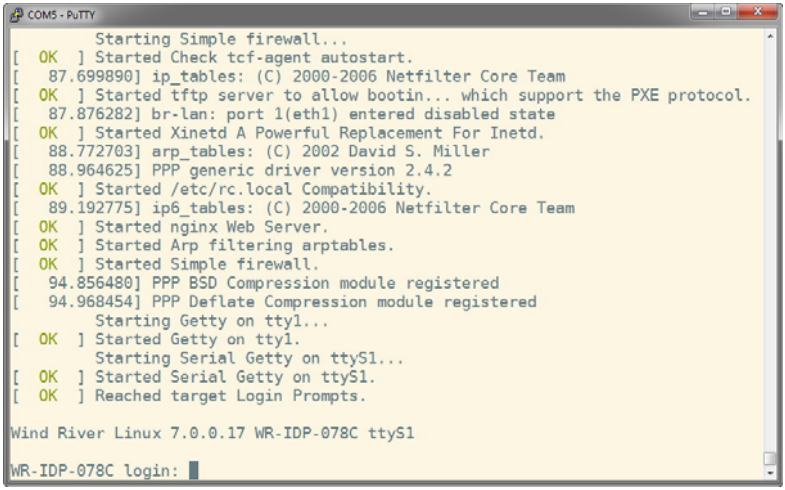
3. Configure PuTTY keyboard settings as follows.



4. Attach the AC adaptor plug to the external power supply.
5. Attach the power cable from the adaptor to the MXE-110i. One LED lights on each LAN port.
6. The MXE-110i platform will initiate the boot process, which can be monitored via the PuTTY console on the host computer.

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7. Boot will take approximately 2-5 minutes, after which the login screen appears:



8. Log in with:
   Login: root
   Password: root

A.2 MXE-110i Network Connection

The MXE-110i can be connected in various ways.

To the internet or another network

Via WAN port to a router with DHCP server enabled, with the MXE-110i's IP address assigned by the DHCP server.

To a local network

Via LAN port to local computers (with/without hub), with the MXE-110i's IP address 192.168.1.1

To WiFi-enabled devices

WiFi network information is:

SSID: IDPDK-xxxx

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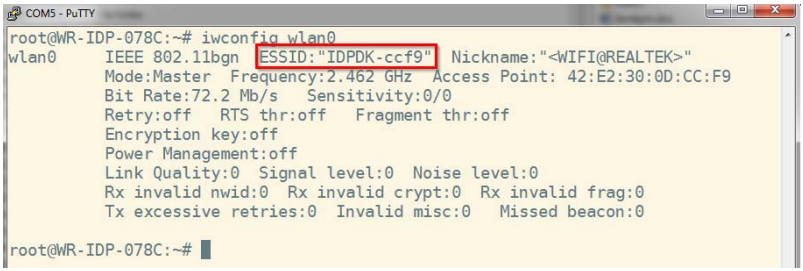
Password: windriveridp

MXE-110i's IP address: 192.168.1.1

Where the WiFi SSID can be found using the command:

```
iwconfig wlan0
```

WiFi SSID in the example shown is IDPDK-ccf9.



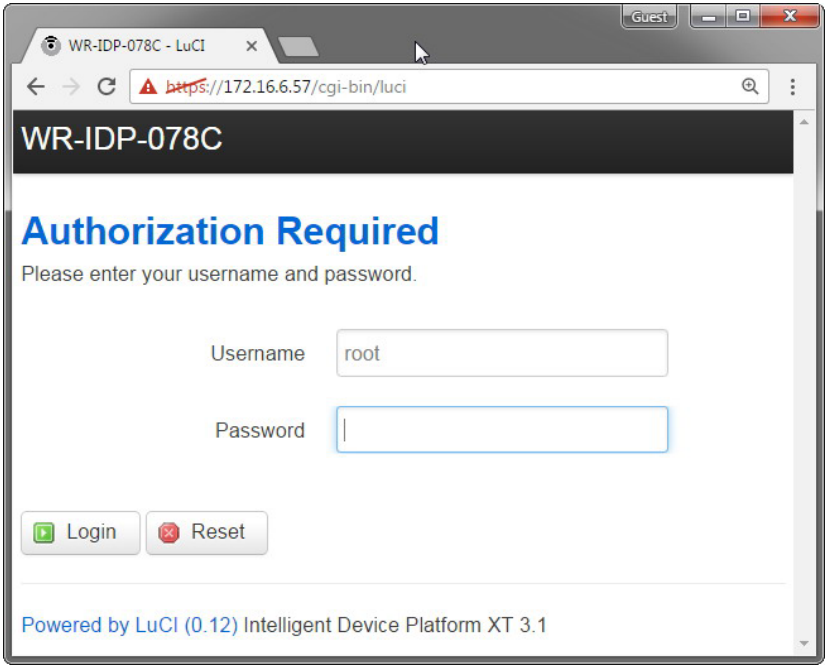
A.3 Wind River Web Interface (LuCI)

Wind River Systems, Inc. provides the LuCI web user interface tool (webif) allowing many Target System settings to be to controlled and changed.

To access the LuCI website:

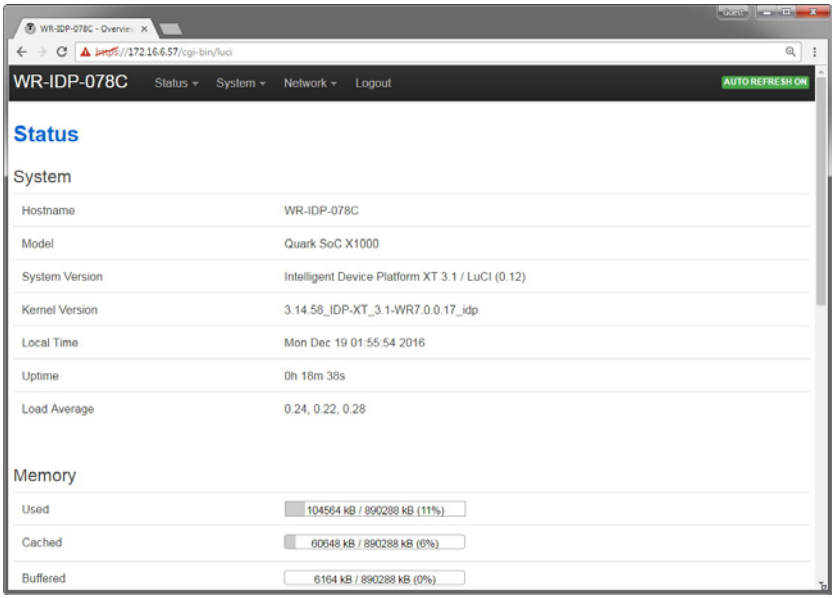
1. Connect Host System to the same network as the MXE-110i (via WiFi, router, or LAN port as described previously).
2. On the Host System, open an internet browser and go to https://<MXE-110i IP Address>. The LuCI login interface appears and user name and password are requested.

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3. Log in with user name admin and password admin. A sample LuCI UI appears.

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WR-IDP-078C - Overview
https://172.16.6.57/cgi-bin/luci
WR-IDP-078C
Status
System
Network
Logout
AUTO REFRESH ON
Status
System
Hostname
WR-IDP-078C
Model
Quark SoC X1000
System Version
Intelligent Device Platform XT 3.1 / LuCI (0.12)
Kernel Version
3.14.58_IDP-XT_3.1-WR7.0.0.17_idp
Local Time
Mon Dec 19 01:55:54 2016
Uptime
0h 18m 38s
Load Average
0.24, 0.22, 0.28
Memory
Used
104564 kB / 890288 kB (11%)
Cached
60648 kB / 890288 kB (6%)
Buffered
6164 kB / 890288 kB (0%)

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Appendix B Watchdog Timer (WDT) & DI/O Function Libraries

This appendix describes use of the watchdog timer (WDT) function library for the MXE-110i.

The watchdog timer is a hardware mechanism provided to reset the system if the operating system or an application stalls. After starting, the watchdog timer in the application must be periodically reset before the timer expires. Once the watchdog timer expires, a hardware-generated signal is sent to reset the system.

DI/O provides input/output to support inter-device communications. Simple programming guides allow easy transmission of digital signals between the system and attached peripherals.

B.1 WDT with API

To use the WDT function library for MXE-110i, include the header file matrix_wdt.h and linkage library matrix_wdt.lib in the C++ project.

InitWDT

Initializes watchdog timer function of MXE-110i. InitWDT must be called before the invocation of any other WDT function.

@ Syntax

C/C++

```
BOOL InitWDT()
```

@ Parameters

None

@ Return code

TRUE if watchdog timer is successfully initialized.

FALSE if watchdog timer fails to initialize.

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SetWDT

Sets the timeout value of the watchdog timer. There are two parameters for this function to indicate the timeout ticks and unit. ResetWDT or StopWDT should be called before the expiration of watchdog timer, or the system will reset.

@ Syntax

C/C++

```
BOOL SetWDT(BYTE tick, BYTE unit)
```

@ Parameters

`tick`

Specify the number of ticks for watchdog timer. A valid value is 1 - 255.

`unit`

Specify the timeout ticks of the watchdog timer.

Value	Description
0	The unit for one tick is one second. For example, when one tick is specified as 100 and the unit as 0, the timeout value is 100 seconds.
1	The unit for one tick is one minute. For example, whenone tick is specified as 100 and the unit as 1, the timeout value is 100 minutes.

@ Return codes

TRUE if timeout value of watchdog timer is successfully set.

FALSE if timeout value of watchdog timer is failed to set.

StartWDT

Starts watchdog timer function. Once the StartWDT is invoked, the watchdog timer starts. ResetWDT or StopWDT should be called before the expiration of watchdog timer, or the system will reset.

@ Syntax

C/C++

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```
BOOL StartWDT()
```

@ Parameters

None

@ Return codes

TRUE if watchdog timer is successfully started.

FALSE if watchdog timer is failed to start.

ResetWDT

Resets the watchdog timer. The invocation of ResetWDT allows restoration of the watchdog timer to the initial timeout value specified in SetWDT function. ResetWDT or StopWDT should be called before the expiration of the watchdog timer, or the system will reset.

@ Syntax

C/C++

```
BOOL ResetWDT()
```

@ Parameters

None

@ Return codes

TRUE if watchdog timer is successfully reset.

FALSE if watchdog timer fails to reset.

StopWDT

Stops the watchdog timer.

@ Syntax

C/C++

```
BOOL StopWDT()
```

@ Parameters

None

@ Return codes

TRUE if watchdog timer is successfully stopped.

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FALSE if watchdog timer fails to stop.

B.2 DI/O with API

To use the DI/O function library for MXE-110i, 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-110i DI/O functions.

@ **Syntax**

C/C++

```
I16 GPIO_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-110i digital input channels 1 to 8 (bit 0 to 7)

@ **Return code**

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```
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-110i digital output channels 1 to 8 (bit 0 to 7) 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-110i digital output channels 1 to 8 (bit 0 to 7).

@ Return code

```
NoError
ErrorOpenDriverFailed
ErrorDeviceIoctl
```

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Appendix C BIOS Setup


NOTE:

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.

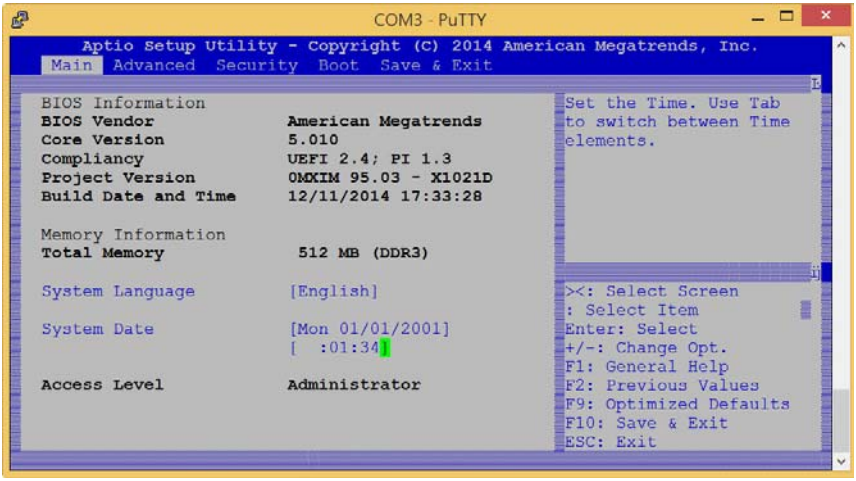
The Basic Input/Output System (BIOS) is a program that provides a basic level of communication between the processor and peripherals. In addition, the BIOS also contains codes for various advanced features applied to the MXE-110i. The BIOS setup program includes menus for configuring settings and enabling features of the MXE-110i. Most users do not need to use the BIOS setup program, as the MXE-110i ships with default settings that work well for most configurations.


WARNING:

Changing BIOS settings may lead to incorrect controller behavior and possible inability to boot.

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C.1 Main



C.1.1 BIOS Information

Shows current system BIOS core version, BIOS version and Board version.

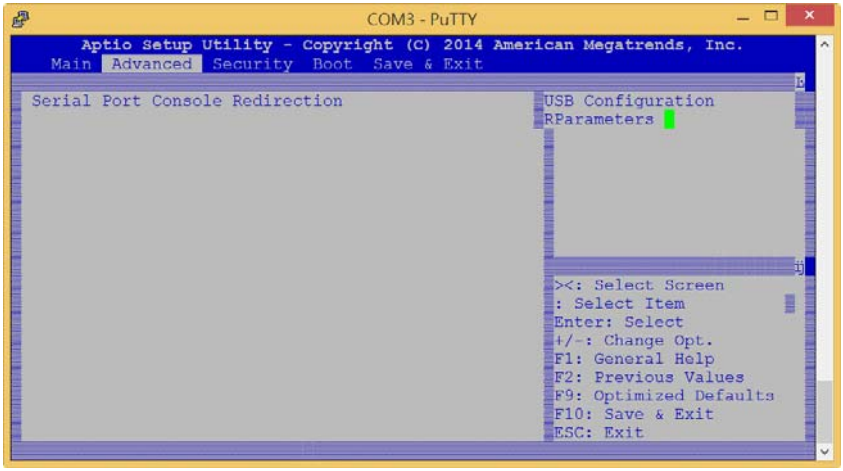
C.1.2 System Time/System Date

Changes system time and date. Highlight System Time or System Date using the up or down <Arrow> keys. Enter new values using the keyboard then <Enter>. Use < Tab > to move between fields. The date must be entered in MM/DD/YY format. The time is entered in HH:MM:SS format.

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.

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C.2 Advanced

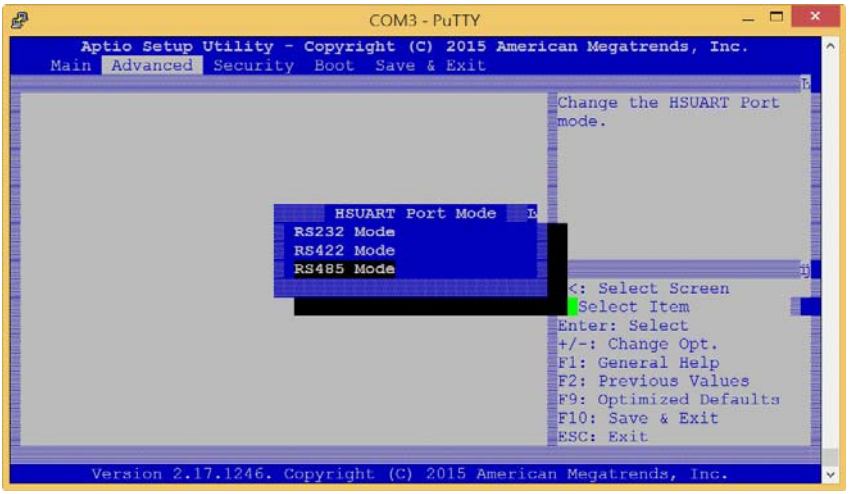


CAUTION:

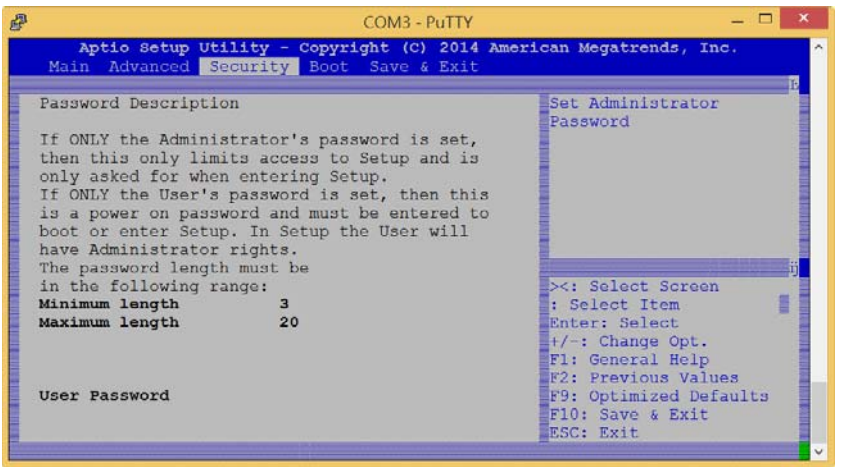
Setting incorrect or conflicting values in Advanced BIOS Setup may cause system malfunction.

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C.2.1 COM Port Settings



C.3 Security



NOTE:

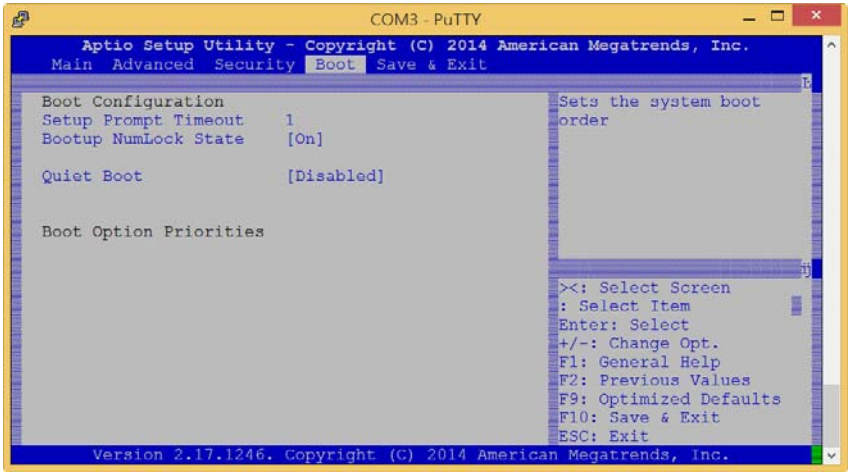
If only the Administrator's password is set, only access to Setup is limited and authorization requested only when entering Setup. If only the User's password is set, a password must be entered to boot or enter setup. In Setup the user has Administrator rights.

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User Password

Sets boot/setup User password.

C.4 Boot

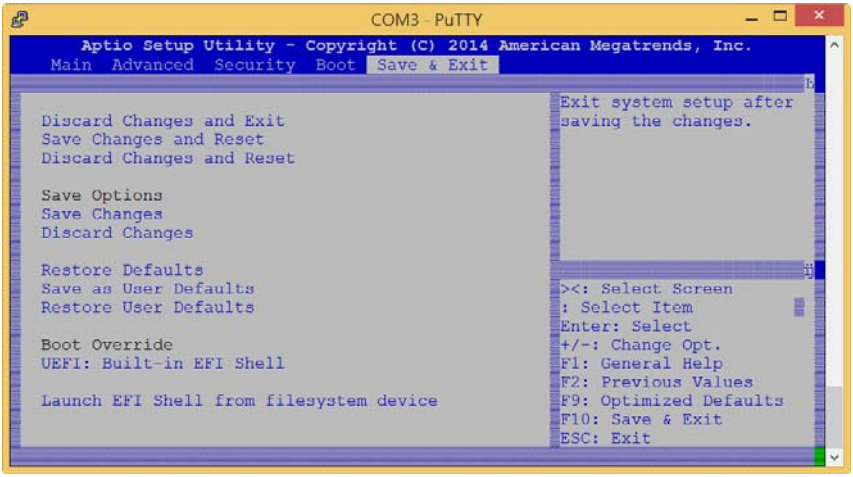


Boot Option Priorities

Specifies the priority of boot devices, with all installed boot devices detected during POST and displayed, where selecting Boot Option # specifies the desired boot device.

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C.5 Exit



Save Changes and Exit

Exits Setup after saving changes.

Discard Changes and Exit

Exits Setup without saving any changes.

Save Changes and Reset

Resets the system after saving changes.

Discard Changes and Reset

Resets system setup without saving any changes.

Save Changes

Saves all changes made to Setup options.

Discard Changes

Discards changes made to Setup options.

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Restore Defaults

Returns all BIOS options to Default settings, providing maximum system stability with limited performance. Applicable in the event of system configuration problems.

Save as User Defaults

Save changes as User Defaults.

Restore User Defaults

Restores User Defaults to all Setup options.

Launch EFI Shell from filesystem device

Initiates launch of EFI Shell application (Shellx64.efi) from an 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 50ºC
- When installing/mounting or uninstalling/removing device; or when removal of a chassis cover is required for user servicing (See "Getting Started" on page 21.):
  - 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

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- 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

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	**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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ADLINK Technology, Inc.
Address: 9F, No.166 Jian Yi Road, Zhonghe District
New Taipei City 235, Taiwan
新北市中和區建一路 166 號 9 樓
Tel: +886-2-8226-5877
Fax: +886-2-8226-5717
Email: service@adlinktech.com

Ampro ADLINK Technology, Inc.
Address: 5215 Hellyer Avenue, #110
San Jose, CA 95138, USA
Tel: +1-408-360-0200
Toll Free: +1-800-966-5200 (USA only)
Fax: +1-408-360-0222
Email: info@adlinktech.com

ADLINK Technology (China) Co., Ltd.
Address: 上海市浦东新区张江高科技园区芳春路 300 号 (201203)
300 Fang Chun Rd., Zhangjiang Hi-Tech Park
Pudong New Area, Shanghai, 201203 China
Tel: +86-21-5132-8988
Fax: +86-21-5132-3588
Email: market@adlinktech.com

ADLINK Technology Beijing
Address: 北京市海淀区上地东路 1 号盈创动力大厦 E 座 801 室(100085)
Rm. 801, Power Creative E, No. 1 Shang Di East Rd.
Beijing, 100085 China
Tel: +86-10-5885-8666
Fax: +86-10-5885-8626
Email: market@adlinktech.com

ADLINK Technology Shenzhen
Address: 深圳市南山区科技园南区高新南七道 数字技术园
A1 栋 2 楼 C 区 (518057)
2F, C Block, Bldg. A1, Cyber-Tech Zone, Gao Xin Ave. Sec. 7
High-Tech Industrial Park S., Shenzhen, 518054 China
Tel: +86-755-2643-4858
Fax: +86-755-2664-6353
Email: market@adlinktech.com

LiPPERT ADLINK Technology GmbH
Address: Hans-Thoma-Strasse 11
D-68163 Mannheim, Germany
Tel: +49-621-43214-0
Fax: +49-621 43214-30
Email: emea@adlinktech.com

PENTA ADLINK Technology GmbH
Ulrichsbergerstrasse 17
94469 Deggendorf, Germany
Tel: +49 (0) 991 290 94 – 10
Fax: +49 (0) 991 290 94 - 29
Email: emea@adlinktech.com

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ADLINK Technology, Inc. (French Liaison Office)
Address: 6 allée de Londres, Immeuble Ceylan
91940 Les Ulis, France
Tel: +33 (0) 1 60 12 35 66
Fax: +33 (0) 1 60 12 35 66
Email: france@adlinktech.com

ADLINK Technology Japan Corporation
Address: 〒101-0045 東京都千代田区神田鍛冶町 3-7-4
神田 374 ビル 4F
KANDA374 Bldg. 4F, 3-7-4 Kanda Kajicho,
Chiyoda-ku, Tokyo 101-0045, Japan
Tel: +81-3-4455-3722
Fax: +81-3-5209-6013
Email: japan@adlinktech.com

ADLINK Technology, Inc. (Korean Liaison Office)
Address: 경기도 성남시 분당구 수내로 46 번길 4 경동빌딩 2 층
(수내동 4-4 번지) (우) 463-825
2F, Kyungdong B/D, 4 Sunae-ro 46 beon-gil
Bundang-gu, Seongnam-si, Gyeonggi-do, Korea, 463-825
Toll Free +82-80-800-0585
Tel +82-31-786-0585
Fax +82-31-786-0583
Email: korea@adlinktech.com

ADLINK Technology Singapore Pte. Ltd.
Address: 84 Genting Lane #07-02A, Cityneon Design Centre
Singapore 349584
Tel: +65-6844-2261
Fax: +65-6844-2263
Email: singapore@adlinktech.com

ADLINK Technology Singapore Pte. Ltd. (Indian Liaison Office)
Address: #50-56, First Floor, Spearhead Towers
Margosa Main Road (between 16th/17th Cross)
Malleswaram, Bangalore - 560 055, India
Tel: +91-80-65605817, +91-80-42246107
Fax: +91-80-23464606
Email: india@adlinktech.com

ADLINK Technology, Inc. (Israeli Liaison Office)
Address: 27 Maskit St., Corex Building
PO Box 12777
Herzliya 4673300, Israel
Tel: +972-54-632-5251
Fax: +972-77-208-0230
Email: israel@adlinktech.com

ADLINK Technology, Inc. (UK Liaison Office)
Tel: +44 774 010 59 65
Email: UK@adlinktech.com

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