AX-8 Series User Guide

www.deltaww.com

Smarter. Greener. Together.

Preface

Thank you for purchasing this product. This user manual provides information about the AX-8 series motion control PAC.

This manual includes:

- Product inspection and Model Explanation
- Specifications and Product Interface
- Product Installation
- BIOS setting instructions
- System Operation and Settings

Product features

The AX-8 series motion control PAC supports EtherCAT (Ethernet Control Automation Technology) control interface, which can be operated with libraries.
It supports a minimum synchronization period of 250 microseconds, and 64 axes and 32 stations in 1 millisecond.
AX-8 series provides 35 kinds of homing methods, point-to point position control, speed control, torque control, multi-axis interpolation, Robot and CNC etc.
The complete motion control functions of the AX-8 series products are able to meet the needs of the diverse industry. This product optimally integrates the operations of multi-axis synchronous motion control, enabling easier assembly, better stability, and more flexible expansion capabilities. This is the one and only choice for industrial upgrading.

How to use this manual

You can use this manual as a reference when using the AX-8 series motion control PAC, which contains information about installation, setting, and instructions on how to use and maintain the product.

Delta technical services

Contact the local distributors or Delta Customer Service Center if you have any inquiry during operation.

(This page is intentionally left blank.)

Table of Contents

1 Product Inspection and Model Explanation

1.1 Product Inspection ····· 1-2
1.2 Model Explanation ····· 1-3
1.3 Electrical Safety precautions ····· 1-4

2 Specifications and Product Interface

2.1 Electrical Specifications ····· 2-2
2.2 External Dimensions ····· 2-4
2.3 Part Names and Port Descriptions ····· 2-5
2.3.1 HDMI Display Port ····· 2-6
2.3.2 Ethernet Port ····· 2-7
2.3.3 USB Port ····· 2-8
2.3.4 Status Indicator ····· 2-9
2.3.5 RS-485/422 Encoder and GPIO Port ····· 2-10
2.3.6 Power Port ····· 2-11
2.3.7 Protocol Port Bus Communication interface ····· 2-12
2.3.8 WatchDog On/Off Switch ····· 2-13
2.4 Wiring Example ····· 2-14
2.4.1 AX-8 Series Wiring for Input Point Connection With External Devices ····· 2-14
2.4.2 AX-8 Series Wiring for Output Point Connection With External Devices ····· 2-15
2.4.3 AX-8SeriesEncoder Wiring ····· 2-17

3 Product Installation

3.1 Hung Installation ····· 3-2
3.2 SD Card Installation ····· 3-3

4 BIOS

4.1 BIOS Operation and Setting ····· 4-1
4.1.1 Main ····· 4-3
4.1.2 Advanced ····· 4-4
4.1.3 WatchDot ····· 4-5
4.1.4 Chipset ····· 4-6
4.1.5 Security ····· 4-11
4.1.6 Boot ····· 4-12
4.1.7 Save & Exit ····· 4-13

5 System Operation and Settings

5.1 Setting and Releasing of the Write Protection UWF Function ····· 5-2
5.1.1 Using the PAC_Tool to Perform Write Protection UWF Operations ····· 5-3
5.1.2 Read Current Write Protection Status ····· 5-3
5.1.3 Enabling Write Protection ····· 5-4
5.1.4 Disabling Write Protection ····· 5-5
5.1.5 Write Protection Fix ····· 5-6
5.2 Operating System Language Change Setting ····· 5-7
5.3 Write Protection Function Exception ····· 5-9

Product Inspection and Model Explanation

1

This chapter mainly introduces the product inspection and product model description, as well as the electrical safety precautions of the AX-8 series product. Read this chapter before using the product to understand related contents.

1.1 Product Inspection ····· 1-2
1.2 Model Description ····· 1-3
1.3 Electrical Safety Precautions ····· 1-4

1.1 Product Inspection

Users please verify the integrity of this product package, and confirm whether all the following items and accessories are complete:

1. Host
2. Product Installation Manual
3. Accessories (As shown in Figure 1.1.1)

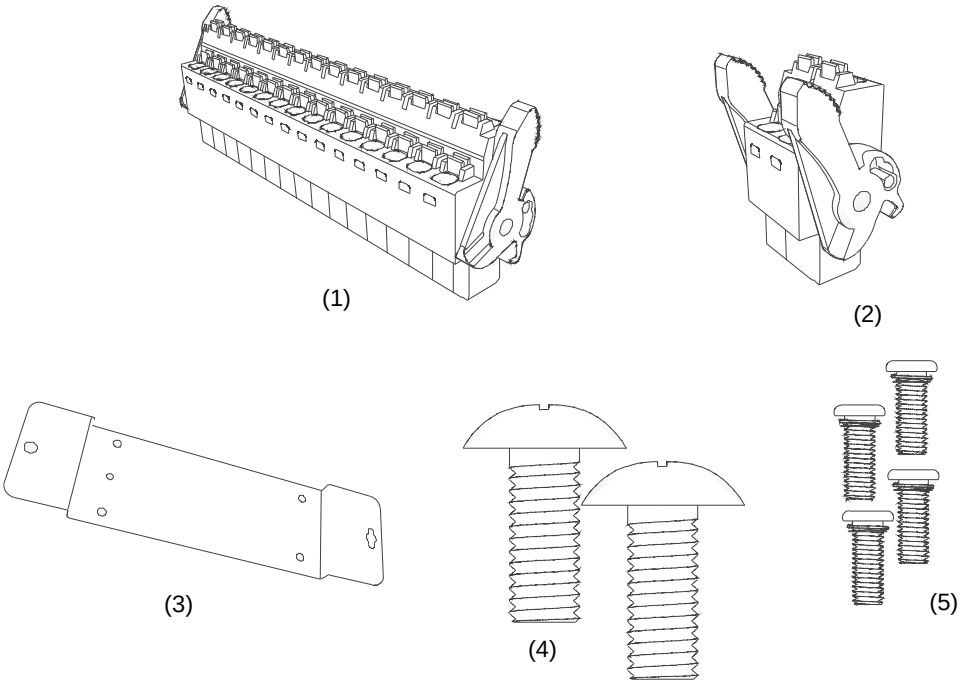


Figure 1.1.1 Accessory Diagrams

No.	Item	Quantity
(1)	I/O Cable Connector	1
(2)	Power Cable Connector	1
(3)	Wall Mount Fixture	1
(4)	M3 Pan Head Screws	4
(5)	M4 Truss Head Screws	2

1.2 Model Description

AX – 8 64 E P0 CB1 T
(1) (2) (3) (4) (5)(6) (7) (8) (9) (10)

No.	Item	Description
(1)	Product type	AX = AX Series Standalone Controller
(2)	Processor	7, 8, 9 = PC-based 1, 2, 3, 4, 5, 6 = PLC-based (1, 2 = Compact; 3, 4, 5 = Middle; 6 = High)
(3)	Number of Axes Supported	08 = 8 axes; 16 = 16 axes; 32 = 32 axes; 64 = 64 axes; 1H = 128 axes; 2H = 256 axes; 5H = 512 axes
(4)	Network Type Movement Type	E = EtherCAT; C = CANopen; D = DMCNet; P = ProfiNet; F = Safety; I = CIP; M = Pulse
(5), (6)	Hardware Version	(5): CPU Version
		A = Intel Atom Series P = Intel Celeron Series C = Intel Core Series
		(6): Controller Version
		0 = Version One 1 = Version Two
(7), (8), (9)	Software Version	(7): License Certification
		P = CODESYS PLC M = CODESYS SoftMotion C = CODESYS SoftMotion + CNC +Robot
		(8): System Type
		A = A type (Win10 IoT 64-bit + 32G M.2 SSD) B = B type (Win10 IoT 64-bit + QT HMI + 32G M.2 SSD) C = C type (Win10 IoT 64-bit + Codesys HMI + 32G M.2 SSD)
		(9): Firmware Version
		1 = Version One
(10)	IO Type	T: Transistor NPN; P: Transistor PNP; R: Relay S: TRIAC; A: Analog I/O; M: Differential

1.3 Electrical Safety Precautions

- In order to prevent possible severe damage caused by electric shocks, please first unplug the host power cable from the power outlet before moving the host.
- Confirm that all power cables have been unplugged before connecting or disconnecting any signal cables from the host.
- Confirm that the voltage setting of the power supply is adjusted to the standard voltage value used in this country/this region. If you are unsure of the supplied voltage value of your region, please consult your local power company staff.
- If the power supply is damaged, do not attempt to fix it by yourself. Please contact Delta's professional technical service staff or the dealer.
- Restart Instructions: Pressing and holding down the reset button for 2 seconds will force restart.
- It is recommended to install this product inside a cabinet or inside an external case in order to block external collisions.
- This product is applicable to industrial automation equipment and applications. Please read this User Manual carefully and perform installation according to the instructions in order to prevent danger from occurring.
- If this product is not operated in accordance with the instructions described in the Manual, it will cause damage to the equipment or abnormal functions.

Specifications and Product Interface 2

This chapter mainly introduces the specifications and part compositions of the AX-8 series product. Please assemble the parts in accordance with the descriptions in this chapter; do not remove the non-removable parts by yourself.

2.1 Electrical Specifications ····· 2-2
2.2 External Dimensions ····· 2-4
2.3 Part Names and Port Descriptions ····· 2-5
2.3.1 HDMI Display Port ····· 2-6
2.3.2 Ethernet Port ····· 2-7
2.3.3 USB Port ····· 2-8
2.3.4 Status Indicator ····· 2-9
2.3.5 RS-485/422 Encoder and GPIO Port ····· 2-10
2.3.6 Power Port ····· 2-11
2.3.7 Protocol Port Bus Communication Interface ····· 2-12
2.4 Wiring Examples ····· 2-14
2.4.1 AX-8 Series Wiring for Input Point Connection With External Devices ····· 2-14
2.4.2 AX-8 Series Wiring for Output Point Connection With External Devices ·· 2-15
2.4.3 AX-8SeriesEncoder Wiring ····· 2-17

2

2.1 Electrical Specifications

Item		AX-8 □□EP0□□□T	AX-8 □□EP0□□□P
Processor System	Processor	Intel Celeron J1900 Quad Core 2.00GHz, up to 2.42GHz	
	BIOS	AMI BIOS	
	Memory	On Board DDR3L-1333 4GB	
	Power Loss Retentive Memory	128 KB MRAM	
Communication interface	Network Interface	2 x IEEE 802.3 / 802.3u / 802.3ab 1 Gbps	
	Bus Communication Interface	1 x EtherCAT	
	USB	4 x USB 2.0	
	Serial Communication Port	1 x isolated RS-485 / 422	
Digital input	Output Signal Form	NPN (SINK) / PNP (SOURCE)	
	Number of End Points	8	
	Power Used	DC 24V (tolerance + 20%,-15%)	
	Max. input current	5 mA / CH	
	Response time (OFF→ON)	Ton ≤ 200 ns	
	Motion Level (OFF→ON)	≥15 V_{DC}	
	Response time (ON→OFF)	Toff ≤ 150 ns	
	Motion Level (ON→OFF)	≤ 5 V_{DC}	
Digital Output	Signal Form	NPN (SINK)	PNP (SOURCE)
	Number of End Points	8	8
	Power Used	DC 24V (tolerance + 20%,-15%)	
	Max. output current	100 mA / CH	50 mA / CH
	Response time	Ton = 0.2 us / Toff = 4.6 us (24 V / 5.1 mA) Ton = 0.2 us / Toff = 2.5 us (24 V / 10 mA) Ton = 0.2 us / Toff = 0.6 us (24 V / 51 mA) Ton = 0.2 us / Toff = 0.35 us (24 V / 100 mA)	Ton = 1.3 us / Toff = 8.2 us (24 V / 5.1 mA) Ton = 1.3 us / Toff = 5 us (24 V / 10 mA) Ton = 1.3 us/ Toff = 2.6 us (24 V / 51 mA)
Encoder Input	Signal Form	Differential	
	Number of End Points	1-CH EA± / EB± / EZ±	
	Response time	Ton ≤ 150 ns	

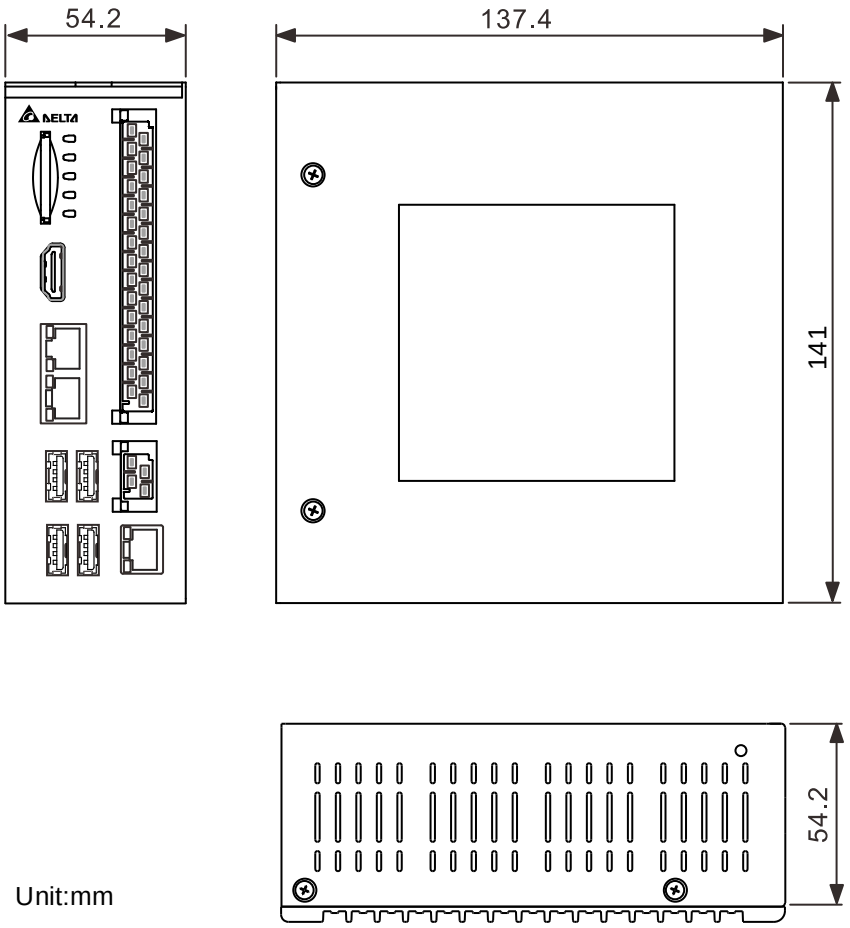
Item		AX-8 □□EP0□□□T	AX-8 □□EP0□□□P
		Toff ≤ 150 ns	
Display Interface	Display Interface Specifications	1 x HDMI 1.4a	
Expansion Interface	Expansion Interface Specifications	1 x SD Card Slot (SD card 3.0 Interface)	
Storage Device	Solid State Drive	1 x M.2 2242 type B&M-key SATA SSD (SATA 2.0 Interface)	
Power Requirement	Input Voltage Type	DC 24V (tolerance + 20%, -15%)	
	Power Consumption*1	24 V / 1.2 A / 28.8 W	
Mechanism	Installation	Wall Mount Type, Orbital Type	
	External Dimensions	54.2 mm*141 mm*137.4 mm (W x H x D)	
Applicable Environment	Operating Temperature	0 °C ~ 50 °C	
	Storage temperature	-20°C ~ 70°C	
	Relative Humidity	0% ~ 90% RH (Uncondensed)	
	Seismic Test	2 Grms, IEC 60068-2-64, random continuous vibration, 5 ~ 500 Hz, 1 hr / axis	
	Impact Test	75 G, IEC 60068-2-27, half sine wave, continually for 11ms	
	Safety Certification	CE	
Software Supported	Microsoft Windows	Window 10 IOT 64-bit	

Notes:

1. CPU and peripheral at full load status; power consumption includes USB, SSD, and other interfaces.

2.2 External Dimensions

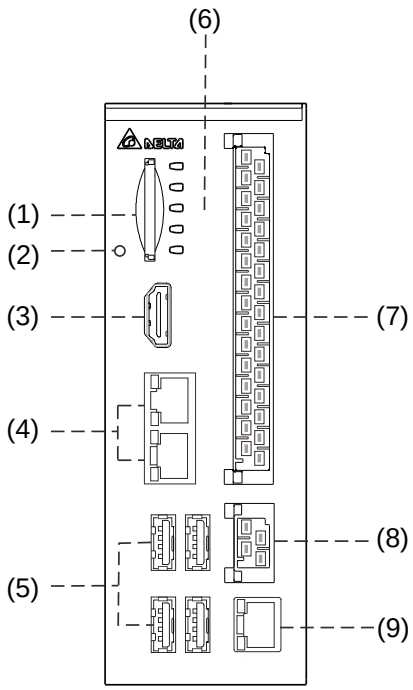
AX-8 Series Model External Dimensions: 54.2 x 141 x 137.4 mm (W x H x D)



Unit:mm

2.3 Part Names and Port Descriptions

AX-8 series model host port illustration diagram and descriptions.

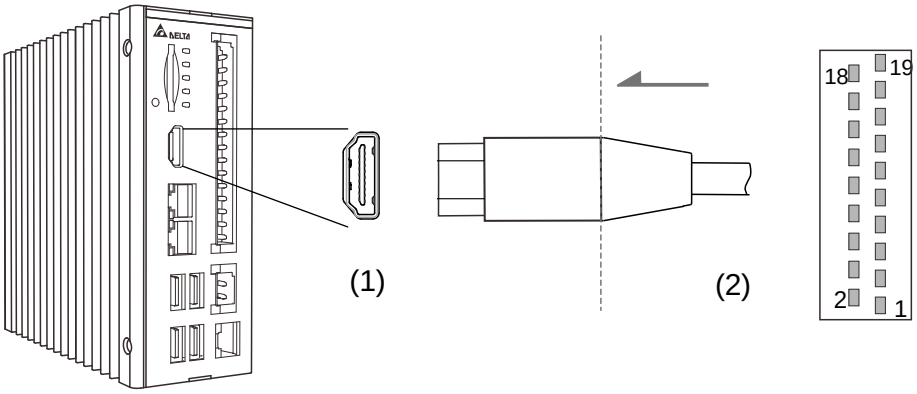


Introduction to Part Names and Port Functions:

No.	Description	No.	Description
(1)	SD Card Slot	(6)	Status Indicator
(2)	Reset Switch	(7)	RS-485/422;Encoder; GPIO Port
(3)	HDMI Display Port	(8)	Power Connection Port
(4)	Gigabit LAN Network Port	(9)	EtherCAT Port
(5)	USB 2.0 Port	-	-

2.3.1 HDMI Display Port

HDMI display port pin illustration diagram and pin descriptions are as follows.



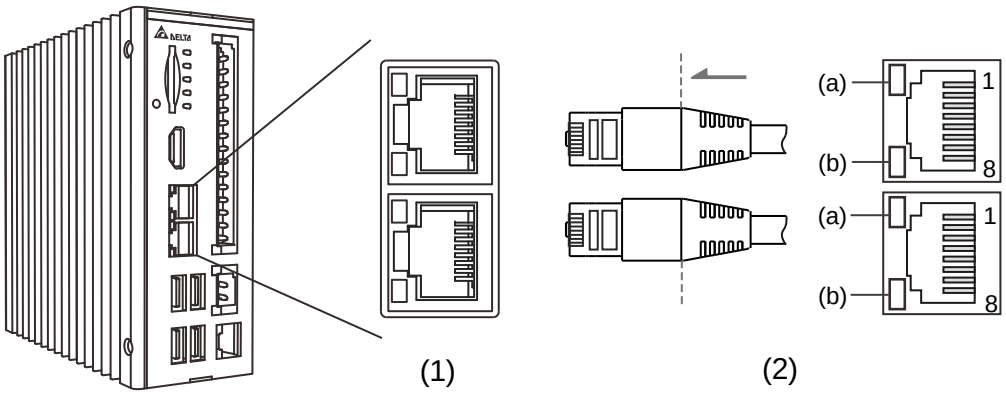
(1) HDMI Display Port (2) HDMI Cable Port

HDMI Pin Definitions:

Pin	Description	Pin	Description
1	TX+_2	11	HDMI_GND
2	HDMI_GND	12	CLK-
3	TX-_2	13	NC
4	TX+_1	14	NC
5	HDMI_GND	15	SCL
6	TX- 1	16	SDA
7	TX+_0	17	HDMI_GND
8	HDMI_GND	18	+5V
9	TX- 0	19	Hot Plug Detect
10	CLK+	-	-

2.3.2 Ethernet Port

Gigabit LAN network port pin illustration diagram and its pin descriptions are as follows.



(1) Gigabit LAN Network Port (2) Network Cable Connector

Gigabit LAN Network Port Pin Definitions:

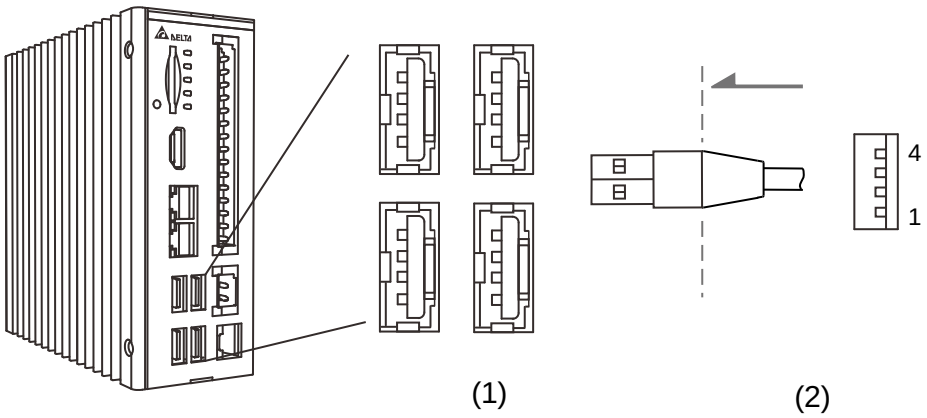
Pin	Description	Pin	Description
1	TP+_1	5	TP-_3
2	TP-_1	6	TP-_2
3	TP+_2	7	TP+_4
4	TP+_3	8	TP-_4

Ethernet Port Indicator Descriptions:

LED	Indicator Display	Status Description
LED (a)	OFF	10 Mbps
	Green	100 Mbps
	Orange	1000 Mbps
LED (b)	Constantly ON (orange)	Mesh Connected
	Flashing (orange)	Data Transmitting

2.3.3 USB Port

USB 2.0 port pin illustration diagram and its pin descriptions are as follows.



(1) USB2.0 (2) USB Signal Cable Connector

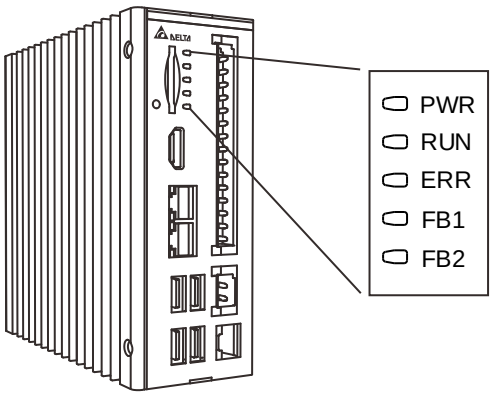
USB 2.0 Port Pin Definitions:

Pin	Description	Pin	Description
1	Power (+5V)	3	D+
2	D-	4	GND

Note: The maximum voltage of each port is 5V (±5%), and the maximum current is 500 mA.

2.3.4 Status Indicator

The following is the status indicator location map and description.

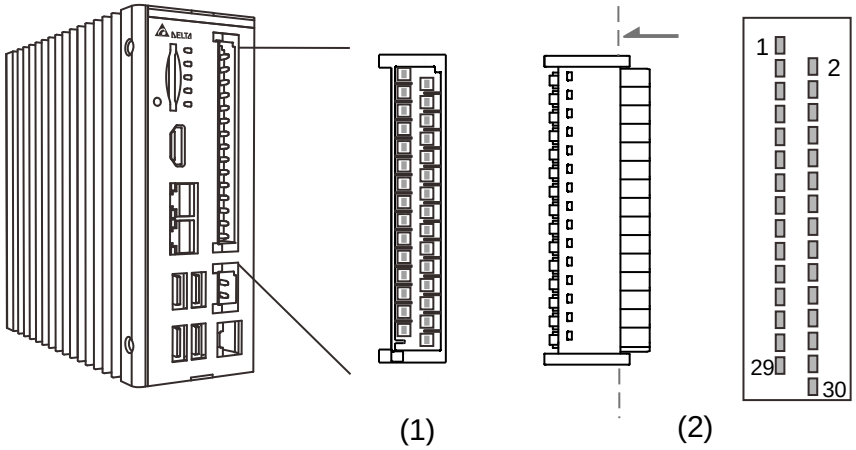


Status Indicator Definitions:

Mark	Description	Mark	Description
PWR	Power Indicator	FB1	Bus 1 Indicator
RUN	Operation Indicator	FB2	Bus 2 Indicator
ERR	Error Indicator	-	-

2.3.5 RS-485/422 Encoder and GPIO Port

RS-485/RS-422 encoder GPIO port pin illustration diagram and its pin descriptions are as follows.



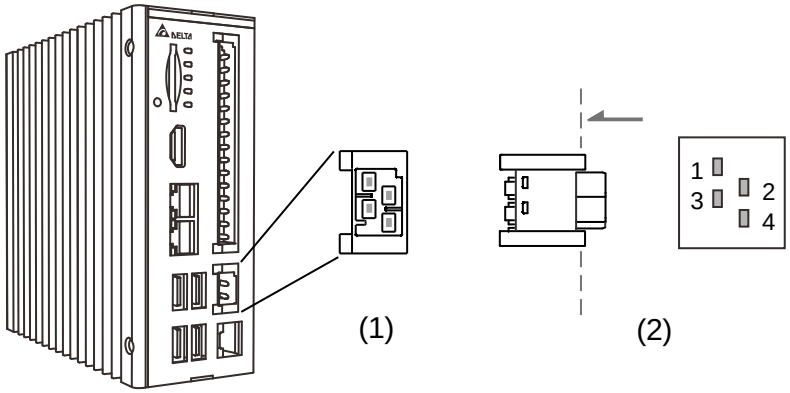
(1) RS-485/RS-422 Encoder and GPIO Port (2) Port Cable Connector

RS-485/RS-422 Encoder and GPIO Pin Definitions:

Pin	Mark	Description	Pin	Mark	Description
1	TX+	RS422 TX+ Signal /RS485+ Signal	2	TX-	RS422 TX- Signal /RS485- Signal
3	SG	RS-422/485 GND	4	SG	RS-422/485 GND
5	RX+	RS-422 RX+ Signal	6	RX-	RS-422 RX- Signal
7	A+	EA+ Signal	8	A-	EA+ Signal
9	B+	EB+ Signal	10	B-	EB- Signal
11	Z+	EZ+ Signal	12	Z-	EZ- Signal
13	X0	GPIO Input Signal	14	Y0	GPIO Output Signal
15	X1	GPIO Input Signal	16	Y1	GPIO Output Signal
17	X2	GPIO Input Signal	18	Y2	GPIO Output Signal
19	X3	GPIO Input Signal	20	Y3	GPIO Output Signal
21	X4	GPIO Input Signal	22	Y4	GPIO Output Signal
23	X5	GPIO Input Signal	24	Y5	GPIO Output Signal
25	X6	GPIO Input Signal	26	Y6	GPIO Output Signal
27	X7	GPIO Input Signal	28	Y7	GPIO Output Signal
29	VCC	External 24V Power	30	GND	External 24V Power GND

2.3.6 Power Port

Power port pin illustration diagram and its pin descriptions are as follows.



(1) Power Port (2) Power Port Cable Connector

Power Port Pin Definitions:

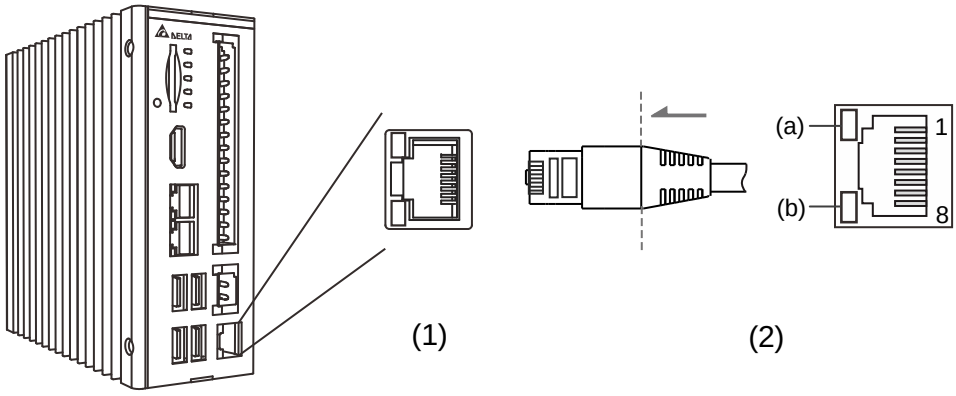
Pin	Description	Pin	Description
1	Frame Ground (FG)	3	Frame Ground (FG)
2	Master Power (+24V)	4	Ground (GND)

Note: When using an external power supply, make sure that it complies with the safety regulations of each location:

1. Safety: EN60950-1
2. CE Certification
3. EMC Certification : Emission (CE & RE) ; CISPR 32, EN 55032, EN 55011, FCC Title 47: Class B, EN 61204-3
   Immunity EN 55024, EN 61000-6-2

2.3.7 Protocol Port Bus Communication Interface

EtherCAT port pin illustration diagram and its pin descriptions are as follows.



(1) EtherCAT Port (2) Network Cable Connector

EtherCAT Port Pin Descriptions:

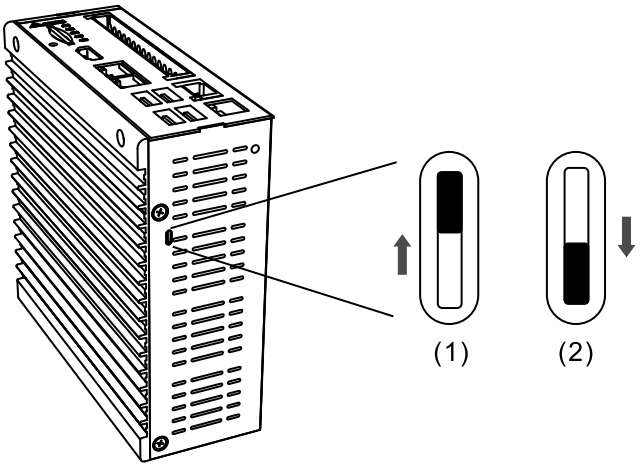
Pin	Description	Pin	Description
1	TP+_1	5	TP-_3
2	TP-_1	6	TP-_2
3	TP+_2	7	TP+_4
4	TP+_3	8	TP-_4

EtherCAT Port Indicator Descriptions:

LED	Indicator Display	Status Description
LED (a)	OFF	10 Mbps
	Green	100 Mbps
LED (b)	Constantly ON (orange)	Mesh Connected
	Flashing (orange)	Data Transmitting

2.3.8 WatchDog On/Off Switch

The watchdog function switch is as follows



(1) Function Enable；(2) Function Disable

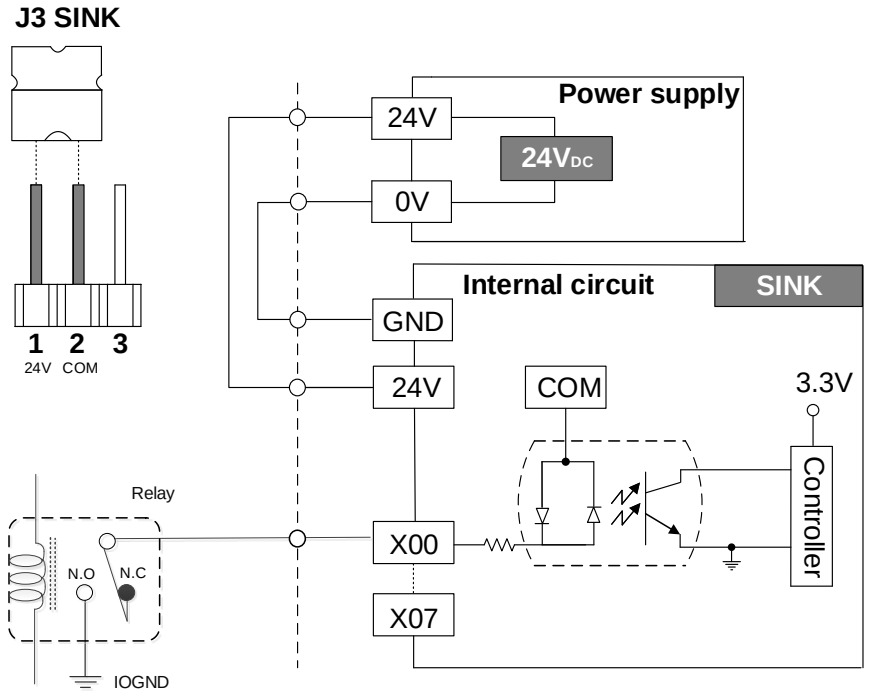
User can switch on/off watchdog function on the bottom of AX-8.
When Watchdog function is enable and there is a system crash, the watchdog timer will send out the reset signal to let system return normal operation. Please refer to Chapter 4.1.3 Watchdog parameter detail settings.

2.4 Wiring Examples

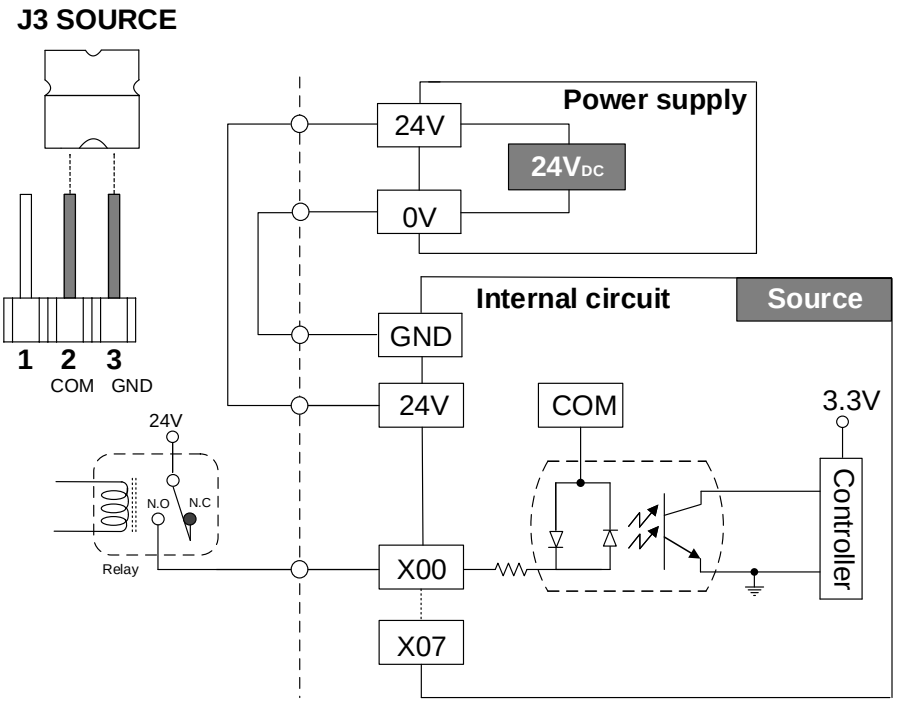
2.4.1 AX-8 Series Wiring for Input Point Connection With External Devices

2

■ SINK Type Wiring: (AX-8□□EP0□□□T)



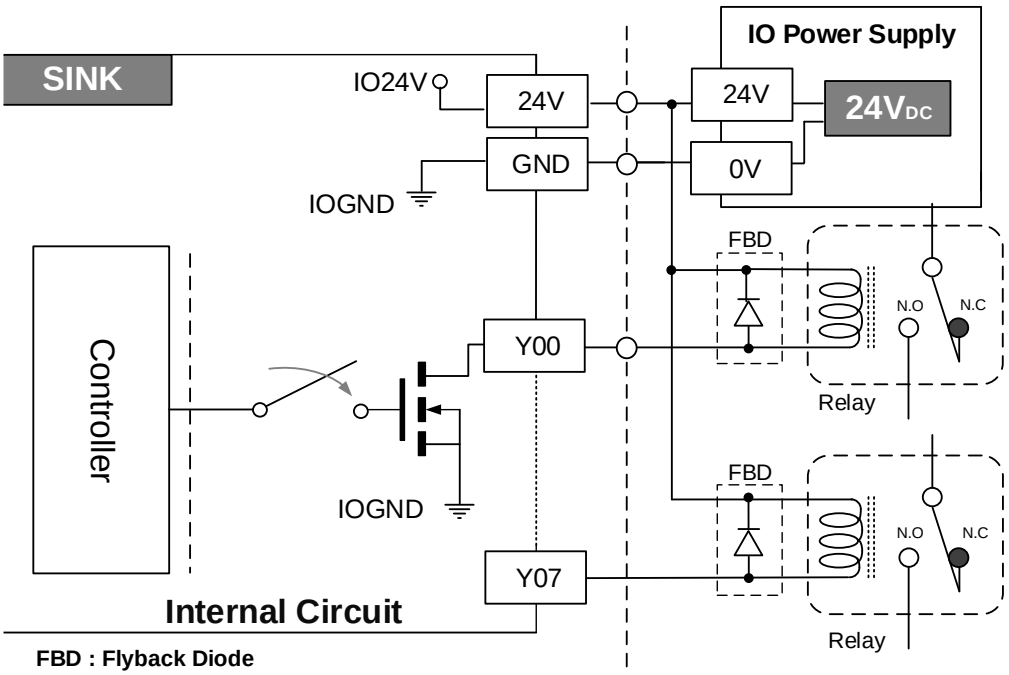
■ SOURCE Type Wiring: (AX-8□□EP0□□□P)



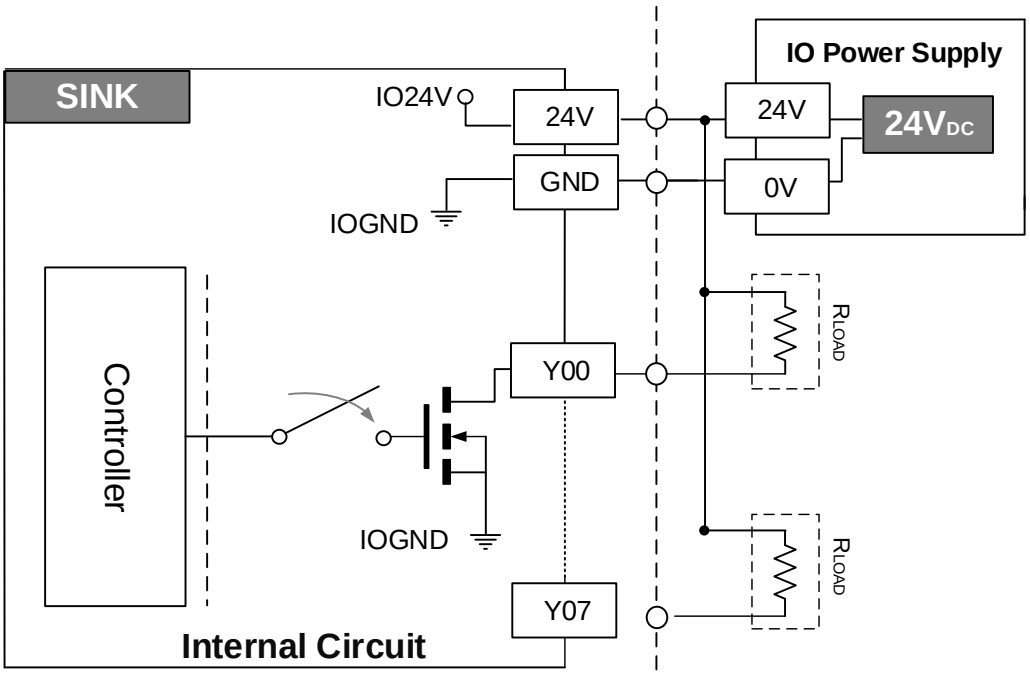
2.4.2 AX-8 Series Wiring for Output Point Connection With External Devices

■ SINK Type Wiring: (AX-8□□EP0□□□T)

(1) Application 1: Relay Type



(2) Application 2: External equivalent load resistance type.

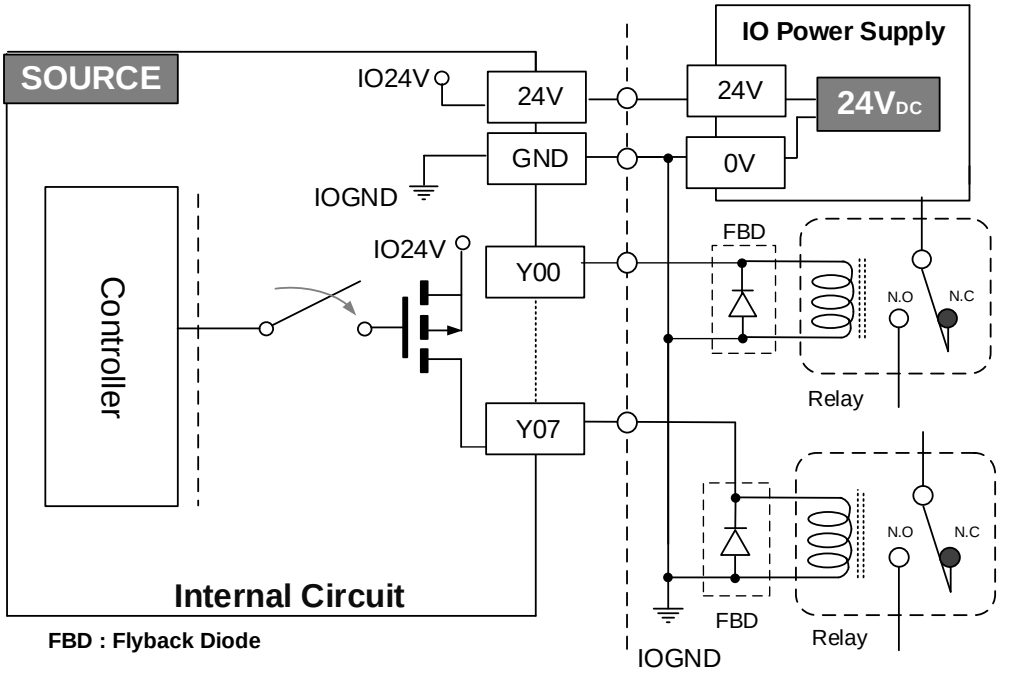


Note: When the external power is 24V, the external load equivalent resistance must not be less than 240ohm (maximum output current: 100mA/CH).

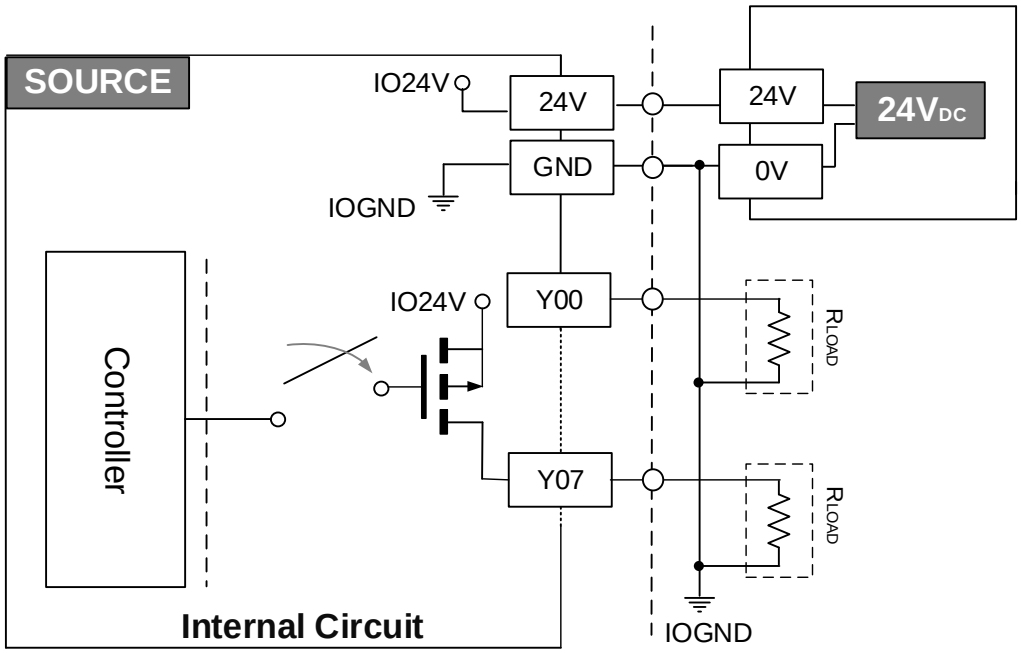
2

■ SOURCE Type Wiring: (AX-8□□EP0□□□P)

(1) Application 1: Relay Type



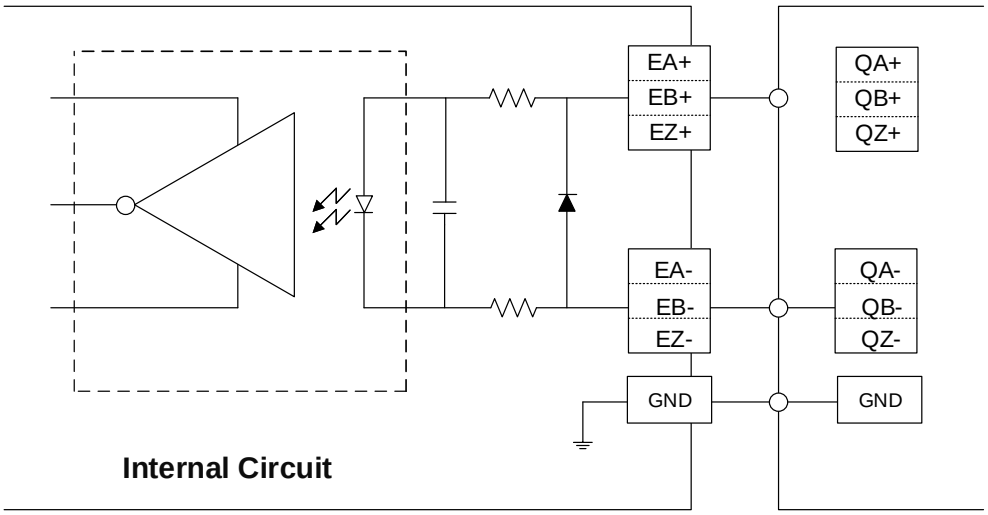
(2) Application 2: External equivalent load resistance type.



Note: When the external power is 24V, the external load equivalent resistance must not be less than 480ohm (maximum output current: 50mA/CH).

2.4.3 AX-8SeriesEncoder Wiring

■ Encoder Signal Wiring Diagram



3 Product Installation

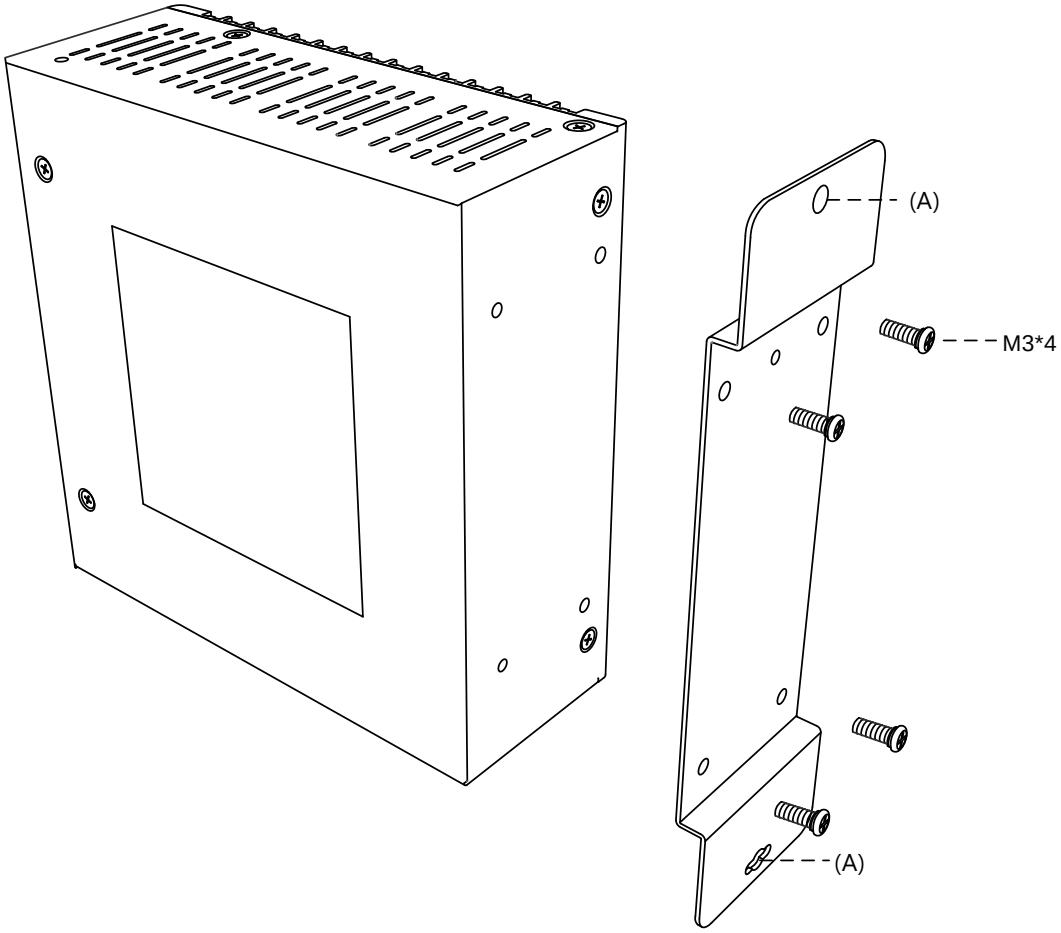
This chapter explains the installation method of the AX-8 series host and the installation method of storage devices.

3.1 Hung Installation ····· 3-2
3.2 SD Card Installation ····· 3-3

3

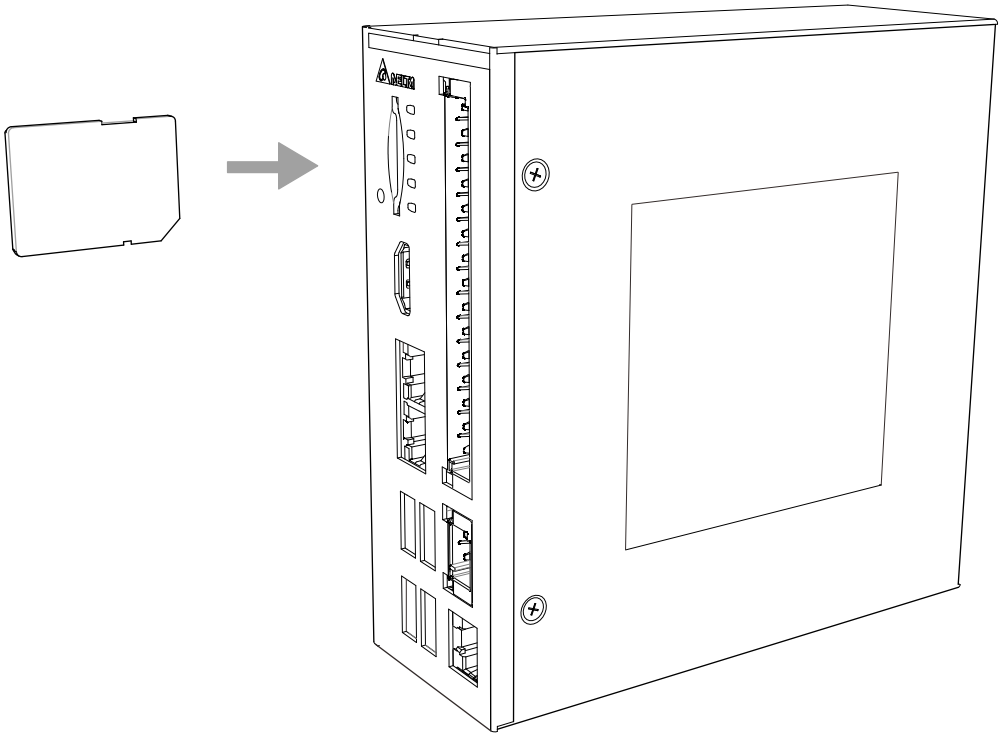
3.1 Hung Installation

As shown in the diagram, rotate the host to its back and use the M3 pan head screws to lock the fixture component onto the host body, and use the wall mount to fix the two upper and lower holes of the fixture in place. To lock the AX-8 host on a rack or cabinet, the M4 screws included in the accessory kit can be used to lock it in place at the (A) position.



3.2 SD Card Installation

Insert the SD card into the slot according to the direction illustrated in the diagram.



(This page is left blank on purpose.)

BIOS

4

This chapter provides BIOS related settings and descriptions for the AX-8 series.

4.1 BIOS Operations and Settings ····· 4-2

4.1.1 Main ····· 4-3

4.1.2 Advanced ····· 4-4

4.1.3 WatchDog ····· 4-5

4.1.4 Chipset ····· 4-6

4.1.5 Security ····· 4-11

4.1.6 Boot ····· 4-12

4.1.7 Save & Exit ····· 4-13

4.1 BIOS Operations and Settings

When “Press **Del** or **F2** to Enter Setup” is displayed during boot up, press the **Del** button or **F2** button to enter the BIOS setting screen as shown in Figure 4.1.1.

1. BIOS Button Operation Method:

Button	Function	Button	Function
↑↓← →	Move Between Items	F1	Button Operation Help
Enter	Enter or Select the Current Item	F2	Restores All Previous Settings
+ , -	Value Adjustment	F3	Restores All Default Settings
Esc	Exit Program	F4	Save All Current Settings

2. Introduction to the Main Menu:

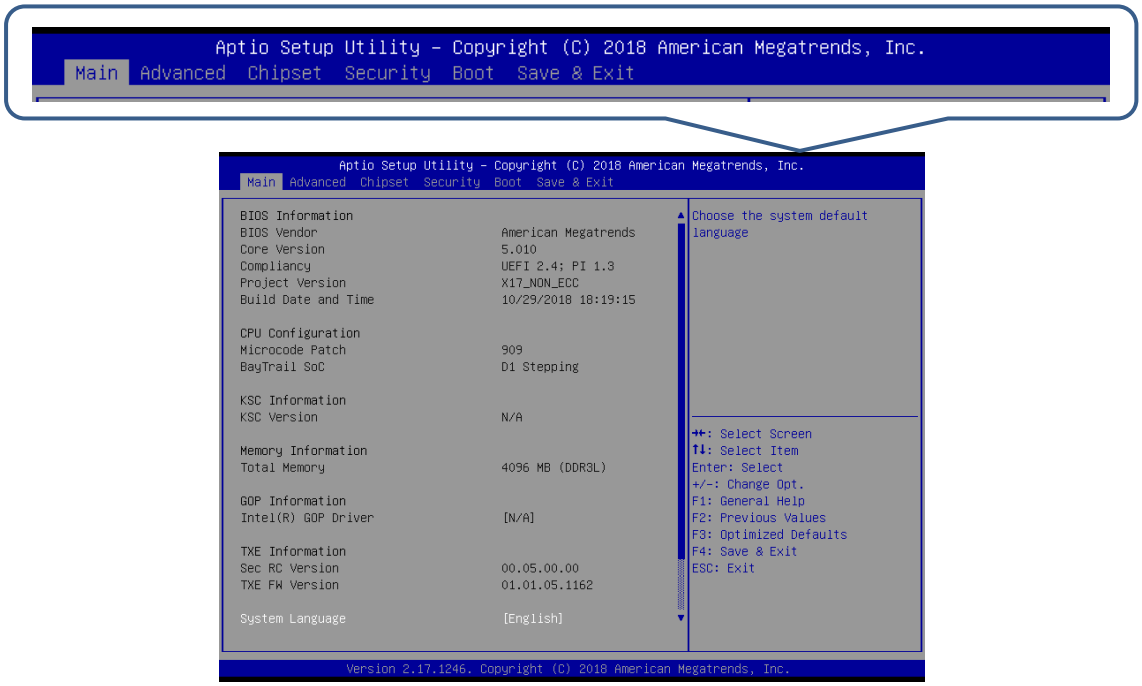


Figure 4.1.1

Menu	Function	Menu	Function
Main	Basic System Settings	Boot	Boot Setting
Advanced	Advanced Function Setting	Security	Security Setting
Chipset	Chipset Setting	Save & Exit	Setting Value Operation and Exit Program

(← and → can be used to browse the various menus.)

4.1.1 Main

The Main option of the BIOS includes Total Memory and System Language, etc. as shown in the figure below:

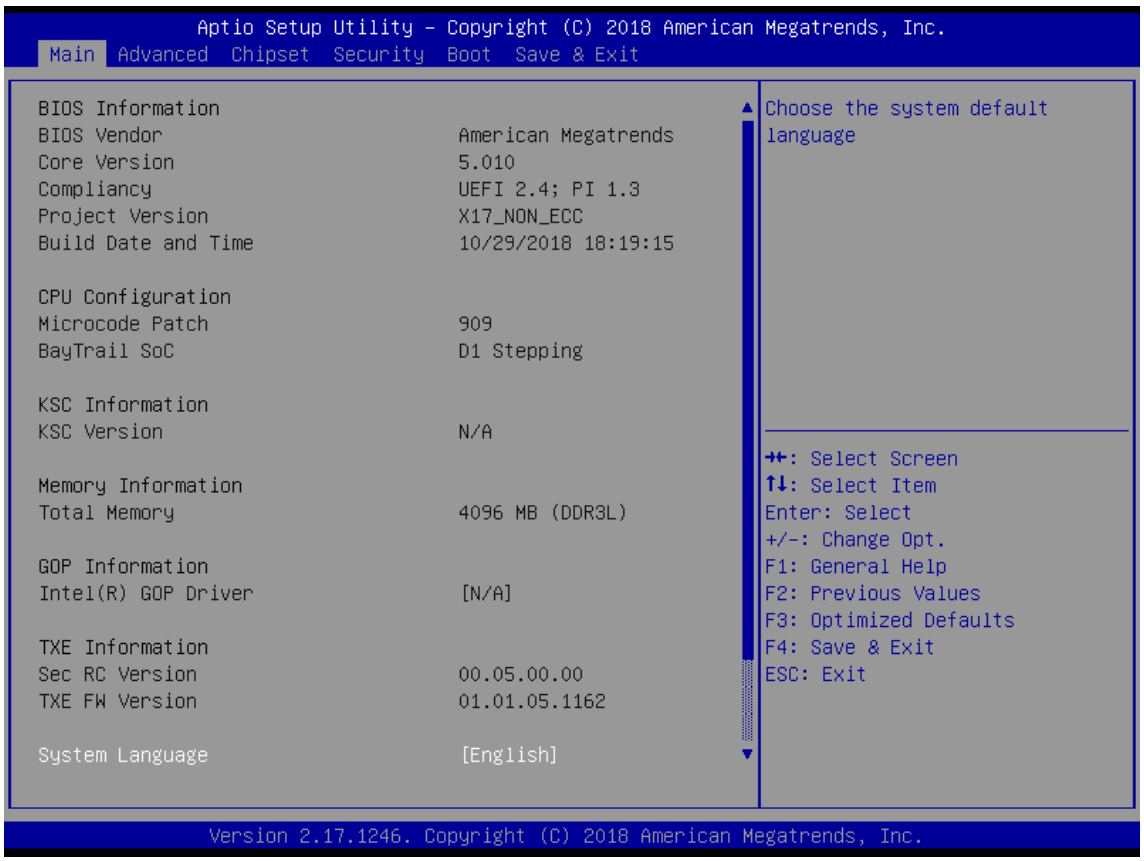


Figure 4.1.1.1

Item	Default Value	Description
System Language	English	N/A
System Date	N/A	Sets System Date
System Time	N/A	Sets System Time

4

4.1.2 Advanced

The Advanced option of the BIOS includes HW Monitor, etc. as shown in the figure below.

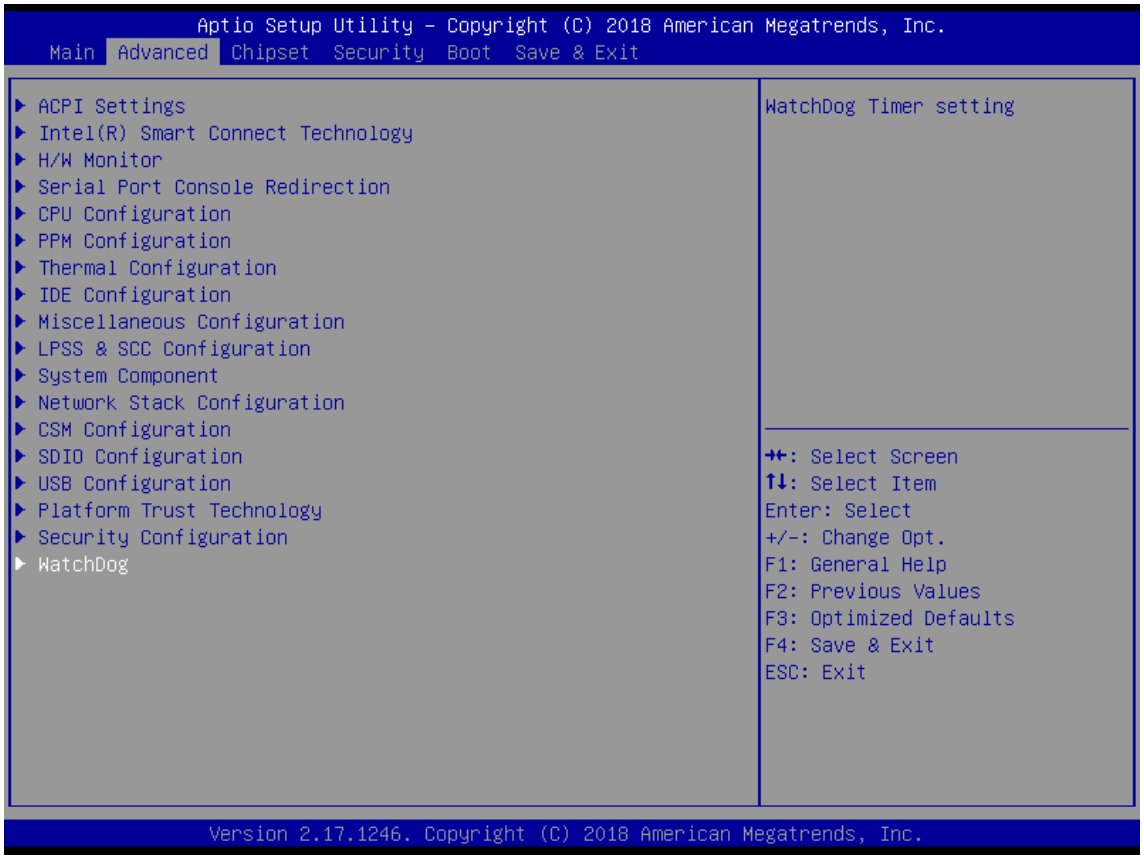


Figure 4.1.2.1

Item	Default Value	Description
H/W Monitor	N/A	Hardware Monitor
IDE Configuration	N/A	IDE Device Configuration
Miscellaneous Configuration	N/A	MISC Configuration
LPSS & SSC Configuration	N/A	LPSS & SSC Configuration
SDIO Configuration	N/A	SDIO Configuration
USB Configuration	N/A	USB Configuration
Platform Trust Configuration	N/A	Platform Trust (TPM) Configuration
Security Configuration	N/A	Security (TXE) Configuration
WatchDog	N/A	WatchDog Configuration

4.1.3 WatchDog

The WatchDog timer function is used to determine whether the system is operating normally; it is activated at fixed intervals to check the system. If the result displayed is abnormal, it will restart the system.

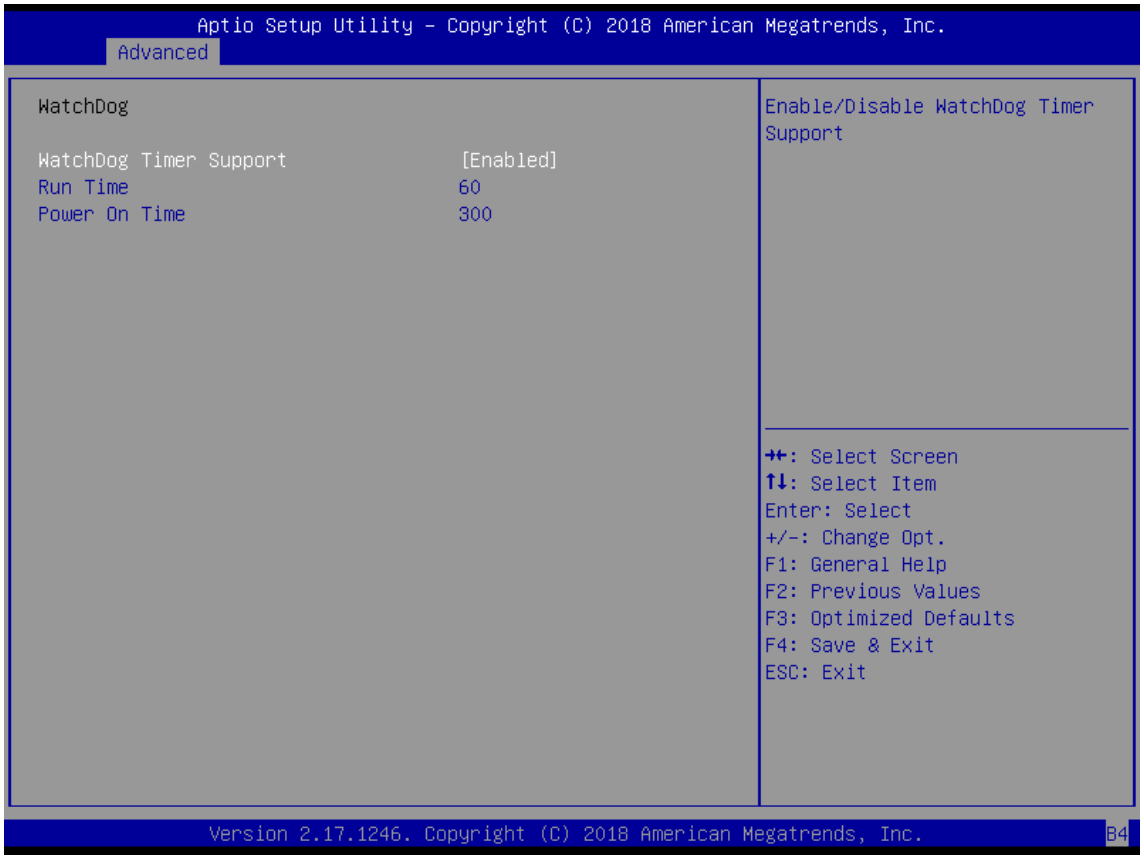


Figure 4.1.3.1

Item	Default Value	Description
WatchDog Timer Support	Enable	Whether to enable the WatchDog timer.
Run Time	60	Checking interval after entering the OS.
Power On Timer	300	Checking interval before entering the OS.

4

4.1.4 Chipset

The Chipset option of the BIOS includes the North Bridge and South Bridge, etc., as shown in the figure below.

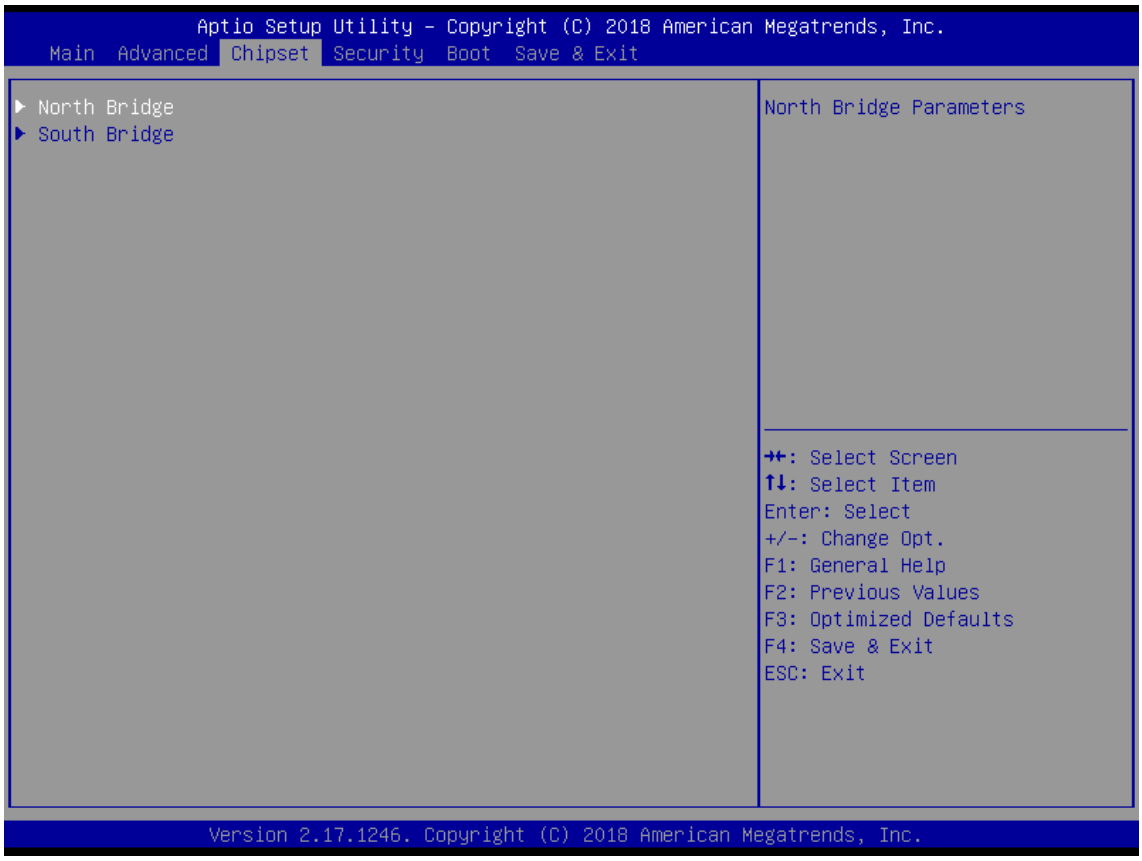


Figure 4.1.4.1

Item	Default Value	Description
North Bridge	N/A	North Bridge
South Bridge	N/A	South Bridge

■ North Bridge

The North Bridge option of the BIOS includes Intel IGD Configuration and Max TOLUD, etc., as shown in the figure below:

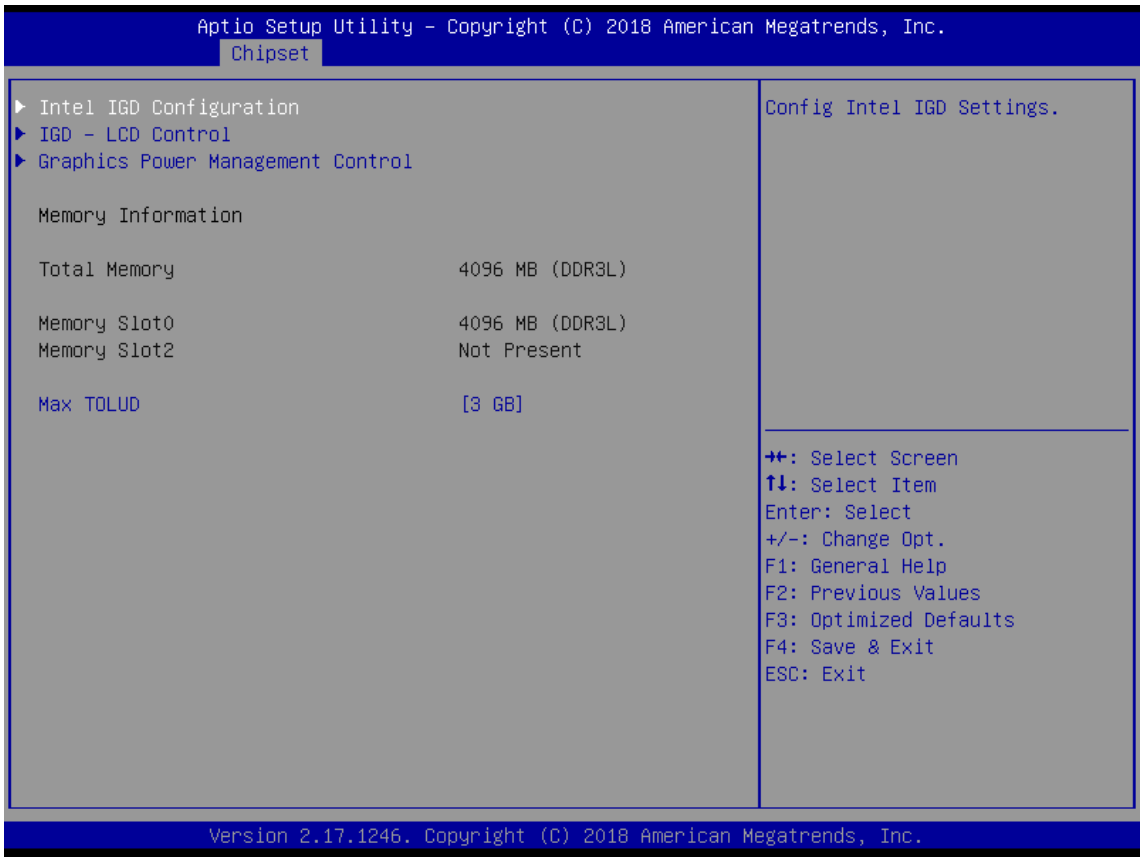


Figure 4.1.4.2

Item	Default Value	Description
Intel IGD Configuration	N/A	Intel Built-in Display Chipset Configuration
Max TOLUD	3 GB	TOLUD Setting

4

■ South Bridge

The South Bridge option of the BIOS includes USB Configuration, etc., as shown in the figure below:

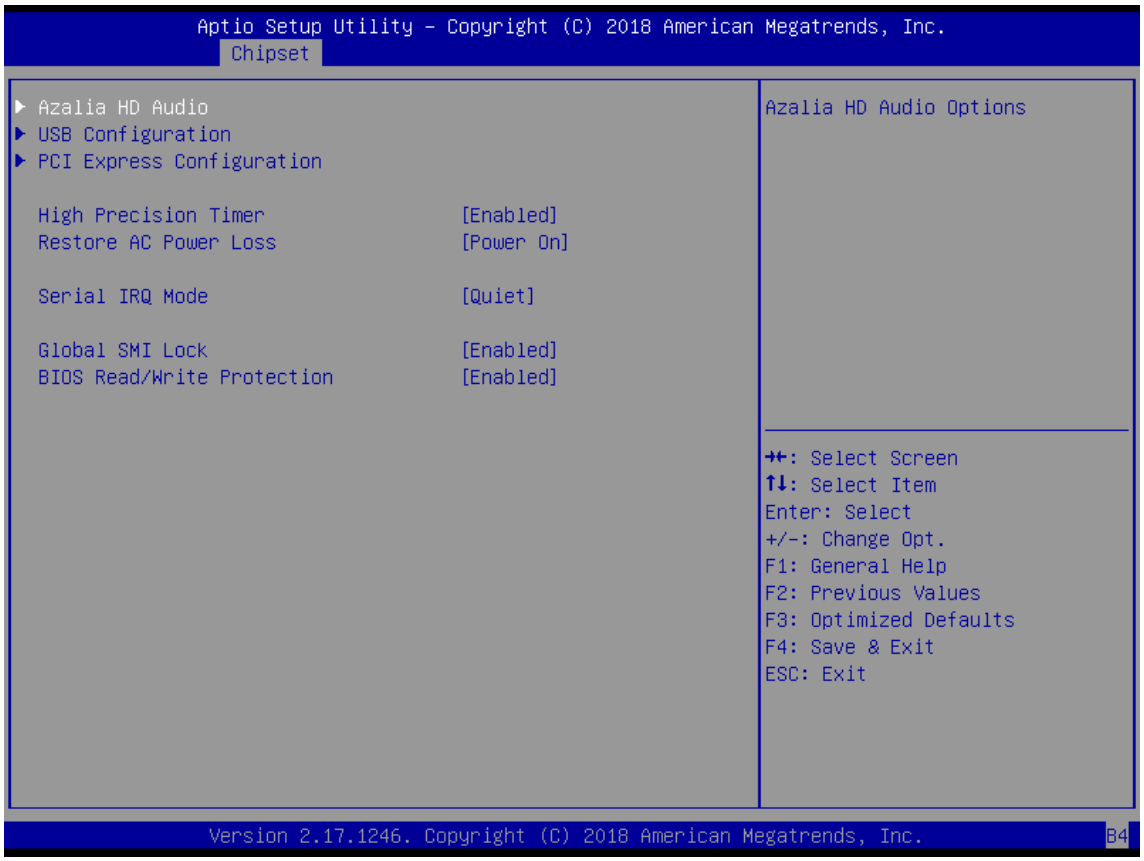


Figure 4.1.4.3

Item	Default Value	Description
Azalia HD Audio	N/A	Azalia Audio Configuration
USB Configuration	N/A	USB Configuration
High Precision Timer	Enabled	N/A
Restore AC Power Loss	Power On	N/A
Serial IRQ Mode	Quiet	N/A
Global SMI Lock	Enabled	N/A
BIOS Read/Write Protection	Enabled	N/A

■ Automatic Booting When Power is Connected

Steps to enable or disable the automatic booting when power is connected are as described below:

1. Under the Chipset screen, select the **South Bridge** option as shown in Figure 4.1.4.4.
2. Select **Restore AC Power Loss** and set either **Power On** or **Power Off** as shown in Figure 4.1.4.5.

When set as Power On, once power is supplied, it will boot directly without the need to press the boot button.
When set as Power Off, once power is supplied, the boot button also needs to be pressed for it to boot.

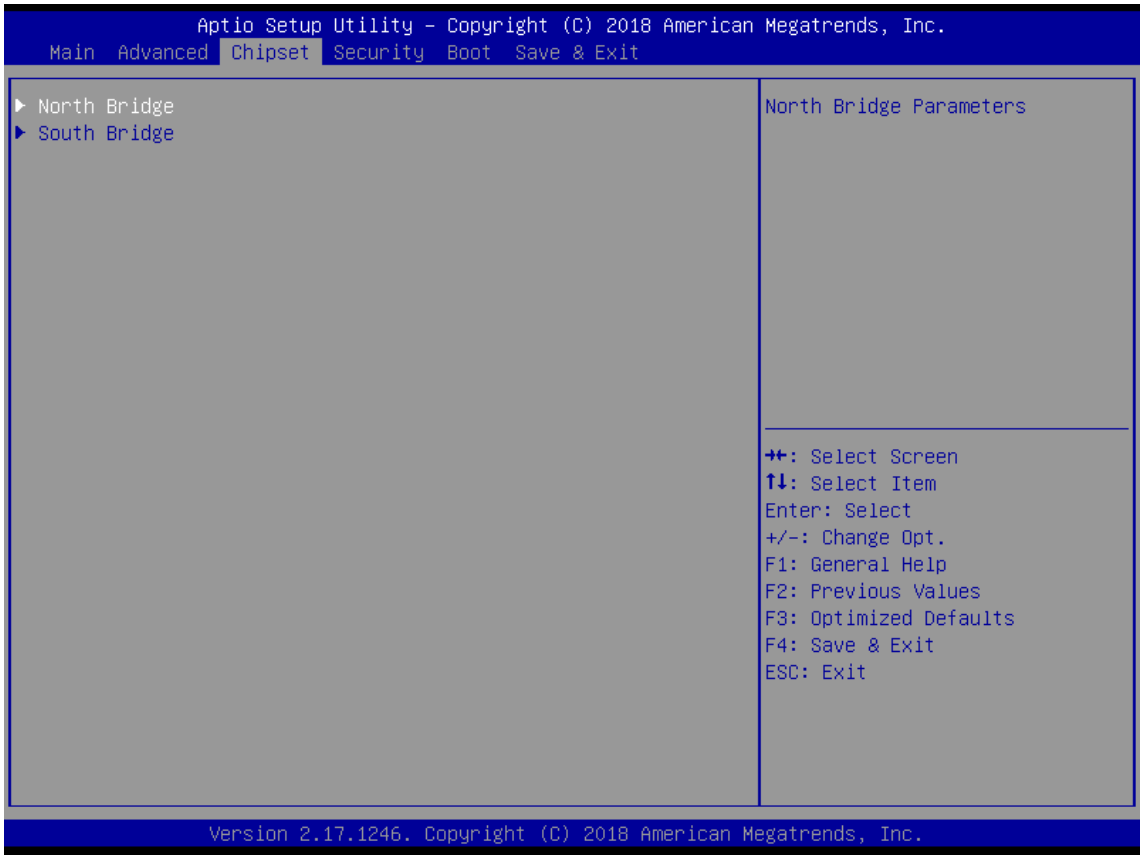


Figure 4.1.4.4

4

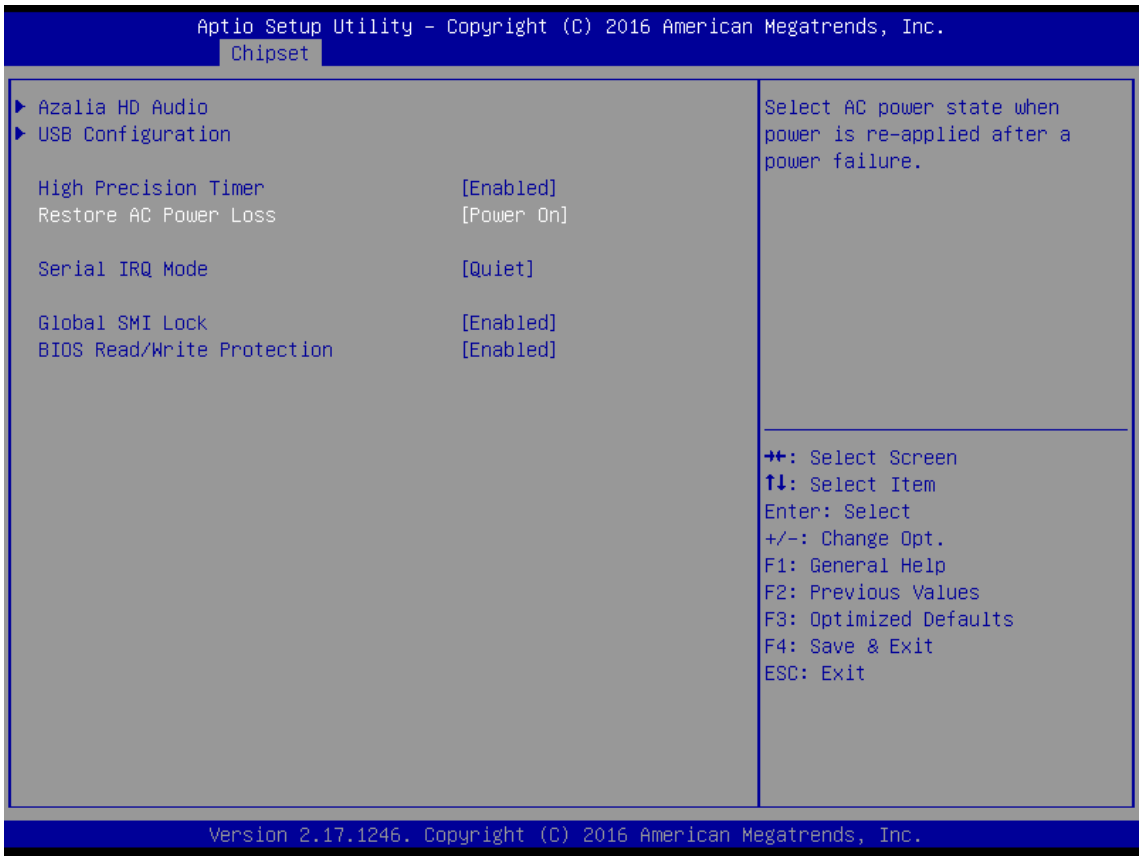


Figure 4.1.4.5

4.1.5 Security

The Security option of the BIOS includes the Administrator Password and User Password, etc., as shown in Figure 4.1. 5.1:

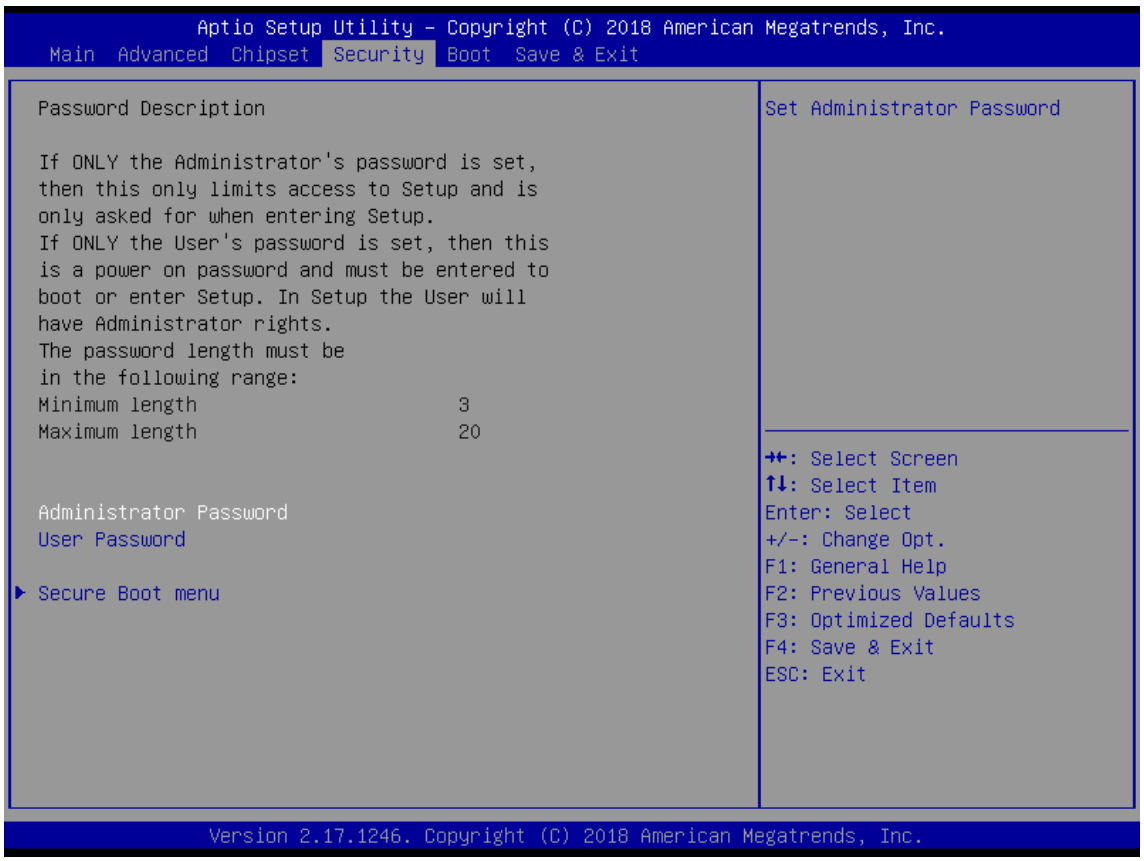


Figure 4.1.5.1

Item	Default Value	Description
Administrator Password	N/A	Set/Change System Administrator Password
User Password	N/A	Set/Change User Password
Secure Boot menu	N/A	Secure Boot menu

4.1.6 Boot

The Boot option of the BIOS includes Setup Prompt Timeout and Bootup NumLock State, etc., as shown in Figure 4.1.6.1:

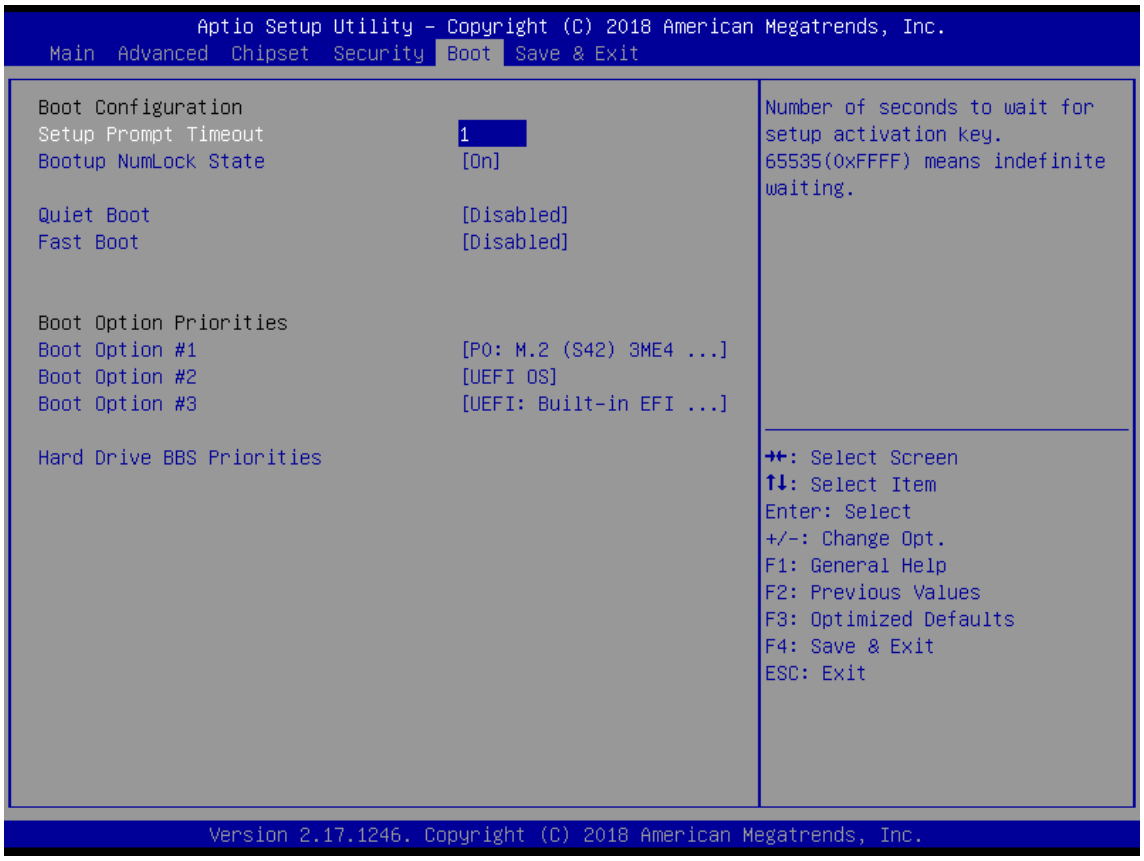


Figure 4.1.6.1

Item	Default Value	Description
Setup Prompt Timeout	1	N/A
Bootup NumLock State	On	N/A
Quiet Boot	Disabled	N/A
Boot Option Priorities	N/A	All Boot Device Priorities
Hard Drive BBS Priorities	N/A	Hard Drive Device Priorities

4.1.7 Save & Exit

The Save & Exit option of the BIOS includes Save Changes and Exit and Discard Changes and Exit, etc., as shown in Figure 4.1.7.1:

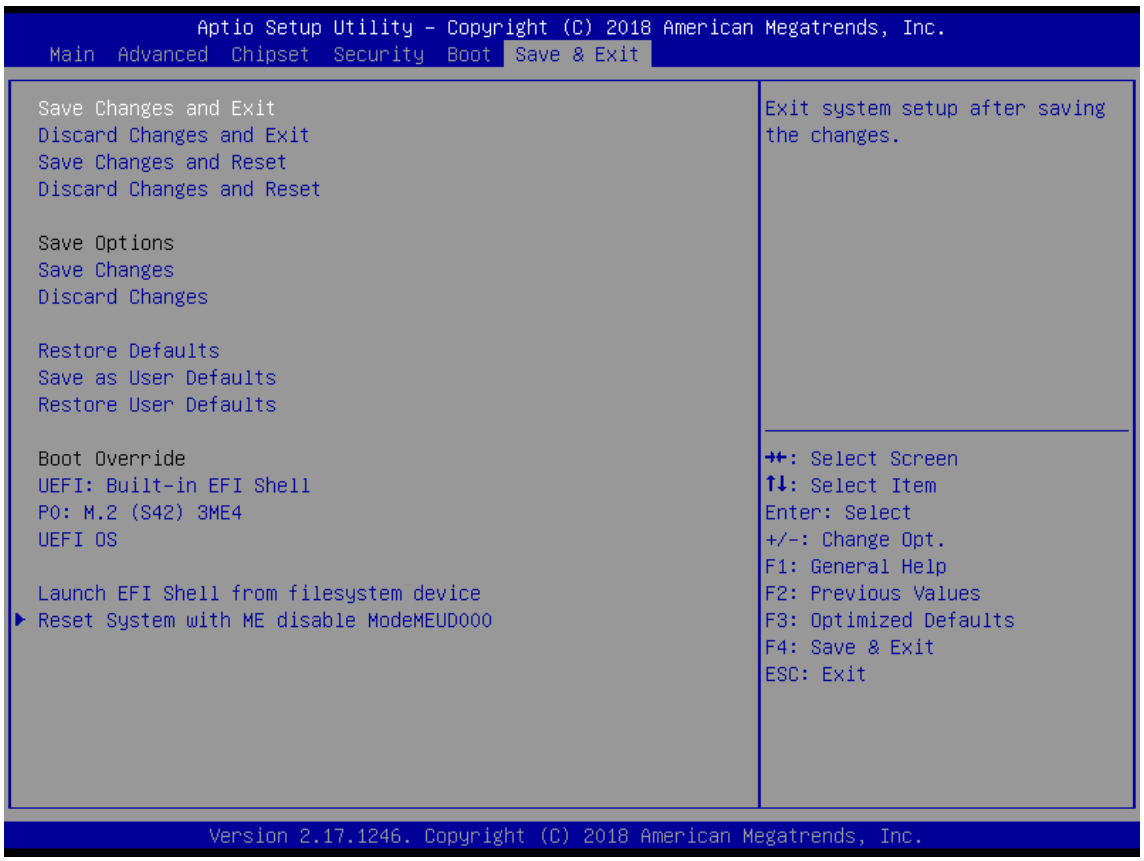


Figure 4.1.7.1

Item	Default Value	Description
Save Changes and Exit	N/A	Saves All Current Settings and Exits
Discard Changes and Exit	N/A	Restores All Previous Settings and Exits
Save Changes and Reset	N/A	Saves All Current Settings and Restarts
Discard Changes and Reset	N/A	Restores All Previous Settings and Restarts
Save Changes	N/A	Save All Current Settings
Discard Changes	N/A	Restores All Previous Settings
Restore Defaults	N/A	Restores All Default Settings
Save as User Defaults	N/A	Saves All Current User Default Settings
Restore User Defaults	N/A	Restores All User Default Settings
Boot Override	N/A	Force Boot

(This page is left blank on purpose.)

System Operation and Settings

5

This chapter will explain the system environment operations and settings; users can learn how to set the system write protection (UWF) function and language change function.

5.1 Setting and Releasing of the Write Protection UWF Function ····· 5-2
5.1.1 Using the PAC_Tool to Perform Write Protection UWF Operations ····· 5-2
5.1.2 Read Current Write Protection Status ····· 5-3
5.1.3 Enabling Write Protection ····· 5-4
5.1.4 Disabling Write Protection ····· 5-5
5.1.5 Write Protection Fix ····· 5-6
5.2 Operating System Language Change Setting ····· 5-7
5.3 Write Protection Function Exception ····· 5-9

5.1 Setting and Releasing of the Write Protection UWF Function

5.1.1 Using the PAC_Tool to Perform Write Protection UWF Operations

5

The main function of the PAC_Tool is to protect the C drive using write protection mechanisms; when write protection is enabled, data written to the C drive will be saved in the memory. When power is disconnected and the system is restarted, the written data will not be saved. To execute this function, please click PAC_Tool.exe on the desktop.

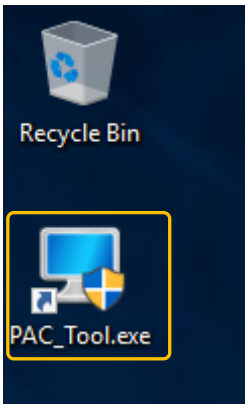


Figure 5.1.1.1

5.1.2 Read Current Write Protection Status

After opening PAC_Tool, Current Status will display the current status.

- Disabled: This means that write protection is currently in the **Disabled** status and changes **will be saved** after power disconnection, as shown in the figure below.

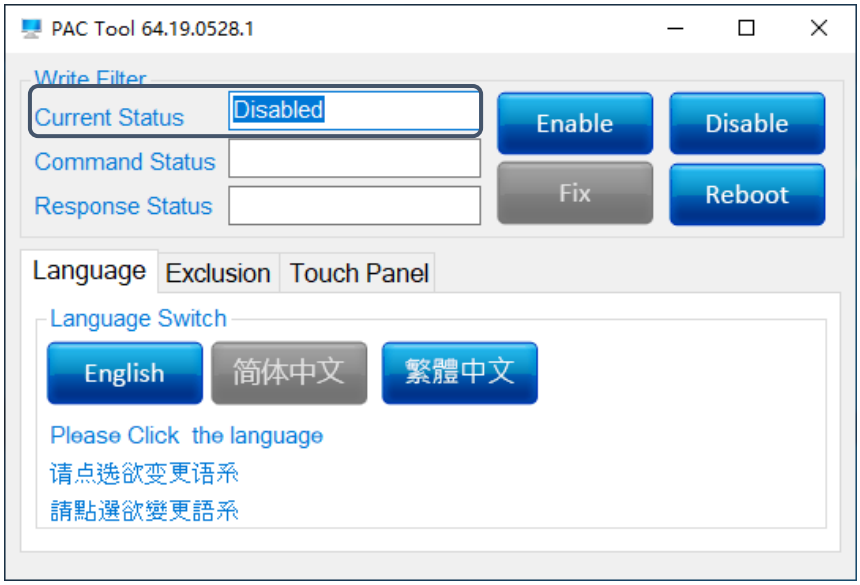


Figure 5.1.2.1

- Enabled: This means that write protection is currently in the **Enabled** status and changes **will not be saved** after power disconnection, as shown in the figure below.

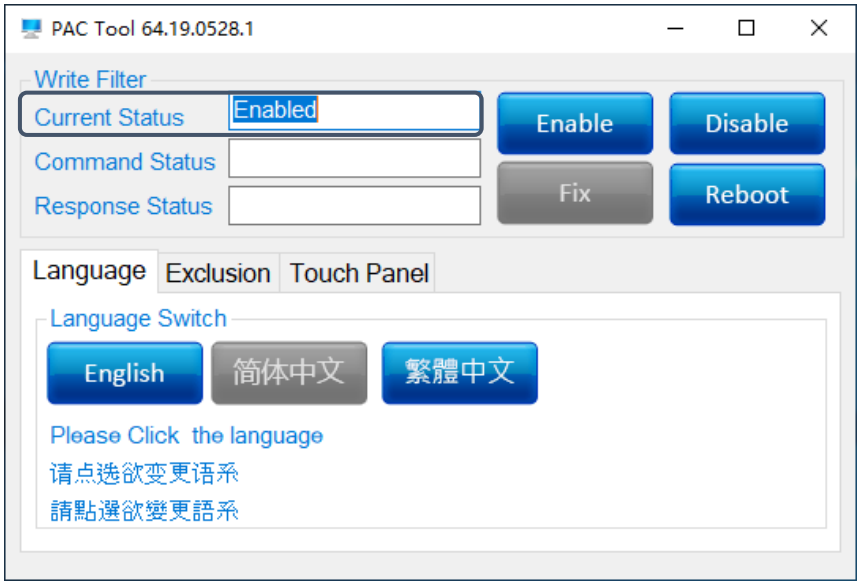


Figure 5.1.2.2

5.1.3 Enabling Write Protection

Using the following steps to enable the write protection function.

5

(1) Click **Enable**.

(2) Press **Reboot** to restart and setting is complete.

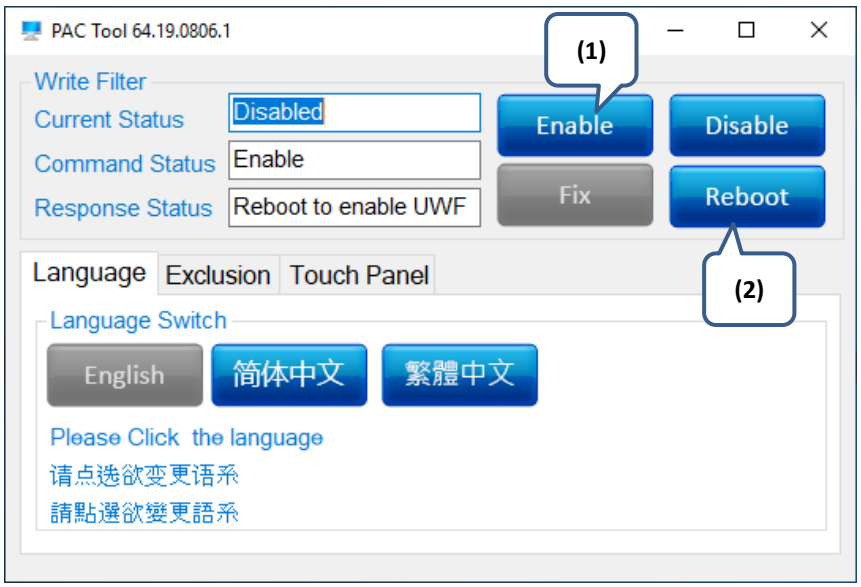


Figure 5.1.3.1

5.1.4 Disabling Write Protection

Using the following steps to disable the write protection function.

(1) Click **Disable**.

(2) Press **Reboot** to restart and setting is complete.

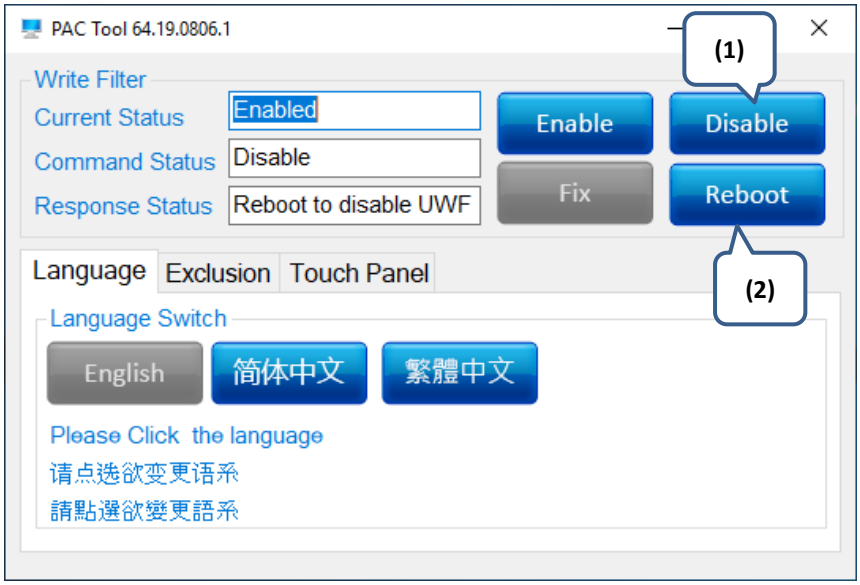


Figure 5.1.4.1

5.1.5 Write Protection Fix

Using the following steps to enable the write protection fix function.

5

(1) Click **Fix**.

(2) Press **Reboot** to restart and setting is complete.

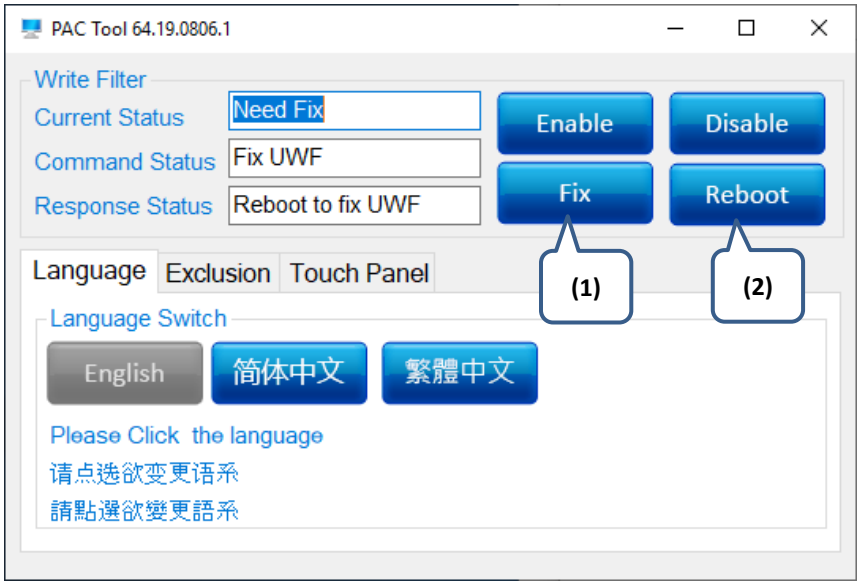


Figure 5.1.5.1

5.2 Operating System Language Change Setting

If there is the need to change the language of the operating system, use the following steps to complete the setting.

■ If the Current Status is displayed as **Disabled,**

(1) Click the system language to change.

(2) Press **Reboot** to restart and setting is complete.

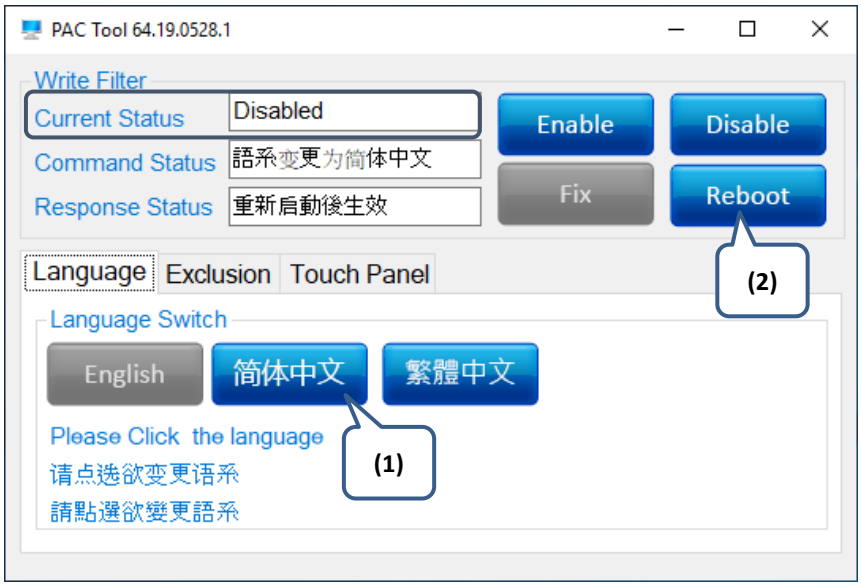


Figure 5.2.1

5

■ If Current Status is Enabled, the write protection function must be disabled first.

(1) Click **Disable.**

(2) Press **Reboot** to restart.

(3) Click the system language to change.

(4) Press **Reboot** to restart.

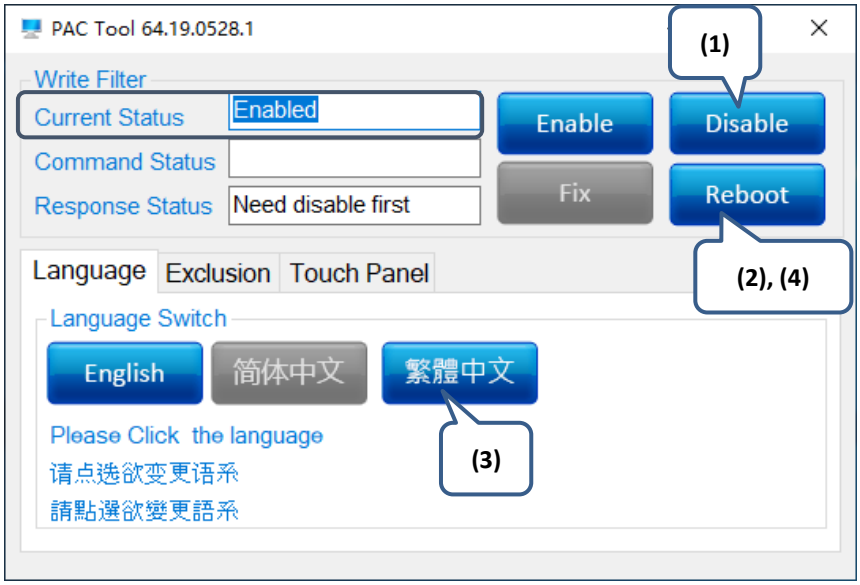


Figure 5.2.2

5.3 Write Protection Function Exception

To exclude some folders or files from write protection while the write protection function is enabled, use the following steps to complete the setting.

■ If the Current Status is **Enabled,**

(1) Select the folders or files to add to the exception.

(2) Press **Reboot** to restart and setting is complete.

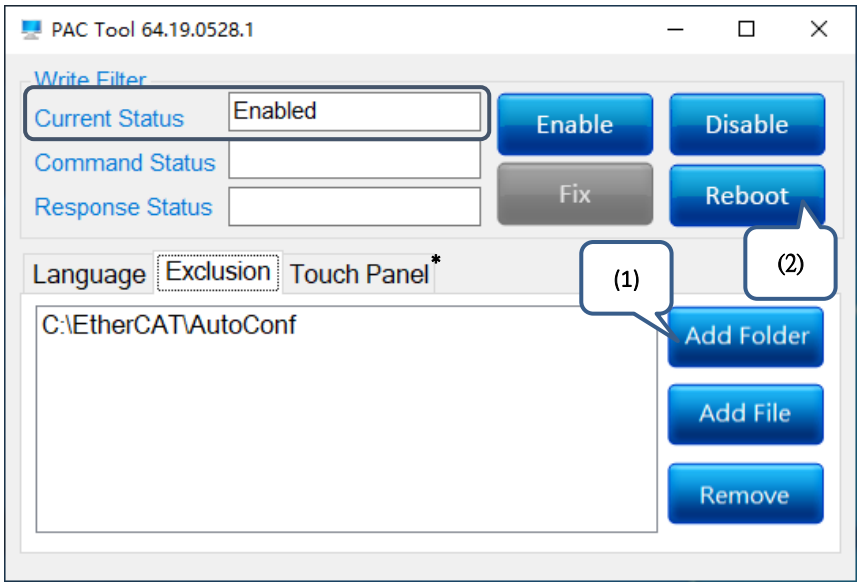


Figure 5.3.1

Note: The Touch Panel tab is only for use with Panel type machines. Therefore, this function is not enabled.

(This page is left blank on purpose.)

Smarter. Greener. Together.

Industrial Automation Headquarters

Delta Electronics, Inc.
Taoyuan Technology Center
No.18, Xinglong Rd., Taoyuan District,
Taoyuan City 33068, Taiwan
TEL: 886-3-362-6301 / FAX: 886-3-371-6301

Asia

Delta Electronics (Shanghai) Co., Ltd.
No.182 Minyu Rd., Pudong Shanghai, P.R.C.
Post code : 201209
TEL: 86-21-6872-3988 / FAX: 86-21-6872-3996
Customer Service: 400-820-9595

Delta Electronics (Japan), Inc.
Tokyo Office
Industrial Automation Sales Department
2-1-14 Shibadaimon, Minato-ku
Tokyo, Japan 105-0012
TEL: 81-3-5733-1155 / FAX: 81-3-5733-1255

Delta Electronics (Korea), Inc.
Seoul Office
1511, 219, Gasan Digital 1-Ro., Geumcheon-gu,
Seoul, 08501 South Korea
TEL: 82-2-515-5305 / FAX: 82-2-515-5302

Delta Energy Systems (Singapore) Pte Ltd.
4 Kaki Bukit Avenue 1, #05-04, Singapore 417939
TEL: 65-6747-5155 / FAX: 65-6744-9228

Delta Electronics (India) Pvt. Ltd.
Plot No.43, Sector 35, HSIIDC Gurgaon,
PIN 122001, Haryana, India
TEL: 91-124-4874900 / FAX : 91-124-4874945

Delta Electronics (Thailand) PCL.
909 Soi 9, Moo 4, Bangpoo Industrial Estate (E.P.Z),
Pattana 1 Rd., T.Phraksa, A.Muang,
Samutprakarn 10280, Thailand
TEL: 66-2709-2800 / FAX : 662-709-2827

Delta Electronics (Australia) Pty Ltd.
Unit 20-21/45 Normanby Rd., Notting Hill Vic 3168, Australia
TEL: 61-3-9543-3720

Americas

Delta Electronics (Americas) Ltd.
Raleigh Office
P.O. Box 12173, 5101 Davis Drive,
Research Triangle Park, NC 27709, U.S.A.
TEL: 1-919-767-3813 / FAX: 1-919-767-3969

Delta Greentech (Brasil) S/A
São Paulo Office
Rua Itapeva, 26 – 3˚ Andar - Bela Vista
CEP: 01332-000 – São Paulo – SP - Brasil
TEL: 55-11-3530-8643 / 55-11-3530-8640

Delta Electronics International Mexico S.A. de C.V.
Mexico Office
Gustavo Baz No. 309 Edificio E PB 103
Colonia La Loma, CP 54060
Tlalnepantla, Estado de México
TEL: 52-55-3603-9200

EMEA

Headquarters: Delta Electronics (Netherlands) B.V.
Sales: Sales.IA.EMEA@deltaww.com
Marketing: Marketing.IA.EMEA@deltaww.com
Technical Support: iatechnicalsupport@deltaww.com
Customer Support: Customer-Support@deltaww.com
Service: Service.IA.emea@deltaww.com
TEL: +31(0)40 800 3900

BENELUX: Delta Electronics (Netherlands) B.V.
De Witbogt 20, 5652 AG Eindhoven, The Netherlands
Mail: Sales.IA.Benelux@deltaww.com
TEL: +31(0)40 800 3900

DACH: Delta Electronics (Netherlands) B.V.
Coesterweg 45, D-59494 Soest, Germany
Mail: Sales.IA.DACH@deltaww.com
TEL: +49(0)2921 987 0

France: Delta Electronics (France) S.A.
ZI du bois Challand 2, 15 rue des Pyrénées,
Lisses, 91090 Evry Cedex, France
Mail: Sales.IA.FR@deltaww.com
TEL: +33(0)1 69 77 82 60

Iberia: Delta Electronics Solutions (Spain) S.L.U
Ctra. De Villaverde a Vallecas, 265 1º Dcha Ed.
Hormigueras – P.I. de Vallecas 28031 Madrid
TEL: +34(0)91 223 74 20

Carrer Llacuna 166, 08018 Barcelona, Spain
Mail: Sales.IA.Iberia@deltaww.com

Italy: Delta Electronics (Italy) S.r.l.
Via Meda 2–22060 Novedrate(CO)
Piazza Grazioli 18 00186 Roma Italy Mail:
Sales.IA.Italy@deltaww.com
TEL: +39 039 8900365

Russia: Delta Energy System LLC
Vereyskaya Plaza II, office 112 Vereyskaya str.
17 121357 Moscow Russia
Mail: Sales.IA.RU@deltaww.com
TEL: +7 495 644 3240

Turkey: Delta Greentech Elektronik San. Ltd. Sti. (Turkey)
Şerifali Mah. Hendem Cad. Kule Sok. No:16-A
34775 Ümraniye – İstanbul
Mail: Sales.IA.Turkey@deltaww.com
TEL: + 90 216 499 9910

GCC: Delta Energy Systems AG (Dubai BR)
P.O. Box 185668, Gate 7, 3rd Floor, Hamarain Centre
Dubai, United Arab Emirates
Mail: Sales.IA.MEA@deltaww.com
TEL: +971(0)4 2690148

Egypt + North Africa: Delta Electronics
Unit 318, 3rd Floor, Trivium Business Complex, North 90 street,
New Cairo, Cairo, Egypt
Mail: Sales.IA.MEA@deltaww.com

*We reserve the right to change the information in this catalogue without prior notice.