TALOS-3012

EtherCAT Master Controller

User's Manual



Manual Rev.:	2.00
Revision Date:	Sept. 10, 2015
Part No:	50-1Z186-1000

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Revision History

Revision	Release Date	Description of Change(s)
2.00	Sept. 10, 2015	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 EtherCAT solutions comprise a complete package, from hardware to middleware to software, with every element tailored for dedicated EtherCAT functionality. Talos master controllers, EPS slave systems, and remote monitoring and control mechanisms combine with ADLINK's Softmotion one-stop control kernel to deliver flexible and easy-to-use intelligent platforms for next-generation Smart Factory environments.

At a compact 100 x 120 x 55 mm (L x W x H), ADLINK's newest Talos-3012 is a palm-size EtherCAT master controller powered by x86 processors. Based on the Intel Atom quad-core processor E3845 1.9GHz, with IEC 61131-3 compliant syntaxes, the Talos master controller allows easy emigration of legacy PLC programming to a PC-based environment, with a single master controller able to connect up to 64 axes and up to 10,000 I/O points of control through a daisy-chained slave system.

In addition, the Talos delivers plug-and-play functionality with numerous leading servo motor systems with more coming online every day.

ADLINK's Talos series provides a complete IEC 61131-3 edition environment supporting 5 common PLC syntaxes, powered by the ADLINK Softmotion kernel, with application-oriented function blocks simplifying use and shortening development time. ADLINK's Softmotion kernel is based on an efficient algorithm to increase precision, speed, and synchronous motion control capability, reducing operational complexity and development period for a wide variety of industrial applications.

An optimized middleware PLC Handler library allows development of owned Human-Machine-Interface (HMI), and the remaining GbE LAN enables terminal function for data exchange to intranet and internet networks. Rugged construction assures operation in harsh environments, with operating shock tolerance up to 100G, an extended operating temperature range of -20°C to 60°C, and optimal EMI resistance with a EN 61000 EMC certification.

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1.2 Features

- Intel® Atom™ SoC processor E3845
- ADLINK Softmotion
- Supports IEC 61131-3-compliant programming environment
- Minimal control cycle time within 250 µs
- Motion control of up to 64 axes and up to 10,000 I/O points of control
- Supports EtherCAT COE, FOE as well as EOE protocols
- Code executable when host Windows system crashes
- 3 user-defined indicators for CTR diagnostic
- Built-in SD socket for logging manufacturing data
- Rugged, compact construction with fanless design at -20°C to 60°C


NOTE:

Minimal control cycle is based on light workloads on both PLC and EtherCAT transmissions of less than 1,000 I/O.

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1.3 Specifications

Specifications		
System Core		
Processor	Intel® Atom™ E3845	
Chipset	SoC with processor	
Video	1x HDMI	
Memory	RAM (Program & Data Memory)	2 GB DDR3L 1066 MHz memory down
	Retain Memory	Configurable on SD card
	Storage (Data Usage)	16 GB SSD / SD card
Connectivity		
EtherCAT	1 (1x Intel® I210IT)	
Ethernet	1 GbE (1x Intel® I210IT)	
Serial	1x RS-232 (COM1) 1x BIOS-programmable RS-232/422/485 (COM2)	
USB	1 USB 3.0, 2 USB 2.0	
Miscellaneous		
Programming Environment	CoDeSys V3.5 (IEC 61131-3 Compliant)	
	ADLINK Softmotion Function Blocks (details in ADLINK Talos Series FLR document)	
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	
Mechanical		
Dimensions	120 (W) x 100 (D) x 55 (H) mm (4.68” x 3.9” x 2.17”)	
Weight	650g (1.43 lb.)	
Mounting	DIN-Rail / Wall-mount kit	
Environmental		

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Specifications	
Operating Temperature	Standard: 0°C to 50°C (w/HDD) Extended Temperature: -20°C to 60°C (w/ industrial mSATA)
Storage Temperature	-40°C to 85°C (excl. HDD/SDD/CFAST)
Humidity	Approx. 95% @ 40°C (non-condensing)
Vibration	Operating, 5 Grms, 5-500 Hz, 3 axes (w/ mSATA)
ESD	Contact +/-4 KV and Air +/-8 KV
Shock	Operating, 50 G, half sine 11 ms duration (w/ mSATA)
EMC	CE and FCC Class A
Safety	UL, CB


NOTE:

Cold boot of the system at -20°C and operation with 100% loading at 60°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	6.3W	Under Windows Desktop with no application programs executed
Processor full load	12.5W	Under Windows with 100% CPU utilization and 2D/3D graphics load
System full load	22W	Under Windows with 100% CPU utilization and simultaneous access to all I/O devices
Recommended power supply	40W	With consideration of voltage de-rating under high environmental temperature

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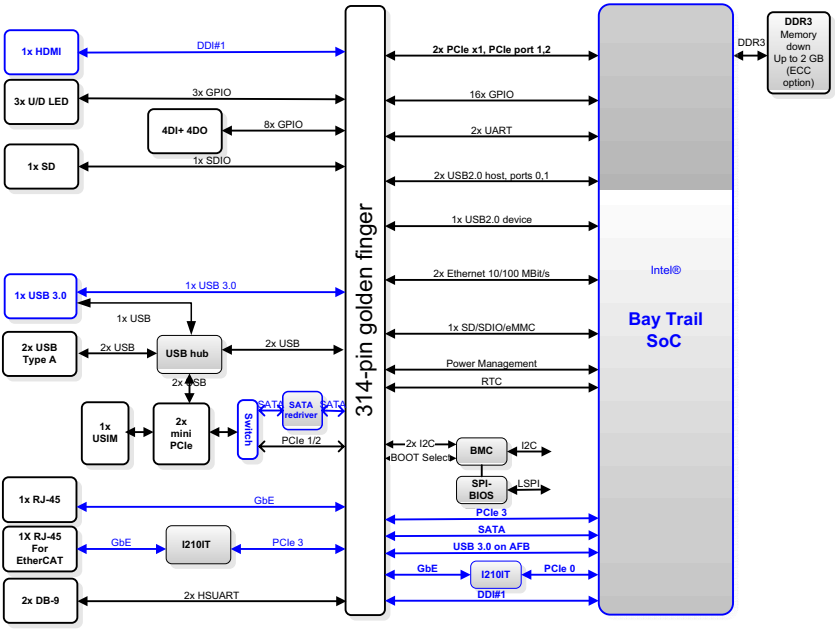


Figure 1-1: TALOS-3012 Functional Block Diagram

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.

- Talos-3012 controller
- DIN-Rail / Wall-mount bracket
- Screw pack for DIN-Rail / Wall-mounting
- Quick Start Guide

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CAUTION:

The Talos-3012 does not support user-initiated OS reinstall or repair. Talos-3012 performance cannot be guaranteed in the event of configuration changes deviating from the original software installation.

1.5 Mechanical Drawings

NOTE:

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

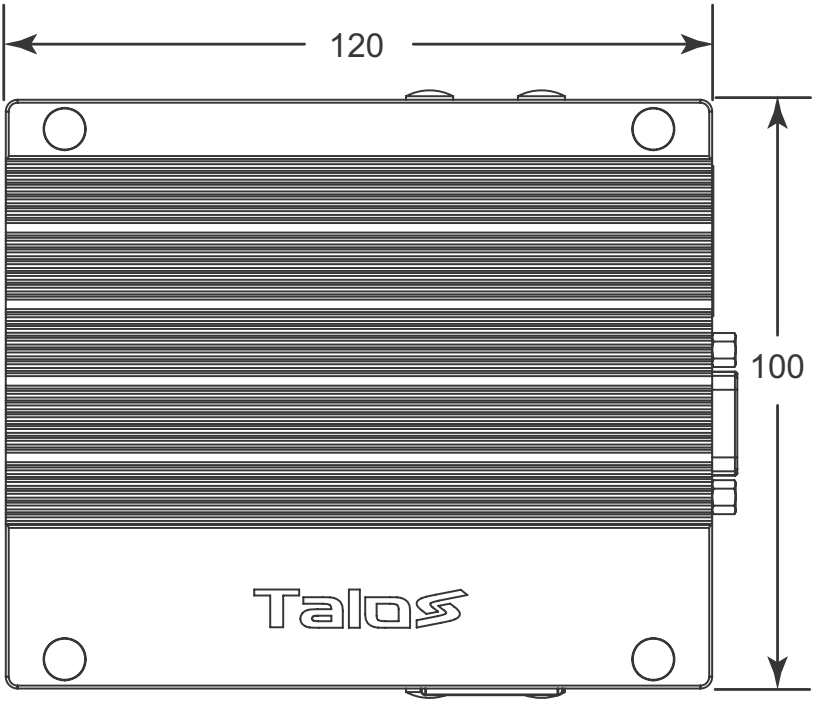


Figure 1-2: Top View

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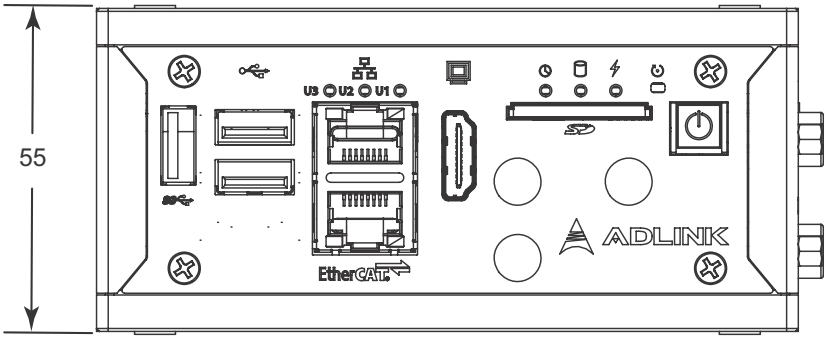


Figure 1-3: Front View

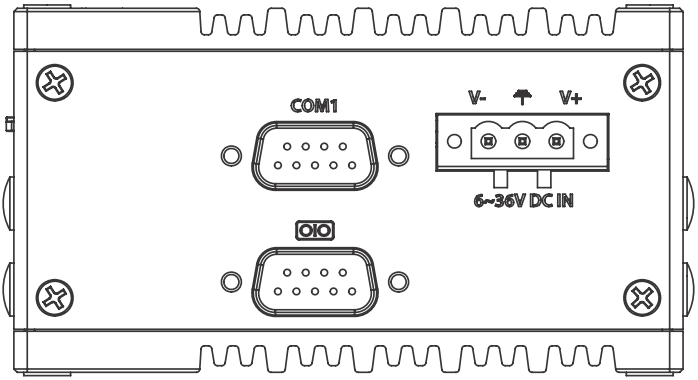


Figure 1-4: (Right) Side View

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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 TALOS-3012.

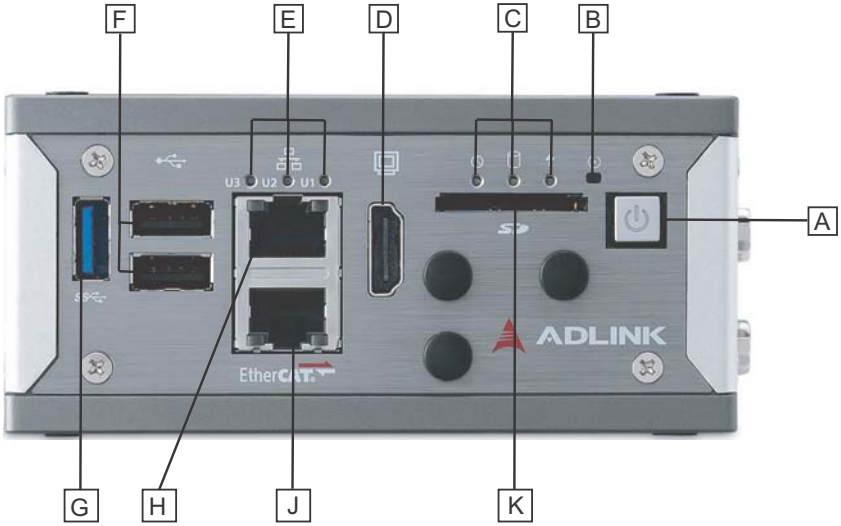


Figure 1-5: Front Panel I/O

A	Power button	**F**	USB 2.0 port x2
B	Reset button	**G**	USB 3.0 (Push-Push, Type II)
C	LED status indicators	**H**	GbE port
D	HDMI	**J**	EtherCAT port
E	User-defined LED indicators	**K**	ISD card

Table 1-1: TALOS-3012 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.

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1.6.2 LED Indicators

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

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

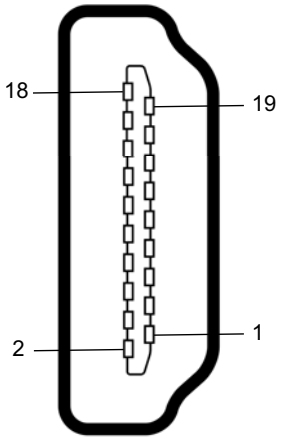
Table 1-2: LED Indicators

1.6.3 Reset Button

The reset button executes hard reset for the TALOS-3012.

1.6.4 HDMI Connector

Provides connection to HDMI monitor or VGA, DVI monitor via HDMI-to-VGA adapter cable, and HDMI-to-DVI adapter cable.



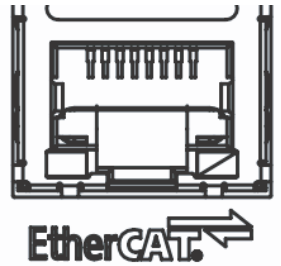
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PIN	Signal	PIN	Signal
1	TMDS_DATA2+	11	TMDS_CLOCK_SHIELD
2	TMDS_DATA2_SHIELD	12	TMDS_CLOCK-
3	TMDS_DATA2-	13	CEC
4	TMDS_DATA1+	14	RESERVED
5	TMDS_DATA1_SHIELD	15	SCL
6	TMDS_DATA1-	16	SDA
7	TMDS_DATA0+	17	DDC/CEC GROUND
8	TMDS_DATA0_SHIELD	18	+5V POWER
9	TMDS_DATA0-	19	HOT PLUG DETECT
10	TMDS_CLOCK+		

Table 1-3: HDMI Pin Assignment

1.6.5 EtherCAT Port

The dedicated EtherCAT port provides connection to EtherCAT slave devices, implementing the Intel WGI210IT GbE controller, qualified by numerous EtherCAT software master stacks and including the CoDeSys platform.



LED	LED Color	Status	Description
Active/Link	Yellow	OFF	Port is disconnected
		ON	Port is connected with no activity
		Flashing	Port is connected and active

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

Table 1-4: EtherCAT Port LED Function

1.6.6 Gigabit Ethernet Port

The Gigabit Ethernet port is based on an Intel WGI210IT GbE controller.

LED	LED Color	Status	Description
Active/Link	Yellow	OFF	Port is disconnected
		ON	Port is connected with no activity
		Flashing	Port is connected and active
Speed	Green/ Orange	OFF	10 Mbps
		Green	100 Mbps
		Orange	1000 Mbps

Table 1-5: Gigabit Ethernet Port LED Function

1.6.7 USB 3.0 Port

The USB 3.0 port supports Type A connection, compatible with SuperSpeed, 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 and boot priority and boot device configured in BIOS.



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

1.7 (Right) Side Panel I/O Connectors

This section describes I/O connectors located on the side panel of the TALOS-3012.

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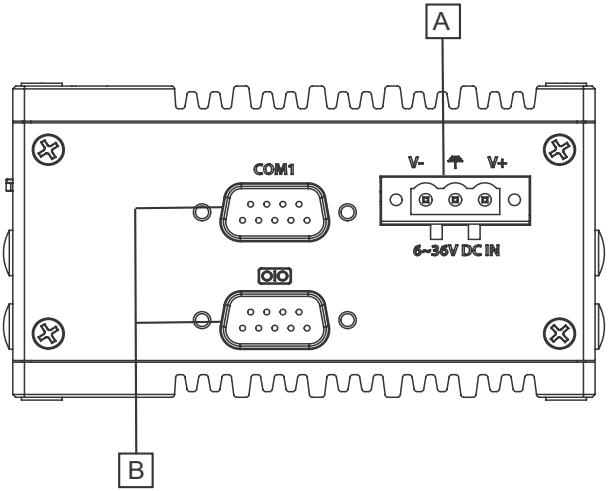


Figure 1-6: (Right) Side Panel I/O

A	DC power supply connector
B	DB-9P COM Ports

Table 1-6: TALOS-3012 Rear Panel I/O Connector Legend

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2 Getting Started

2.1 Connecting DC power

WARNING:

Before providing DC power to the TALOS-3012, 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 TALOS-3012 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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2.2 DIN Rail Mounting

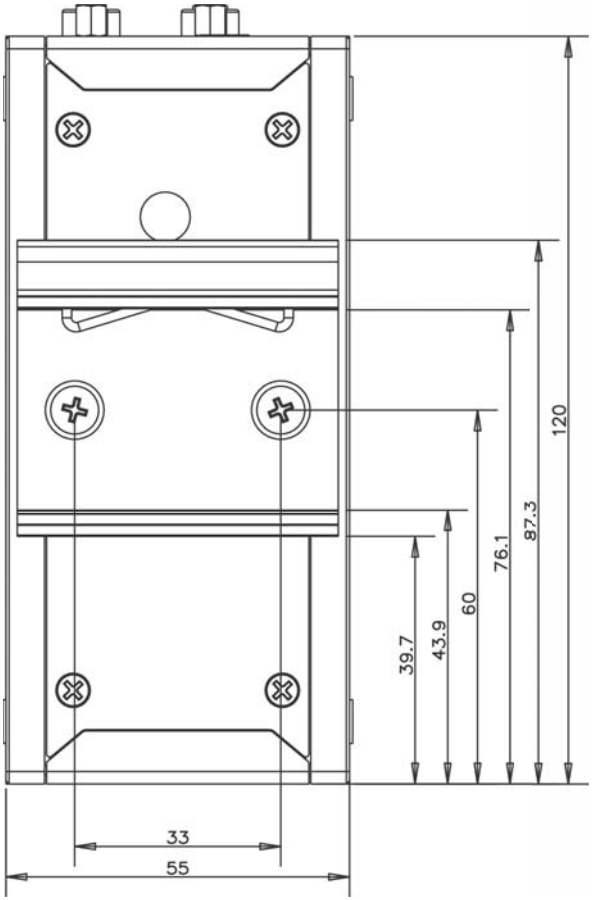
The TALOS-3012 controller is shipped with DIN rail mounting brackets and accessory screws, with mounting procedures as follows.

1. Prepare the 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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2.3 Cooling Considerations

Heat-generating components of the TALOS-3012 (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 TALOS-3012.

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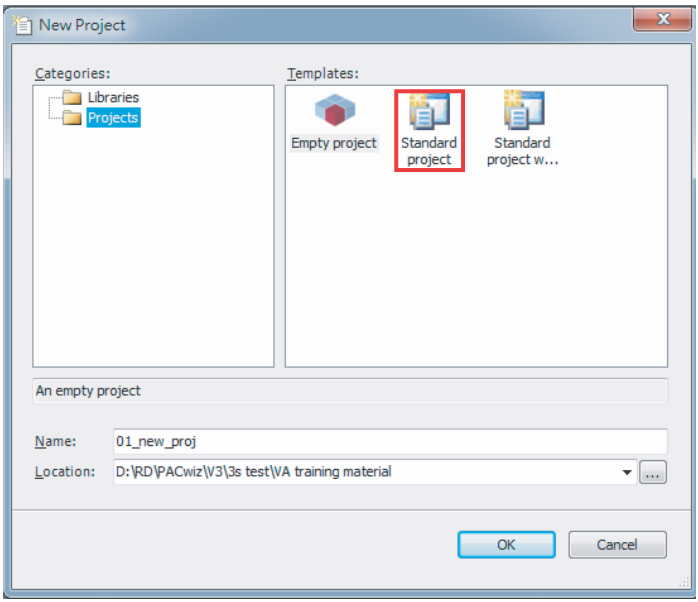
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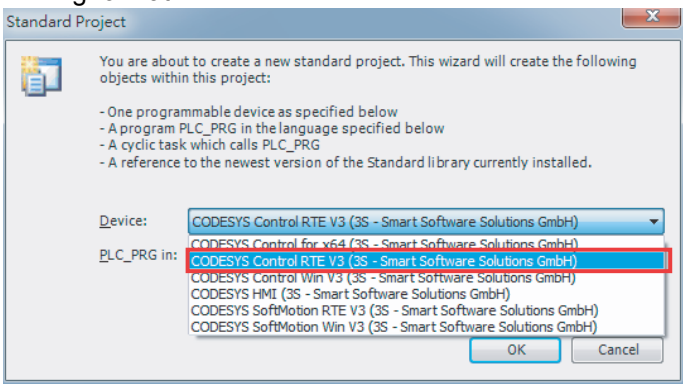
3 Project Creation

3.1 Creating a Project

1. Open CoDeSys IDE and create a Standard Project.

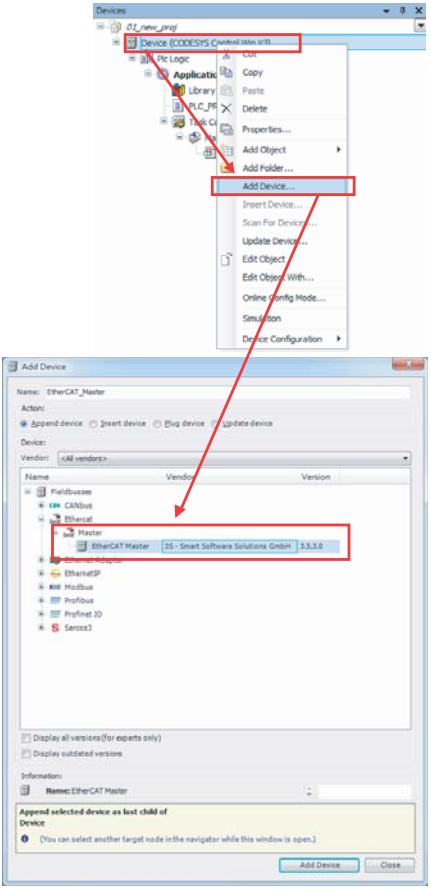


2. Configure the project with “CODESYS Control RTE V3 (3S – Smart Software Solutions GmbH)” PLC programming format.



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3. Add an EtherCAT master device in the PLC Device tree view.



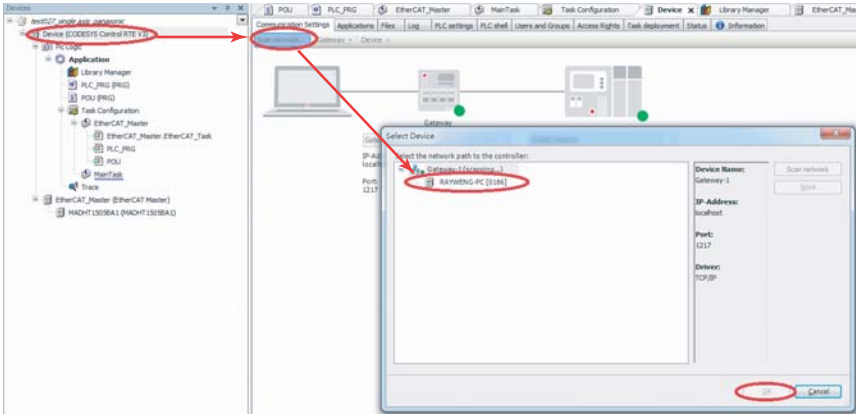
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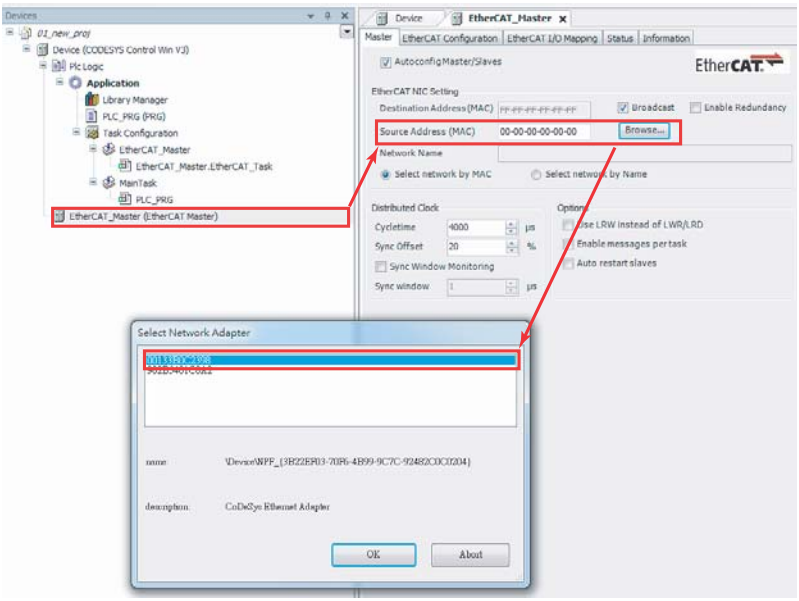
To enable proper configuration of related PLC and EtherCAT parameters, ensure that both the CoDeSys RTE and Gateway are enabled in the Windows taskbar.



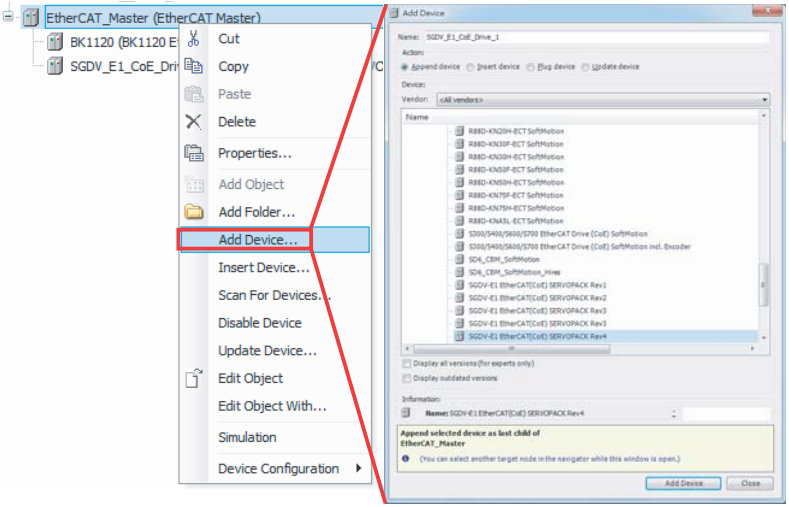
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4. Connect to CoDeSys gateway and configure the corresponding NIC number in EtherCAT master usage.





5. Add an EtherCAT Device in the device tree, either by scanning the whole EtherCAT line automatically using Scan for Devices, or, alternatively, adding one EtherCAT device manually, recommended to prevent mismatch between physical devices and corresponding ESI file.



6. Set EtherCAT device parameters in the relative device page.

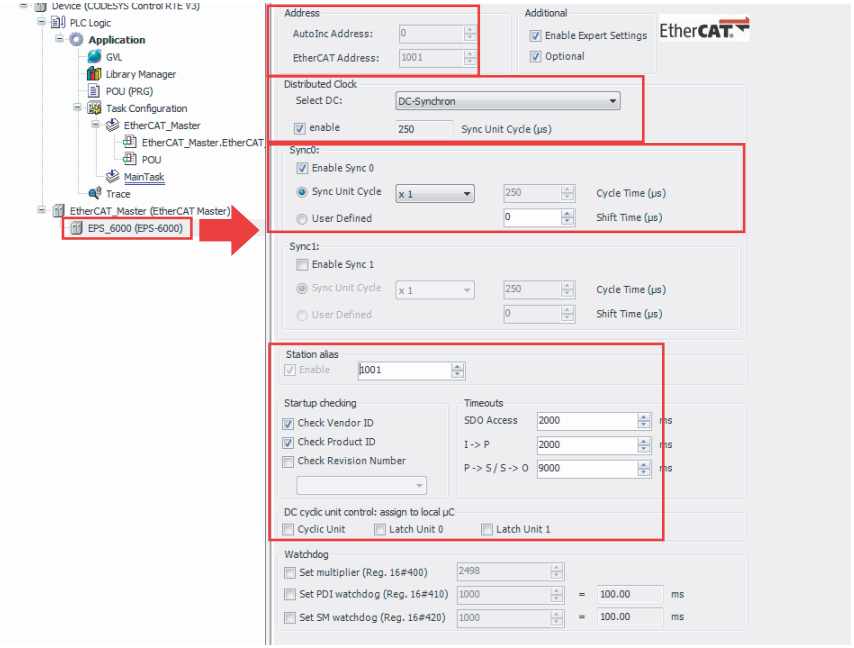
   ▷**Address Setting**: EtherCAT master will assign the logic slave address automatically, typically starting with 1001 unless the reset manually.

   ▷**Distributed Clock**: synchronizes all EtherCAT slaves reducing jitter as much as possible.

   ▷**Sync0**: Among Expert Settings, for fine tuning the behavior of sync manager in dedicated slave setting, with the default setting Disabled, to prevent unexpected synch errors.

   ▷The remaining settings are among Expert Settings. Contact ADLINK service to adjust the parameters properly.

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3.2 Starting a Task in CoDeSys IDE Environment

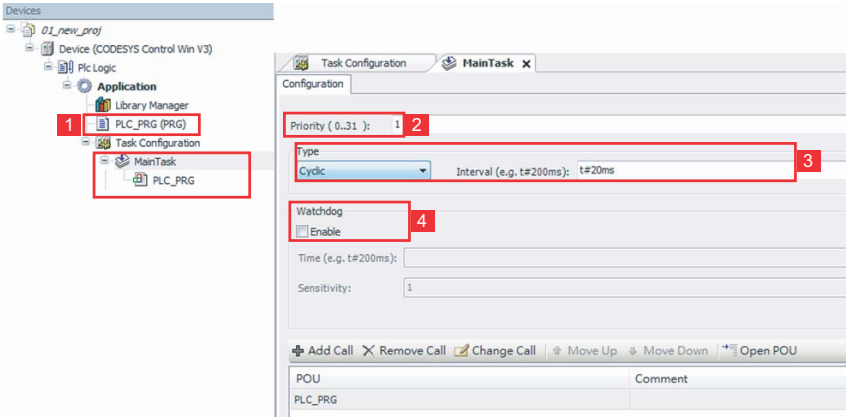
Start a Task

1. Add a new POU or place an existing POU in the PLC logic tree.
2. Put the POU into task configuration
3. Set the priority of all tasks in task configuration, from 1 (highest) to 31 (lowest).
4. Set PLC polling type and corresponding cycle time (interval period)
5. Enable / Disable PLC watch dog timer (WDT).If no PLC runtime is submitted during a ppreset time, the WDT will issues a notification to the IDE message box.

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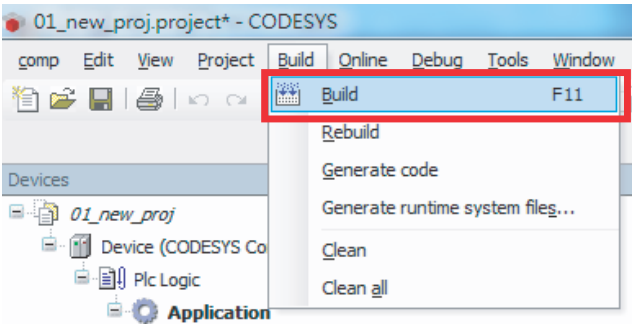
CAUTION:

The EtherCAT master task occupies the highest priority (0) setting by default, do not reset.



Build, Log In, and Start the Project

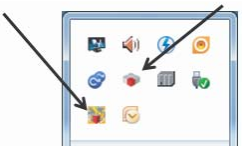
1. Click the “Build” button to compile PLC execution when all POU has been completed.



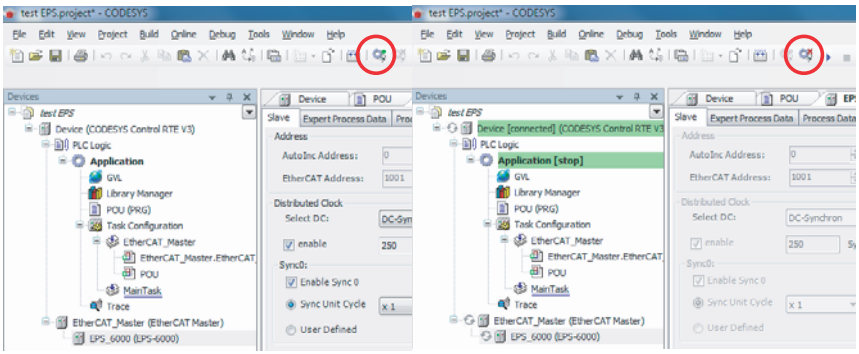
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NOTE:

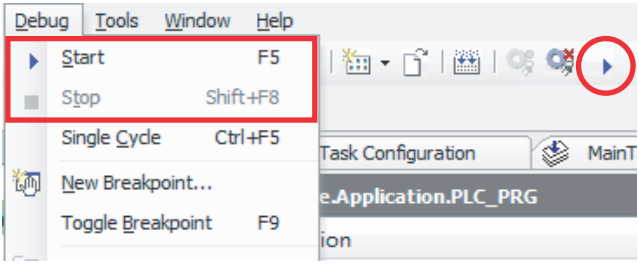
Ensure that both the CoDeSys RTE and Gateway have been enabled in the Windows taskbar, to allow proper configuration of related PLC and EtherCAT parameters.



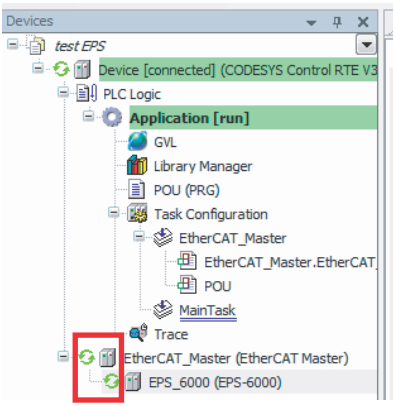
2. Click Login/Logout to connect the CoDeSys RTE runtime and IDE.



3. To start or stop the PLC program in RTE runtime, use the Start/Stop buttons or select the commands from the Debug toolbar.

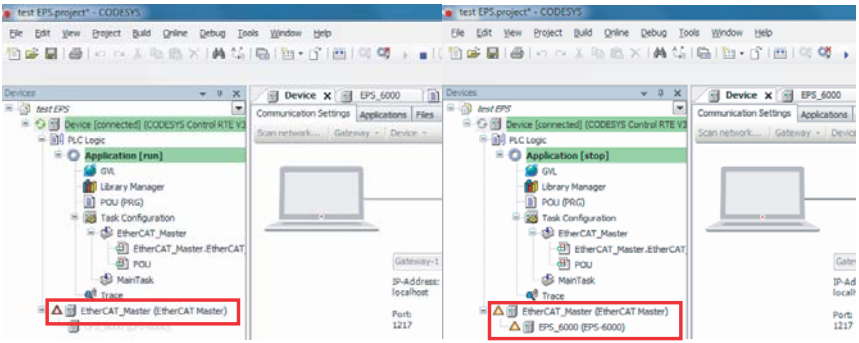


4. Run a PLC program in RTE and monitor in IDE. If a green icon is displayed, operations are normal. A red icon indicates an operational abnormality.



3.3 Troubleshooting

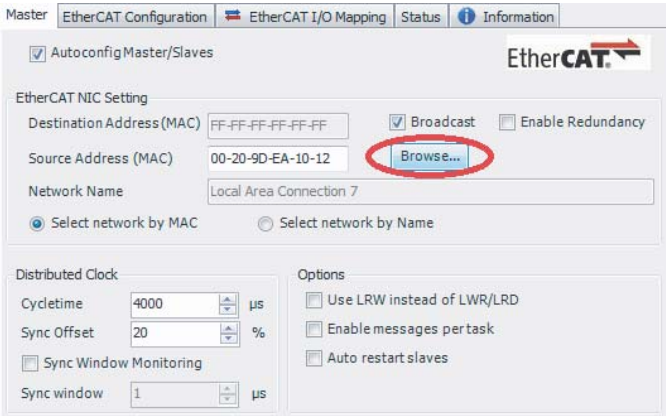
As mentioned, orange/red icons indicate an error/warning in EtherCAT communication or the failure of EtherCAT slave function. Possible causes are as follows.



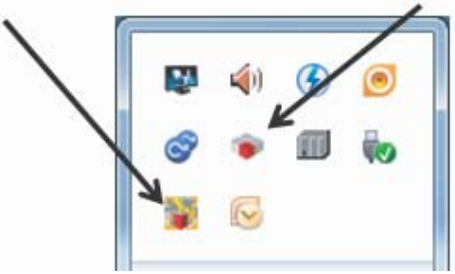
Check configuration:

- Ensure cable connection is secure.
- Ensure the EtherCAT MAC is properly set.

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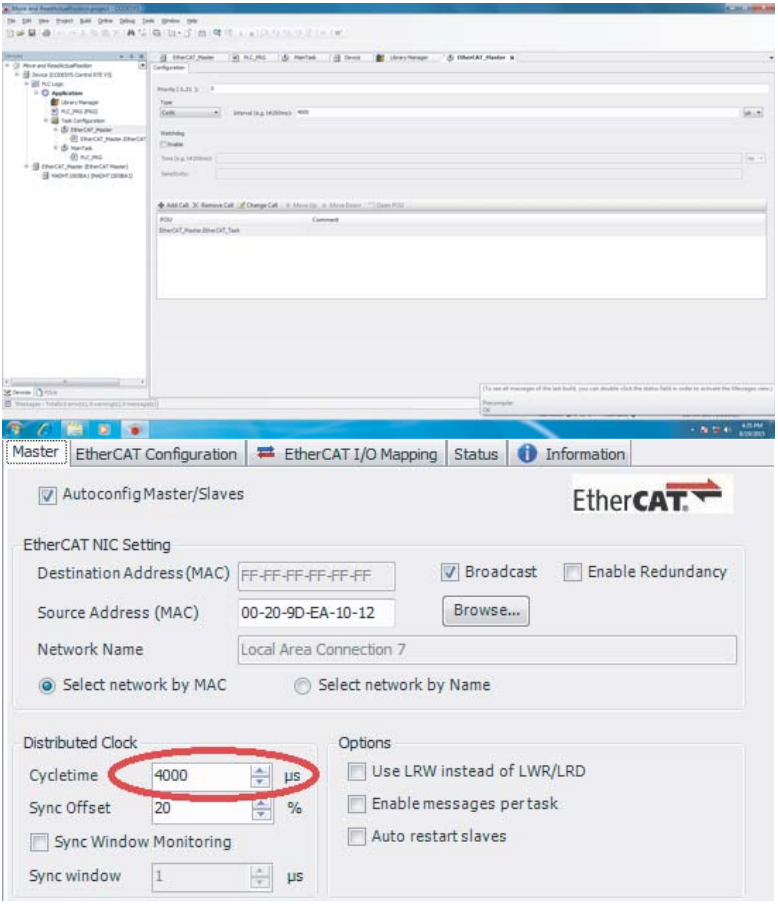


- Ensure RTE is running:



- Ensure the EtherCAT slave is connected properly.

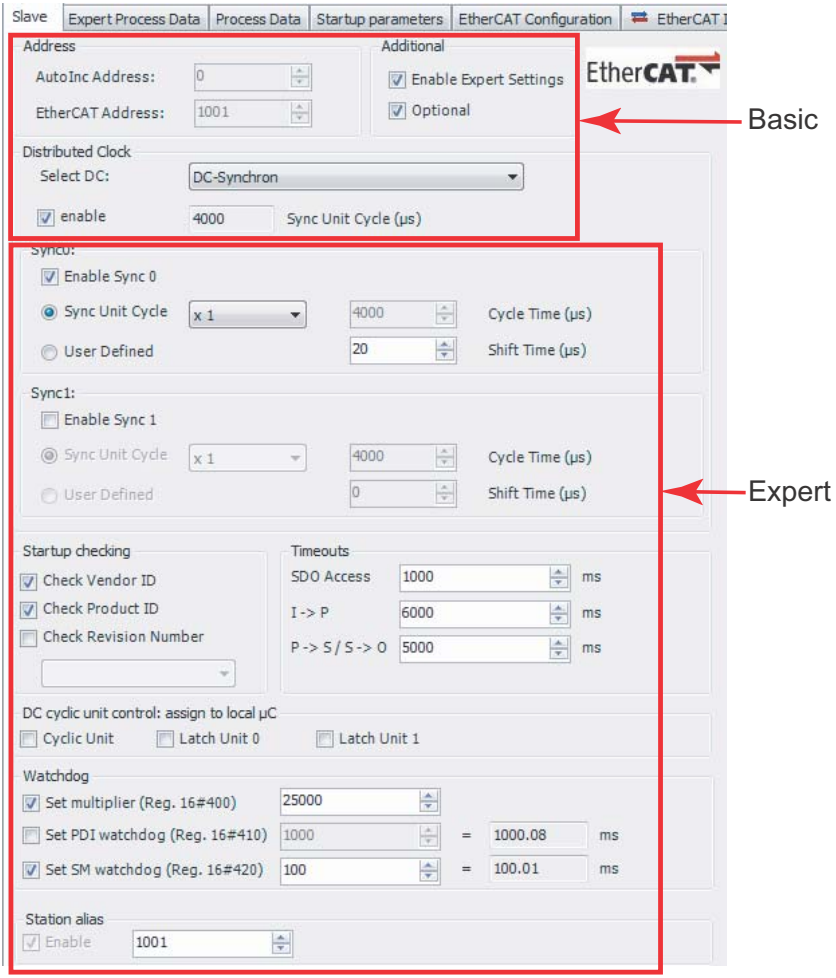
- Ensure the EtherCAT Master Task has been properly set:



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If the EtherCAT Slave icon is not green, please check the configuration as follows.

- ▶ Ensure that the Basic and Expert settings for EtherCAT slave conform to the specific device requirements.

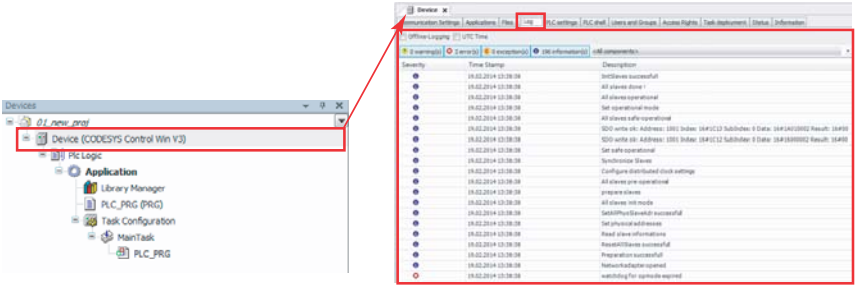


- ▶ If an alarm has been issued for the EtherCAT slave, reset the alarm.
- ▶ Ensure that EtherCAT cables are connected properly.

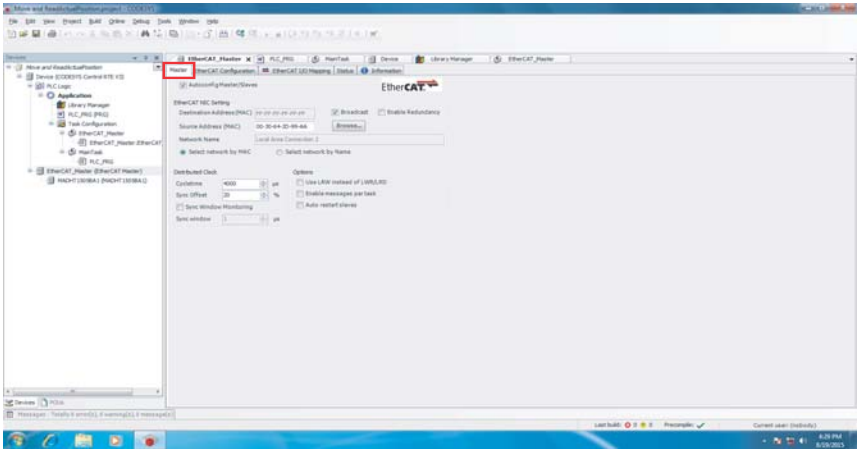
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3.4 Errors

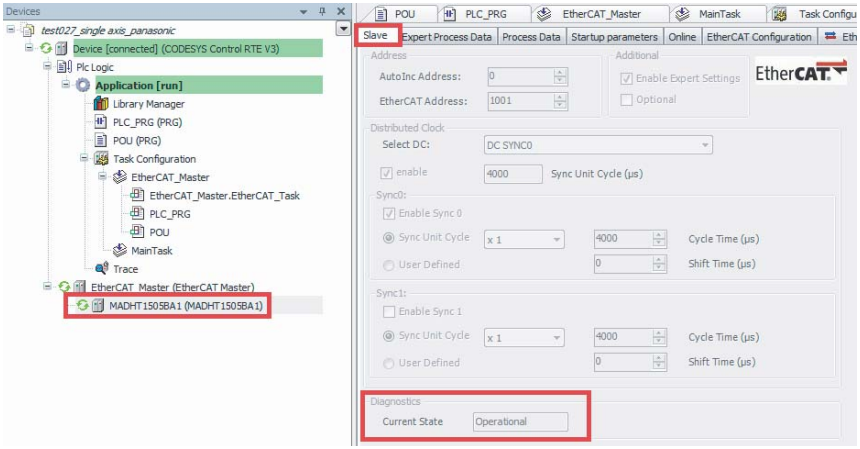
To identify the error, open the Log tab in the Device page and locate the error listing.



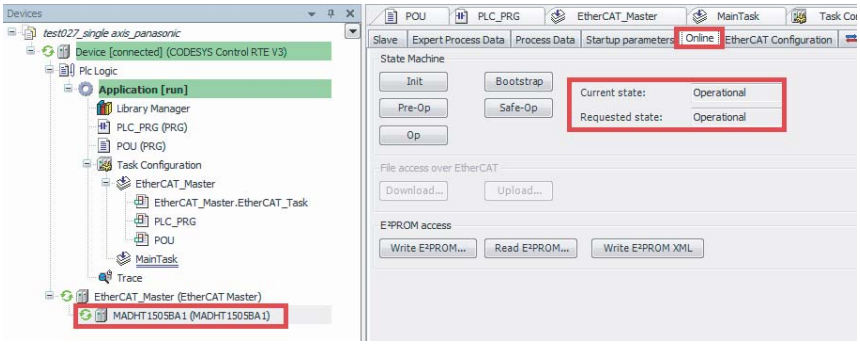
To isolate the error, first check the EtherCAT status in the Diagnostic Message of the Master setting tab.



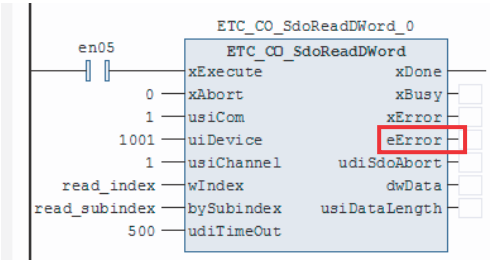
Then check the EtherCAT status in the Diagnostic Message of the Slave setting tab.



In addition to the default Op mode, the slave state can be set to Init, Pre-Op, and Safe-Op modes.

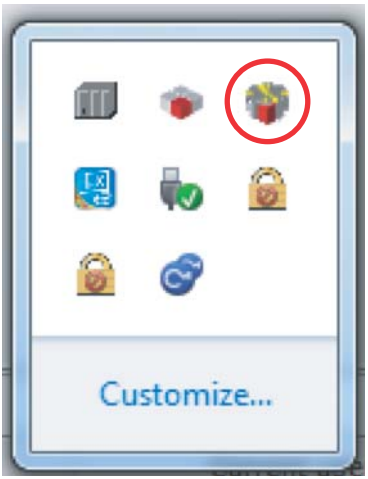


The error code produced by the slave can be checked in object dictionary 0x60F3, by SDO command in CoDeSys IDE.



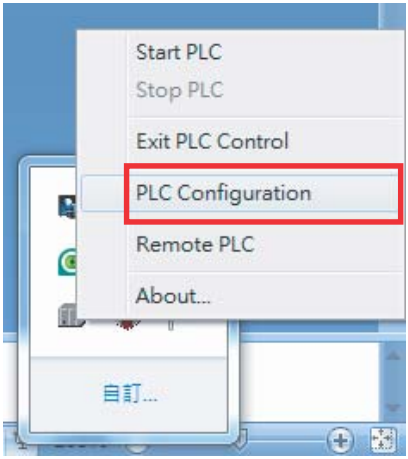
3.5 RTE Setting

1. Select Control RTE from the taskbar

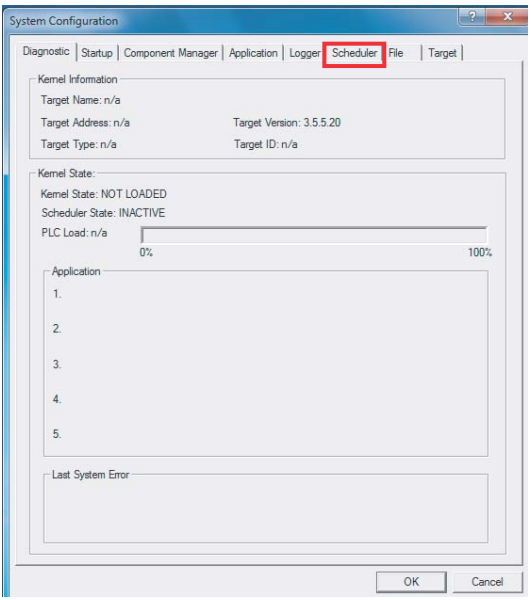


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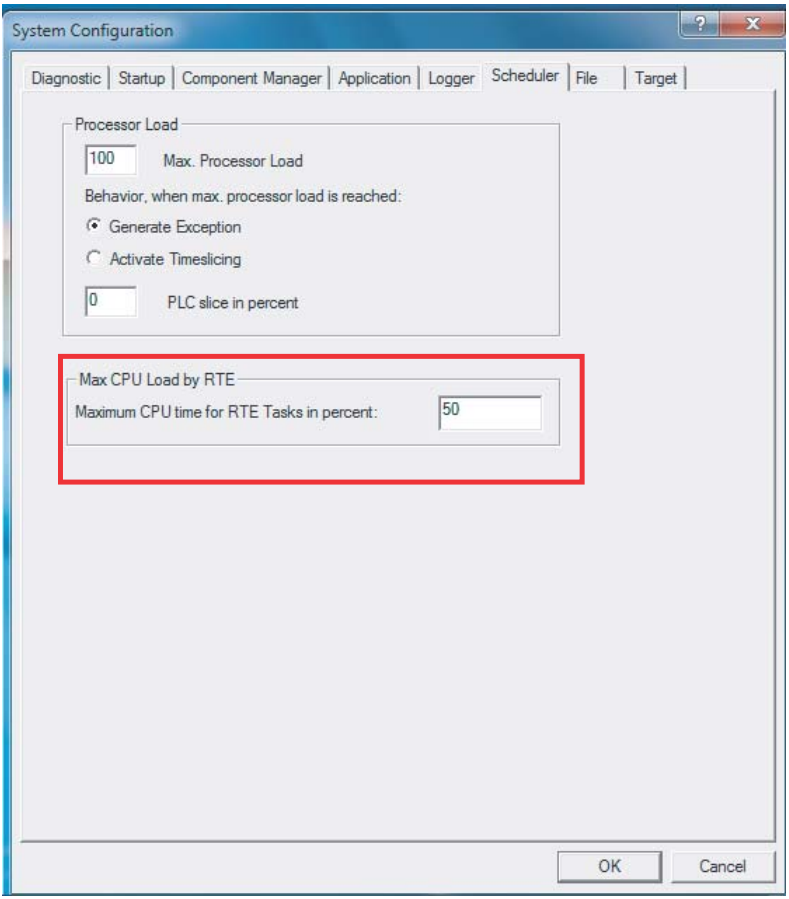
2. Select PLC Configuration



3. The PLC Configuration window opens. Select the Scheduler tab.

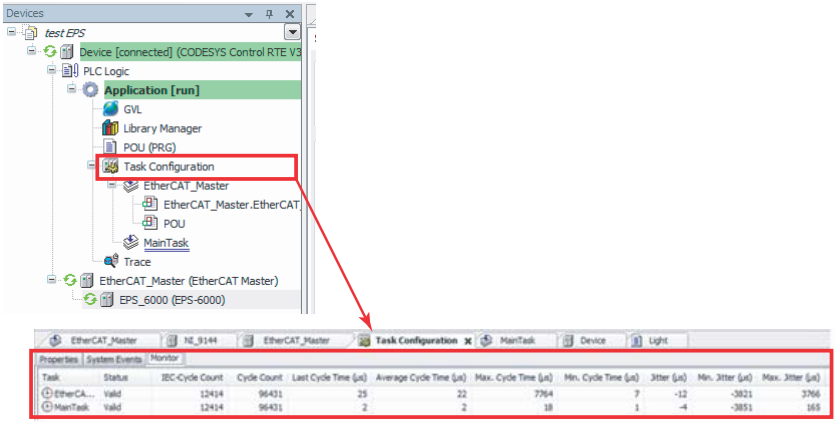


4. Set the maximum CPU loading (as a percent value).

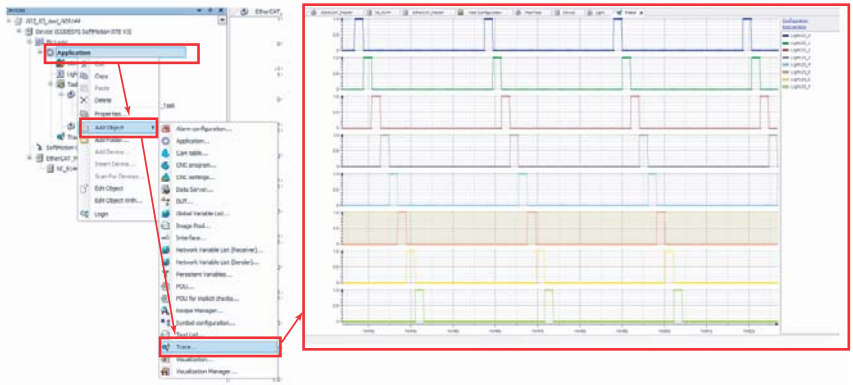


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5. Open Task Configuration to monitor task time consumption.



6. In the Application context menu, select Add Object and then Trace to show the traced plot link to the variable in the program.



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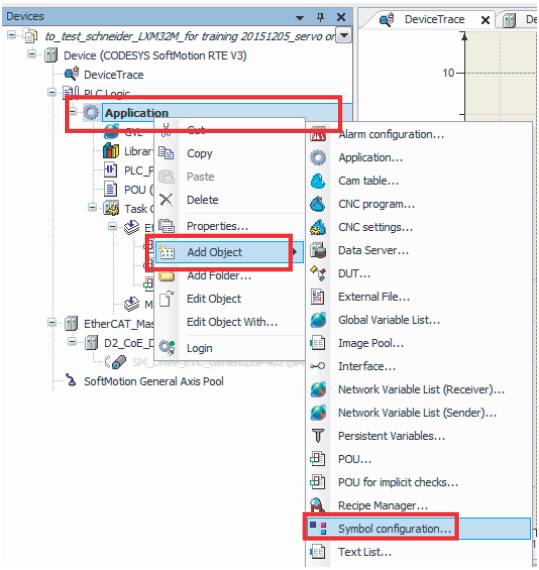
Appendix A PLC Handler

PLC handler manages data exchange between CoDeSys RTE and any Windows executions to support customized visualization with C tools such as Microsoft C#, Microsoft Visual Studio, Borland C and other C-based software tools.

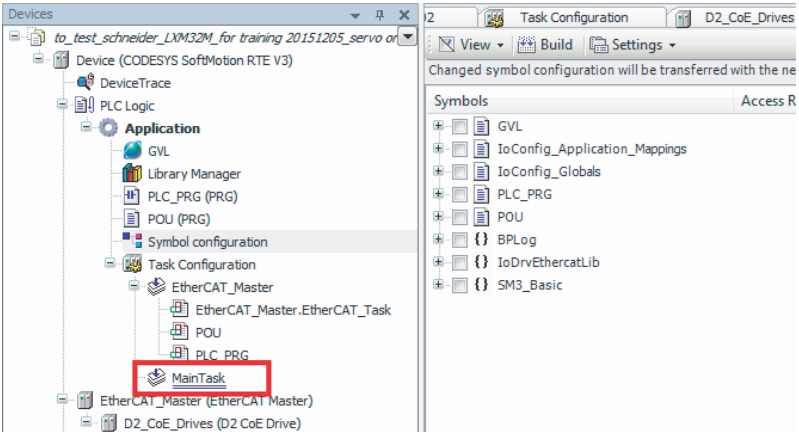
A.1 In CoDeSys

A.1.1 Configuring Symbols

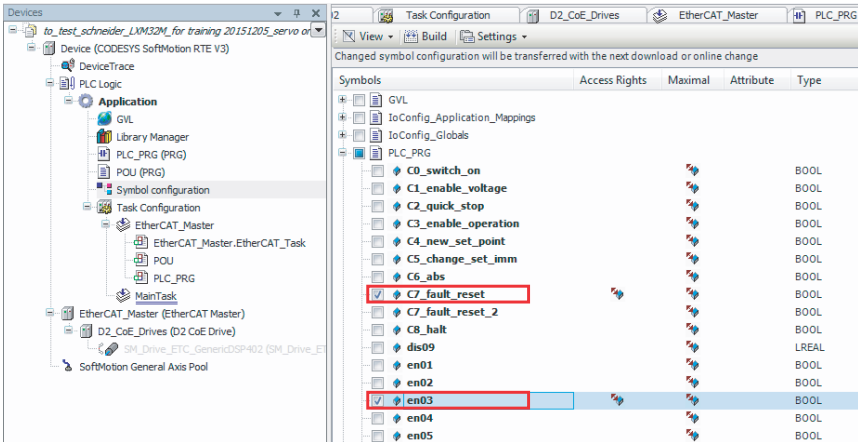
1. In the **Application** context menu, select **Add Object** and then **Symbol configuration**.



2. Select the desired object

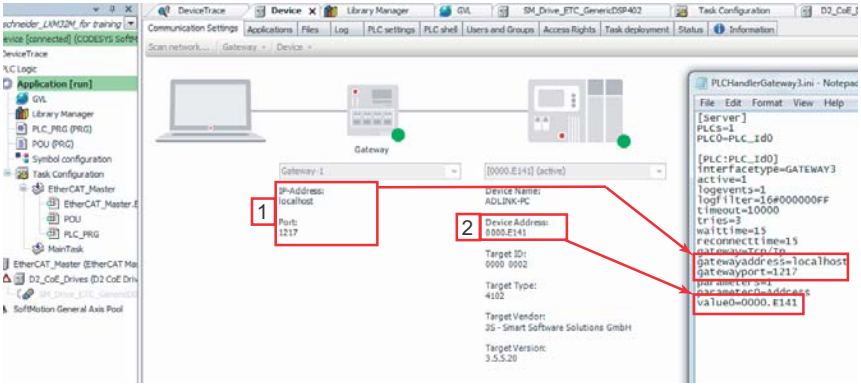


3. Select relative Variables/POU



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4. Set the Codesys gateway to PLCHandlerGateway3.ini



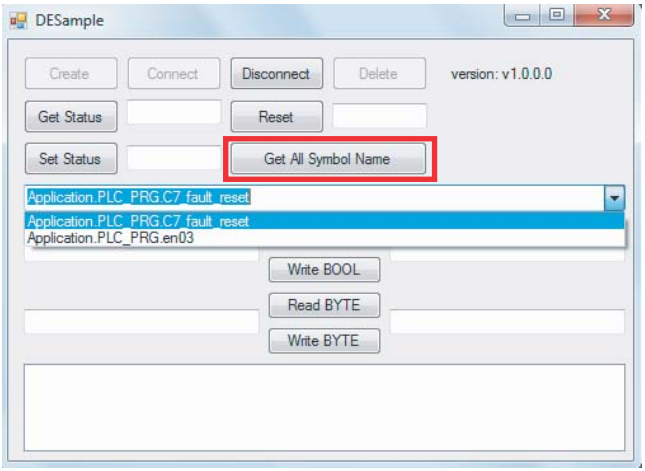
A.2 In Windows

Copy the PLCHandlerGateway3.ini file into the corresponding folder for execution.

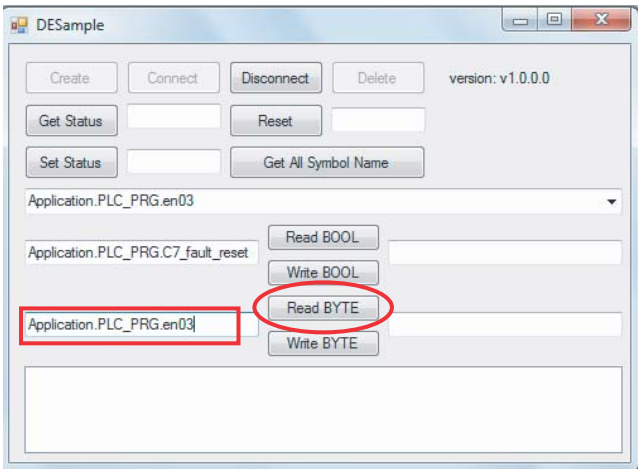
A.2.1 Mapping Variables

1. On the DESample tab, select **Create** and then **Connect**.

2. Select **Get All Symbol Name,** corresponding variables are displayed.



3. Select the desired variable and double-click to R/W.



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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.

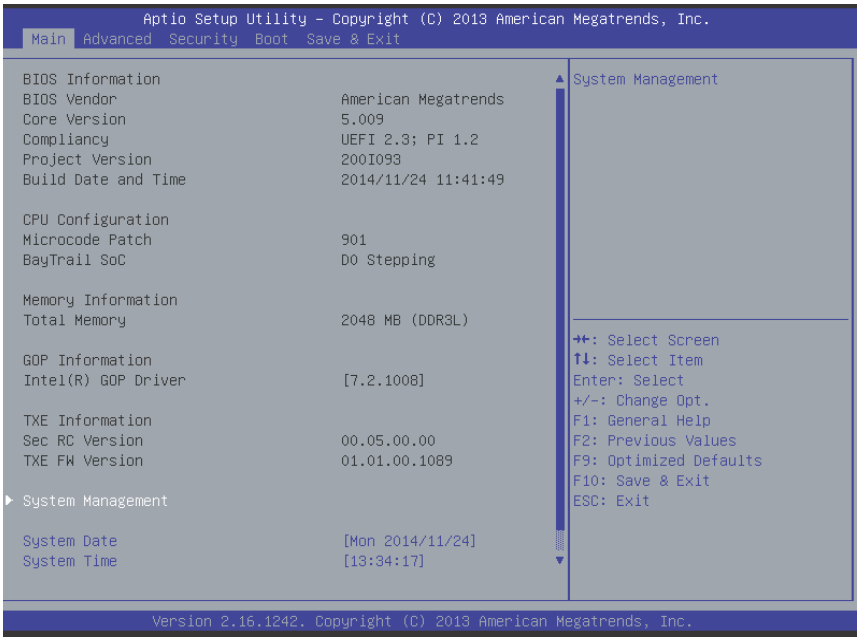
The Basic Input/Output System (BIOS) is a program that provides a basic level of communication between the processor and peripherals. In addition, the BIOS also contains codes for various advanced features applied to the TALOS-3012. The BIOS setup program includes menus for configuring settings and enabling features of the TALOS-3012. Most users do not need to use the BIOS setup program, as the TALOS-3012 ships with default settings that work well for most configurations.



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

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B.1 Main



B.1.1 BIOS Information

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

B.1.2 System Time/System Date

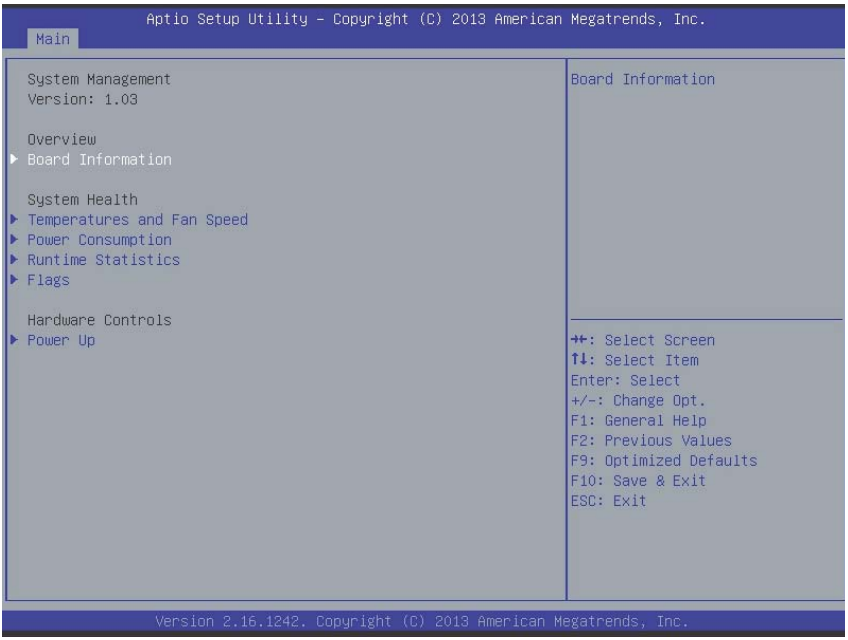
Changes system time and date. Highlight System Time or System Date using the up or down <Arrow> keys. Enter new values using the keyboard then <Enter>. Use < Tab > to move between fields. The date must be entered in MM/DD/YY format. The time is entered in HH:MM:SS format.

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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.

B.1.3 System Management



Board Information

Provides SEMA Board Information.

Temperatures and Fan Speed

Displays system temperatures and fan speed.

Power Consumption

Provides system power consumption information.

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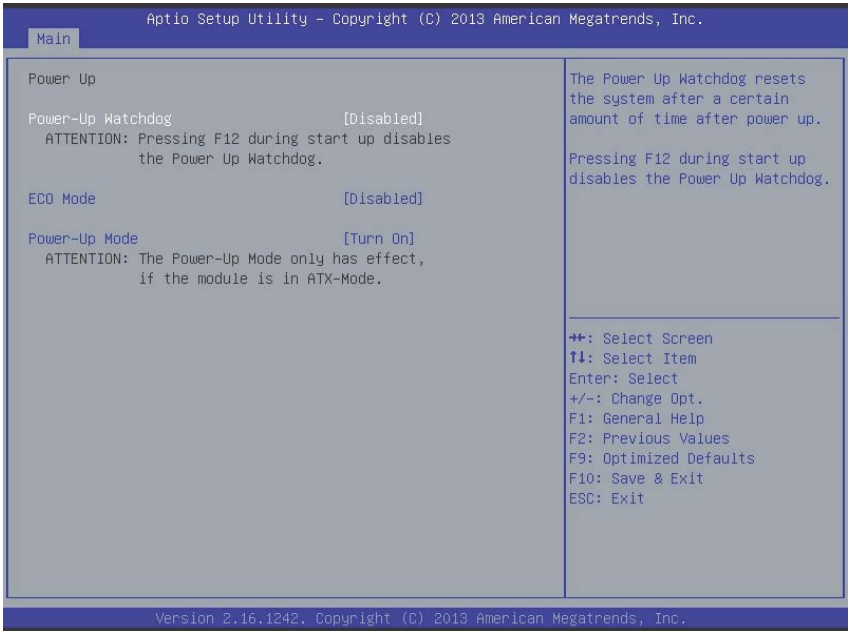
Runtime Statistics

Displays runtime statistics for the system.

Flags

Shows SEMA flags.

Power Up



Power-Up Watchdog

Resets the system after a preset period after power up has passed.

ECO Mode

Reduces power consumption of the system. After shutdown, at least 5 seconds must pass before restart can be executed.

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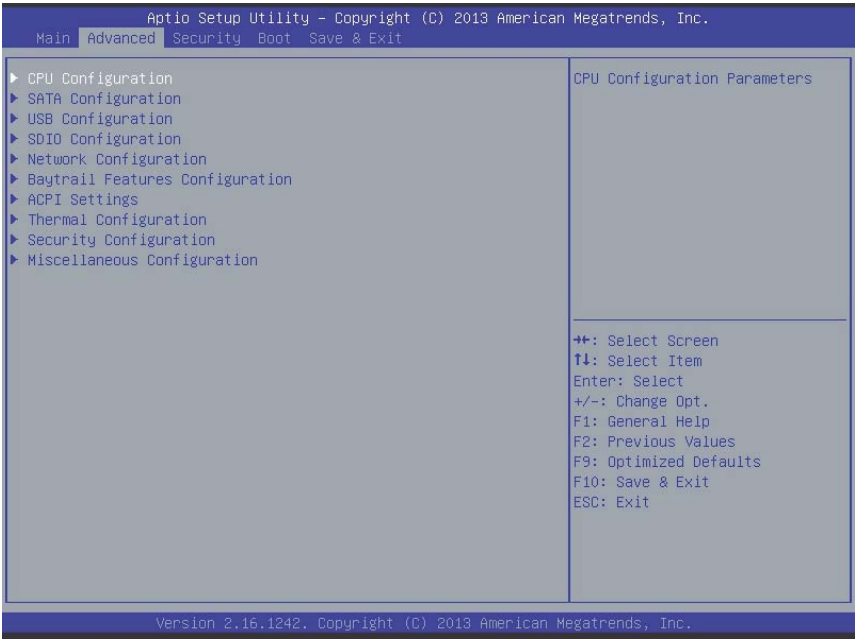
Power-Up Mode

Selecting Turn On starts the device automatically when the power supply is turned on.

Selecting Remain Off starts the device when the power button is pressed.

Selecting Last State powers up to the last power state

B.2 Advanced

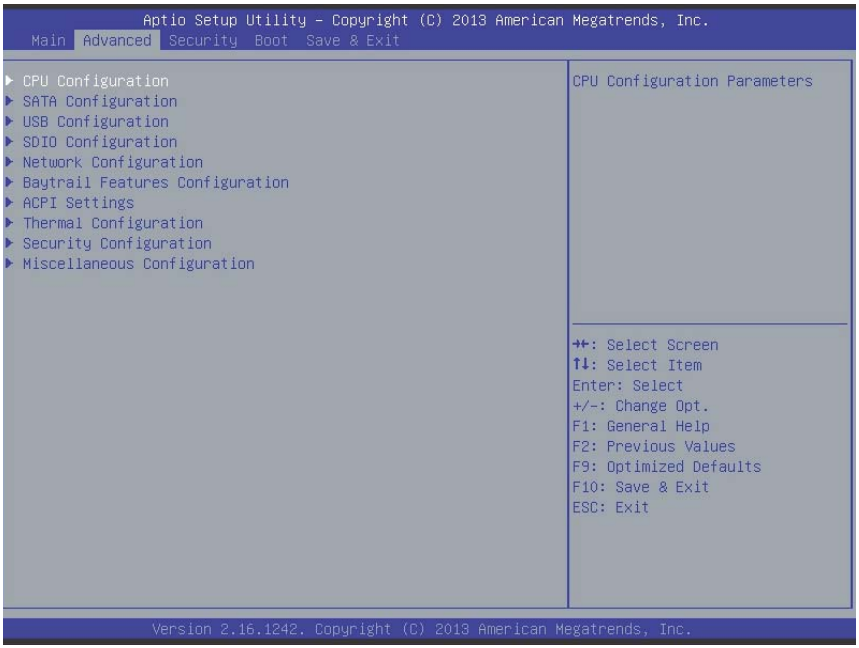


CAUTION:

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

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B.2.1 CPU Configuration



Limit CPUID Maximum

Disabled for Windows XP.

Execute Disable Bit

XD can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS (Windows Server 2003 SP1, Windows XP SP2, SuSE Linux 9.2, RedHat Enterprise 3 Update 3.)

Intel Virtualization Technology

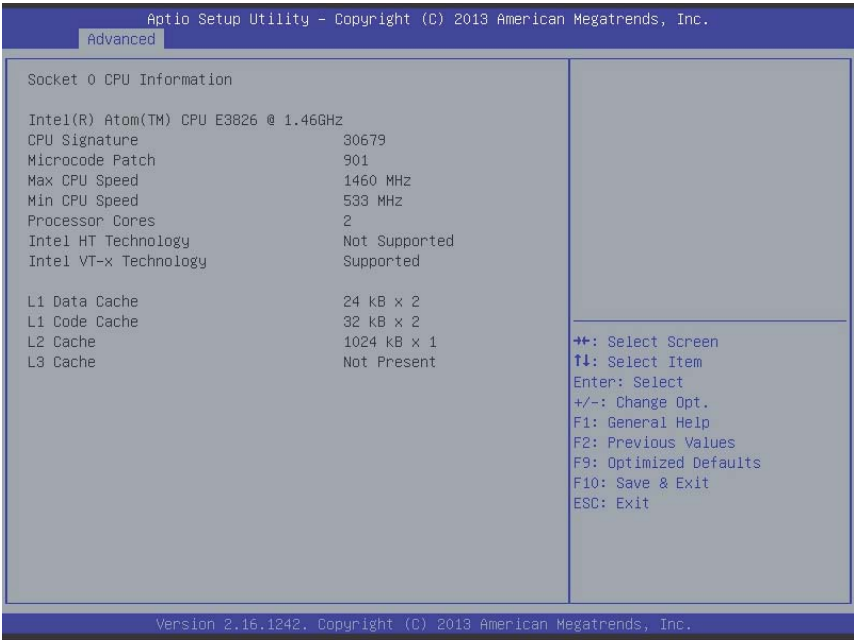
When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology

Power Technology

Enables power management features.

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Socket 0 CPU Information

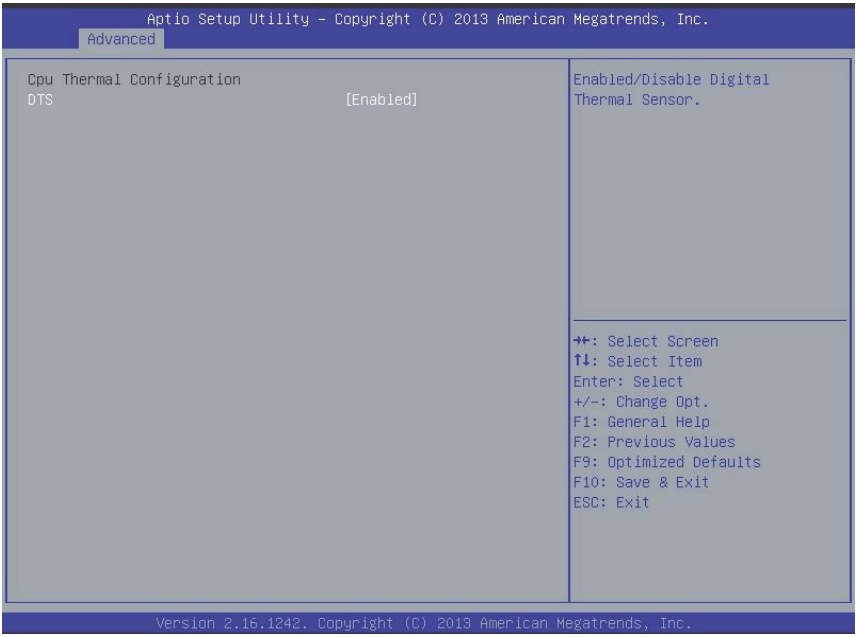


Feature	Description
CPU Brand Name	Displays CPU rand name
CPU Signature	Displays CPU signature
Microcode Patch	Displays microcode patch
Max CPU speed	Displays max CPU speed
Min CPU speed	Displays min CPU speed
Processor Cores	Displays processor cores
Intel HT Technology	Displays Intel HT Technology support status
Intel VT-x Technology	Displays Intel VT-x Technology support status

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Feature	Description
L1 Data Cache	Displays cache info
L1 Code Cache	Displays cache info
L2 Cache	Displays cache info
L3 Cache	Displays cache info

CPU Thermal Configuration

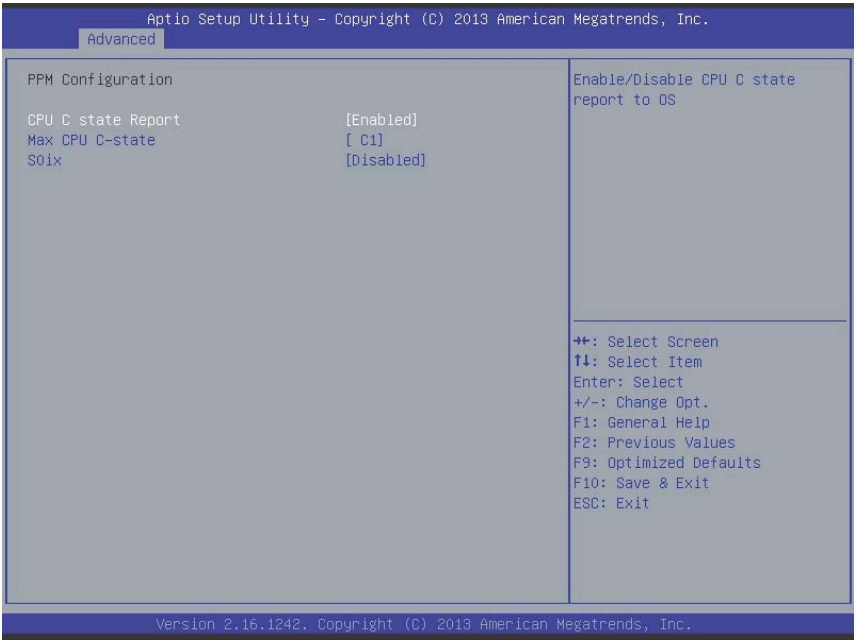


DTS

Enables/Disables Digital Thermal Sensor.

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PPM Configuration



CPU C state Report

Enables/Disables reports of CPU C state to OS.

Max CPU C-state

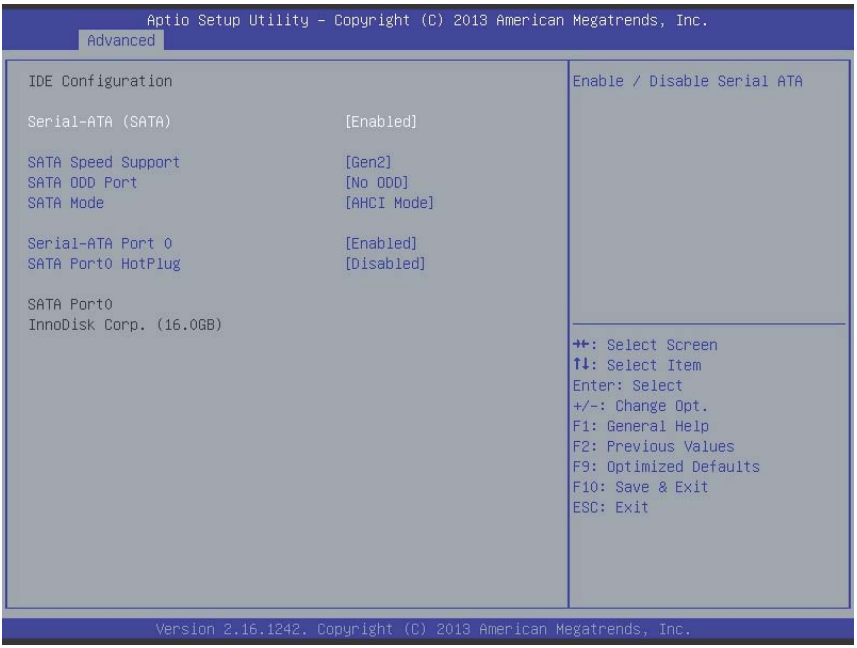
Determines which Max C state the processor supports.

S0ix

Enables/Disables CPU S0ix state

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B.2.2 SATA Configuration



Serial-ATA (SATA)

Enables/Disables Serial ATA

SATA Speed Support

Selects SATA Speed Support Gen1 or Gen2

SATA Mode

Selects IDE/AHCI modes

Serial-ATA Port 0

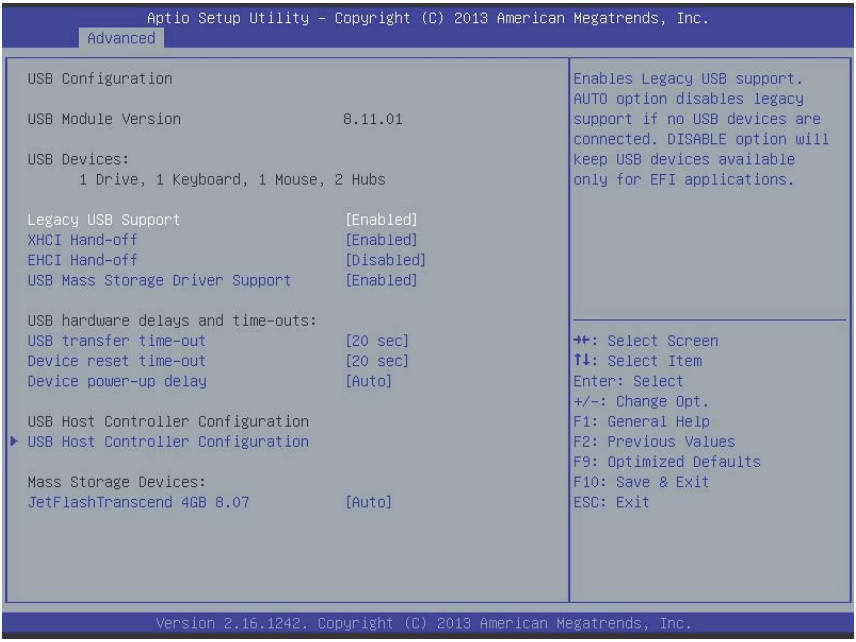
Enables/Disables Serial ATA Port 0

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SATA Port0 HotPlug

Enables/Disables Port O HotPlug capability

B.2.3 USB Configuration



Legacy USB Support

Selecting AUTO disables legacy support if no USB devices are connected, and DISABLE keeps USB devices available for only EFI applications.

XHCI Hand-Off

A workaround for OSs without XHCI handoff support. XHCI ownership change should be claimed by XHCI driver.

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EHCI Hand-Off

A workaround for OSs without EHCI handoff support. EHCI ownership change should be claimed by EHCI driver

USB Mass Storage Driver Support

Enables/disables USB Mass Storage Driver support.

USB transfer time-out

Timeout value for Control, Bulk, and Interrupt transfers.

Device reset time-out

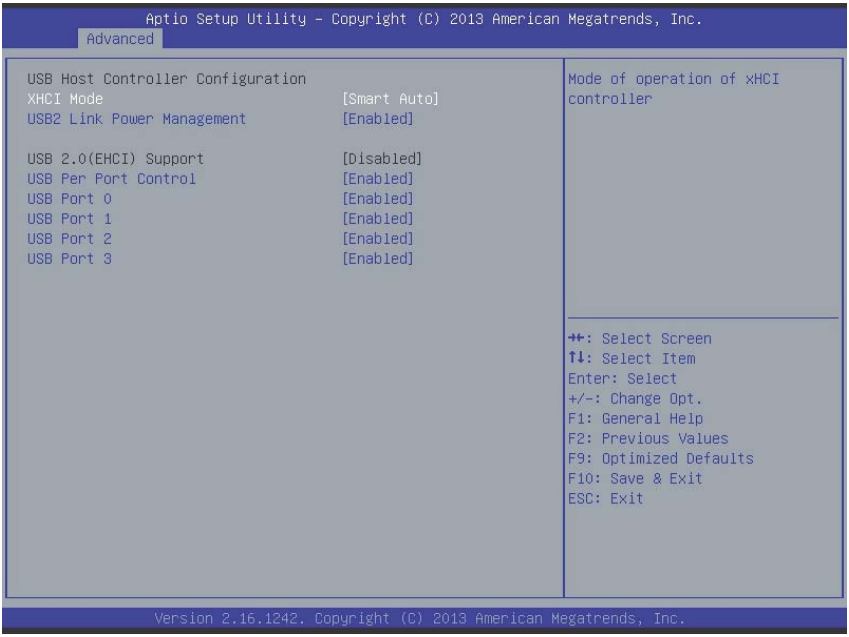
USB mass storage device Start Unit command timeout.

Device power-up delay

Maximum time the device will take before reporting to the Host Controller. Selecting Auto employs the default value, ie for a Root port, 100 ms and for a Hub port the delay is taken from Hub descriptor.

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USB Host Controller Configuration



XHCI mode

Sets operating mode of XHCI controller.

USB2 Link Power Management

Enables/disables USB2 Link Power Management.

USB Per Port Control

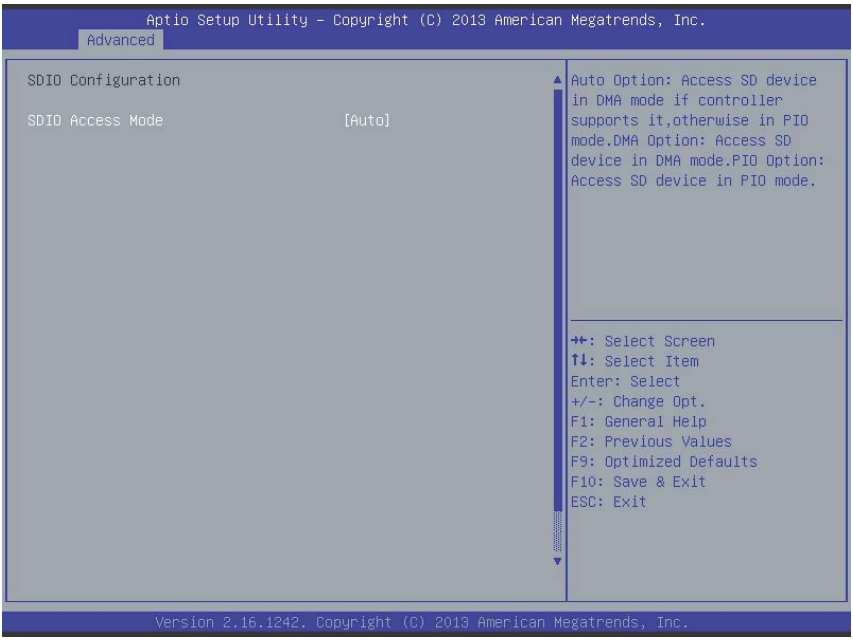
Controls each USB port 0 to 3, Enabling USB per port, or Disable by USB port x settings.

USB Port #0~3

Enables/disables USB Ports 0 to 3.

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B.2.4 SDIO Configuration

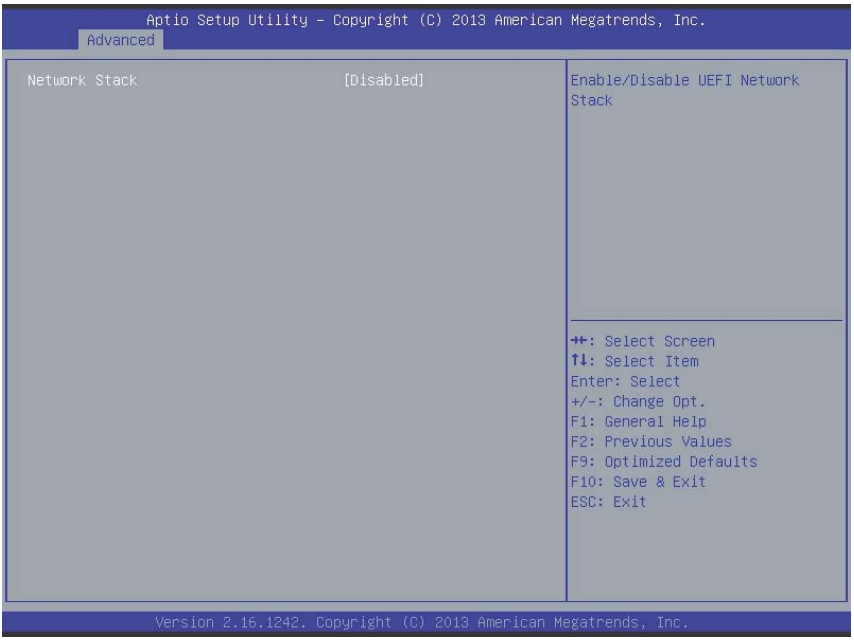


SDIO Access Mode

Selecting Auto accesses SD device in DMA mode if controller supported, otherwise in PIO mode. Selecting DMA accesses SD device in DMA mode, and selecting PIO Accesses SD device in PIO mode.

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B.2.5 Network Configuration

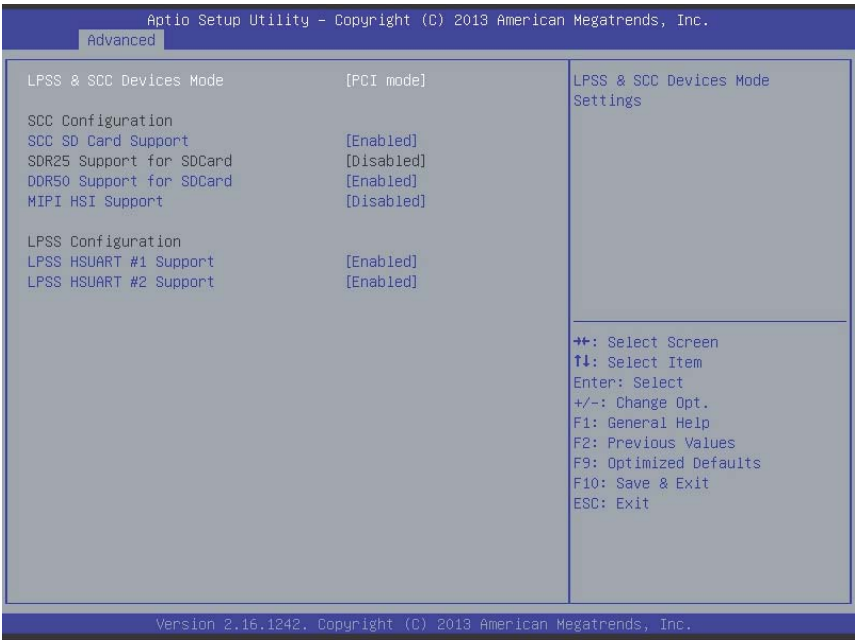


Network Stack

Enables/disables UEFI Network Stack

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B.2.6 Baytrail Feature Configuration



LPSS & SCC Devices Mode

Sets LPSS & SCC Device Mode.

SCC SD Card Support

Enables/Disables SCC SD Card support

DDR50 Support for SD Card

Enables/Disables DDR50 capability in SD card controller.

MIPI HSI Support

Enables/Disables MIPI HSI support.

LPSS HSUART # Support

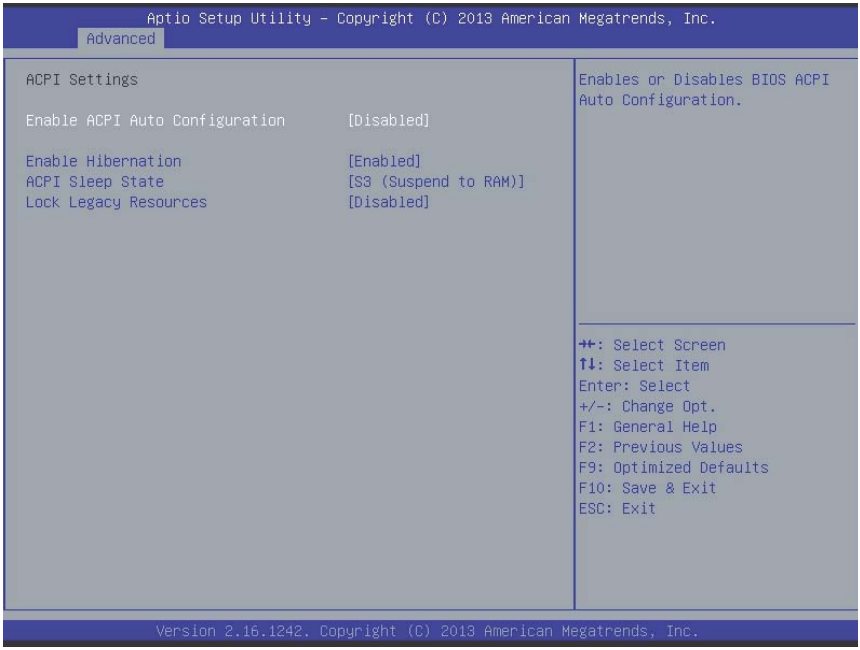
Enables/Disables LPSS HSUART # support.

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HSUART Port Mode

Sets HSUART port mode.

B.2.7 ACPI Setting



Enable ACPI Auto Configuration

Enables/Disables BIOS ACPI Auto Configuration.

Enable Hibernation

Enables/Disables hibernation capability (OS/S4 Sleep State), when supported by OS.

ACPI Sleep State

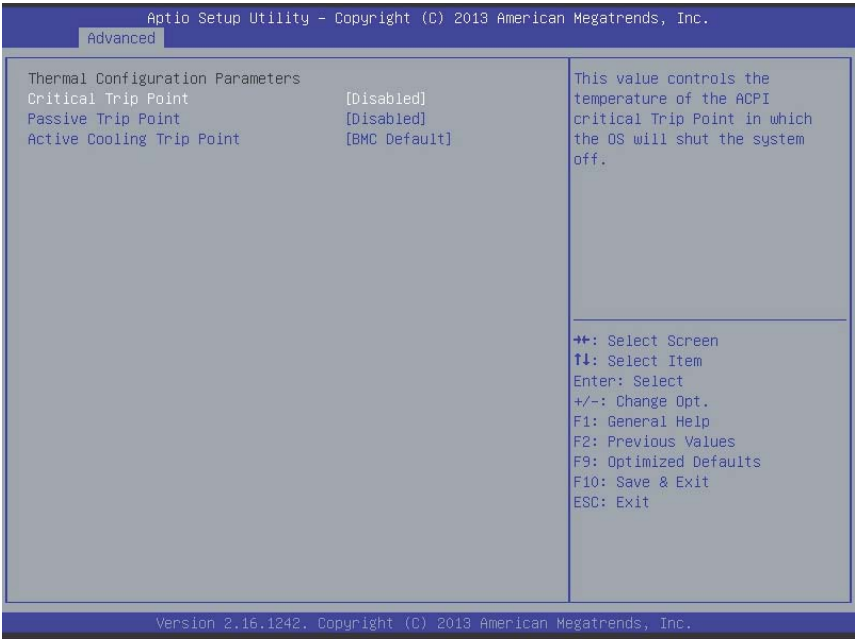
Selects the highest ACPI sleep state the system will enter when SUSPEND is selected.

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Lock Legacy Resources

Enables/Disables Legacy Resource lock.

B.2.8 Thermal Configuration



Critical Trip Point

Sets the ACPI critical trip point temperature at which the OS will shut the system down.

Passive Trip Point

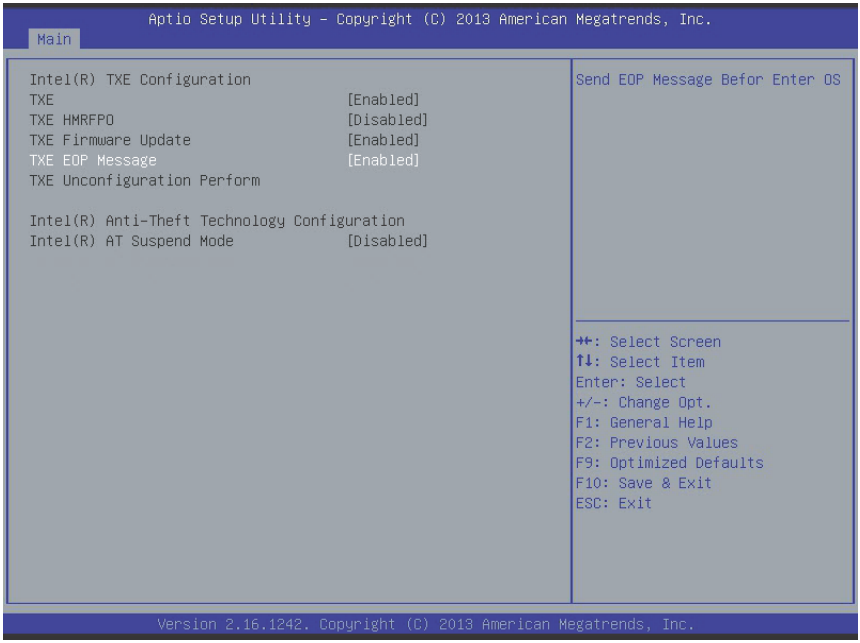
Sets the temperature of the ACPI critical trip point at which the OS will begin throttling the processor

Active Cooling Trip Point

Sets the Active Cooling trip point.

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B.2.9 Security Configuration



TXE

Enables/Disables TXE firmware

TXE HMRFBO

Enables/Disables TXE HMRFBO

TXE Firmware Update

Enables/Disables TXE firmware update.

TXE EOP Message

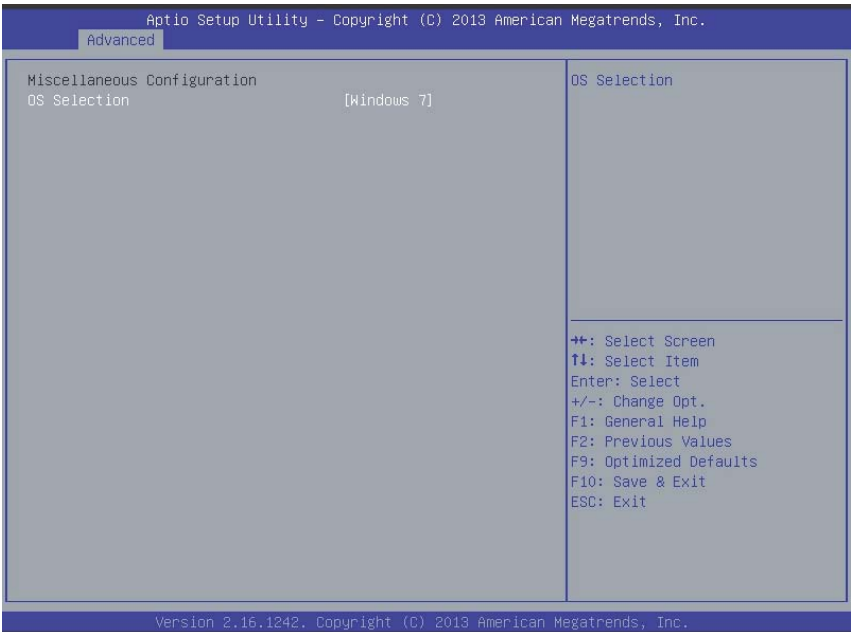
Sends EOP Message Before OS starts up.

TXE Unconfiguration Perform

Reverts TXE Settings to factory defaults.

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B.2.10 Miscellaneous Configuration

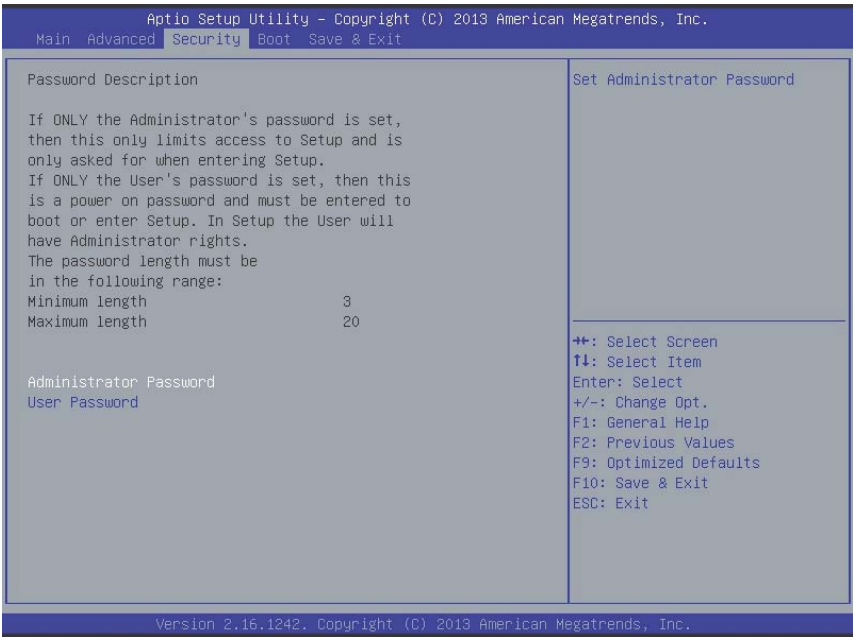


OS Selection

Selects active OS.

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B.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.

Administrator Password

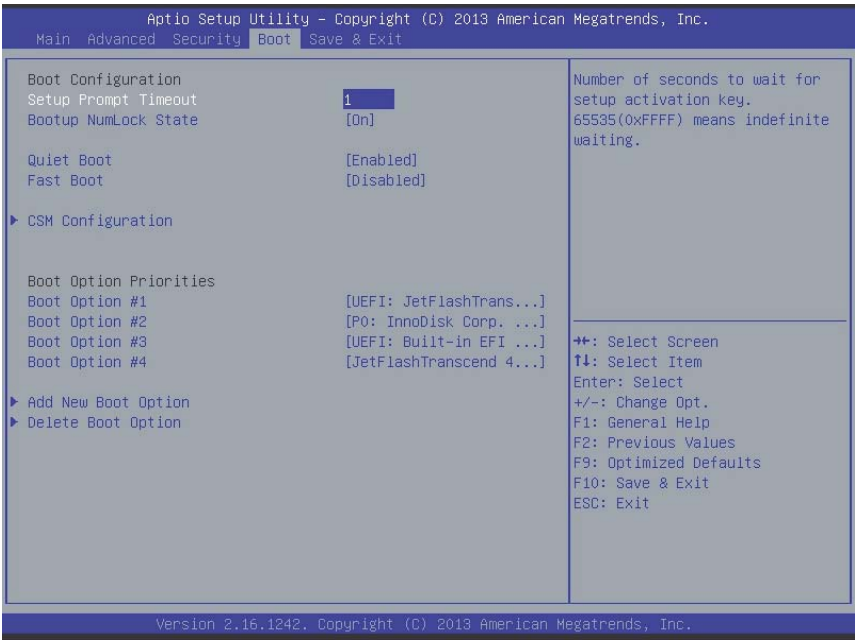
Sets Administrator password.

User Password

Sets boot/setup User password.

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B.4 Boot



Setup Prompt Timeout

Sets number of seconds to wait for setup activation key.

Bootup Num-Lock State

Allows Number Lock setting to be modified during boot.

Quiet Boot

When Disabled, directs BIOS to display POST messages, when Enabled, directs BIOS to display the OEM logo.

Fast Boot

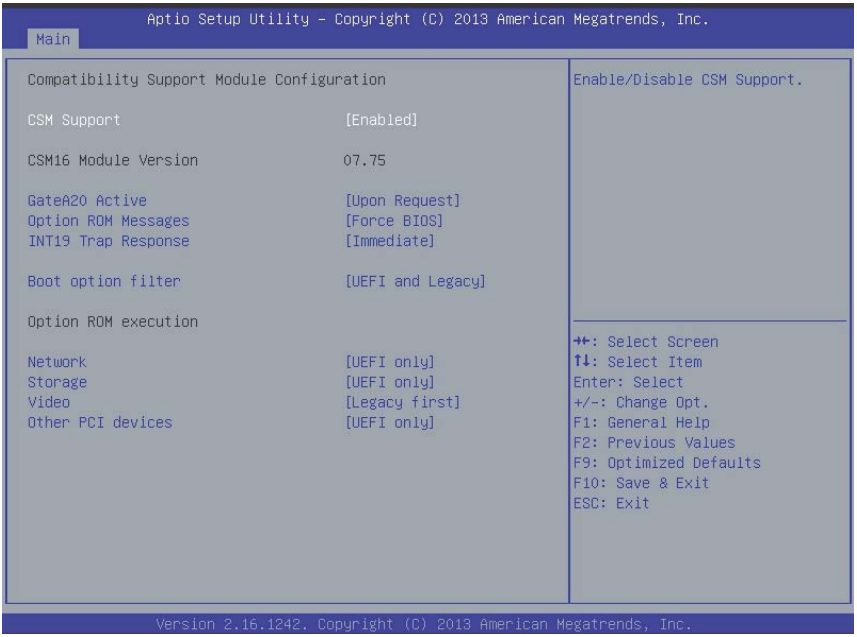
Enables or disables boot with initialization of the minimal set of devices required to launch active boot option. Has no effect on BBS boot options.

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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.

CSM Configuration



CSM Support

Enables/disables CSM support.

GateA20 Active

Selecting Upon Request allows GA20 to be disabled using BIOS services, and selecting Always disallows disabling of GA20, useful when any RT code exceeding 1MB is executed.

Option ROM Messages

Sets display mode for Options.

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INT19 Trap Response

Sets BIOS reaction to INT19 trapping by Option ROM, where selecting Immediate executes the trap immediately, and Postponed executes the trap during a legacy boot.

Boot option filter

Sets Legacy/UEFI ROM priority.

Network

Sets execution of UEFI and Legacy PXE OpROM.

Storage

Sets execution of UEFI and Legacy Storage OpROM.

Video

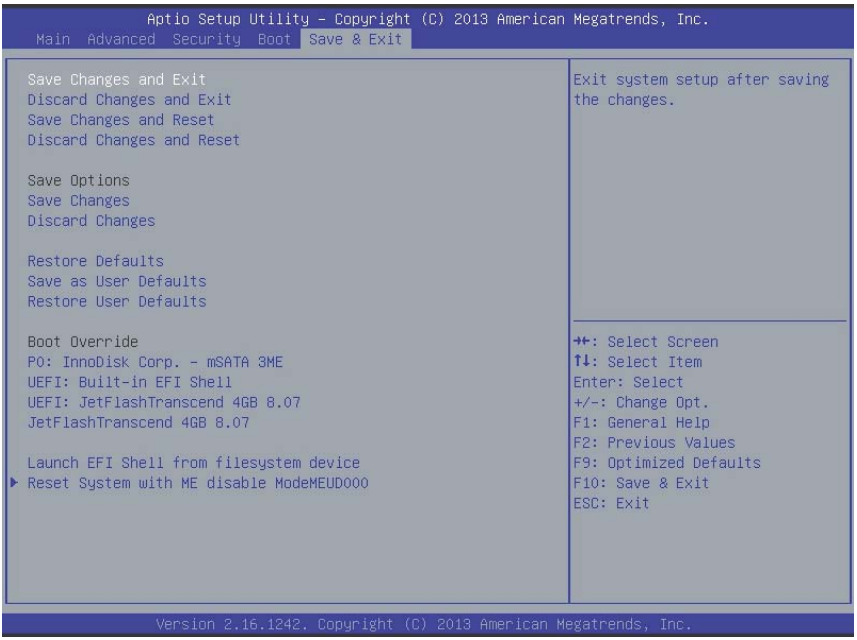
Sets execution of UEFI and Legacy Video OpROM.

Other PCI devices

Determines OpROM execution policy for devices other than Network, Storage, or Video.

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B.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.

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Discard Changes

Discards changes made to Setup options.

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.

Reset System with ME disable ModeMEUD000

ME runs in temporary disable mode, not applicable if ME Ignition FWMEUD001.

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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 equipment before handling/operating the equipment.

- Read these safety instructions carefully.
- Keep this user's manual for future reference.
- Read the specifications section of this manual for detailed information on the operating environment of this equipment.
- When installing/mounting or uninstalling/removing equipment:
  - Turn off power and unplug any power cords/cables.
- To avoid electrical shock and/or damage to equipment:
  - Keep equipment away from water or liquid sources;
  - Keep equipment away from high heat or high humidity;
  - Keep equipment properly ventilated (do not block or cover ventilation openings);
  - Make sure to use recommended voltage and power source settings;
  - Always install and operate equipment near an easily accessible electrical socket-outlet;
  - Secure the power cord (do not place any object on/over the power cord);
  - Only install/attach and operate equipment on stable surfaces and/or recommended mountings; and,
  - If the equipment will not be used for long periods of time, turn off and unplug the equipment from its power source.

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- Never attempt to fix the equipment. Equipment should only be serviced by qualified personnel.
- A Lithium-type battery may be provided for uninterrupted, backup or emergency power.

WARNING:

Risk of explosion if battery is replaced with an incorrect type; please dispose of used batteries appropriately.

- Equipment must be serviced by authorized technicians when:
  - The power cord or plug is damaged;
  - Liquid has penetrated the equipment;
  - It has been exposed to high humidity/moisture;
  - It is not functioning or does not function according to the user's manual;
  - It has been dropped and/or damaged; and/or,
  - It has an obvious sign of breakage.

Please pay strict attention to all warnings and advisories appearing on the device, to avoid injury or damage.



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Getting Service

Contact us should you require any service or assistance.

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