User Manual
GFK-3138B
Jul 2021

PACSystems™ Industrial Display User Manual

EMERSON

Contents

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Warning notices are used in this publication to emphasize that hazardous voltages, currents, temperatures, or other conditions that could cause personal injury exist in this equipment or may be associated with its use.

In situations where inattention could cause either personal injury or damage to equipment, a Warning notice is used.

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Section 1: Introduction

1.1 An Introduction to RXi – Industrial Displays

RXi – Industrial Displays are a modular and fanless display portfolio consisting of industrial monitors, web panels, and panel PC options to suit customer visualization and computing needs. The entire portfolio features IP66-rated screens that protect against dust, moisture, and waterjets as well as a range of TFT LCD screen sizes in a 16:9 format: 7”, 10”, 12”, 15”, 19”, 24”. The RXi – Industrial Displays family includes outdoor, sunlight-readable screens for 7” – 15” screens. The screens are projected capacitive touch screens and have a multi-touch functionality. The front of the screens includes a light sensor, which allows for the screens to automatically adjust to changes in ambient light and system power LED light.

1.2 Revisions in This Manual

Revision	Date	Description
B	Jul 2021	Updated Pin Configuration for Serial Port (UART)
A	Dec 2020	Initial Release

1.2.1 Advantages to RXi - Industrial Displays

Scratch Resistance

The RXi – Industrial Displays are robust displays engineered to resist the harshest environments. The industrial displays feature scratch-resistant glass without the use of plastic overlays and feature screen sensitivity options to adapt to a user’s protective gear (PPE).

- All RXi Industrial Displays have specifical PCAP screens
- No Plastic Resistive overly
- Special Glass has a 7 rating on the Mohs Hardness scale.
- The Mohs scale measures the hardness of various materials”
    - Harder materials can scratch softer ones
    - Softer materials are unable to scratch harder ones
    - RXi Industrial Displays have a strong resistance against scratching from fingernails, knives, keys, and standard steel tools.

Figure 1: Mohs Hardness Scale

Screen Chemical Resistances

- Acetone
- Unleaded Gasoline
- Isopropyl Alcohol
- Motor Oil
- Laundry Detergents
- 5% Salt Water
- Hydraulic Fluid
    - Skydrol

Glove Compatibility

RXi Industrial Displays are compatible with a wide variety of PPE, which eliminates the need for a worker to remove gloves to interface with the screens. The figure below illustrates glove compatibility.

The following values represent glove compatibility on the standard sensitivity setting

The sensitivity of the RXi – Industrial Displays can be increased.

Globe Thickness (mm)	Glove Material	Glove Photo
0.12	Latex	
0.85	Nylon	
0.85	Polyester	
1.85	Cotton	
1.85	Cotton	
0.85	Leather	

1.3 RXi - Industrial Monitor

1.3.1 Primary Technical Features

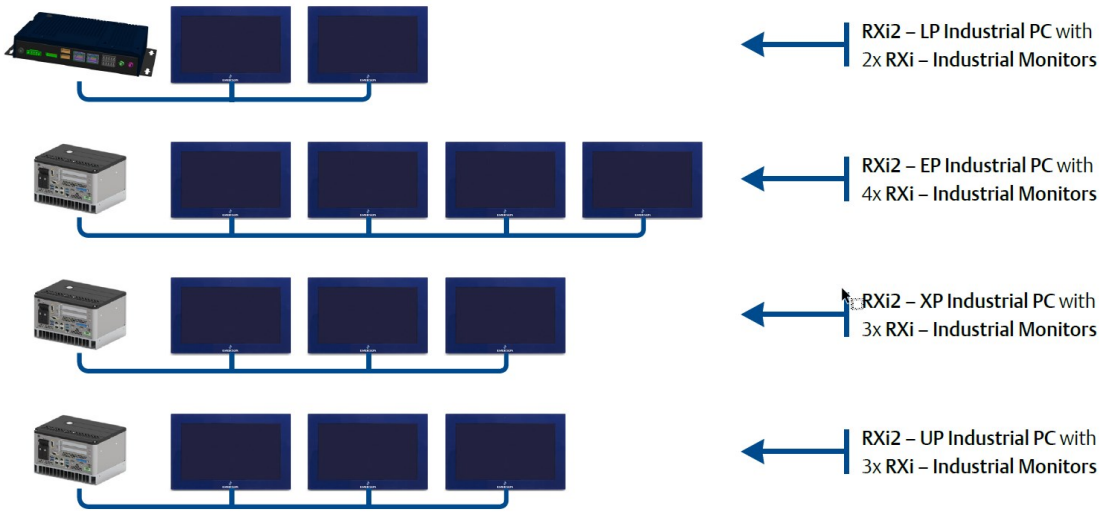
- HDMI, DP, DP-out (MST-daisy chain), Line-out, USB ports
- On-Screen Display (OSD) on the left side
- 7”/ 10”/ 12”/ 15”/ 19”/ 24” Widescreen Display
- 7”/10”/12”/15” Industrial Widescreen Outdoor Sunlight Readable Screens
- TFT LCD Industrial Display
- Aluminum chassis

1.3.2 Display Architectural Options

MST Daisy-Chained together using DisplayPort In and DisplayPort Out ports top pass Audio and Video signals in either an “Extended” or “Cloned” configuration.

The maximum number of MST daisy-chained displays with DisplayPort 1.2 is four displays. The number of RXi – Industrial Monitors will be limited by the graphical capabilities of the attached hardware. The figure below illustrates which hardware offers the most graphical power.

Figure 2: Daisy Chaining



To enable touchscreen capabilities, the USB cable must be attached from the individual screen back to the IPC.

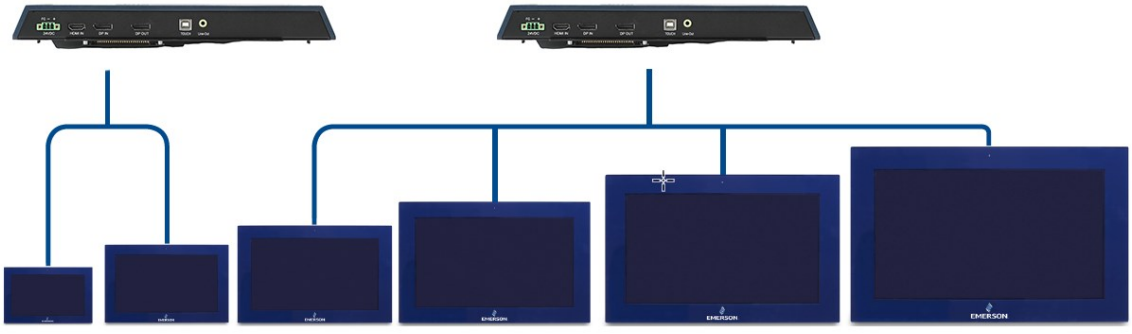
Note: Microsoft Windows limits user input to one touchscreen at a time, even with multiple screens attached to the IPC.

1.3.3 Backing Module and Screen Compatibility

Figure 3: Backing Module and Screens

RXi – Industrial Monitor small backing module and compatible screens

RXi – Industrial Monitor large backing module and compatible screens



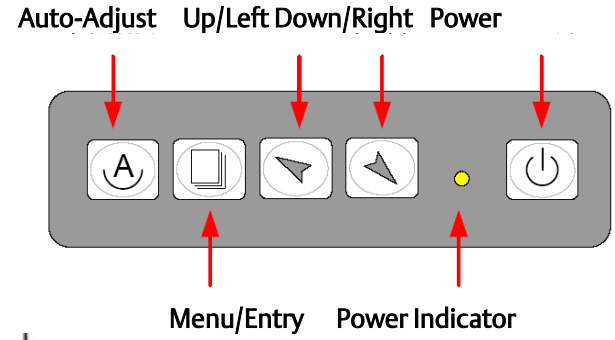
7”	10”	12”	15”	19”	24”
16:9 Widescreen 1024x600	16:10 Widescreen 1280x800	16:10 Widescreen 1280x800	16:9 Widescreen 1920x1080	16:9 Widescreen 1920x1080	16:9 Widescreen 1920x1080

1.3.4 Configuration and Setup RXi Industrial Monitor

On-Screen Display (OSD)

AD Board OSD Functions

Figure 4: AD Board OSD Functions Legend



Power switch: To turn ON or OFF the power

Shift the icon to the left side or shift it up

Shift the icon to the right side or shift it down

Menu: To enter the OSD menu for related icon and item

Auto Button: One-touch auto adjustment

Enter Burn-in Mode

Before entering the burn-in mode, first, disconnect the AC power cord, then press and hold the buttons, then release after the AC power cord is connected and the **RGB** appears on the top left corner of your screen. Now it can be put into the burn-in mode for changing colors.

Exit Burn-in Mode

Before exiting burn-in mode, please first disconnect the AC power cord, then press the button (If for any reason this button is non-functional, press and hold the button) until the AC power cord is connected. Do not release the button until the AC power cord is connected again and the wording of **RGB** appears on the top left corner of your screen, then wait for 3 seconds. If there is no input plugged into the unit, the **CABLE NOT CONNECTED** message will denote that it has successfully left burn-in mode.

If unable to exit Burn-in Mode

If the **RGB** is still on the top left corner of the screen, press to enter **Miscellaneous** and choose **Reset**, and then select **Yes**, and press . When the screen goes black, disconnect power and repeat the above steps.

If the RGB is not found, disconnect the AC power cord first, then press and hold the buttons until the AC power cord is connected, and wait for 2 to 3 seconds. When **RGB** appears, repeat the above steps.

OSD Controls

OSD Keypad

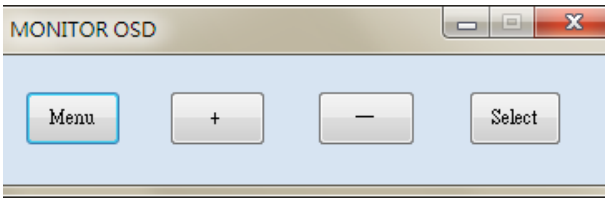
To make any adjustment to the settings of the Industrial Monitor, select the following:

1. Press (Menu) to show the OSD menu or dismiss the OSD menu.
2. Select the icon that you wish to adjust with the (/) key in the menu.
3. Press (Menu) and then choose the item with the (/) key.
4. Press (Menu) and then adjust the quality with the (/) key.

Virtual OSD Keypad

1. Press Menu to show the OSD menu or dismiss the OSD menu.
2. Navigate to the icon that you wish to adjust with the (+) and (-) keys in the menu.
3. Press Menu and then choose the item with the (+) and (-) keys.
4. Press Menu and then adjust the quality with the (+) and (-) keys

Figure 5: Virtual OSD Keyboard



Main Menu

Picture

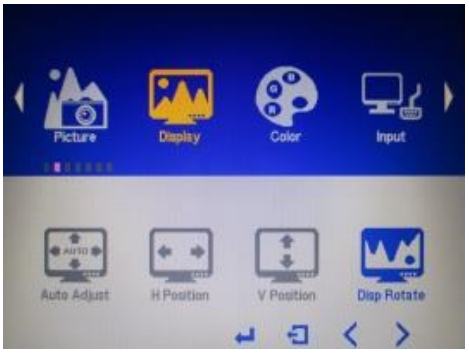
To access the main menu, push the **Menu** button on the OSD controls.

Figure 6: Picture Menu Options

Menu Items	Descriptions
AutoBacklight	Adjusts the brightness of the screen based on the brightness level of the video in use
Backlight	Adjusts the brightness of the display
Brightness	Adjusts the colors levels to simulate brightness
Contrast	Adjusts the scale factor (gain) to the red, green, and blue signals
Sharpness	Adjusts the clarity of a display's picture or text

Display

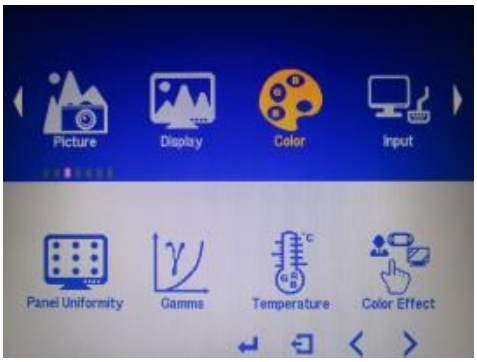
Figure 7: Display Menu Options



Menu Items	Descriptions
AutoAdjust	The screen will calibrate the display to show the best screen orientation and position
H Position	Moves the screen left or right (horizontally)
V Position	Moves the screen up or down (vertically)
Disp Rotate	Rotates the display orientation (landscape/portrait)

Color

Figure 8: Color Menu Options



Menu Items	Descriptions
Panel Uniformity	Adjusts color consistency across the screen
Gamma	Adjusts gamma value
Temperature	Adjusts temperature value
Color Effect	Adjusts color effect

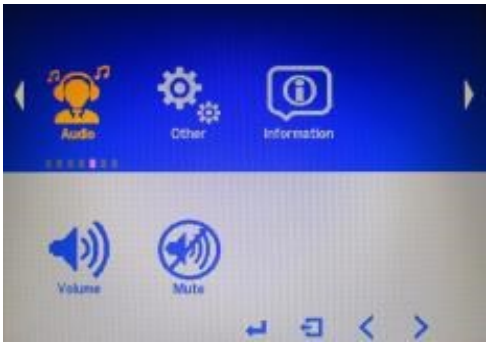
Input

Figure 9: Input Menu Options

Menu Items	Descriptions
Auto Select	Automatically displays input from whichever ports are supplying media
DP	Manually displays input from DisplayPort port
HDMI	Manually displays input from HDMI port

Audio

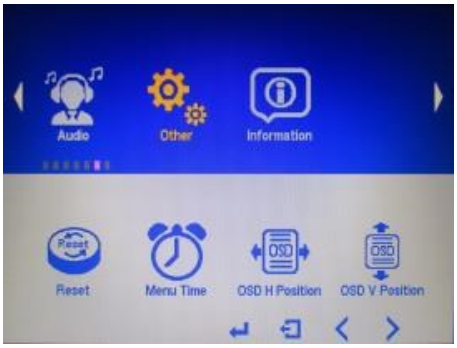
Figure 10: Audio Menu Options



Menu Items	Descriptions
Volume	Increases or decreases the volume level
Mute	Toggles volume on or off

Other (Menu Item)

Figure 11: Other Menu Options



Menu Items	Descriptions
Reset	It will reset the values to original/ default values.
Menu Time	Adjusts the time that the menu will remain on-screen after pressing the menu button.
OSD H Position	Moves the virtual OSD menu left or right (horizontally)
OSD V Position	Moves the virtual OSD menu up or down (vertically)

1.4 RXi - Panel PC

The RXi - Panel PC is a modular display portfolio that offers multiple options of separable screens and computing units, which maximize flexibility, performance, and durability. The portfolio ranges from 7" to 24" screens in a widescreen format, with 7” to 15” models also available with outdoor sunlight readable screens. The modular nature of the unit allows users to easily swap an indoor screen for an outdoor screen, change screen sizes, or simply replace a damaged screen while utilizing the same computing unit.

There are two variants of the RXi - Panel PC, base and advanced (high performance AMD Ryzen processor). The base model comes with either a Dual-Core 1.0 GHz or a Quad-Core 1.2 GHz AMD G-Series processor with 4 GB or 8 GB of available DDR3 RAM available. The advanced module comes with Quad-Core 2.0 GHz AMD Ryzen Series processor with 8 GB or 16 GB of DDR4 RAM. All RXi - Panel PCs come with Windows 10 IOT Enterprise LTSC OS installed standard. The high resolution, multitouch, projective capacitive screens can be used with personal protective equipment and feature quick response times.

The outdoor-rated sunlight-readable screens are optically bonded and feature UV protection reducing reflections and glare. All indoor and outdoor rated configurations carry the same certifications and capabilities.

The entire RXi – Panel PC portfolio features IP66 rated screens that protect against dust, moisture, and even direct water jets. The effective operating temperatures range as high as 65 °C and as low as -20 °C. With Marine, ATEX/IECEX, and HazLoc certifications, the RXi - Panel PC provides you with a solution that is designed to go where you need it to.

1.4.1 Primary Technical Features (Base Model)

- 7”/ 10”/ 12”/ 15”/ 19”/ 24” Industrial Widescreens
- 7”/ 10”/ 12”/ 15” Industrial Widescreen Outdoor Sunlight Readable Screens
- Flat Front Panel Projected Capacitive Touch Screens
- Modular Design
- AMD Embedded G-Series SOC Processor
- Onboard DDR3L, up to 8GB (Soldered with ECC)
- Fanless Design
- 1x M2 SSD slot
- 4x 10/100 base T Ethernet RJ45
- 1x RS-232, 1x RS-485
- 2x USB 3.0, 2x USB 2.0
- 1x Display port
- 1x Mic-in, 1x Line-out
- 24VDC Wide Range Power Input
- 1 x External Micro SD/ SDHS Card Slot (up to 32 GB)
- Secure & Trusted Boot Capability

1.4.2 Primary Technical Features (with AMD Ryzen)

Primary technical features:

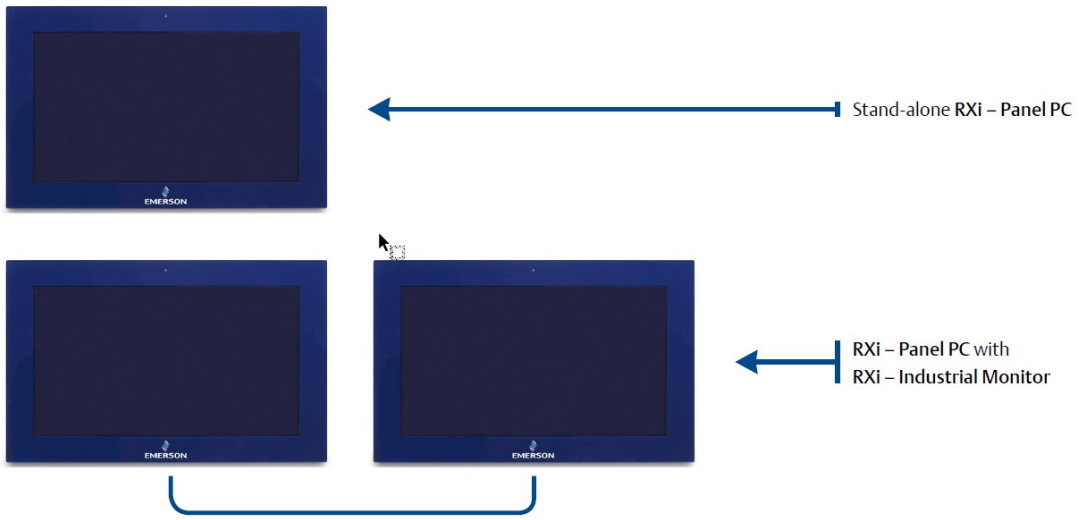
- 12”/ 15”/ 19”/ 24” Industrial Widescreens
- 12”/ 15” Industrial Widescreen Outdoor Sunlight Readable Screens
- Flat Front Panel Projected Capacitive Touch Screens
- Modular Design
- AMD Embedded V1000 Series SoC (V1404i)
- Fanless Design
- 1x M2 SSD slot
- 4x 10/100 base T Ethernet RJ45
- 1x RS-232, 1x RS-485
- 2x USB 3.0, 2x USB 2.0
- 1x Display port
- 1x Mic-in, 1x Line-out
- 24VDC Wide Range Power Input
- 1 x External Micro SD/ SDHS Card Slot (up to 32 GB)

Secure & Trusted Boot Capability

1.4.3 Display Architectural Options

The RXi – Panel PC can operate as a stand-alone unit or connect directly with an RXi – Industrial Monitor for dual-screen operation. For more information, please see the RXi – Industrial Monitors Data Sheet.

Figure 12: Configuration

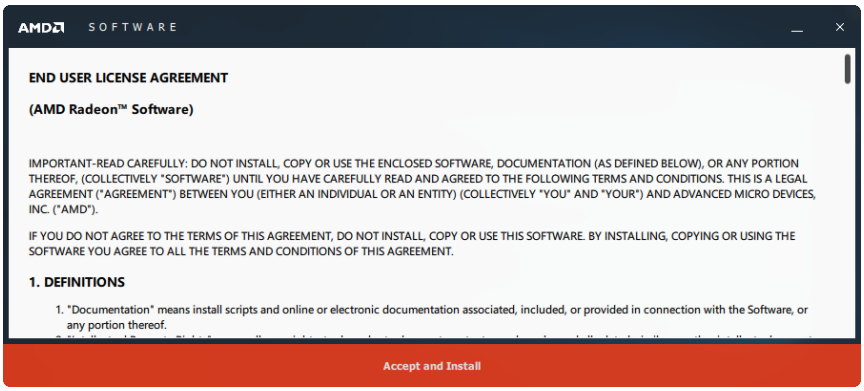


1.4.4 Drivers Installation

Note: Instructions are the same for Panel PC with or without AMD Ryzen.

1. Read and accept the End User License Agreement (Figure 13).

Figure 13: End User License Agreement



Express Installation

There are two installation processes. Express Installation is the easiest:

1. Select **Express Install** (Figure 14).
2. Once the installation is complete, select **Restart Computer** (Figure 15).

Note: It is strongly encouraged to restart the Panel PC before continuing.

Figure 14: Express Install

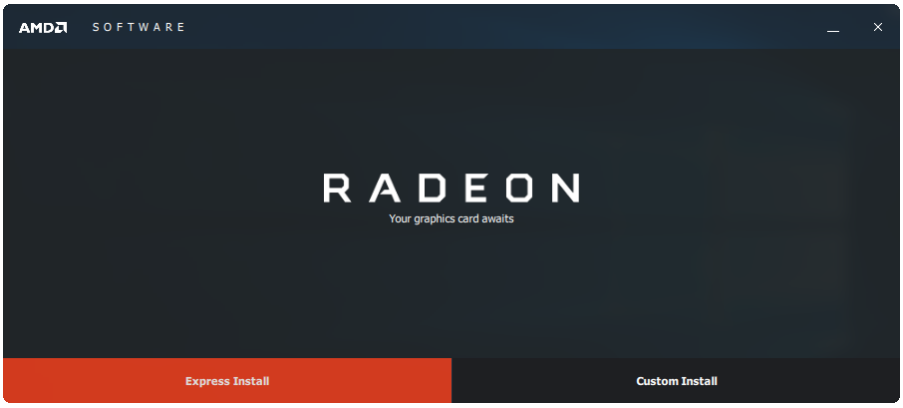
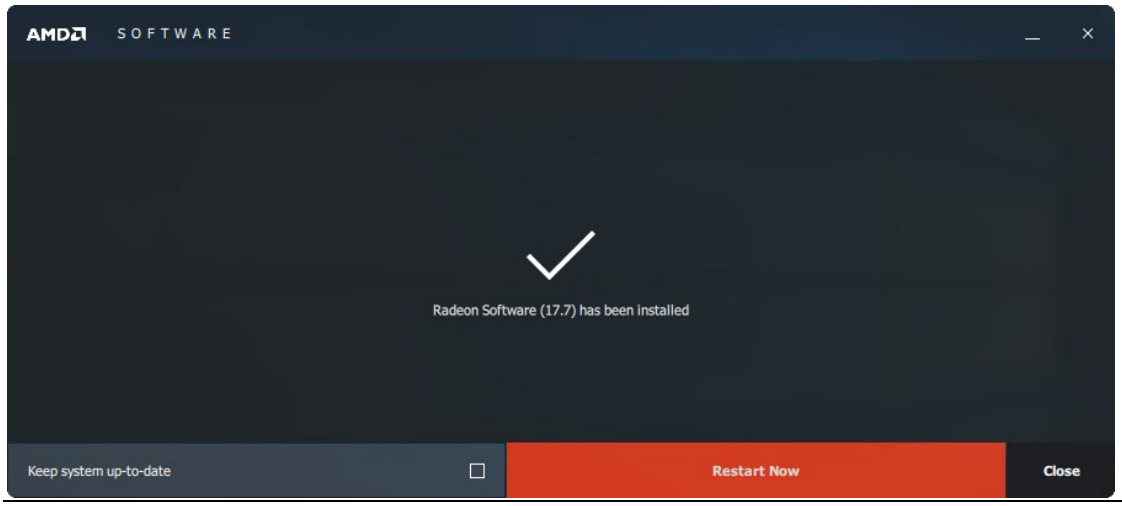


Figure 15: Restart Now



Custom Installation

Customer installation is available to allow users to specify which drivers they want to install. To proceed:

1. Select **Custom Install** (Figure 16).
2. Select your driver requirements and click **Install** (Figure 17).
3. Restart the computer when the installation is complete (Figure 18).

Figure 16: Custom Install

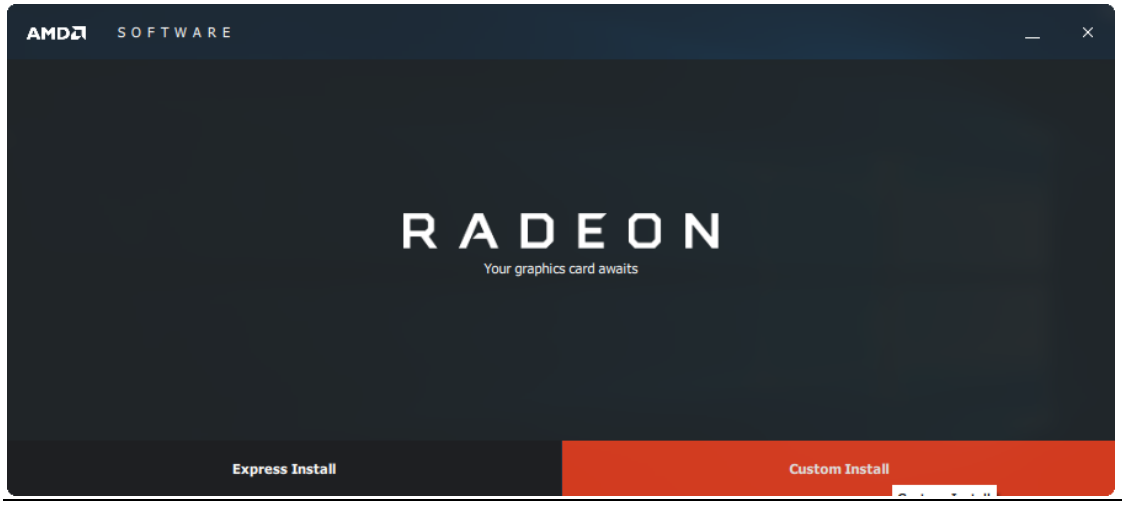


Figure 17: Drivers Selection

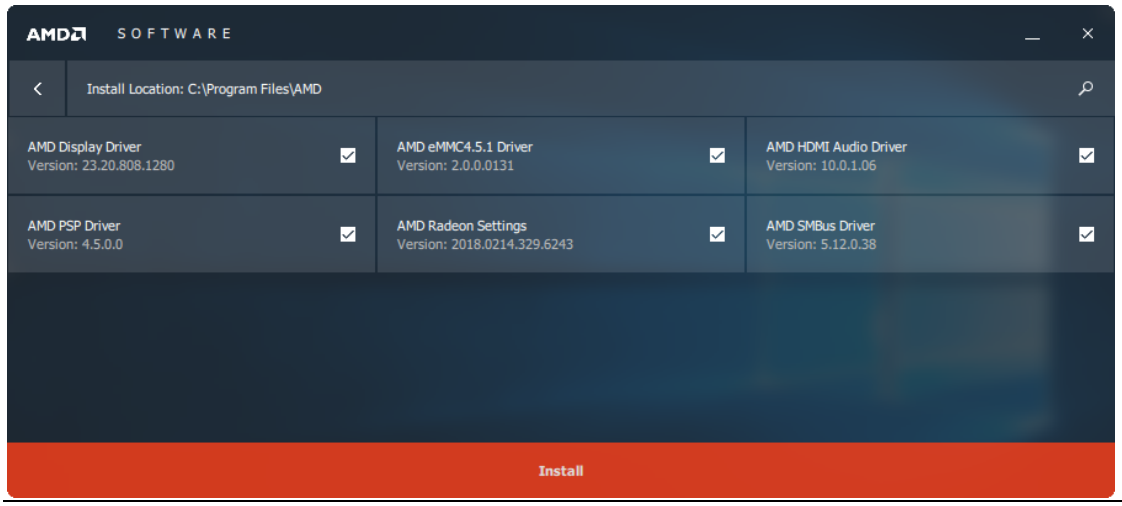
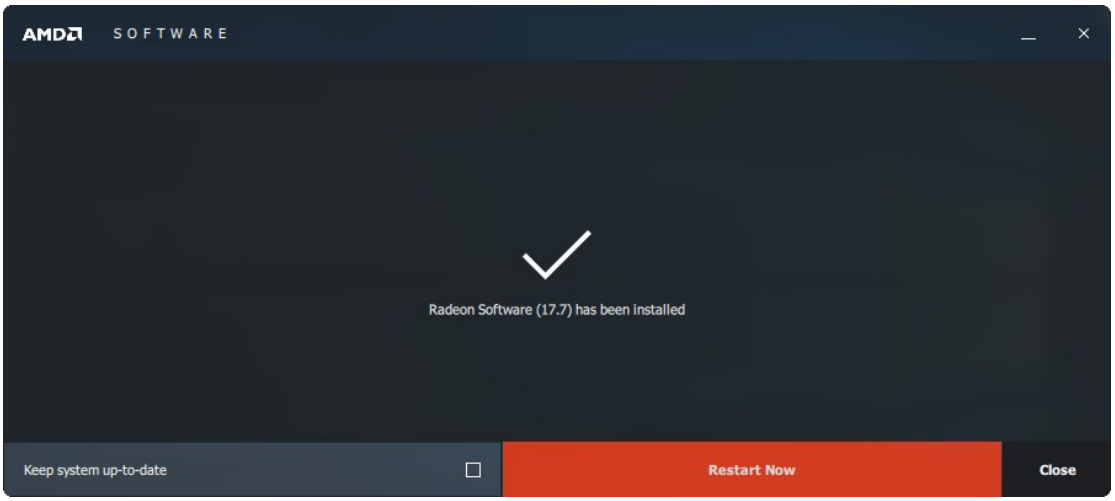


Figure 18: Restart Now



Note: It is strongly encouraged to restart the Panel PC before continuing.

1.4.5 Configuration and Setup with RXi – Panel PC

Set Brightness in Panel PC

Changing the screen brightness of a Panel PC must be done in the BIOS.

1. During startup, repeatedly press the **Delete** key.
2. Press the right arrow key two times to navigate to the **Chipset** heading under the BIOS menu.
3. Under the **Chipset** menu in BIOS, press the down arrow key twice to highlight the **Display Control** submenu and press Enter to select.
4. Under the **Display Control** submenu, press the down arrow key twice to highlight the "**Auto Backlight Dimming** setting and press enter to select
5. Once you have selected the **Auto Backlight Dimming** option, change the setting to **Disabled**
6. Once the setting has been adjusted, press the ESC key to exit the submenu. You may then save and exit the BIOS to start the operating system with your desired settings in effect.

1.4.6 Accessing the BIOS (Panel PC)

The BIOS is a program that handles basic levels of communication between the CPU and peripherals. It contains codes for various advanced features found in this system board. The BIOS allows you to configure the system and save the configuration in a battery-backed CMOS so that the data is retained even when the power is off. In general, the information stored in the CMOS RAM of the EEPROM will stay unchanged unless a configuration change has been made, such as a hard drive replaced or a device has been added.

The CMOS battery can fail over time, causing CMOS data loss. If this happens, you need to install a new CMOS battery and reconfigure the BIOS settings.

Keys	Function
Right and Left arrows	Moves the highlight left or right to select a menu.
Up and Down arrows	Moves the highlight up or down between submenu or fields.
Enter	Press **Enter** to enter the highlighted submenu or item.
+ (plus key)	Scrolls forward through the values or options of the highlighted field.
- (minus key)	Scrolls backward through the values or options of the highlighted field.
<F1>	Displays general help
<F2>	Pervious values
<F3>	Load Optimized Defaults
<F4>	Saves and resets the setup program.
<Esc>	Exit to the BIOS Setup Utility.

Submenu

When "□" appears on the left of a particular field, it indicates that a submenu that contains additional options are available for that field. To display the submenu, move the highlight to that field and press **Enter**.

AMI BIOS Setup Utility (Panel PC)

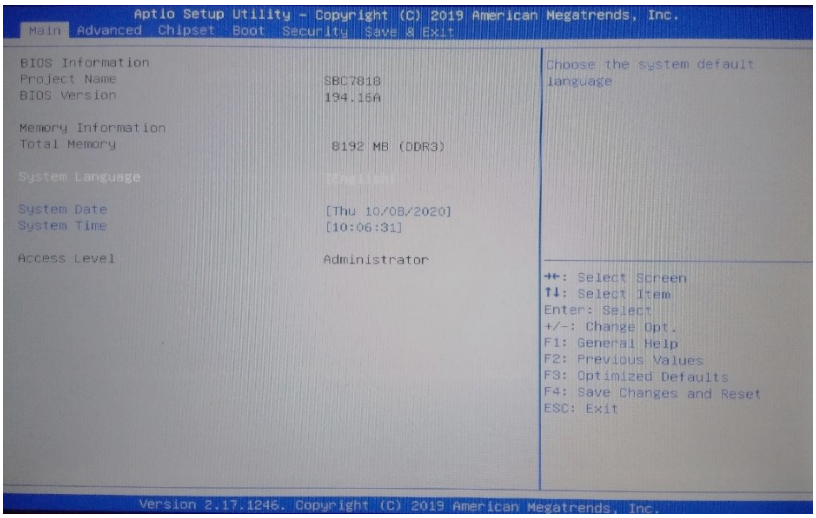
Accessing the BIOS

To access the BIOS, you must attach a USB keyboard to the device and repeatedly press the **Delete** key during the startup sequence until it brings you to the BIOS Main Menu.

Main Menu

The Main menu is the first screen that you will see when you enter the BIOS Setup Utility.

Figure 19: Main Menu

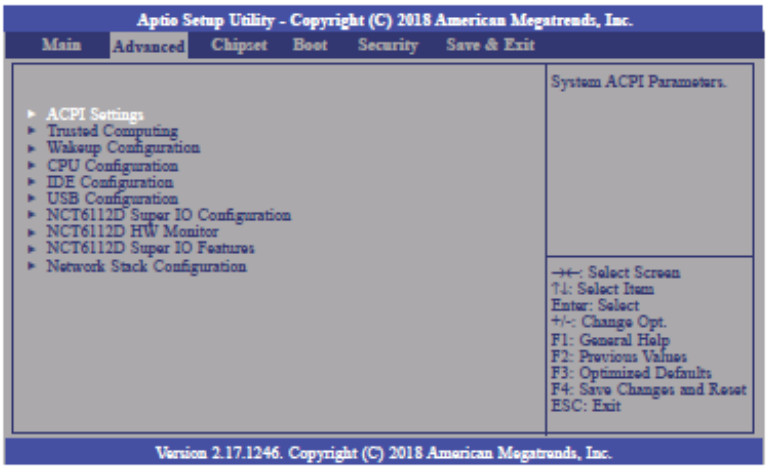


BIOS Parameter	Description
System Language	Choose the system default language.
System Date	The date format is <day>, <month>, <date>, <year>. Day displays a day, from Sunday to Saturday. Month displays the month, from 01 to 12. Date displays the date, from 01 to 31. Year displays the year, from 1980 to 2099.
Time	The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.

Advanced

The Advanced menu allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others if enabled, will improve the performance of your system or allow the user to set some features according to their preference.

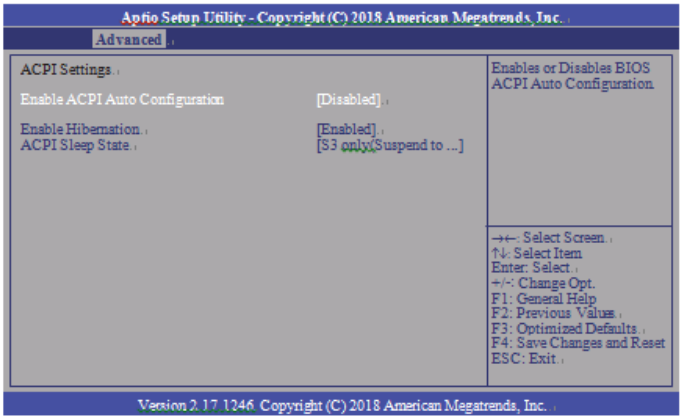
Figure 20: Advanced Menu



ACPI Settings

This section configures system ACPI parameters.

Figure 21: ACPI Settings

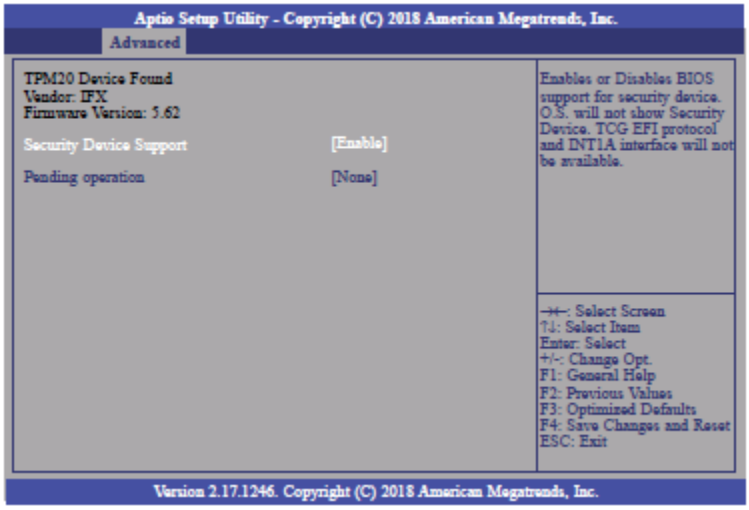


BIOS Parameter	Description
ACPI Auto Configuration	This field is used to enable or disable BIOS ACPI auto configuration.
Enable Hibernation	This field is used to enable or disable the system's ability to hibernate (OS/S4 Sleep State). This option may not be functional with all operating systems.

Trusted Computing

This section is used to configure the Trusted Computing settings.

Figure 22: Trusted Computing

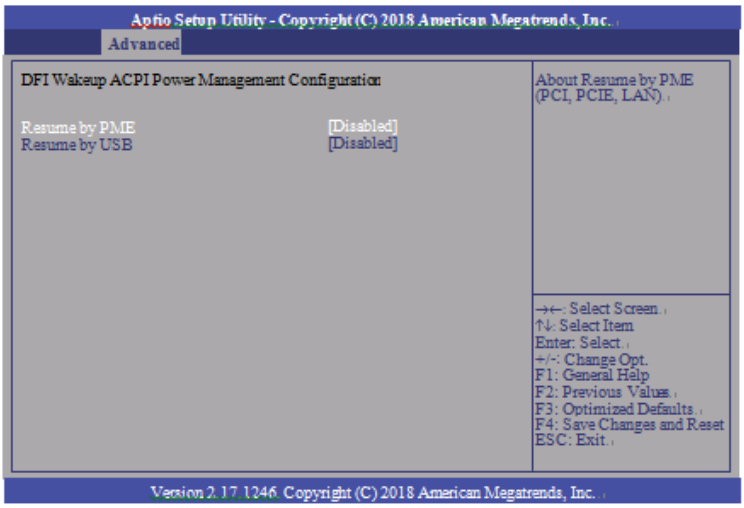


BIOS Parameter	Description
Security Device Support	Enable or disable BIOS support for a security device. The Operating System will not show a security device. TCG EFI protocol and INT1A interface will not be available.
Pending Operation	Schedule an operation for the security device. Your computer will reboot during restart to change the state of the security device.

Wakeup Configuration

This section is used to configure the Wakeup ACPI Power Management.

Figure 23: Wakeup Configuration

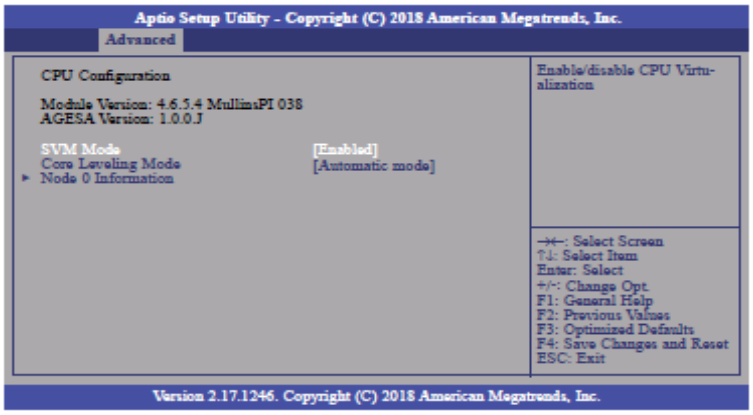


BIOS Parameter	Description
Resume by PME	Enable or disable to resume by PME (PCI, PCIe, LAN, etc.)
Resume by USB	Enable or disable to resume by USB.

CPU Configuration

This section is used to configure the CPU. It will also display the detected CPU information.

Figure 24: CPU Configuration

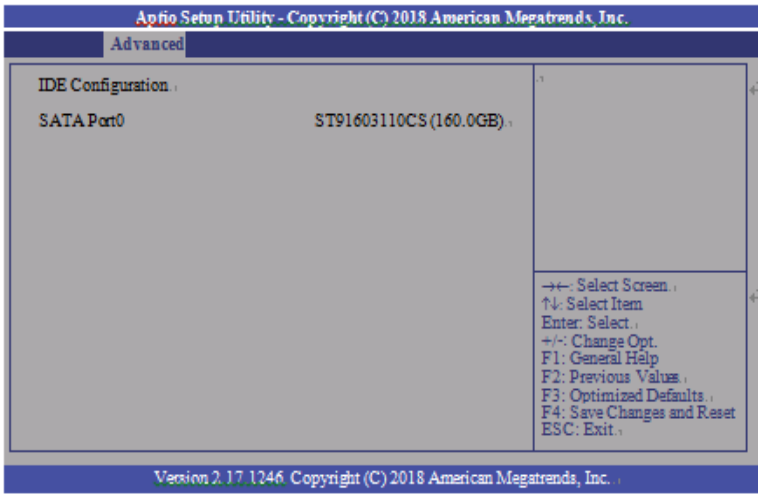


BIOS Parameter	Description
SVM Mode	Enable or disable CPU Virtualization.
Core Leveling Mode	Select the number of cores in the system: Automatic mode, Three cores per processor, Two cores per processor, or One core per processor.
Node 0 Information	View Memory Information related to Node 0.

IDE Configuration

This section is used to configure the IDE Devices. It will also display the detected information.

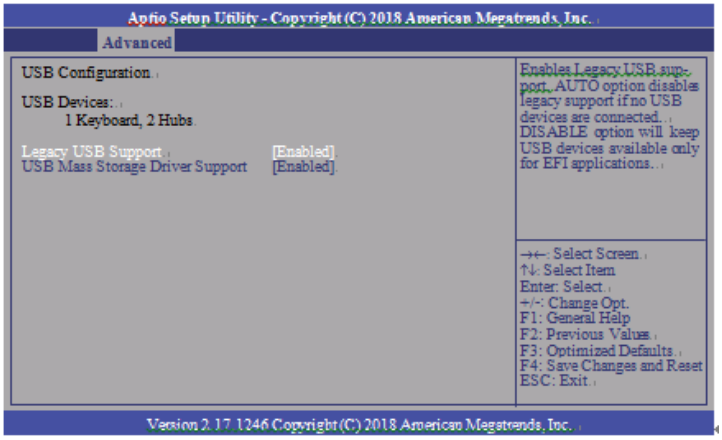
Figure 25: IDE Configuration



USB Configuration

This section is used to configure the parameters of the USB Device.

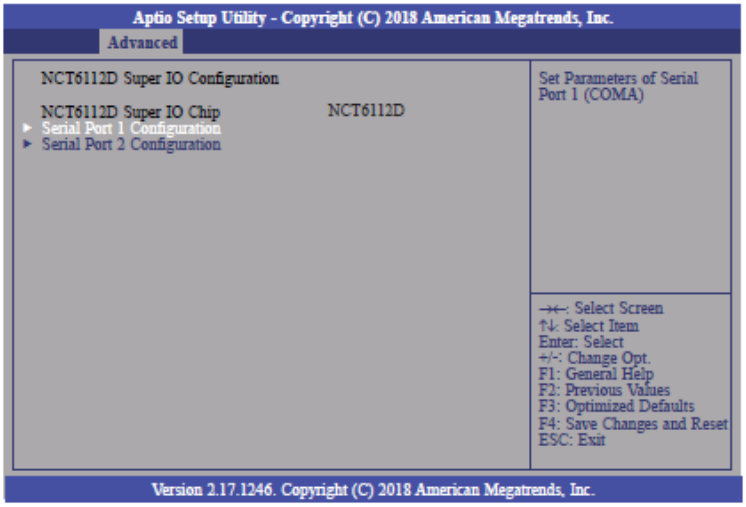
Figure 26: USB Configuration



BIOS Parameter	Description
Legacy USB Support	**Enabled** – Enabled Legacy USB **Disabled** – Keep USB devices available only for EFI applications **Auto** – Disable support for legacy when no USB devices are connected
USB Mass Storage Driver Support	Enable or disable the support of the USB Mass Storage Driver.

NCT61120 Super IO Configuration

This section is used to configure the parameters of the system super IO chip.

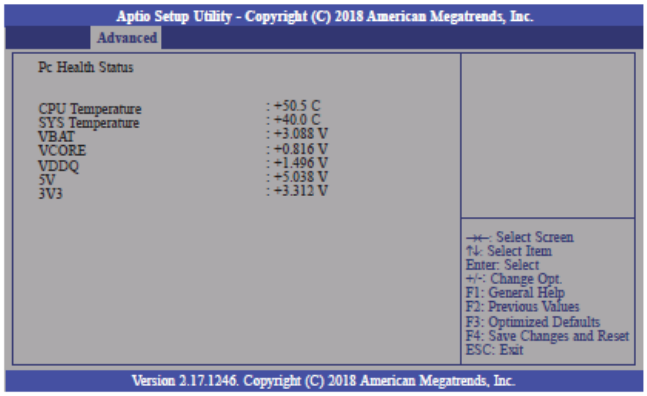


BIOS Parameter	Description
Serial Port	Enable or disable the serial COM port.
RS485 Auto Flow Support	Enable or disable the RS485 auto flow support.

NCT 6112D HW Monitor

This section is used to monitor hardware status.

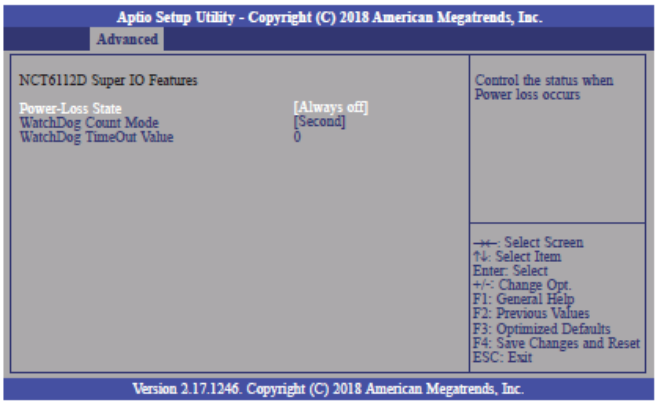
Figure 27: NCT6112D Hardware Monitor



NCT 6112D Super IO Features

This section is used to configure some control functions of the system super IO chip.

Figure 28: NCT 6112D Super IO Features

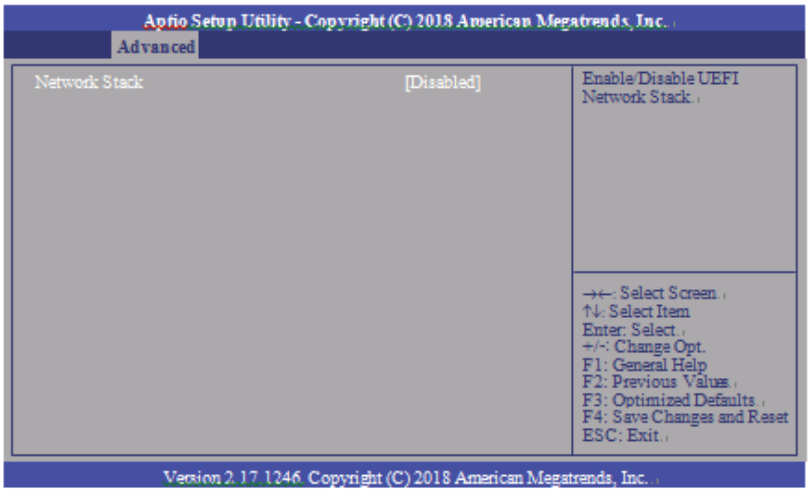


BIOS Parameter	Description
WatchDog Count Mode	A WatchDog timer (WDT) is a hardware timer that automatically generates a system reset if the main program neglects to periodically service it. It is often used to automatically reset an embedded device that hangs because of a software or hardware fault. Use this menu to select the WatchDog Timer Unit: second or minute.
WatchDog TimeoutValue	Enter the value to set the Super IO WatchDog timer. 0 means disabled.

Network Stack Configuration

This section is used to enable or disable network stack settings. The Network Stack Controls LAN1 & LAN2 (Also LAN 3 & LAN4 on large computing module).

Figure 29: Network Stack Configuration

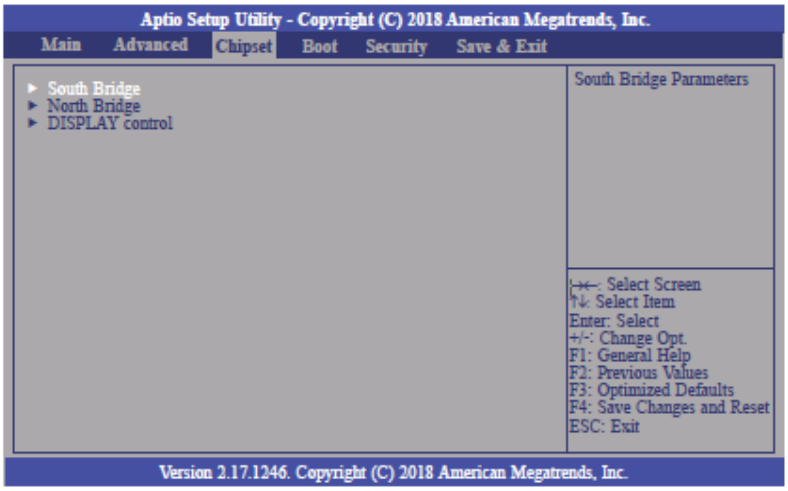


BIOS Parameter	Description
Network Stack	Enable or disable the UEFI network stack. When Network Stack is set to enabled, the screen will be displayed as below.
Ipv4 PXE Support	When enabled, Ipv4 PXE boot supports. When disabled, the Ipv4 PXE boot option will not be available.
Ipv6 PXE Support	When enabled, Ipv6 PXE boot supports. When disabled, the Ipv6 PXE boot option will not be available.
PXE Boot Wait Time	Enter the wait time value to abort the PXE boot.
Media Detect Time	Enter the wait time in seconds to detect media.

Chipset

This section configures relevant chipset functions.

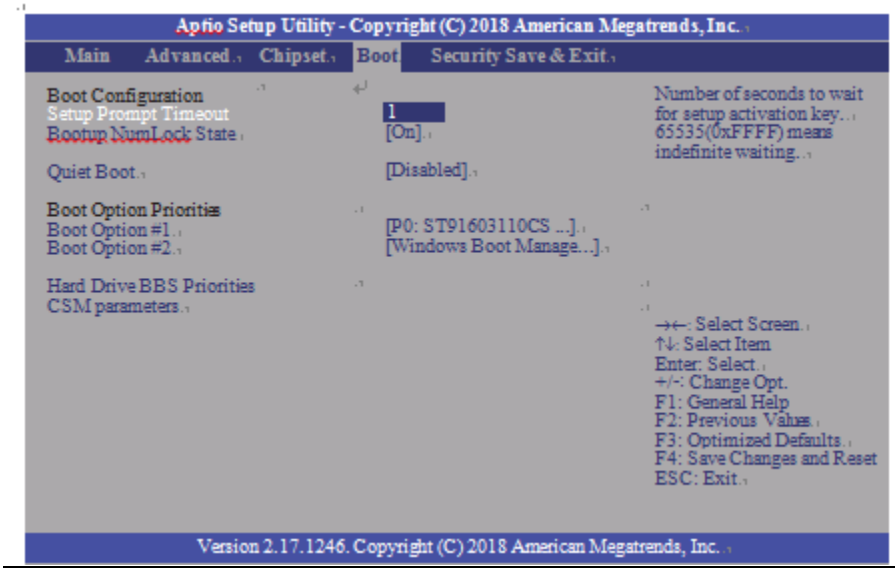
Figure 30: Chipset Screen



BIOS Parameter	Description
OnChip SATA Channel	Enable or disable Serial ATA
OnChip SATA Type	Select OnChip SATA Type: Native IDE, AHCI, or Legacy IDE.
SD Mode	Enable or disable Secure Digital (SD) Mode configuration.
SD Host Controller Version	Select Secure Digital (SD) host controller version: SD2.0 or SD3.0.
HD Audio	HD Audio will be enabled if present, disabled otherwise.
Restore on AC Power Loss	**Power On –** When Power returns after an AC power failure, the system will automatically power-on.
	Power Off - When power returns after an AC power failure, the system will remain off. You must press the Power button to power on the system.
	Last State - When power returns after an AC power failure, the system will return to the state where you left off before power failure occurs. If the system's power is off when AC power failure occurs, it will remain off when power returns. If the system's power is on when AC power failure occurs, the system will power-on when power returns.
GPP2 Hotplug Mode Control	Enable or Disable GPP2 Hotplug Mode Control
GPP3 Hotplug Mode Control	Enable or disable GPP3 hotplug mode control.
DP0 Output Mode	Select NB PCIe to connect type (display device): EDP or Disabled.
Dp1 Output Mode	Select NB PCIe connect type (display device): DP or Disabled
Auto Backlight Dimming	Enable or disable dimming backlight by TB573D.
Minimum Dimming Level	Set the minimum dimming level control. The range is 1~20%.

Boot Configuration

Figure 31: Boot Configuration Menu

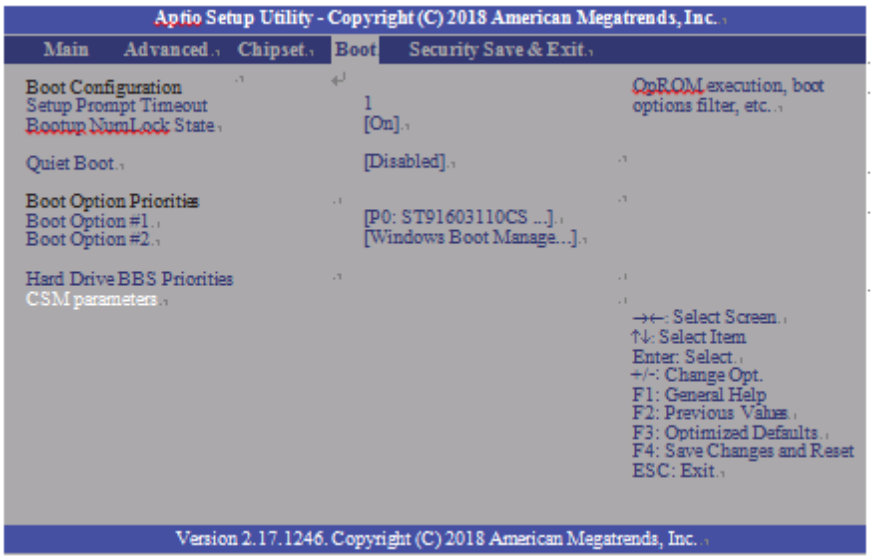


BIOS Parameter	Description
Setup Prompt Timeout	Select the number of seconds to wait for the setup activation key. 65535(0xFFFF) denotes indefinite waiting.
Bootup NumLock State	This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on wherein the function of the numeric keypad is the number keys. When set to Off, the function of the numeric keypad is the arrow keys.
Quiet Boot	Enable or disable the Quiet Boot option.
Boot Option #1/#2	Select the system boot order.

Hard Drive BBS Priorities

Set the order of the legacy devices in this group.

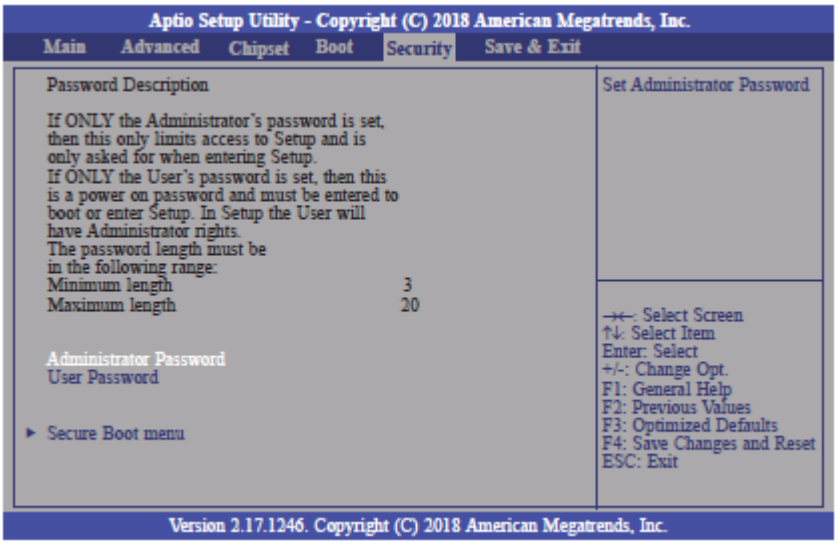
Figure 32: Hard Drive BIOS Boot Specification



BIOS Parameter	Description
Launch CSM	This field is used to enable or disable to launch of CSM.
Boot Option Filter	This option controls what device(s) the system will boot to.
Launch PXE OpROM Policy	This field controls the execution of UEFI and Legacy PXE OpROM.
Launch Storage OpROM Policy	This field controls the execution of UEFI and Legacy Storage OpROM.
Launch Video OpROM Policy	This field controls the execution of UEFI and Legacy Video OpROM.

Security

Figure 33: Security

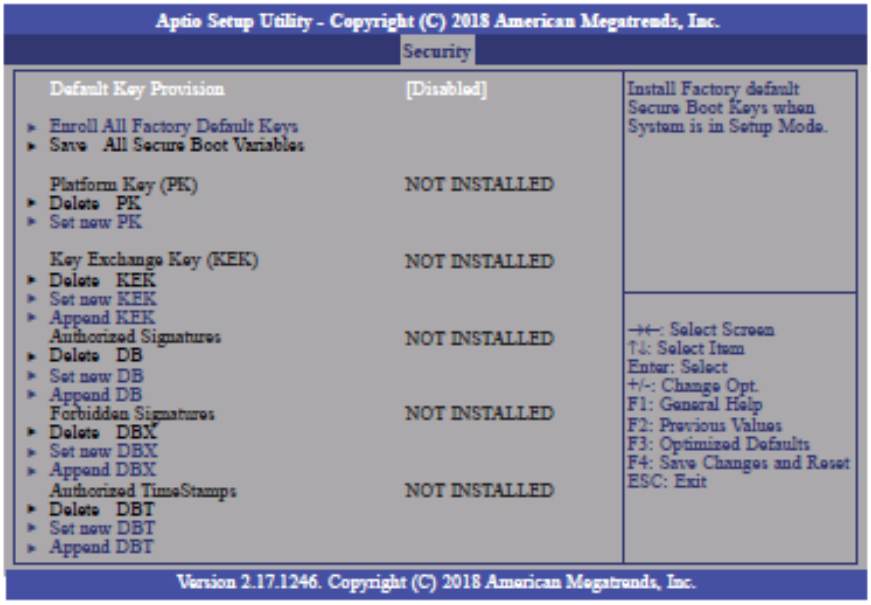


BIOS Parameter	Description
Administrator Password	Set the administrator password.
User Password	Set the user password.
Secure Boot Menu	This section is used to configure customizable secure boot settings.
Secure Boot	Enable or disable secure boot. Secure Boot can be enabled if 1. System running in user mode with enrolled platform key (PK); 2. CSM function is disabled.
Secure Boot Mode	Select secure boot mode: standard or custom. Custom mode enables users to change image execution policy and manage secure boot keys.

Key Management

This section enables experienced users to modify secure boot variables.

Figure 34: Key Management

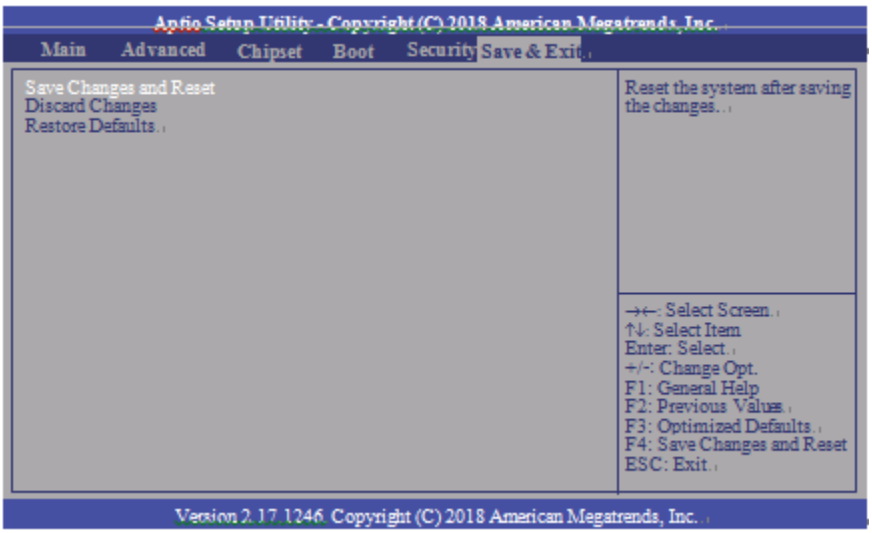


BIOS Parameter	Description
Default Key Provision	Enable or disable to install factory default secure boot keys when the system is in setup mode. When enabled, a pop-up window will display. Select **Yes** and press **Enter** to install factory default keys.
Enroll All Factory Default Keys	Select **Yes** and press **Enter** to install ALL factory default keys, including PK, KEK, DB, DBX, and DBT. Change takes effect after reboot.
Set New PK	Select **Yes** and press **Enter** to set a new PK or select **No** and press **Enter** to load it from a file on external media.
Set new KEK	Select **Yes** and press **Enter** to set a new KEK or select **No** and press **Enter** to load it from a file on external media.
Append KEK	Select **Yes** and press **Enter** to set a new KEK or select **No** and press **Enter** to load it from a file on external media.
Set new DB	Select **Yes** and press **Enter** to set a new DB or select **No** and press **Enter** to load it from a file on external media.
Append DB	Select **Yes** and press **Enter** to set a new DB or select **No** and press **Enter** to load it from a file on external media.
Set new DBX	Select **Yes** and press **Enter** to set a new DBX or select **No** and press **Enter** to load it from a file on external media.
Set new DBT	Select **Yes** and press **Enter** to set a new DBT or select **No** and press **Enter** to load it from a file on external media.
Append DBT	Select **Yes** and press **Enter** to set a new DBT or select **No** and press **Enter** to load it from a file on external media.

Save & Exit

Menu Options

Figure 35: Menu Options



BIOS Parameter	Description
Save Changes and Reset	To save the changes, select this field and then press **Enter**. A dialog box will appear. Select Yes to reset the system after saving all changes made.
Discard Changes	To discard the changes, select this field and then press **Enter**. A dialog box will appear. Select Yes to reset the system setup without saving any changes.
Restore Defaults	**Enter**. A dialog box will appear. Select Yes to restore the default values of all the setup options.

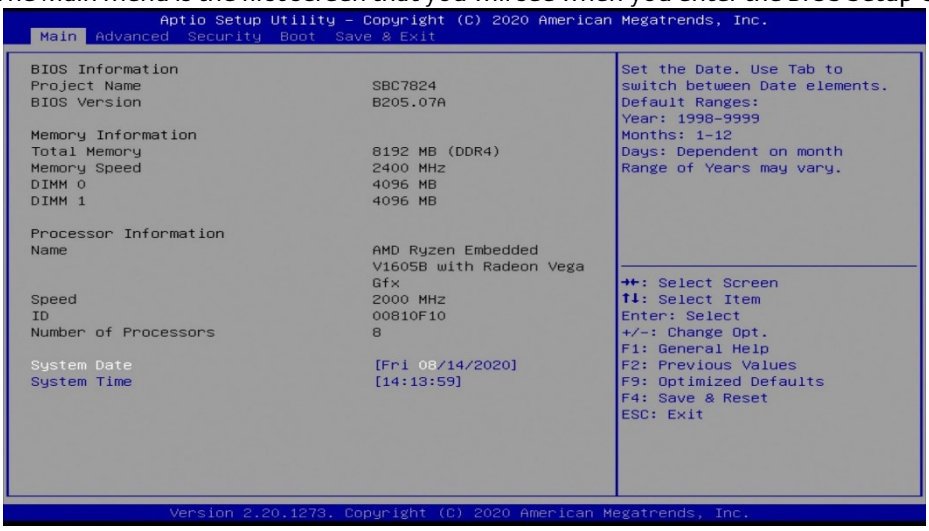
Updating the BIOS

To update the BIOS, you will need the BIOS file and a flash utility. Please contact technical support or your sales representative for the files. The contact information is located at the end of this document.

1.4.7 Accessing the BIOS (Panel PC with AMD Ryzen)

Main

The Main menu is the first screen that you will see when you enter the BIOS Setup Utility.

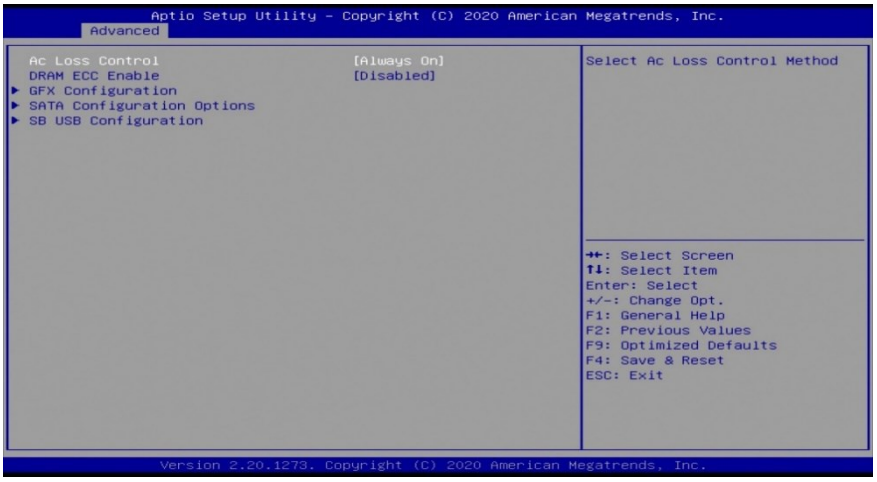


BIOS Parameter	Description
System Language	Choose the system default language.
System Date	The date format is <day>, <month>, <date>, <year>. Day displays a day, from Sunday to Saturday. Month displays the month, from 01 to 12. Date displays the date, from 01 to 31. Year displays the year, from 1980 to 2099.
Time	The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.

AMD Chipset Settings

This section configures AMD CBS parameters.

Figure 36: AMD Chipset Setting

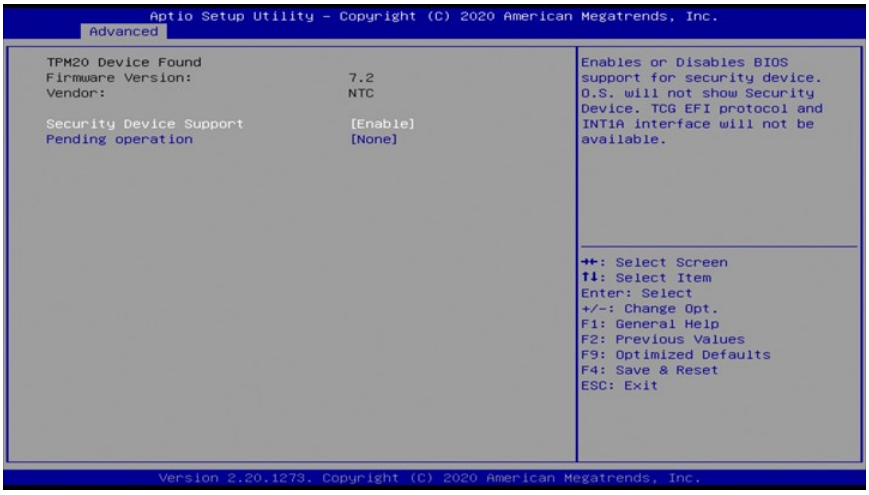


BIOS Parameter	Description
Ac Loss Control	Select Ac Loss Control Method.
DRAM ECC Enable	Use this option to enable/disable DRAM ECC. The auto will set ECC to enable.
GFX Configuration	This field is used to configure UMA Mode and NB Azalia.
SATA Configuration	This section is used to configure the SATA controller and M.2-M.
SB USB Configuration	This section is used to enable/disable USB and Micro SD.

Trusted Computing

This section is used to configure the Trusted Computing settings

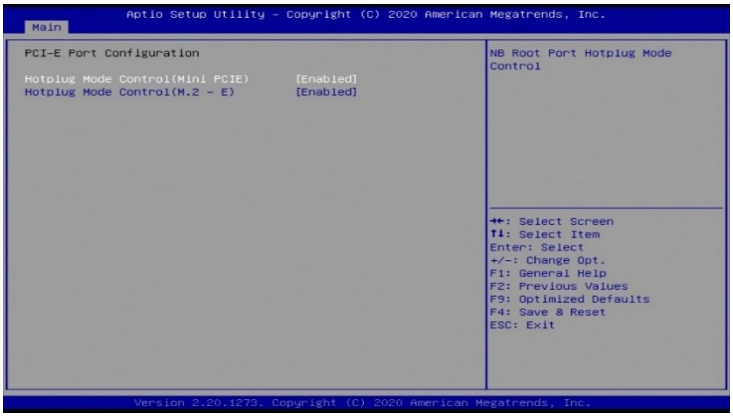
Figure 37: Trusted Computing



BIOS Parameter	Description
Security Device Support	Enable or disable BIOS support for a security device. O.S. will not show a security device. TCG EFI protocol and INT1A interface will not be available.
Pending Operation	Schedule an operation for the security device. Your computer will reboot during restart to change the state of the security device.
PCI-E Port Configuration	This section configures PCI-E Port parameters.

PCI-E Port Configuration

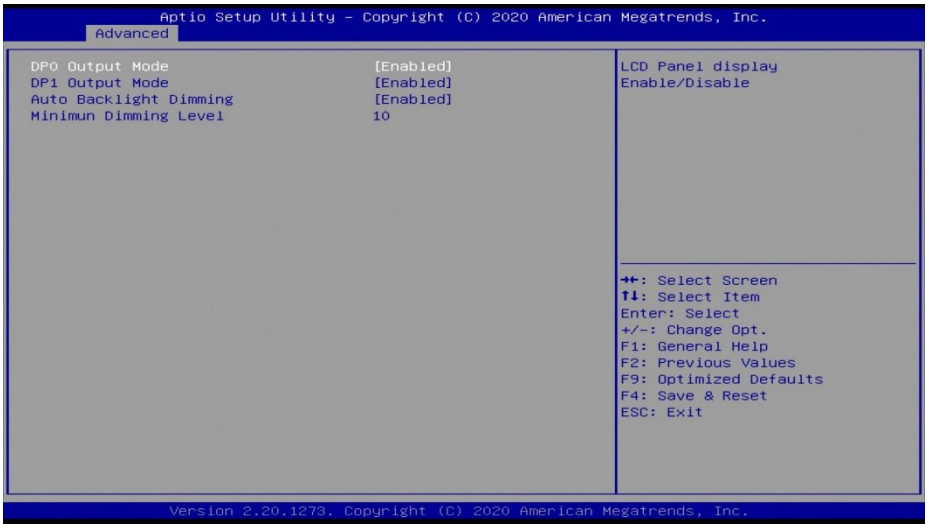
Figure 38: PCI-E Port Configuration



BIOS Parameter	Description
Hotplug Mode Control(Mini PCIE)	To enable/disable Hotplug Mode Control of Mini PCIe.
Hotplug Mode Control (M.2 -E)	To enable/disable Hotplug Mode Control of M.2-E.
Dimming Control	This section is used to configure displays and dimming.

Advanced

Figure 39: Advanced

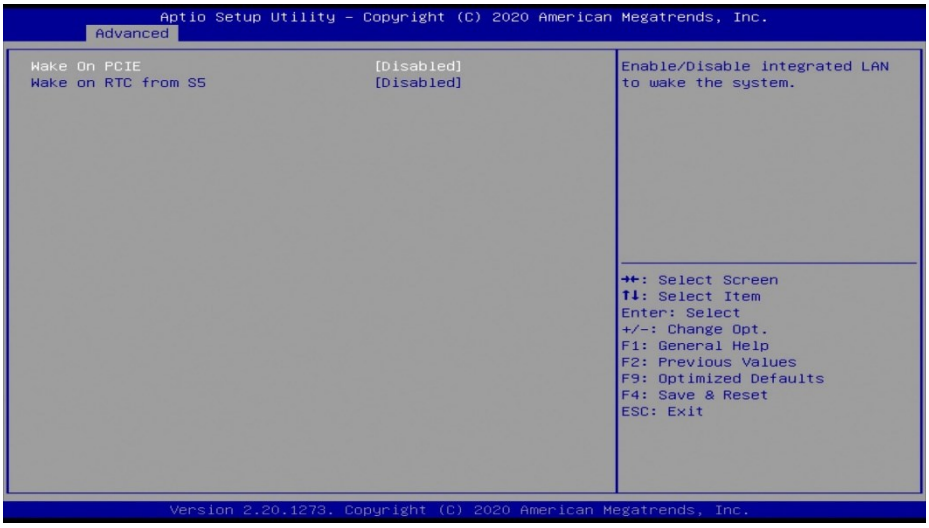


BIOS Parameter	Description
DP0 Output Mode	To enable/disable LCD panel display.
DP1 Output Mode	To enable/disable rear DP display.
Auto Backlight Dimming	To dim backlight by TB573D.
Minimum Dimming Level	Ranges from 1~20%.

ACPI Configuration

This section configures system ACPI parameters.

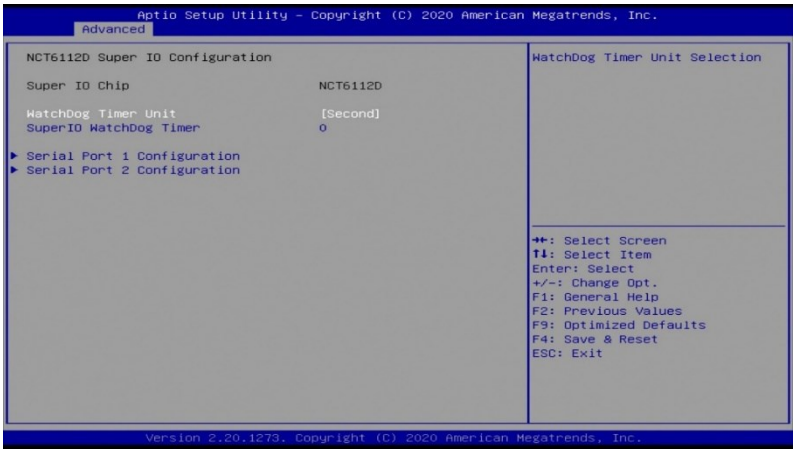
Figure 40: ACPI Configuration



BIOS Parameter	Description
Wake on PCIe	Enable/disable integrated LAN to wake the system
Wake on RTC from S5	Resume by RTC Alarm after S5 shutdown
NCT6112D Super IO Configuration	This section is used to configure the parameters of the system super IO chip.

NCT611D Super IO Configuration

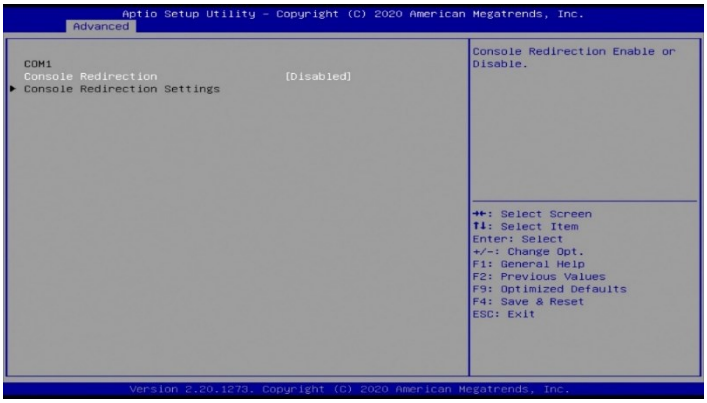
Figure 41: NCT611D



BIOS Parameter	Description
WatchDog Timer Unit	Select WatchDog Timer Unit by second or minute.
SuperIO WatchDog Timer	Disable the timer by value 0 or set another timeout value to enable the timer.
Serial Port 1 Configuration	Enable or disable serial port 1(COMA).
Serial Port 2 Configuration	Enable or disable serial port 2(COMB). Switch Auto Flow and Full-Duplex Mode of RS485.
NCT6112D HW Monitor	Monitor hardware status.

Serial Port Console Redirection

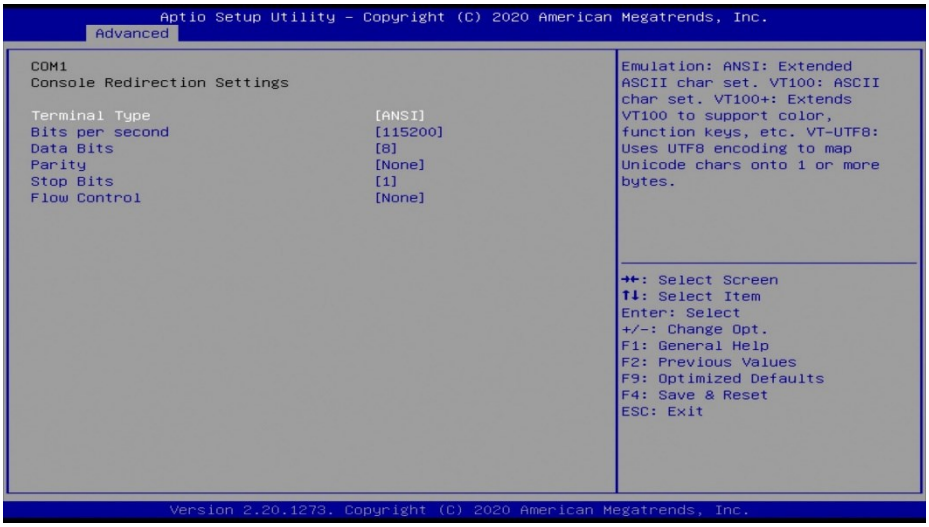
Figure 42: Serial Port Console Redirection



BIOS Parameter	Description
Console Redirection	Enable / disable console direction.
Console Redirection Settings	Specify how the host computer and the remote one (which the user is using) will exchange data. Both computers should have the same or compatible settings. Please refer to the next page.

Serial Port Console Redirection

Figure 43: Serial Port Console Redirection



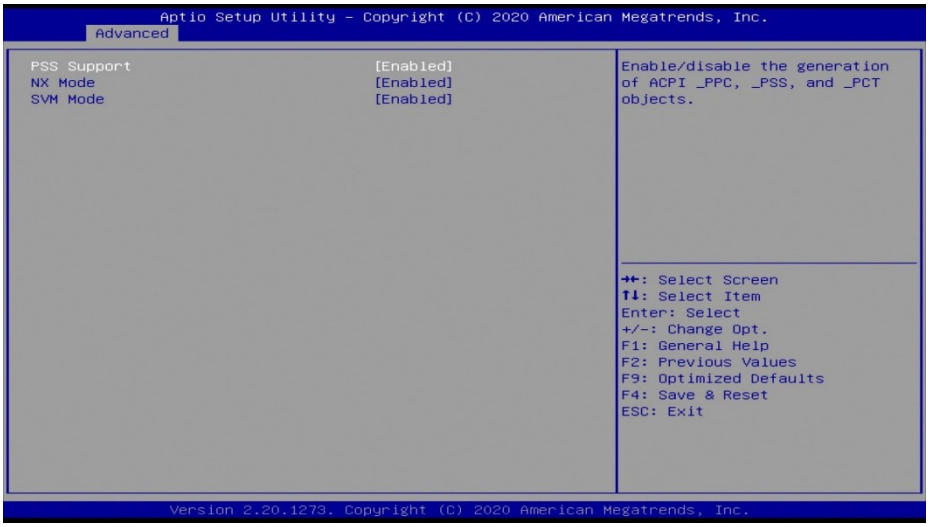
BIOS Parameter	Description
ANSI	**VT100** – ASCII CharSet
	VT100+ Extends VT100 to Support color and function keys
	VT-UTF8 - Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.
Bits per Second	**9600 / 19200 / 38400 / 57600 / 115200 -** Selects serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/ stop signals.
Data Bits	7 / 8

Parity	A parity bit can be sent with the data bits to detect some transmission errors.	**Even** - Parity bit is 0 if the num of 1's in the data bits is even.
		Odd - Parity bit is 0 if the num of 1's in the data bits is odd.
		Mark - Parity bit is always 1
		Space - Parity bit is always 0. Note: Mark and Space parity do not allow for error detection.
Stop Bits	**1 /2** - Stop bits indicate the end of a serial data packet(A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.	
Flow Control	**None / Hardware RTS/CTS** - Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.	

CPU Configuration

This section is used to configure the CPU.

Figure 44: CPU Configuration

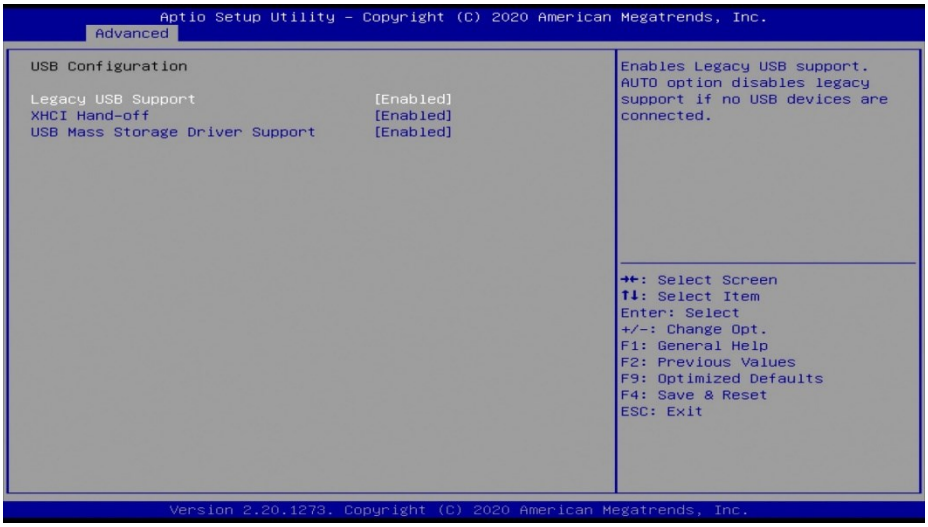


BIOS Parameter	Description
PSS Support	Enable or disable the generation of ACPI _PPC, _PSS, and _PCT objects.
NX Mode	Enable or disable the No-execute page protection function.
SVM Mode	Enable or disable CPU Virtualization

USB Configuration

This section is used to configure the parameters of a USB device.

Figure 45: USB Configuration

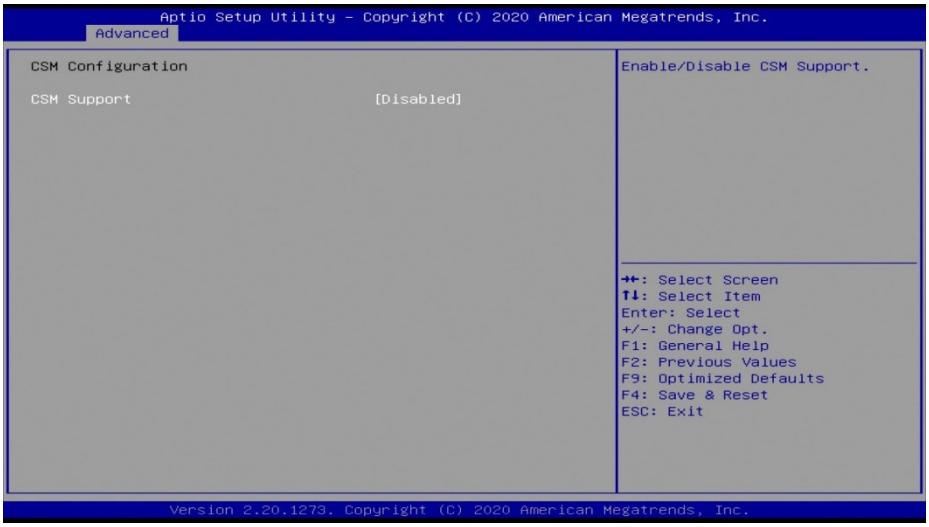


BIOS Parameter	Description
Legacy USB Support	Enable or disable Legacy USB support.
XHCI Hand-off	This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
USB Mass Storage Driver Support	Enable or disable the support of the USB Mass Storage Driver.

CSM Configuration

Enable or disable CSM options, Option ROM execution settings, etc.

Figure 46: CSM Configuration

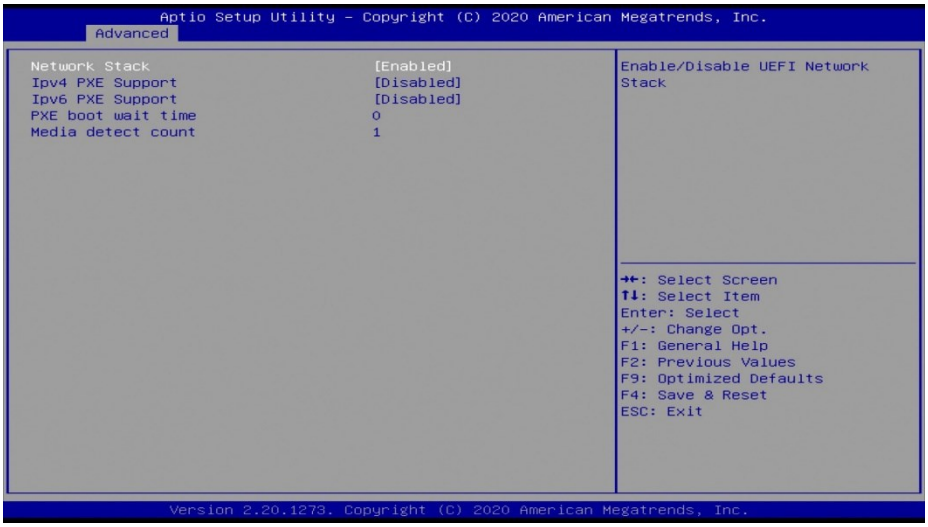


BIOS Parameter	Description
CSM Support	Enable or disable CSM support

Network Stack Configuration

This section is used to enable or disable network stack settings.

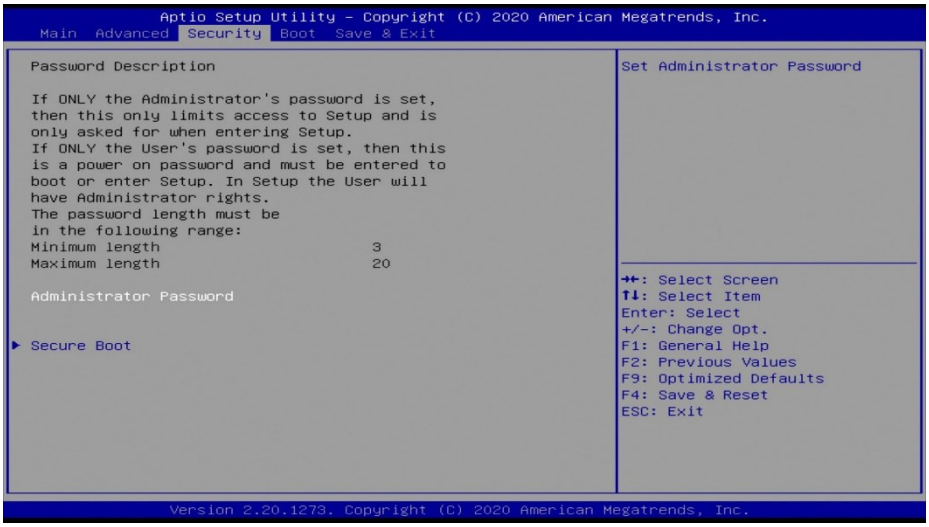
Figure 47: Network Stack Configuration



BIOS Parameter	Description
Network Stack	Enable or disable the UEFI network stack. When Network Stack is set to enabled, the below settings will be shown.
Ipv4 PXE Support	When enabled, Ipv4 PXE boot supports. When disabled, Ipv4 PXE boot support will not be available.
Ipv6 PXE Support	When enabled, Ipv6 PXE boot supports. When disabled, Ipv6 PXE boot support will not be available.
PXE Boot Wait Time	Enter the wait time value for pressing ESC to abort the PXE boot
Media Detect Count	The number of times the presence of media will be checked. Use either +/- or numeric keys to set the value.

Security

Figure 48: Security

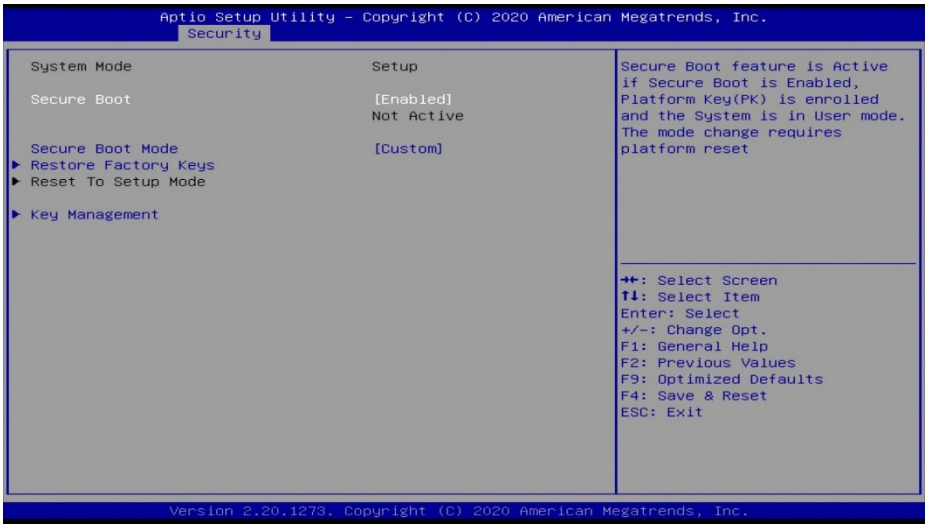


BIOS Parameter	Description
Administrator Password	Set the administrator password
Secure Boot	Secure boot configuration

Secure Boot menu

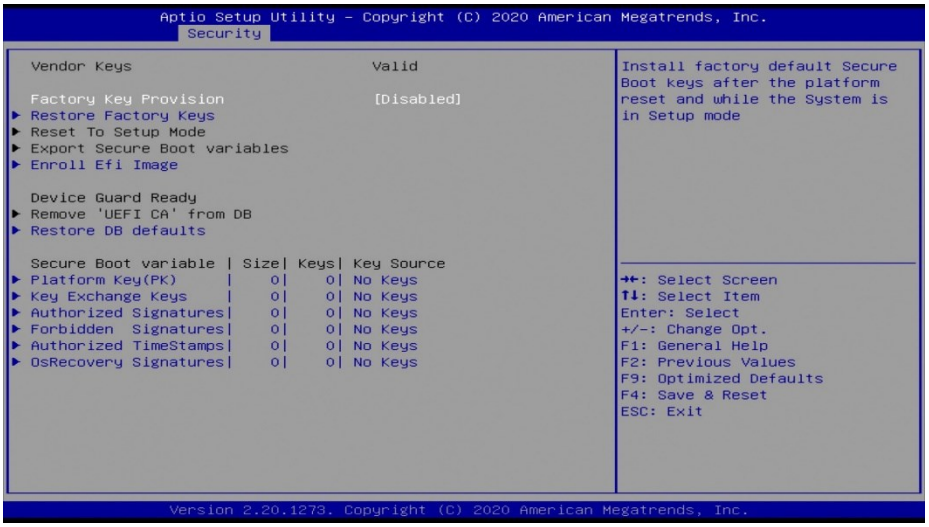
This section is used to configure customizable secure boot settings.

Figure 49: Secure Boot Menu



BIOS Parameter	Description
Secure Boot	Enable or disable secure boot. Secure Boot features are active if Secure Boot is enabled, Platform Key(PK) is enrolled and the System is in User mode. The mode change requires a platform reset.
Secure Boot Mode	Select secure boot mode: Standard or Custom. In the Custom mode, secure boot policy variables can be configured by a physically present user without full authentication.
Restore Factory Keys	Force System to User mode. Install factory default Secure Boot key databases.
Reset to Setup Mode	Delete all Secure Boot key databases from NVRAM
Key Management	Enable expert users to modify Secure Boot Policy variables without full authentication. See the next page for details.

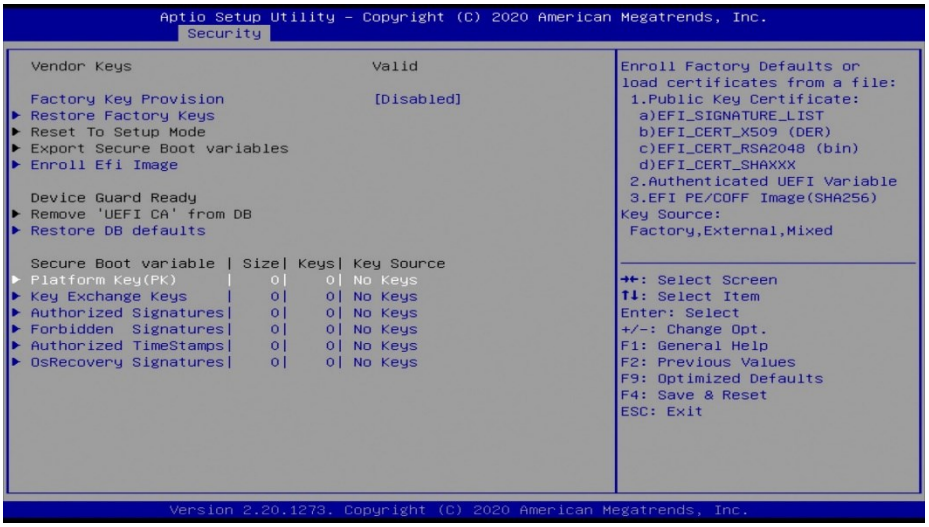
Secure Boot menu



BIOS Parameter	Description
Factory Key Provision	Install factory default Secure Boot Keys after the platform reset and while the System is in Setup mode.
Restore Factory Keys	Force System to User mode. Install factory default Secure Boot key databases.
Reset to Setup Mode	Delete all Secure Boot key databases from NVRAM.
Export Secure Boot Variables	Export current secure boot variables.
Enroll Efi Image	Allow the image to run in Secure Boot mode. Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database. (dB)
Device Guard Ready- Remove ‘UEFI CA’ from DB	Device Guard ready system must not list ‘Microsoft UEFI CA’ Certificate in Authorized Signature databases (dB)
Restore DB defaults	Restore DB variable to factory defaults.

Secure Boot Variables

Figure 50: Secure Boot Variables



Enroll Factory Defaults or load certificates from a file:

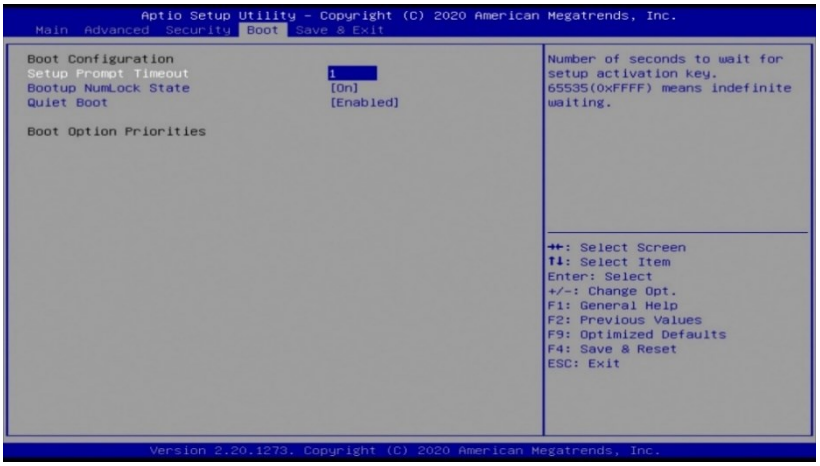
1. Public Key Certificate:
   a) EFI_SIGNATURE_LIST
   b) EFI_CERT_X509 (DER)
   c) EFI_CERT_RSA2048 (bin)
   d) EFI_CERT_SHAXXX
2. Authenticated UEFI Variable
3. EFI PE/COFF Image(SHA256)

   Key Source:

   Factory, External, Mixed

Boot

Figure 51: Boot

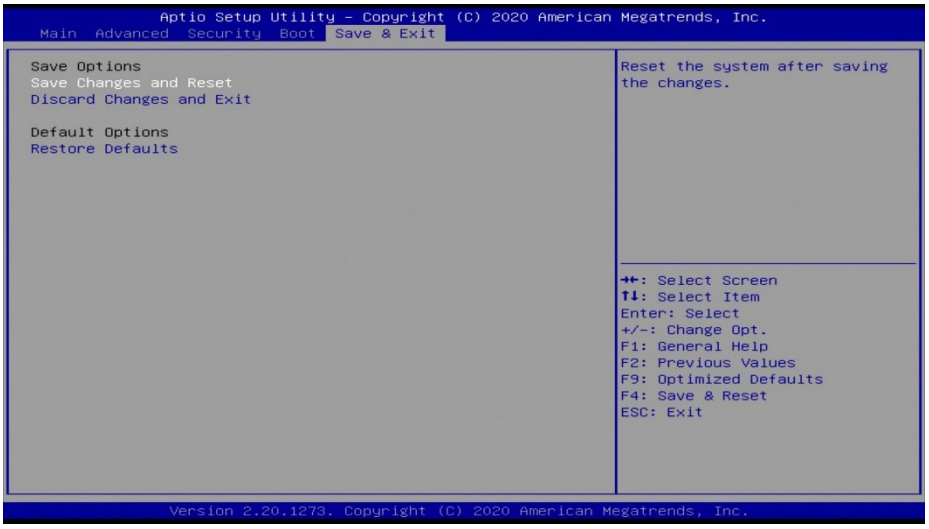


BIOS Parameter	Description
Setup Prompt Timeout	Select the number of seconds to wait for the setup activation key. 65535(0xFFFF) denotes indefinite waiting.
Bootup NumLock State	This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on wherein the function of the numeric keypad is the number keys. When set to Off, the function of the numeric keypad is the arrow keys.
Quiet Boot	Enable or disable the Quiet Boot option.
Boot Option Priorities	Select the system boot order

.

Save & Exit

Figure 52: Save & Exit'



BIOS Parameter	Description
Save Changes and Reset	To save the changes, select this field and then press <Enter>. A dialog box will appear. Select Yes to reset the system after saving all changes made.
Discard Changes and Exit	To discard the changes, select this field and then press <Enter>. A dialog box will appear. Select Yes to reset the system setup without saving any changes
Restore Defaults	To restore and load the optimized default values, select this field and then press <Enter>. A dialog box will appear. Select Yes to restore the default values of all the setup options
Updating the BIOS	To update the BIOS, you will need the new BIOS file and a flash utility. Please contact technical support or your sales representative for the files.

Updating the BIOS

To update the BIOS, you will need the new BIOS file and a flash utility. Please contact technical support or your sales representative for the files.

Note: BIOS SPI ROM

1. Due to safety concerns, the BIOS (SPI ROM) chip cannot be removed from this system board and used on another system board of the same model.
2. The BIOS (SPI ROM) on this system board must be the original equipment from the factory and cannot be used to replace one which has been utilized on other system boards.
3. If you do not follow the methods above, the Management Engine will not be updated and will cease to be effective.Installation of Drivers

1.5 RXi - Web Panel

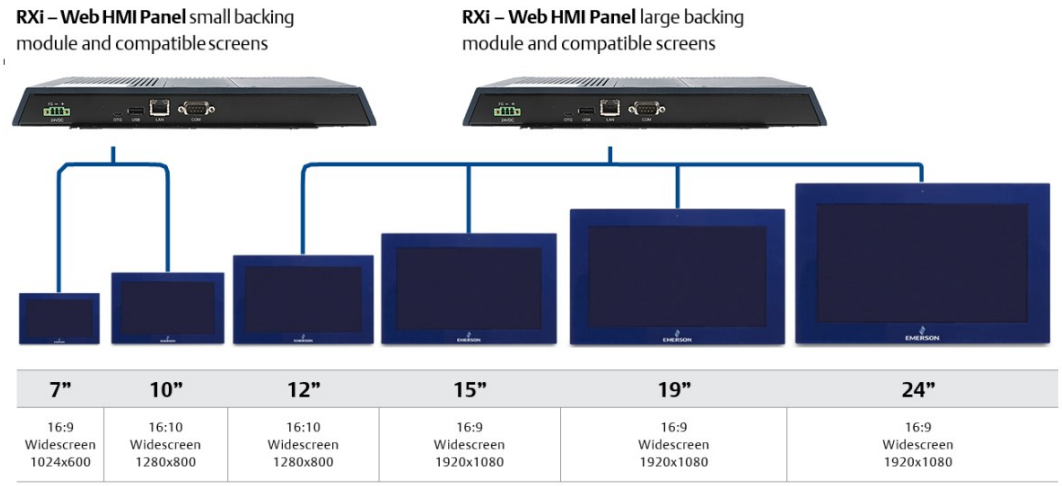
An Emerson display that provides the ability to view web-hosted interfaces and dashboards.

1.5.1 Primary Technical Features

- Linux Yocto OS Version 4.9.88
- HTML5 Capability

1.5.2 Display Architecture Options

Figure 53: Backing Module and Screen Compatibility



1.5.3 Configuration and Setup of RXi - Web Panel

Adjusting Screen Sensitivity

TouchTool Steps

1. Open Chromium browser and point to **chrome://apps** (Figure 54).
2. Select **Touch Tools** for touchpoint and screen sensitivity adjustment.
3. Select how many touchpoints are needed (Figure 55).
4. Set Sensitivity level appropriately based on the touchpoint (Figure 56).

Figure 54: Point Chromium Browser to chrome://app

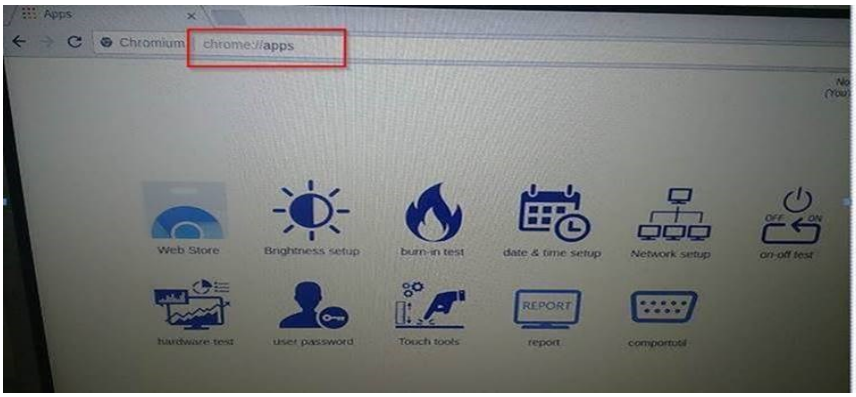


Figure 55: Touch Tool

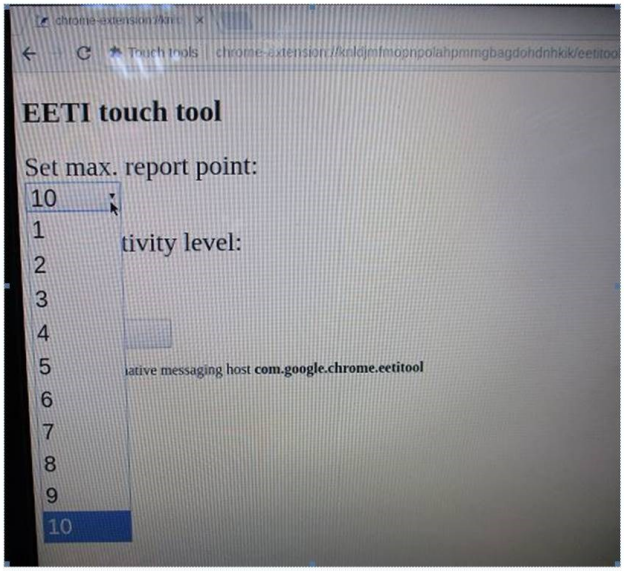
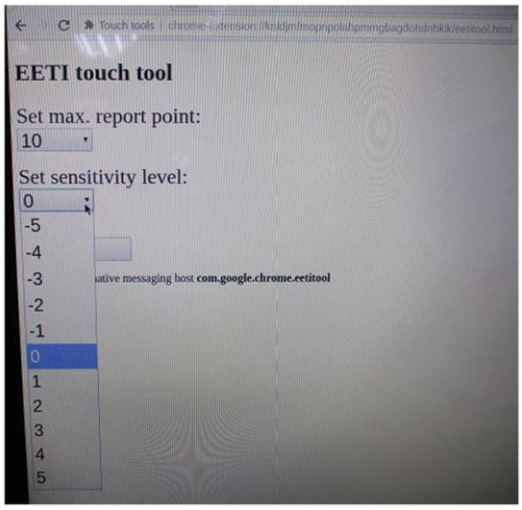


Figure 56: Sensitivity Level



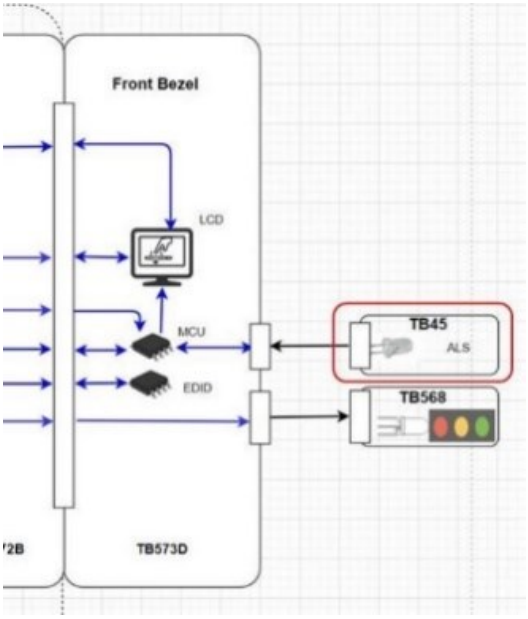
Ambient Light Sensor (ALS)

The RXi Web Panel uses a photodiode to sense the ambient light and in turn, the microcontroller reads the ALS, adjusting the LCD backlight.

The ALS function can be switched on or off by the mainboard

1. Enable **ALS ON** to disable manual dimming control.
2. Alternatively, disable **ALS ON** to enable the manual dimming control.

Figure 57: Enabling/Disabling ALS from the Mainboards

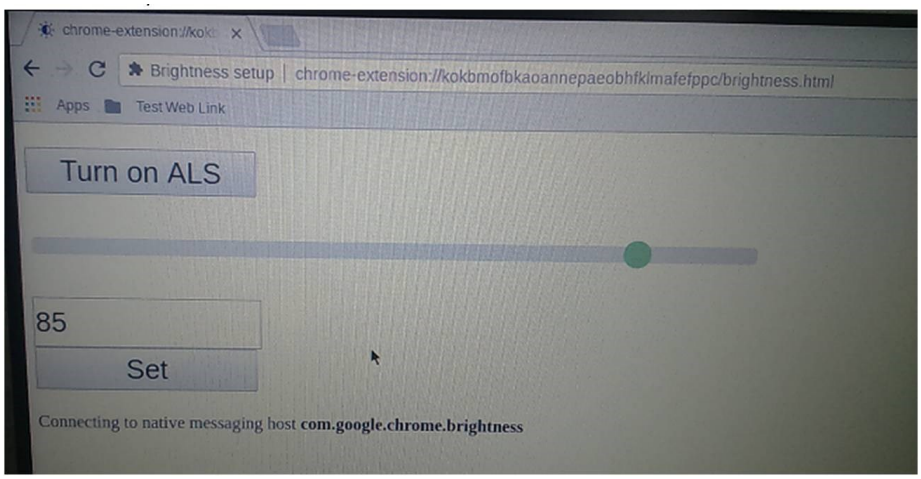


Adjusting Screen Brightness

1. Open Chromium browser and point to **chrome://apps** (Figure 54).
2. Select **Brightness Setup** from the menu to adjust backlight dimming or ALS on/off control.

   Note: The manual adjustment bar will only be shown when ALS is off.
3. The dimming level can be adjusted by inputting a number in the text field and clicking the **Set** button or clicking and dragging the adjustment bar (Figure 58).

Figure 58: Turn on ALS



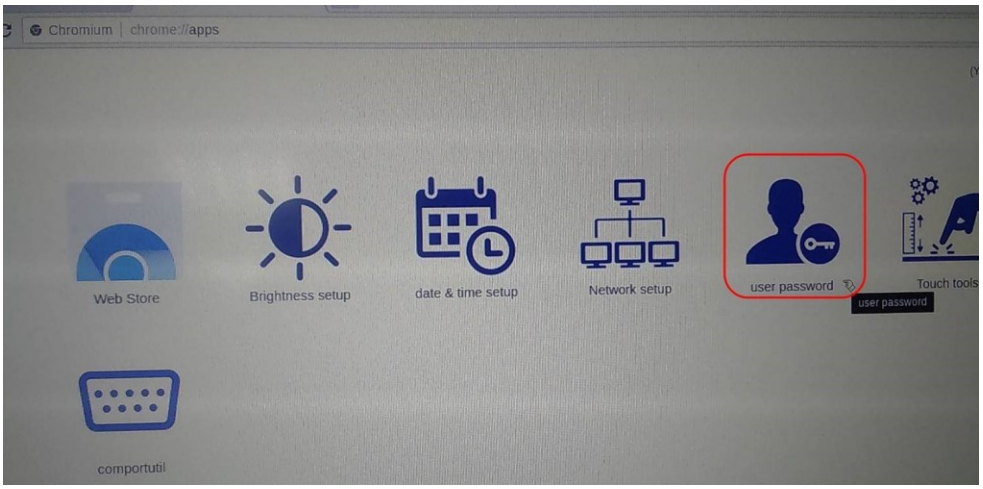
Note: There is an internal setting for the minimum dimming level, which is 10% by default. When adjusting the dimming level below 10%, no change will be evident.

User Password Settings

The user/root default password is **EMrootroot.** Here are instructions to change the password.

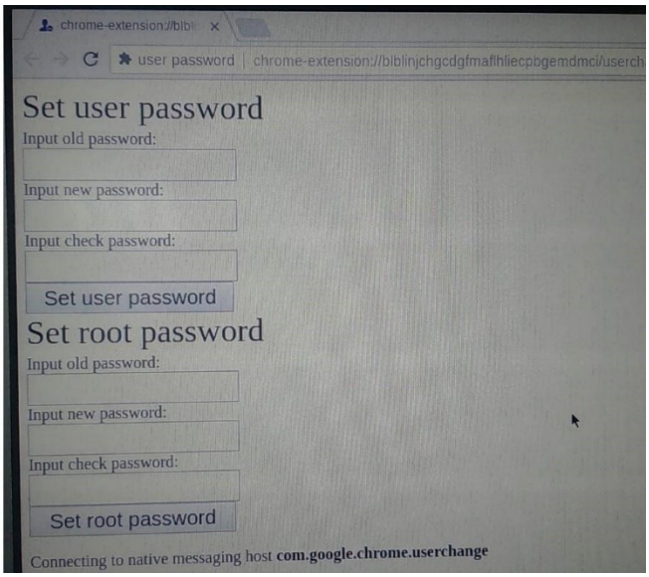
1. Click the user password icon.

Figure 59: User Password Icon



2. Enter the default (old) and new password then click the **Set user password** or **Set root password** button to submit the new password.

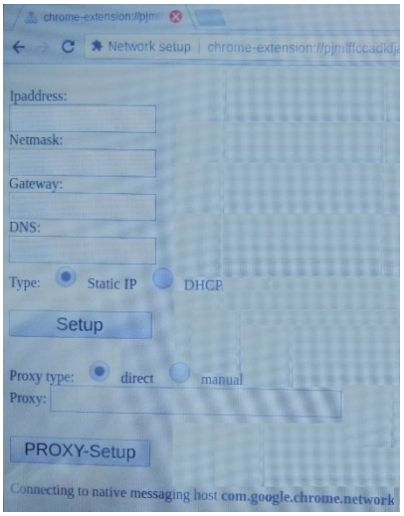
Figure 60: Set User Password



Network Setup

1. Open Chromium browser and point to **chrome://apps**
2. Select Network Setup
3. Assign values to the empty fields to setup your network
4. Click the **Setup** button to complete the setup.

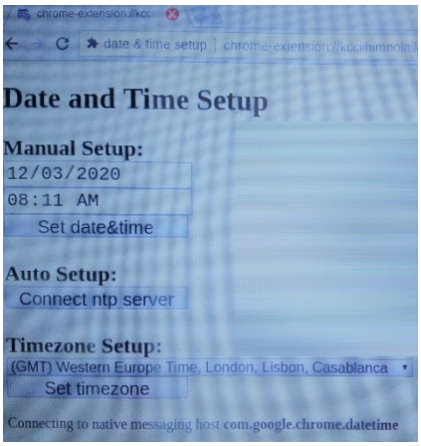
Figure 61: Network Setup



Date and Time Settings

1. Open Chromium browser and point to **chrome://apps**
2. Select Network Setup
3. Manually set the date and time and click **Set Date & Time.**

Figure 62: Date and Time Setup



Section 2: Specifications

2.1 RXi - Industrial Monitor

	Size (inch)	7"	10"	12"	15"	19"	24"
Display	Resolution	1024 x 600 WSVGA	1280 x 800 WXGA		1920 x 1080 Full HD		
	Format	Widescreen (16:0)	Widescreen (16:10)		Widescreen (16:9)		
	Orientation	Landscape					
	Reading Angle (°)	150 (H) / 145 (V)	170 (H) / 170 (V)	176 (H) / 176 (V)	170 (H) / 170 (V)	178 (H) / 178 (V)	
	Display Off-Color	Black					
	Contrast	800:1		1000:1	800:1	1000:1	5000:1
	Brightness (cd/m2)	500		400	450	350	300
	Brightness with Outdoor SLR Screen (cd/m2)	1000				N/A	
	MTBF Backlighting	50,000 h (at 25 °C)					
Touchscreen	Technology	Projected Capacitive Touch (PCT/PCAP)					
	Touch Sensor	Multi-touch (Ten-Point)					
Interfaces	Port 1	1 x HDMI-In					
	Port 2	1 x Display Port-In					
	Port 3	1 x Display Port-Out					
	Port 4	(MST - Daisy Chain)					
	Port 5	1 x USB Input (For Touch)					
Status Indicators	Front Bezel Tri-color LED	Amber/Green/Red					
Power-Supply	Voltage (V)	+24 VDC ±10% (3-Pin Connector, Isolated, use 28-14AWG (0.2-1.5mm²) wire rated 90C, 1.7 in-lbs (0.19Nm) torque)					
Power Consumption	Maximum Wattage (W)	5 W	11 W	17 W	15 W	22 W	30 W
Protection-Class	Front-Side	IP66 & Type 4/4X (When Installed to a suitable Wall/Panel)					
	Back-Side	IP20					
Design	Housing	Aluminum Die Casting (Front)					
Environment	Operating Temperature	-20 °C to +65 °C					
	Storage Temperature	-30 °C to +70 °C					
	Operating Humidity	85% RH (non- condensing) @ 30 °C					
	Operating Altitude	10000 ft. (3.000 m)					
	Vibration	1 Grms / 5 ~ 500Hz (Random) / Operation IEC 60068-2-64 10 G peak acceleration (11 msec. duration)/operation IEC 60068-2-27					

	Size (inch)	7"	10"	12"	15"	19"	24"
Compliance	Certifications	UL and cUL Information Technology Equipment (UL/CSA 62368-1) UL and cUL Class 1 Division 2: Programmable Controllers for Use in Hazardous Locations (UL/CSA 61010-2-201, UL 121201, CSA C22.2 No. 213) IECEx & ATEX Zone 2/22 Hazardous Locations(IEC/EN 60079-0, IEC/EN 60079-7, IEC/EN 60079-31) IECEE CB Scheme (IEC 61010-2-201) UL TYPE 4 & 4X, IP66 (ANSI/IEC 60529) Marine: DNV, ABS, BV					
Mounting	Panel Cutout Dimensions (mm)	183.5 (W) 128.5 (H)	255.5 (W) 174 (H)	317 (W) 214.5 (H)	398 (W) 245.5 (H)	482 (W) 297 (H)	581 (W) 360 (H)
	VESA Mounting	100 x 100					
	Hardware Included	Mounting Clamps					
Physical Specification	Net Weight (kg)	2.0	2.6	3.8	5.1	6.9	9.0
	Dimensions (mm)	192 (W) 137 (H) 65 (D)	267 (W) 186.2 (H) 65 (D)	329.1 (W) 226.8 (H) 66 (D)	410.2 (W) 257.6 (H) 65 (D)	500 (W) 315 (H) 70 (D)	600 (W) 382 (H) 71 (D)

2.1.1 RXi - Industrial Monitor Motherboard Specifications

Item	Description
Board Size	170 x 113mm
Scalar IC	Realtek RTD2556T-CG
Input	1 x HDMI Input 1 x Display Port (DP) Input (DP1) 1 x USB 2.0 (Type B)
Output	1 x Support up to 24-bit LVDS FULL HD panel interface 1 x Display Port (DP) Output (DP2) 1 x Line-Out (Audio Jack)
Resolution	Up to 1920 x 1080@60Hz for LVDS Up to 1920 x 1080@60Hz for Display Port
Power Input	DC24V±20%
Temperature	Operating: -20°C to 65°C Storage: -30°C to 85°C
Humidity	10%-90%, non-condensing, operating
EMI/EMS	Meet CE/FCC class A

2.2 RXi - Panel PC

2.2.1 Panel PC (Base Model)

	Display Size	7"	10"	12"	15"	19"	24"
Display	Resolution	1024 x 600 WSVGA	1280 x 800 WXGA		1920 x 1080 Full HD		
	Format	Widescreen (16:10)			Widescreen (16:9)		
	Orientation	Landscape					
	Reading Angle (°)	150 (H) / 145 (V)	170 (H) / 170 (V)	176 (H) / 176 (V)	170 (H) / 170 (V)	178 (H) / 178 (V)	
	Display Off-Color	Black					
	Contrast	800:1		1000:1	800:1	1000:1	5000:1
	Brightness (cd/m2)	500 (1000 with Outdoor SLR Screen)		400 (1000 with Outdoor SLR Screen)	450 (1000 with Outdoor SLR Screen)	350	300
	Colors	16.2 Million					
	MTBF Backlighting	50,000 h (at 25°C)					
	Backlight	LED, Dimmable via Software					
Processor	Chipset	AMD Embedded G-Series SOC			AMD Embedded G-Series SOC or AMD Embedded V1000-Series SoC		
	Processor	GX-210HL		GX-412GC or V1404I			
	# of cores/TDP	2/7W		4/15W			
	CPU frequency/L2 Cache	1.0Ghz/1MB		GX-412GC: 1.2GHz/2MB V1404I: 2.0/2MB			
	GPU frequency	267Mhz		GX-412GC: 300MHz V1404I: 2400MHz			
Memory	Capacity	4GB or 8GB DDR3L (Soldered with ECC, -40°C ~ 85°C)			GX-412GC: 4GB or 8GB DDR3L (Soldered with ECC, -40°C ~ 85°C) V1404I: 8GB/ 16GB DDR4 (Soldered with ECC, -40°C ~ 85°C)		
Storage	Internal	32 / 64 / 128GB MLC SSD (SATA Slim, -40°C ~ 85°C)		GX-412GC: 64 / 128GB MLC SSD (SATA Slim, -40°C ~ 85°C) V1404I: 128 / 256 / 512GB M.2 MLC SSD (SATA III)			
	External Slot	1 x External Micro SD/ SDHC Card Slot (up to 32GB)			GX-412GC: 1 x External Micro SD/ SDHC Card Slot (up to 32GB) V1404I: 1 x Micro SD Slot, 1 x Microchip USB2642-I		
Watchdog Timer	Timer Levels	255 timer levels, set up by software					

	Display Size	7"	10"	12"	15"	19"	24"
Operating Control	Method	Touch					
Touchscreen	Technology	Projected Capacitive Touch (PCT/PCAP)					
	Touch Sensor	Multi-touch (Ten-Point)					
Interfaces	Port 1	2 x 10/100/1000 Base T Ethernet RJ45		4 x 10/100/1000 Base T Ethernet RJ45			
	Port 2	1 x RS-232 COM Port (5-Pin Connector, Isolated, use 24-16AWG (0.2-1.3mm²), strip-length 10mm) 1 x RS-485 COM Port (5-Pin Connector, Isolated, use 24-16AWG (0.2-1.3mm²), strip-length 10mm)					
	Port 3	2 x USB 3.0 (Type-A)		2 x USB 3.0 (Type-A) 2 x USB 2.0 (Type-A)			
	Port 4	1 x DisplayPort					
	Port 5	1 x Mic In (Mono) (3.5mm Jack)					
	Port 6	1 x Line Out (Stereo) (3.5mm Jack)					
Status Indicators	Front Bezel Tri-color LED	Amber / Green / Red					
	On-board Buzzer	Yes (85dB sound level with 80mA mean current)					
Power-Supply	Voltage [V]	+24VDC ±10% (3-Pin Connector, Isolated, use 28-14AWG (0.2-1.5mm²) wire rated 90C, 1.7 in-lbs (0.19Nm) torque)					
Power Consumption	Maximum Wattage [W]	14 W	19 W	19 W	19 W	19 W	43 W
Protection-Class/Installation	Front-Side	IP66 & Type 4/4X (When Installed to a suitable Wall/Panel)					
	Back-Side	IP20/Open Type product for mounting in an ultimate enclosure Pollution Degree 2 environment					
Operating System	Installed Standard	Windows 10 IOT Enterprise LTSC					
Software Tools	Tool 1	Secure & Trusted Boot Capability					
	Tool 2	DHCP-Client, Web Browser (IE or FireFox), Java JRE Capability					
Secure & Trusted Boot	Item 1	On-Board TPM2.0					
Design	Housing	Aluminum Die Casting (Front)					
	Construction Type	Modular (Detachable Modules; Computer, Monitor, Touch Display, DIO)					
	Cooling	Natural Convection (Fanless Passive Cooling)					
Environmental	Operating Temperature	-20°C to +65°C					
	Storage Temperature	-30°C to +70°C					
	Operating Humidity	85% RH (non- condensing) @ 30°C					
	Operating Altitude	10000 ft. (3.000 m)					
	Vibration	1Grms / 5 ~ 500Hz (Random) / Operation IEC 60068-2-64 10G peak acceleration (11 msec. duration)/operation IEC 60068-2-27					
Mounting	Panel Cutout Dimensions (mm)	183.5 (W) 128.5 (H)	255.5 (W) 174 (H)	317 (W) 214.5 (H)	398 (W) 245.5 (H)	482 (W) 297 (H)	581 (W) 360 (H)
	VESA Mounting	75 x 75			100 x 100		
	Hardware Included	Mounting Clamps					
Physical	Net Weight (kg)	2.0	2.6	3.8	5.1	6.9	9.0

	Display Size	7"	10"	12"	15"	19"	24"
Specification				6kg	7kg	9kg	11kg
	Dimensions (mm)	192(W) 137(H) 65(D)	267(W) 186.2(H) 65(D)	329.1(W) 226.8(H) 66(D)	410.2(W) 257.6(H) 65(D)	500(W) 315(H) 70(D)	600(W) 382(H) 71(D)
Certifications	Certifications	UL and cUL Information Technology Equipment (UL/CSA 62368-1) UL and cUL Class 1 Division 2: Programmable Controllers for Use in Hazardous Locations (UL/CSA 61010-2-201, UL 121201, CSA C22.2 No. 213) IECEx & ATEX Zone 2/22 Hazardous Locations(IEC/EN 60079-0, IEC/EN 60079-7, IEC/EN 60079-31) IECEE CB Scheme (IEC 61010-2-201) UL TYPE 4 & 4X, IP66 (ANSI/IEC 60529)					
	Certifications Coming	Marine: DNV, ABS, BV					

2.2.2 Panel PC Motherboard Specifications

Item	Description	
Board Size	170mm x 113mm	
CPU Support	AMD® Embedded G-Series AMD® GX-210HL, Dual-Core, 1M Cache, 1.0GHz, 7W AMD® GX-412GC, Quad-Core, 2M Cache, 1.2GHz, 15W	
Memory Support	Onboard 4GB/8GB DDR3L Memory with ECC Supports Single Channel DDR3 1066/1333MHz	
Graphics	AMD Radeon™ R3E GPU DirectX® 11.2, OpenGL 4.3, OpenCL™ 1.2 graphics support 1 x DP++ 1 x LVDS DP++: resolution up to 4096x2160 @ 30Hz LVDS: dual channel 24-bit, resolution up to 1920x1200 @ 60Hz	
BIOS	AMI SPI 64Mbit	
Storage	1 x Micro SD 1 x SATA 3.0 (7+15pin)	
Ethernet	2 x Intel® I210IT, -40 to 105°C PCIe (10/100/1000Mbps)	
Outside I/O	2 x USB 3.0 1 x RS-232 1 x RS-485 1 x Line-out	1 x Mic-in 2 x GbE (RJ-45) 1 x DP++ 1 x Power Button
Internal I/O	1 x LVDS LCD Panel Connector 1 x AIO/DIO 1x30pin Connector (JAE TX24-30R-10ST-H1E)	
Battery	CR2032 Coin Cell	
Audio	Codec:92HD73C	
Expansion	1 x Mini PCIe (PCIe/USB 2.0) 1 x M.2 E key 2230 (PCIe/USB 2.0)	
Security	TPM2.0	
Watchdog Timer	System Reset Programmable via Software from 1 to 255 Seconds/Minutes	
Temperature	Operating: -30 to 85 °C Storage: -30 to 85 °C	
Humidity	Operating: 10 to 90% RH Storage: 10 to 90% RH	
OS Support	Windows 10 IoT Enterprise (64-bit)	

2.2.3 Panel PC (with AMD Ryzen)

	Display Size	7"	10"	12"	15"	19"	24"
Display	Resolution	NA	NA		1920 x 1080 Full HD		
	Format	NA			Widescreen (16:9)		
	Orientation	Landscape					
	Reading Angle (°)	NA	NA	176 (H) / 176 (V)	170 (H) / 170 (V)	178 (H) / 178 (V)	
	Display Off-Color	Black					
	Contrast	NA		1000:1	800:1	1000:1	5000:1
	Brightness (cd/m2)	NA		400 (1000 with Outdoor SLR Screen)	450 (1000 with Outdoor SLR Screen)	350	300
	Colors	16.2 Million					
	MTBF Backlighting	50,000 h (at 25°C)					
	Backlight	LED, Dimmable via Software					
Processor	Chipset	AMD® Embedded V1000-Series SoC					
	Processor	NA		V1404I			
	# of cores/TDP	NA		4/15W			
	CPU frequency/L2 Cache	NA		2.0~3.6GHz/2MB			
	GPU frequency	NA		2400MHz			
Memory	Capacity	8GB/ 16GB DDR4 (Soldered with ECC, -40 °C ~ 85 °C)					
Storage	Internal	NA		1 x M.2 M Key 2280 size with (w/PCIex4 and SATA III)			
	External Slot	1 x Micro SD Slot 1 x Microchip USB2642-I					
Watchdog Timer	Timer Levels	255 timer levels, set up by software					
Operating Control	Method	Touch					
Touchscreen	Technology	Projected Capacitive Touch (PCT/PCAP)					
	Touch Sensor	Multi-touch (Ten-Point)					
Interfaces	Port 1	NA		4 x 10/100/1000 Base T Ethernet RJ45			
	Port 2	1 x RS-232 COM Port (5-Pin Connector, Isolated, use 24-16AWG (0.2-1.3mm²), strip-length 10mm) 1 x RS-485 COM Port (5-Pin Connector, Isolated, use 24-16AWG (0.2-1.3mm²), strip-length 10mm)					
	Port 3	NA		2 x USB 3.0 (Type-A) 2 x USB 2.0 (Type-A)			
	Port 4	1 x DisplayPort					
	Port 5	1 x Mic In (Mono) (3.5mm Jack)					
	Port 6	1 x Line Out (Stereo) (3.5mm Jack)					
Status Indicators	Front Bezel Tri-color LED	Amber / Green / Red					
	On-board Buzzer	Yes (85dB sound level with 80mA mean current)					
Power-Supply	Voltage [V]	+24VDC ±10% (3-Pin Connector, Isolated, use 28-14AWG (0.2-1.5mm²) wire rated 90C, 1.7 in-lbs (0.19Nm) torque)					

	Display Size	7"	10"	12"	15"	19"	24"
Power Consumption	Maximum Wattage [W]	NA	NA	49 W	52 W	50 W	64 W
Protection-Class	Front-Side	IP66 & Type 4/4X (When Installed to a suitable Wall/Panel)					
	Back-Side	IP20					
Operating System	Installed Standard	Windows 10 IOT Enterprise LTSC					
Software Tools	Tool 1	Secure & Trusted Boot Capability					
	Tool 2	DHCP-Client, Web Browser (IE or FireFox), Java JRE Capability					
Secure & Trusted Boot	Item 1	On-Board TPM2.0					
Design	Housing	Aluminum Die Casting (Front)					
	Construction Type	Modular (Detachable Modules; Computer, Monitor, Touch Display, DIO)					
	Cooling	Natural Convection (Fanless Passive Cooling)					
	Operating Temperature	-20 °C to +65 °C					
	Storage Temperature	-30°C to +70 °C					
	Operating Humidity	85% RH (non- condensing) @ 30 °C					
	Operating Altitude	10000 ft. (3.000 m)					
	Vibration	1Grms / 5 ~ 500Hz (Random) / Operation IEC 60068-2-64 10G peak acceleration (11 msec. duration)/operation IEC 60068-2-27					
Compliance	Certifications	UL and cUL Information Technology Equipment (UL/CSA 62368-1) UL and cUL Class 1 Division 2: Programmable Controllers for Use in Hazardous Locations (UL/CSA 61010-2-201, UL 121201, CSA C22.2 No. 213) IECEx & ATEX Zone 2/22 Hazardous Locations(IEC/EN 60079-0, IEC/EN 60079-7, IEC/EN 60079-31) IECEE CB Scheme (IEC 61010-2-201) UL TYPE 4 & 4X, IP66 (ANSI/IEC 60529) Marine; DNV, ABS, BV, LR					
Mounting	Panel Cutout Dimensions (mm)	NA	NA	317(W) 214.5(H)	398(W) 245.5(H)	482(W) 297(H)	581(W) 360(H)
	VESA Mounting	100 x 100					
	Hardware Included	Mounting Clamps					
Physical Specification	Net Weight (kg)	NA	NA	3.8	5.1	6.9	9.0
	Dimensions (mm)	NA	NA	329(W) 228(H) 103(D)	410(W) 250(H) 108(D)	500(W) 315(H) 80(D)	600(W) 382(H) 108(D)

2.2.4 Panel PC Motherboard Specifications (Panel PC with AMD Ryzen)

Item	Description
Board Size	282mm (11.1") x 138mm (5.43")
CPU Support	AMD® Embedded V1000-Series SoC AMD® V1404I, Quad-Core, 2M L2 Cache, 2.0~3.6GHz, 15W AMD® V1605B, Quad-Core, 2M L2 Cache, 2.0~3.6GHz, 15W
Memory Support	Onboard Dual Channel DDR4 ECC RAM up to 2400MHz 8/16GB
Graphics	AMD Radeon™ Vega 8 Graphics DirectX® 12.1, OpenGL 4.6, OpenCLTM 2.0 graphics support 1 x DP++ 1 x LVDS DP++: resolution up to 4096x2160 @ 60Hz LVDS: dual channel 24-bit, resolution up to 1920x1200 @ 60Hz LVDS + DP++
BIOS	AMI SPI 64Mbit
Storage	1 x M.2 M Key 2280 size with (w/PCIex4 and SATA III) 1 x Micro SD Slot 1 x Microchip USB2642-I
Ethernet	4 x GbE (RJ-45)
Outside I/O	2 x USB 3.1 2 x USB 2.0 1 x RS-232 1 x RS-485 1 x Line-out 1 x Mic-in 4 x GbE (RJ-45) 1 x DP++ 1 x Power Button
Internal I/O	1 x LVDS LCD Panel Connector 1 x AIO/DIO 1x30pin Connector (JAE TX24-30R-10ST-H1E)
Battery	CR2032 Coin Cell
Audio	Codec:92HD73C
Expansion	1 x Mini PCIe (PCIe/USB 2.0) 1 x M.2 E key 2230 (PCIe/USB 2.0)
Security	TPM2.0
Watchdog Timer	255 timer levels, set up by software
Temperature	Operating: -30 to 85 °C Storage: -30 to 85 °C
Humidity	Operating: 10 to 90% RH Storage: 10 to 90% RH
OS Support	Windows 10 IoT Enterprise (64-bit)

2.3 RXi - Web HMI Panel

	Display Size	7"	10"	12"	15"	19"	24"
Display	Resolution	1024 x 600 WSVGA	1280 x 800 WXGA		1920 x 1080 Full HD		
	Format	Widescreen (16:10)			Widescreen (16:9)		
	Orientation	Landscape					
	Reading Angle (°)	150 (H) / 145 (V)	170 (H) / 170 (V)	176 (H) / 176 (V)	170 (H) / 170 (V)	178 (H) / 178 (V)	
	Display Off-Color	Black					
	Contrast	800:1		1000:1	800:1	1000:1	5000:1
	Brightness (cd/m2)	500 (1000 with Outdoor SLR Screen)		400 (1000 with Outdoor SLR Screen)	450 (1000 with Outdoor SLR Screen)	350	300
	MTBF Backlighting	50 000 h (at 25°C)					
	Backlight	LED, Dimmable via Software					
Processor i.MX 6DualLite	Processor	Freescale i.MX 6DualLite					
	# of cores/TDP	2 core/2.5W					
	CPU frequency	1.0Ghz					
Memory	Capacity	2GB DDR3L					
Storage	Internal	4GB eMMC NAND Flash Memory					
Watchdog Timer	Setup	Setup by software					
Operating Control	Method	Touch					
Touchscreen	Technology	Projected Capacitive Touch (PCT/PCAP)					
	Touch Sensor	Multi-touch (Ten-Point)					
Interfaces	Port 1	1 x 10/100/1000 Base T Ethernet RJ45					
	Port 2	1 x RS-232/422/485 COM Port (DB-9 connector)					
	Port 3	1 x USB 2.0 (Type-A) 1 x USB OTG (micro USB)					
Status Indicators	Front Bezel Tri-color LED	Amber/Green/Red					
	On-board Buzzer	Yes (85dB sound level with 80mA mean current)					
Power-Supply	Voltage [V]	+24VDC ±10% (3-Pin Connector, Isolated, use 28-14AWG (0.2-1.5mm²) wire rated 90C, 1.7 in-lbs (0.19Nm) torque)					
Power Consumption	Maximum Wattage [W]	5 W	11 W	17 W	15 W	19 W	35 W
Protection-Class	Front-Side	IP66 & Type 4/4X (When Installed to a suitable Wall/Panel)					
	Back-Side	IP20					
Operating System	OS	Linux kernel 4.1.15: Yocto					
	Framework	Qt 5.6.2					

Software Tools	Tool 1	Qt WebKit / Web Browser					
	Tool 2	HTML5 Capability					
Secure and Trusted Boot	Item 1	CAAM					
Design	Housing	Aluminum Die Casting (Front)					
	Construction Type	Modular (Detachable Modules; Computer, Monitor, Touch Display, DIO)					
	Cooling	Natural Convection (Fanless Passive Cooling)					
Environment	Operating Temperature	-20°C to +65°C					
	Storage Temperature	-30°C to +70°C					
	Operating Humidity	85% RH (non- condensing) @ 30°C					
	Operating Altitude	10000 ft. (3.000 m)					
	Vibration	1Grms / 5 ~ 500Hz (Random) / Operation IEC 60068-2-64 10G peak acceleration (11 msec. duration)/operation IEC 60068-2-27					
Compliance	Certifications	UL and cUL Information Technology Equipment (UL/CSA 62368-1) UL and cUL Class 1 Division 2: Programmable Controllers for Use in Hazardous Locations (UL/CSA 61010-2-201, UL 121201, CSA C22.2 No. 213) IECEx & ATEX Zone 2/22 Hazardous Locations(IEC/EN 60079-0, IEC/EN 60079-7, IEC/EN 60079-31) IECEE CB Scheme (IEC 61010-2-201) UL TYPE 4 & 4X, IP66 (ANSI/IEC 60529) Marine: DNV, ABS, BV					
Mounting	Panel Cutout Dimensions (mm)	183.5 (W) 128.5 (H)	255.5 (W) 174 (H)	317 (W) 214.5 (H)	398 (W) 245.5 (H)	482 (W) 297 (H)	581 (W) 360 (H)
	VESA Mounting	100 x 100					
	Hardware Included	Mounting Clamps					
Physical Specification	Net Weight (kg)	2.0	2.6	3.8	5.1	6.9	9.0
	Dimensions (W x H x D)	192 (W) 137 (H) 65 (D)	267 (W) 186.2 (H) 65 (D)	329.1 (W) 226.8 (H) 66 (D)	410.2 (W) 257.6 (H) 65 (D)	500 (W) 315 (H) 70 (D)	600 (W) 382 (H) 71 (D)

2.3.1 RXi - Web Panel HMI Motherboard Specifications

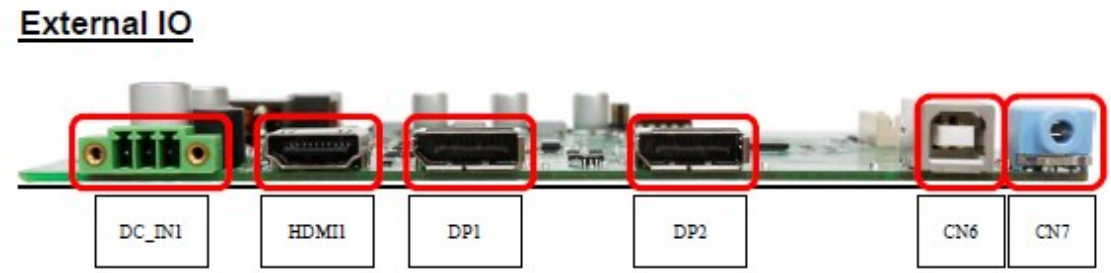
Item	Description
Board Size	170mm x 113mm, 10 Layers, 1.6mm
CPU Support	Freescale ARM Cortex A9 i.MX6 Dual Lite 1.0GHz
Memory Support	Onboard 2GB DDR3L SDRAM
Storage	Onboard 4GB eMMC Flash Onboard Micro SD Card slot
Ethernet	1 x 10/100/1000MHz, RJ45 connector
Outside I/O	1 x USB 2.0, Type A connector 1 x RS-232/422/485, DB9 connector 1 x USB OTG, Micro USB connector
Internal I/O	1 x Debug port
Battery	CR2032 Coin Cell
Watchdog Timer	System Reset, Programmable via Software from 1 to 255 Seconds/Minutes
Temperature	Operating: -20 to 65 °C Storage: -40 to 70 °C
Humidity	Storage: 10 to 90% @40 °C
OS Support	Linux Kernel 4.9.11 + Chromium Browser 54.0.2810.2 (Chromium 54 Over)

Section 3: Hardware

3.1 RXi - Industrial Monitor

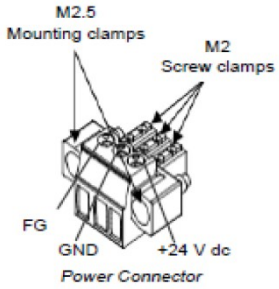
3.1.1 Jumpers and Connectors Location

Figure 63: Jumpers and Connectors Location



Connecting Input Power (24V DC-in)

To connect to power, follow these steps:



1. Verify that the power cable is not energized.
2. Loosen the screw clamps on the mating power connector.
3. Strip the insulation from the power cables.
4. Secure the power cable to the mating connector, noting polarity, and tighten the screw clamps. The torque for the attaching screws is 0.3 Nm (2.26 in-lb).
5. Apply dc power to the unit. During normal startup and operation, the LED status indicator displays as follows:
    - Solid amber while the RXi Industrial Display unit is starting up
    - Solid green during normal operation
6. Once power is applied, the unit begins initializing. The first thing to display is the splash screen.

Be sure to connect a DC power cord to this 3-pin power connector. Using a voltage out of the range may fail to boot the system or cause damage to the system board.

Note: All RXi Industrial Displays are configured with reverse voltage protection to mitigate power failure if plugged in by error.

3.1.2 I/O and Connectors

DC_IN1

(3.5mm Pitch 1x3 Pin Connector), DC24V power input connector

Pin #	Power Input
Pin1	DC+24V
Pin2	Ground
Pin3	FG

HDMI (HDMI Input)

(HDMI Connector), High Definition Multimedia Interface connector, provides high-quality video and audio input.

Figure 64: HDMI Layout

Signal Name	Pin#	Pin#	Signal Name
DATA2+	1	2	DATA2 Shield
DATA2-	3	4	DATA1+
DATA1 Shield	5	6	DATA1-
DATA0+	7	8	DATA0 Shield
DATA0-	9	10	CLK+
HDMI CAB DET	11	12	CLK-
NC	13	14	NC
HDMI SCL	15	16	HDMI SDA
GND	17	18	HDMI 5V
HDMI HPD	19		

DP1 (Display Port Input)

(Display Port Connector), Display Port Interface connector, provide high-quality video and audio input.

Signal Name	Pin#	Pin#	Signal Name
LANE3-	1	2	GND
LANE3+	3	4	LANE2-
GND	5	6	LANE2+
LANE1-	7	8	GND
LANE1+	9	10	LANE0-
GND	11	12	LANE0+
GND	13	14	GND
AUX_CHP	15	16	DP CAB DET
AUX_CHN	17	18	DP HPD
RETURN	19	20	DP 3.3V

DP2 (Display Port Output)

(Display Port Connector), Display Port Interface connector, provide high-quality video and audio output.

Signal Name	Pin#	Pin#	Signal Name
LANE0+	1	2	GND
LANE0-	3	4	LANE1+
GND	5	6	LANE1-
LANE2+	7	8	GND
LANE2-	9	10	LANE3+
GND	11	12	LANE3-
GND	13	14	GND
AUX_CHP	15	16	GND
AUX_CHN	17	18	DP HPD
RETURN	19	20	DP 3.3V

CN1 (Debug) - Reserved

(2.0mm 1x4 Pin Header), Reserved for debugging only.

Pin #	Signal Name
1	3.3V
2	UART TX
3	UART RX
4	GND

CN2 - Reserved

(2.0mm 1x4 Pin Header)

Pin #	Signal Name
1	HOST_I2C_SCL
2	HOST_I2C_SDA
3	HOST_IRQ_OUT
4	GND

CN3 - Reserved

(2.0mm 1x4 Pin wafer connector), Reserved for IR receiver

Pin #	Signal Name
1	GND
2	IR
3	3.3V
4	NC

CN4 (OSD)

(2.0mm 1x9 Pin wafer connector), On-Screen Display menu Control connector.

Pin #	Signal Name
1	Power Key
2	R_LED
3	G_LED
4	GND
5	MENU Key
6	DOWN Key
7	UP Key
8	SELECT Key
9	NC

CN5 (LVDS Output)

(2.0mm 2x25 Female Pin Header), Connect to TB-572B, providing LVDS, USB, SM BUS, and LED signals.

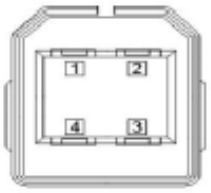
Signal Name	Pin#	Pin#	Signal Name
+12V	1	2	+12V
BackLight Enable	3	4	BackLight CTRL
GND	5	6	GND
Panel 3.3V	7	8	Panel 3.3V
Panel 5V	9	10	Panel 5V
GND	11	12	GND
LVDS Odd0-	13	14	LVDS Odd0+
LVDS Odd1-	15	16	LVDS Odd1+
LVDS Odd2-	17	18	LVDS Odd2+

LVDS Odd CLK-	19	20	LVDS Odd CLK+
LVDS Odd3-	21	22	LVDS Odd3+
LVDS Even0-	23	24	LVDS Even0+
LVDS Even1-	25	26	LVDS Even1+
LVDS Even2-	27	28	LVDS Even2+
LVDS Even CLK-	29	30	LVDS Even CLK+
LVDS Even3-	31	32	LVDS Even3+
GND	33	34	GND
USB D-	35	36	USB 5V
USB D+	37	38	GND
GND	39	40	SM Bus CLK1
5V	41	42	SM Bus Data1
Reserved	43	44	Reserved
GND	45	46	SM Bus CLK2
3.3V	47	48	SM Bus Data2
LED1	49	50	LED2

CN6 (USB 2.0)

(2.0mm 1x9 Pin wafer connector), For external USB2.0 signal.

Figure 65: USB2.0



Pin #	Signal Name
1	USB 5V
2	USB-
3	USB+
4	GND

CN7 (Line Out)

(Diameter 3.5mm Jack), Line Out audio port. Line Out can be connected to headphones, speakers, or an amplifier.

Figure 66: Line Out

JP1

(2.0mm Pitch 1x3 Pin Header),

JP1 Pin #	Function
Close 1-2	Backlight Enable & Backlight PWM Level select 3.3V
Close 2-3	Backlight Enable & Backlight PWM Level select 5V

JP2

(2.0mm Pitch 1x3 Pin Header), Backlight control setting.

JP1 Pin #	Function
Close 1-2	For PWM Mode (Default)
Close 2-3	For DC Mode

SW1 - Reserved

Panel Type Select.

3.1.3 LED Indicators

Operation Status LEDs (Screen)

All RXi Industrial Displays have a tri-color LED built into the screen that provides a visual indication of the operation status.

LED State	System State
Amber, Solid	Operating system starting
Green, Solid	Normal operating state
Green, Blinking	Backlight off
Red, Blinking	Backlight failure
Off	Power not applied to the unit

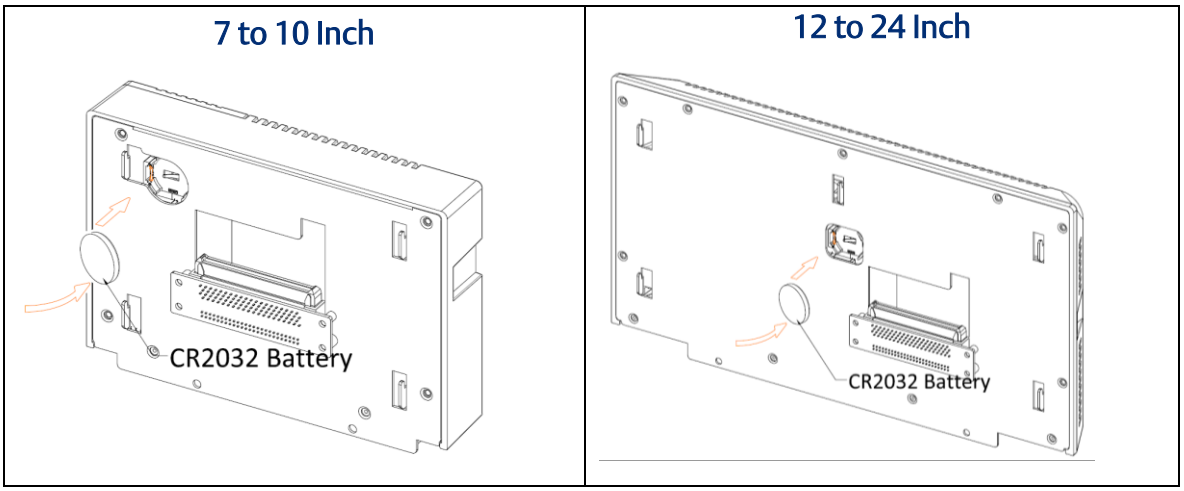
3.2 RXi - Panel PC

3.2.1 Battery

The lithium-ion battery powers the real-time clock and CMOS memory. It is an auxiliary source of power when the main power is shut off or disconnected. It is a standard CR2032 battery and is accessible on the bottom of the computing module when separated from the screen (as shown below)
Safety Measures

- Danger of explosion if battery incorrectly replaced.
- Replace only with the same or equivalent type recommended by the manufacturer.
- Dispose of used batteries according to local ordinances.
-

Figure 67: C2032 Battery



3.2.2 I/O and Connectors

Outside I/O

The rear panel I/O port arrangement consists of the following:

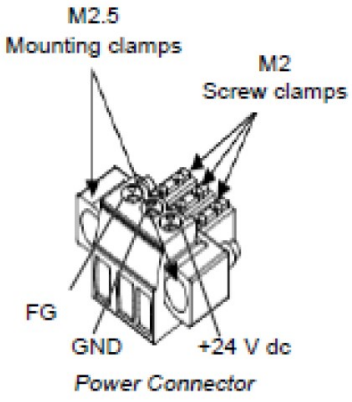
- 1 power button
- 1 24V DC-in 3-pin power connector
- 1 DP++
- 2 USB 3.0 ports
- 2 RJ45 LAN ports
- 1 UART terminal-block
- 1 Line-out jack
- 1 Mic-in jack

Figure 68: Rear Panel Arrangement

Connecting Input Power (24V DC-in)

To connect to power, follow these steps:

2. Verify that the power cable is not energized.
3. Loosen the screw clamps on the mating power connector.
4. Strip the insulation from the power cables.
5. Secure the power cable to the mating connector, noting polarity, and tighten the screw clamps. The torque for the attaching screws is 0.3 Nm (2.26 in-lb).
6. Apply dc power to the unit. During normal startup and operation, the LED status indicator displays as follows:
    - Solid amber while the RXi - Industrial Display unit is starting up
    - Solid green during normal operation



Power Connector

7. Once power is applied, the unit begins initializing. The first thing to display is the splash screen.

Be sure to connect a DC power cord to this 3-pin power connector. Using a voltage out of the range may fail to boot the system or cause damage to the system board.

Graphics Interface

The display port consists of the following:

DP++ Port

The DP++ is a digital display interface used to connect a display device such as a computer monitor. It is used to transmit audio and video simultaneously. The interface, which is developed by VESA, delivers higher performance features than any other digital interface.

BIOS Setting

Configure the display device in the Chipset menu (“DISPLAY control” submenu) of the BIOS. Refer to chapter 3 for more information.

RJ45 LAN Ports

Features

2 Intel® I210IT PCI Express Gigabit Ethernet controllers (4 on larger box module)

The LAN ports allow the system board to connect to a local area network through a network hub or router.

BIOS Setting

Configure the onboard LAN in the Advanced menu (“Wakeup Configuration” submenu) of the BIOS. Refer to chapter 3 for more information.

USB Ports

The USB ports allow for data exchange between your computer and a wide range of simultaneously accessible external Plug and Play peripherals. The RXi – Panel PC is equipped with 2 onboard USB 3.0 ports (USB 0-1) in the small configuration with an additional 2 USB 2.0 ports (USB 4-5) in the large box configuration.

BIOS Setting

Configure the onboard USB in the Advanced menu (“Wakeup Configuration” submenu) of the BIOS. Refer to chapter 3 for more information.

Wake-On-USB Keyboard/Mouse

The Wake-On-USB Keyboard/Mouse function allows you to use a USB keyboard or USB mouse to wake up a system from the S3 (STR - Suspend To RAM) state.

Serial Ports (UART)

Serial Connection	Pin	Function	
RS232	1	TXD	
	2	RXD	
	3	RTS	
	4	CTS	
	5	GND	
RS485	6	TX+	
	7	TX-	
	8	RX+	
	9	RX-	
	10	GND	

Audio

Rear Audio

The system board is equipped with 2 audio jacks (Line-out and Mic-in). A jack is a one-hole connecting interface for inserting a plug.

- Line-out Jack (Lime)

This jack is used to connect a headphone or external speakers.

- Mic-in Jack (Pink)

This jack is used to connect an external microphone.

BIOS Setting

Configure the onboard Audio device in the Chipset menu (“SB HD Azalia Configuration” submenu) of the BIOS.

I/O Connectors

Serial ATA (SATA) Connector

Features

- 1 Serial ATA 3.0 port with data transfer rate up to 6Gb/s
- Integrated Advanced Host Controller Interface (AHCI) controller

The Serial ATA connector is used to connect the Serial ATA device. Connect one end of the Serial ATA data connector to a SATA connector on the other end to your Serial ATA device.

BIOS Setting

Configure the Serial ATA drive in the Chipset menu (“SB SATA Configuration” submenu) of the BIOS. Refer to chapter 3 for more information.

Expansion Slots

Micro SD Socket

The micro SD socket allows you to install a micro SD card for the expansion of available storage.

LVDS LCD Panel Connector

The system board allows you to connect an LCD Display Panel with the LVDS LCD panel connector. This connector transmits video signals and power from the system board to the LCD Display Panel. Refer to the right side for the pin functions of the LVDS connector.

BIOS Setting

Configure the LCD panel in the Chipset menu (“DISPLAY control” submenu) of the BIOS. Refer to Chapter 3 for more information.

AIO/DIO Connector

AIO/DIO connector provides functionality to external devices that are connected to the connector. **(FOR FUTURE USE)**

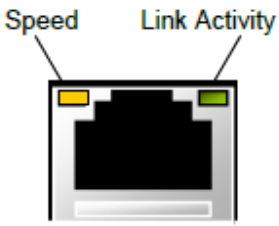
3.2.3 LED Indicators

Operation Status LEDs (Screen)

All RXi Industrial Displays have a tri-color LED built into the screen that provides a visual indication of the operation status.

LED State	System State
Amber, Solid	Operating system starting
Green, Solid	Normal operating state
Green, Blinking	Backlight off
Red, Blinking	Backlight failure
Off	Power not applied to the unit

Ethernet Port Operation LEDs



LED	LED State	Operating State
Speed	Yellow, ON	10/100/1000
Link Activity	Green, ON	Link Status

3.3 RXi - Web Panel

3.3.1 Jumpers and Connectors Locations

Setting Jumper Functions

Before installing the Web Panel, please set the necessary functions following the chart below.

Note: To determine Pin 1 of the jumper and port, please observe the marking beside the plug. it will be marked as “1”, a bolded line, or a “△”; see the welding plate at the backside, the square welding plate is Pin 1.

Setting Jumper Functions (SW1)

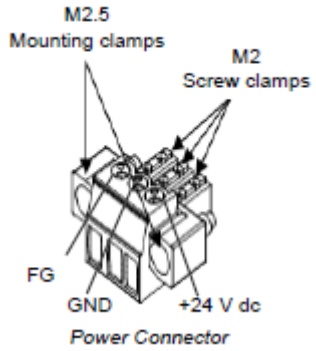
SW1: 2bit switching ON/OFF, used to set the recording and the starting mode of the Motherboard.

		ON	OFF
SW1	1.BOOT_MODE1_S	DOWNLOAD MODE	NORMAL MODE
	2.BOOT_DEV	SD	DEFAULT

Figure 69: Junction Function (SW1)

Socket Description

Connecting Input Power (24V DC-in)



To connect to power, follow these steps:

1. Verify that the power cable is not energized.
2. Loosen the screw clamps on the mating power connector.
3. Strip the insulation from the power cables.
4. Secure the power cable to the mating connector, noting polarity, and tighten the screw clamps. The torque for the attaching screws is 0.3 Nm (2.26 in-lb).
5. Apply dc power to the unit. During normal startup and operation, the LED status indicator displays as follows:
    - Solid amber while the RXi - Industrial Display unit is starting up
    - Solid green during normal operation
6. Once power is applied, the unit begins initializing. The first thing to display is the splash screen.

Be sure to connect a DC power cord to this 3-pin power connector. Using a voltage out of the range may fail to boot the system or cause damage to the system board.

Before connecting the Web Panel to other devices, please read this manual carefully first to prevent damage to the Motherboard.

Power Socket (DC_IN1)

DC_IN1: (Conn. Header Socket, 3.5mm, 1 x 3PIN), used to provide 24V voltage for the system.

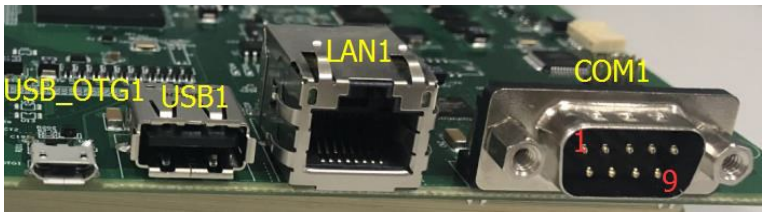
DC_IN1 Pin#	Signal
Pin1	FG
Pin2	DC_IN-
Pin3	DC_IN+

Figure 70: Power Socket (DN-IN1)

USB Socket (USB_OTG1/USB1)

USB_OTG1: Conn. Mini-USB, B-Type Female, SMD-5P With DIP 4pin, used to load system firmware

Figure 2.6 USB, LAN, and COM Ports



USB_OTG1 Pin#	Signal Name
1	5V_USB_OTG
2	USB_OTG_DN
3	USB_OTG_DP
4	USB0_ID
5	GND

USB1: Type-A connector, supports USB devices.

USB_OTG1 Pin#	Signal Name
1	5V_USB_HOST1
2	USBDN_DM1
3	USBDN_DP1
4	GND
5	GND
6	GND

LAN Socket (LAN1)

LAN 1: Conn. I/O Port, RJ45, 1000M, provide a solid RJ45 Ethernet Dock, GREEN denotes data transfer, YELLOW verifies a connection to the Internet.

Connecting Socket (COM1)

COM1: Conn. I/O Port, RS232, DB9, Male. Standard DB9 port, provide 1 route for RS232/422/485.

COM1 Pin#	Signal Name
1	DCD1-_422TX-_485-
2	RXD1_422TX+_485+
3	TXD1_422RX+
4	DTR1-_422RX-
5	GND
6	NC

7	NC
8	NC
9	NC

Debug Socket (DEBUG1)

DEBUG1: Conn. 1.25mm, (DF14 with pointing) SMD-4P, used for debugging information.

DEBUG Pin#	Signal Name
1	3P3V_S0_IO
2	UART1_TXD_DEBUG
3	UART1_RXD_DEBUG
4	GND

SD-Card Socket (SD1)

SD1: Socket, mini SD/TF Card, 9 pins, SMD, supports SD/TF Card devices.

BAT1 Socket (BAT1)

BAT1: BAT Socket, BS-10-A1B0J001, 20mm SMT, supports non-chargeable batteries. CR-2032

Backlight Board Socket (BTB_MAIN_TB572B_1)

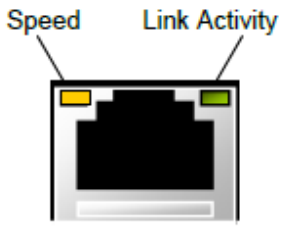
BTB_MAIN_TB-572B_1: Conn. Female, WCON, 2243-225M3CUT, 2 x 25P, 2.00mm, 180°, H=4.35, 10u", SMD-50P, TB-572B Backlight Board Socket.

3.3.2 LED Indicators
Operation Status LEDs (Screen)

All RXi Industrial Displays have a tri-color LED built into the screen that provides a visual indication of the operation status.

LED State	System State
Amber, Solid	Operating system starting
Green, Solid	Normal operating state
Green, Blinking	Backlight off
Red, Blinking	Backlight failure
Off	Power not applied to the unit

Ethernet Port Operation LEDs



LED	LED State	Operating State
Speed	Yellow, ON	10/100/1000
Link Activity	Green, ON	Link Status

Section 4: Installation and Mounting Information

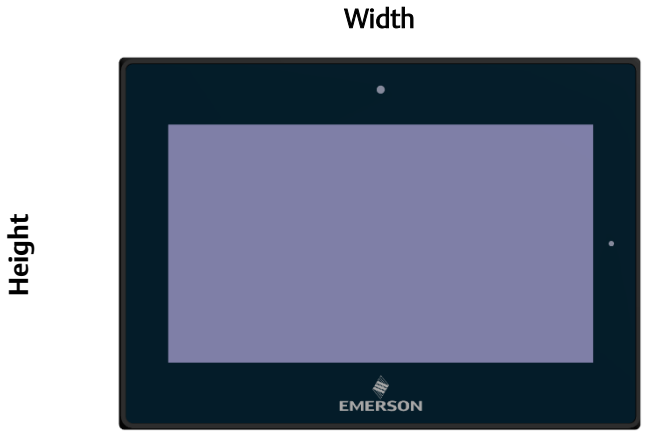
4.1 Panel Cutout Dimensions

4.1.1 Industrial Monitor

The RXi Industrial Monitor can be panel-mounted as presented in Section 4.2, *Panel Installation Steps.* A Type 4, Type 4X, or IP 66 rating is achieved when mounted to the flat surface of a sufficiently rated enclosure. Please follow the instructions in Section 4.2, *Panel Installation Steps.*

Panel Thickness: 16[1] to 7 gauge (1.6 to 5 mm)

Figure 71: Panel Cutout Dimension Definitions



Display Size (in)	Width (mm)	Height (mm)
15	398	245.5
19	482	297
24	581	360

All panel cutout measurements should be within ±0.5 mm.
Values presented are width and height only.

[1] For IP66 installations of 12-inch displays (IC758CSW12SCREEN-A and IC758COW12SCREENSLR-A) use a 14 to 7 gauge (2 to 5 mm) thick panel.

4.1.2 Panel PC Cutout Dimensions

The RXi Panel PC can be panel-mounted as presented in Section 4.3, *Mounting to Modular Display*.

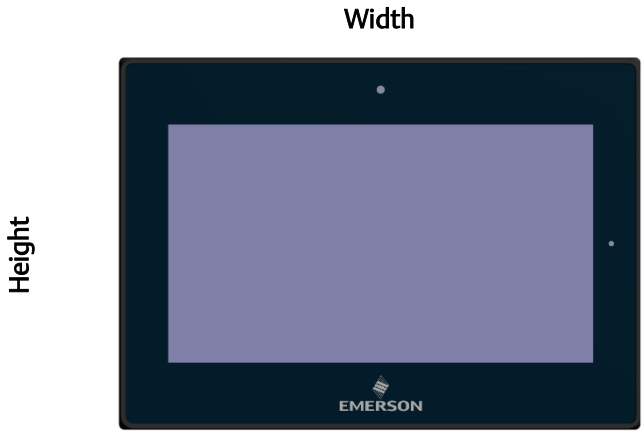
A Type 4, Type 4X, or IP 66 rating is achieved when mounted to the flat surface of a sufficiently rated enclosure. Please follow the instructions in Section 4.2, *Panel Installation Steps.*

Panel Thickness: 16[2] to 7 gauge (1.6 to 5 mm)

Panel Thickness: 1.6 to 5mm

All measurements within ±0.5mm

Figure 72: Panel Cutout Dimension Definitions

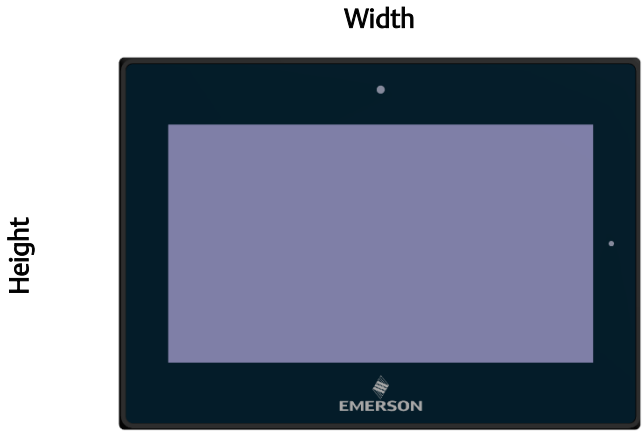


Display Size (in)	Width (mm)	Height (mm)
7	183.5	128.5
10	255.5	174
12	317	214.5
15	398	245.5
19	482	297
24	581	360

[2] For IP66 installations of 12-inch displays (IC758CSW12SCREEN-A and IC758COW12SCREENSLR-A) use a 14 to 7 gauge (2 to 5 mm) thick panel.

4.1.3 Web Panel Cutout Dimensions

Figure 73: Panel Cutout Dimension Definitions



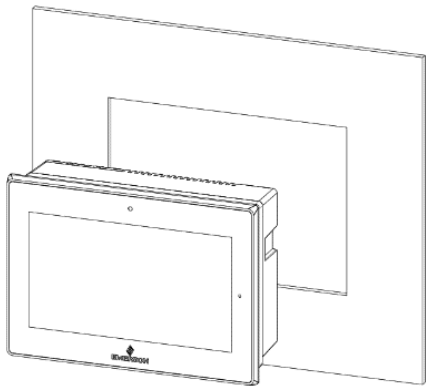
Display Size (in)	Width (mm)	Height (mm)
7	183.5	128.5
10	255.5	174
12	317	214.5
15	398	245.5
19	482	297
24	581	360

4.2 Panel Installation Steps

1. Verify that the gasket is present and properly seated in the bezel channel located on the sides of the unit

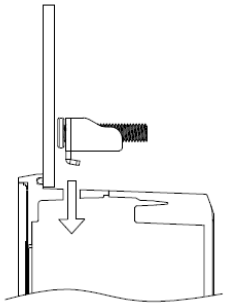
2. Insert the unit into the mounting panel cutout

Figure 74: Panel Install View



3. Insert the hook of the mounting bracket into the mounting hole as displayed in the following figure.

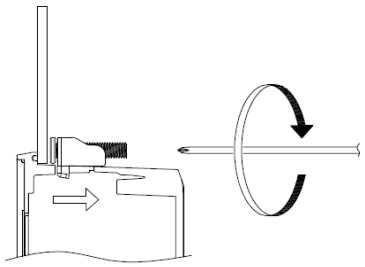
Figure 75: Mounting Bracket Insertion



4. Tighten all mounting brackets by hand until the gasket seal contacts the mounting surface uniformly.

5. In a cross pattern around the monitor tighten all mounting clip screws to a torque of 13 to 13.9 in-lbs. (15 to 16kgf-cm) making sure not to overtighten the bracket.

Figure 76: Tighten Mounting Bracket



4.3 Mounting to Modular Display

Figure 77: 7" Mount

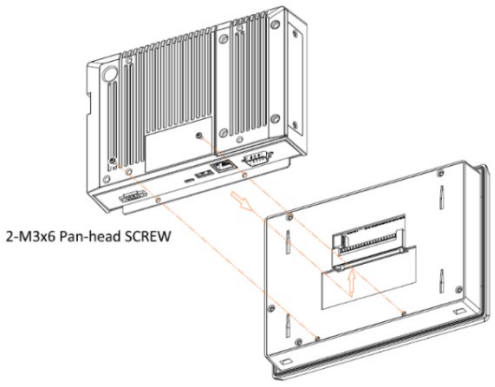


Figure 78: 10" Mount

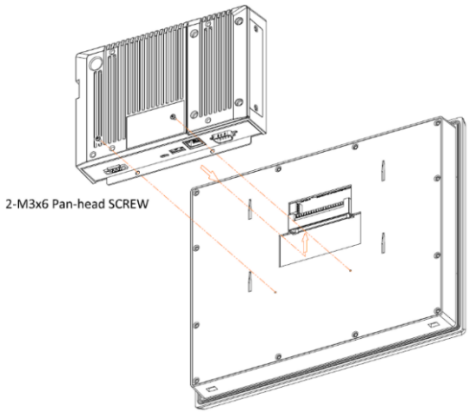


Figure 79: 12" Panel Mount

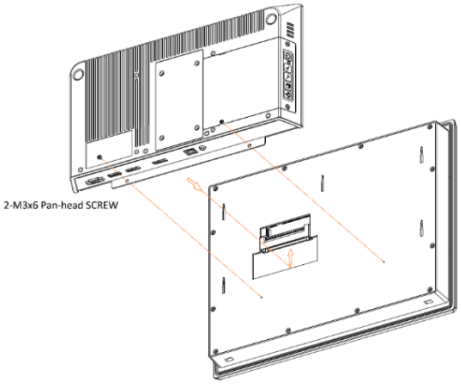


Figure 80: 15" Panel Mount

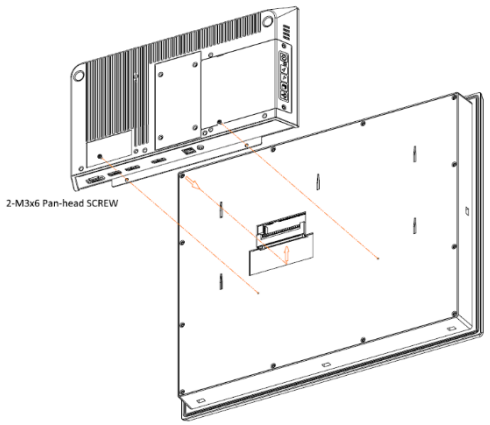


Figure 81: 19"/24" Panel Mount

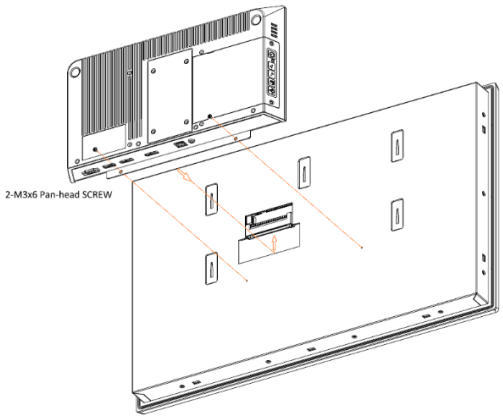
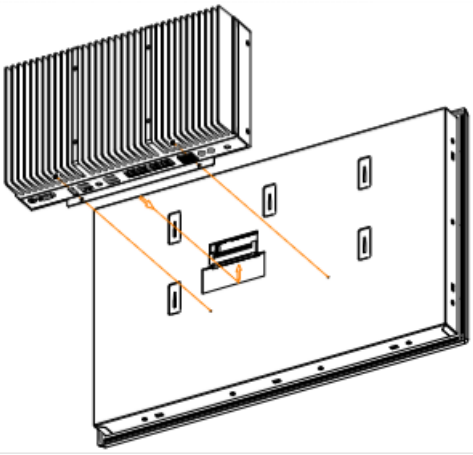


Figure 82: Panel PC with AMD Ryzen Mount



4.4 VESA Mount

Figure 83: 7" VESA Mount

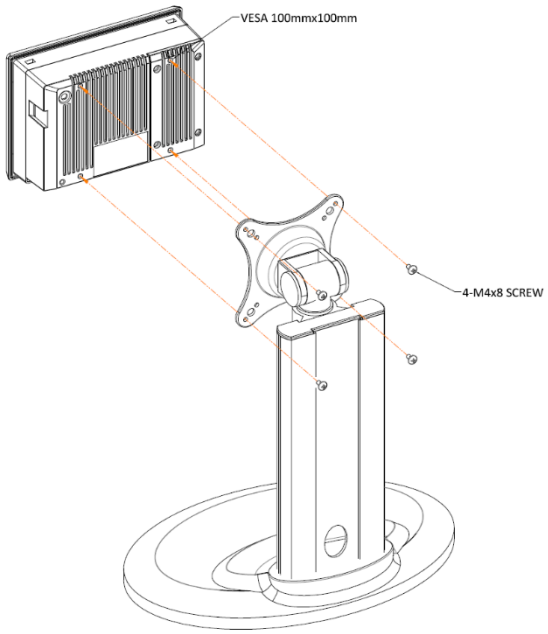


Figure 84: 10" VESA Mount

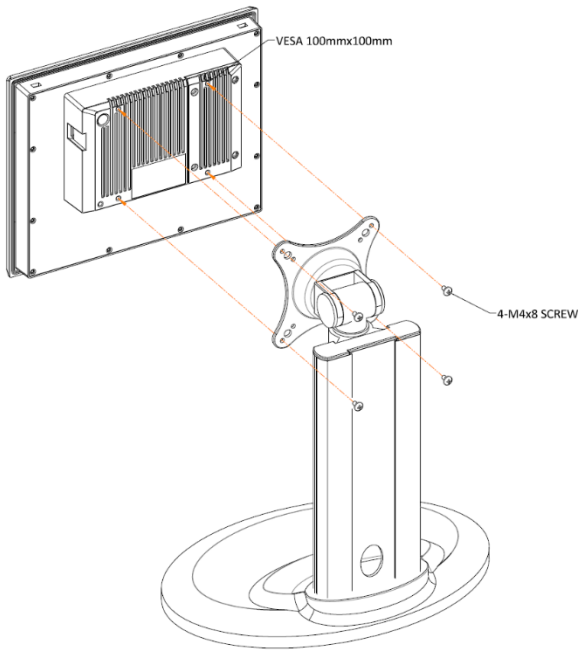


Figure 85: 12" VESA Mount

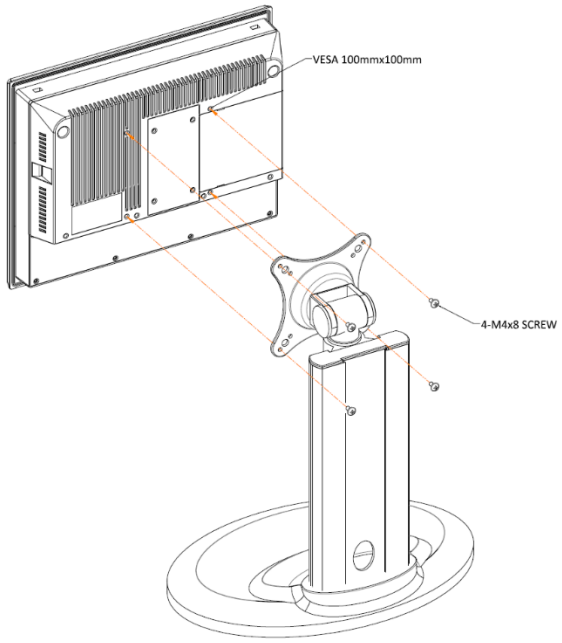


Figure 86: 15" VESA Mount

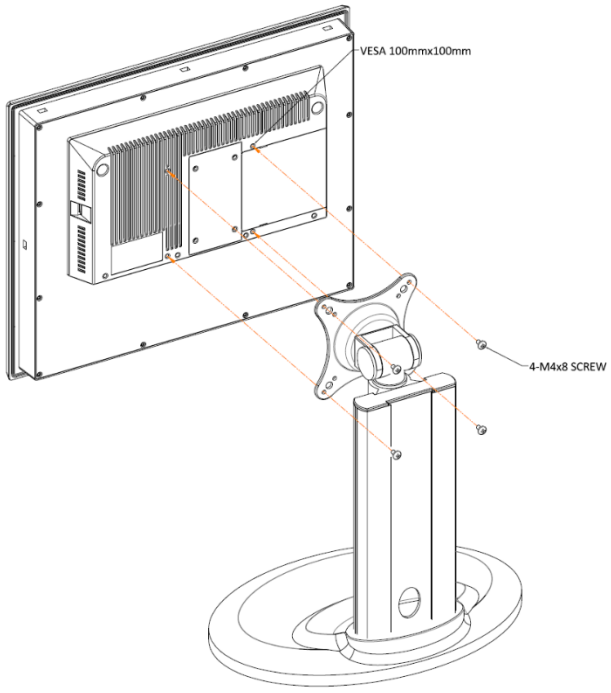


Figure 87: 19"/24" VESA Mount

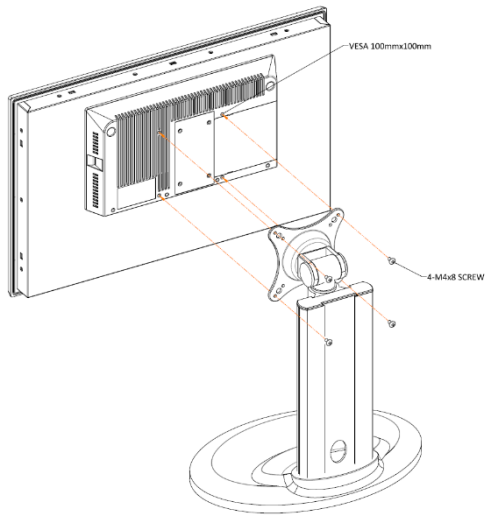
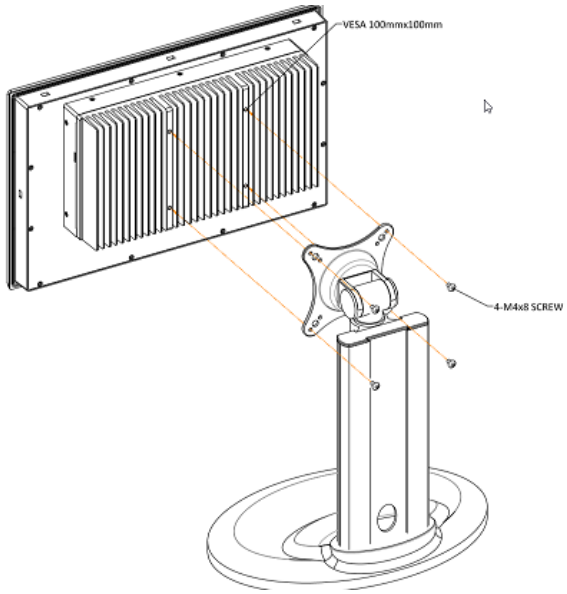


Figure 88: Panel PC with AMD Ryzen VESA Mount



⚠ CAUTION

- Tighten the mounting clip screws by hand until the gasket contacts the mounting surface uniformly.
- Tighten the mounting clip screws to a torque of 8-10 kgf-cm by using the specified sequence. Be sure not to overtighten.

Section 5: Firmware Update Instructions for the RXi-Panel PC and RXi2-LP IPC

The following Firmware Update requires the user to use a portable media storage device. Users can deploy to either a DVD or a USB stick.

5.1 Deploy to DVD (Option 1)

1. Place a blank DVD in your optical drive.
    a. If your system does not have a DVD drive, connect an external DVD drive to the system first.
    b. **Note**: The optical drive must have support for DVD-burning to continue with this process.
2. Download the .iso file to your computer, and open File Explorer to the .iso file location
3. Right-click on the .iso file and select **Burn disk image.**
4. A prompt will appear requesting the user to select the disk burner. Select the disk burner containing the blank DVD and select **Burn.**
    a. If you only have one disk burner with the blank DVD inside, it will default to that burner.
    b. Optionally, select **Verify disc after burning**, but it is not required for this process
5. The optical drive will begin burning the DVD. Upon completion, the Windows Disk Image Burner will notify you that the process is complete and that the contents of the drive will be viewable in File Explorer.
6. Once the process is complete and the files are viewable, you may proceed with recovering the system.

5.2 Deploy to USB Stick (Option 2)

1. Insert a blank USB drive into your computer.
    a. This process may erase any data stored on the USB drive. If your selected USB drive contains any important data, please be sure to create a backup of the files before proceeding.
2. Download the .iso file to your computer and open your USB boot media creation tool.
3. Following the process with your chosen USB boot media creation tool.

5.3 Recover from Image

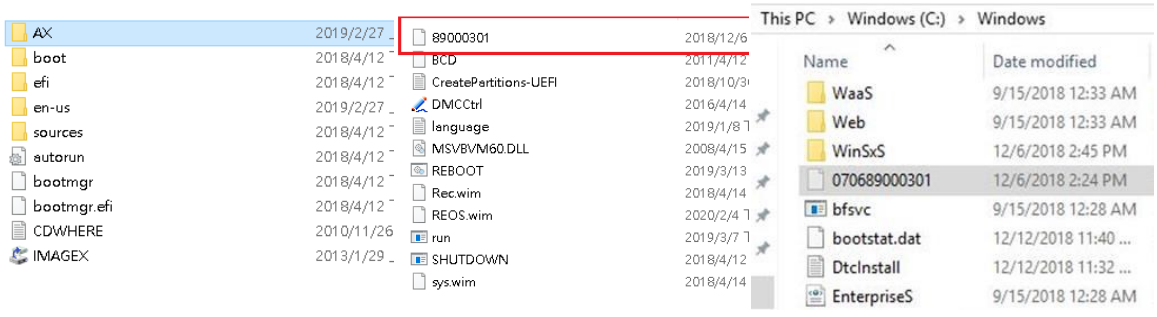
1. During startup, open the boot menu by repeatedly pressing **F7**.
2. Under the boot menu, select the recovery image as your boot option.
3. Once you have selected the correct boot option, a Windows PE environment will begin to boot.
4. Once the Windows PE environment has loaded, you will be presented with a GUI with multiple options.
5. Select **Recover** and the process will begin.
6. Once the process has been completed, the unit will automatically restart. Once it has restarted, remove your recovery media and the unit will boot into Windows 10
    a. NOTE: If the boot priority has been changed, please go back into BIOS to adjust the boot priority to ensure the internal SSD is the primary boot device

5.4 Steps for Checking the Installed Version

1. Release note file location:

You can find the release notes file in the **AX** directory on the recovery disc and the `C:\Windows` directory (after recovery), the file name will be a string of numbers with no extension.

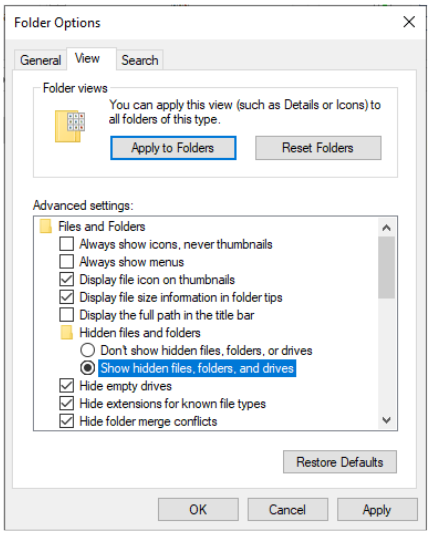
Figure 89: AX Directory.



2. Folder Options:

In `C:\Windows` the file properties of the release notes file are set to hidden, you must change the file browsing settings in **Folder Options** to see the file.

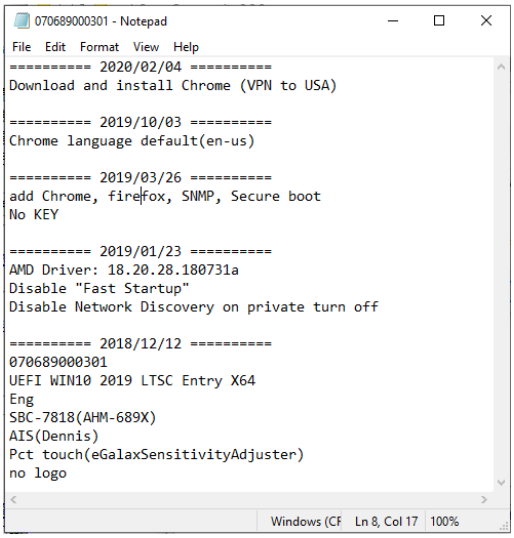
Figure 90: Folder Options



3. Revision check:

The release notes file uses dates to publish each change.

Figure 91: Release Notes



Section 6: RXi Panel PC Windows Activation Procedure

The preloaded Windows 10 IOT Enterprise image on Panel PC is not activated by default. The product key is present on the rear of the Panel PC backing module to activate Windows 10 IOT Enterprise.

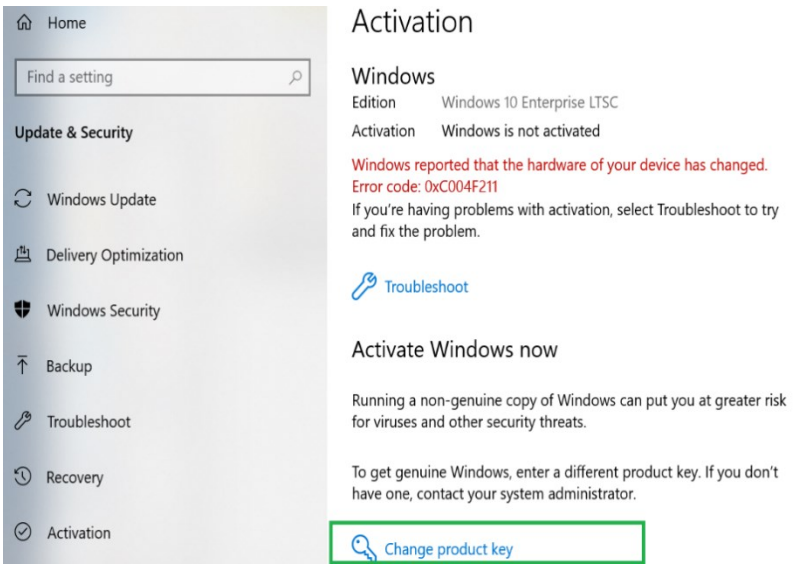
6.1 Activate a Windows 10 IoT Enterprise LTSC device Using an Internet Connection

NOTICE

It is required to place the Panel PC unit in a DMZ network architecture with internet access temporarily to perform the activation with Microsoft.

1. Press the Windows key (Start button), then go to **Settings** > **Update and Security** > **Activation (or) Launch This PC properties**.
2. Proceed with license activation by pressing the **Change Product Key** option which is highlighted in the below image in green color.

Figure 92: Activation



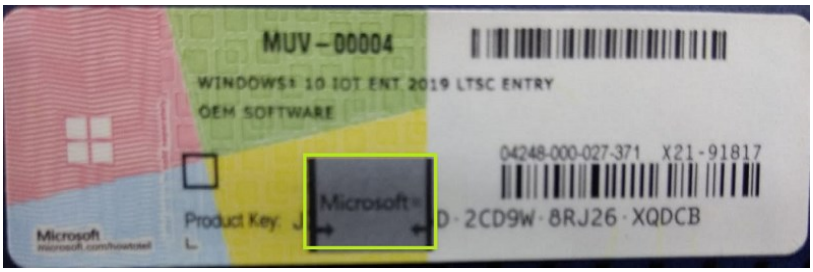
Note: Ignore the error message – "Windows reported that the hardware of your device has changed. Error code: 0xC004F211."

1. Find the **Product Key Sticker** that is present on the rear side of the Panel PC backing module as shown in (Figure 93).

Figure 93: Product Key Sticker

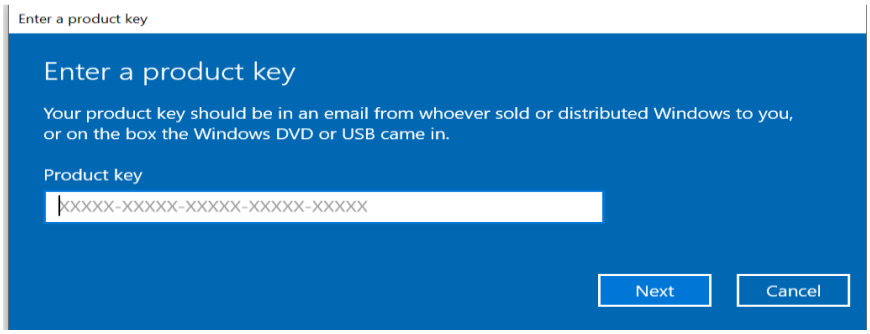
2. Part of the **Product Key** may be covered with gray scratch ink. Remove (scratch) the ink layer to reveal the Product Key as shown in (Figure 94).

Figure 94: Removing the Scratch Layer



3. Enter the retrieved **Product Key** into the popup box and press **Next** (Figure 95).

Figure 95: Enter the Product Key



4. The Windows 10 product key is now active.

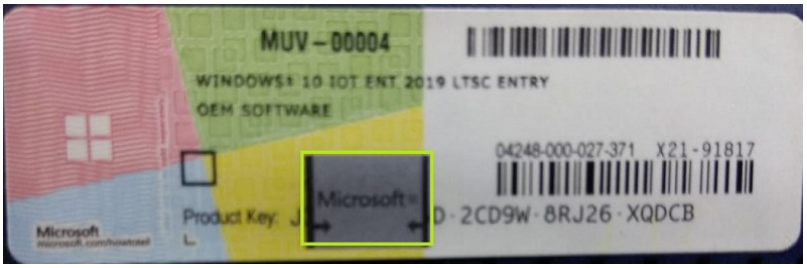
6.2 Activate a Windows 10 IoT Enterprise LTSC Device Using a Telephone

1. On the device, open a command prompt as the administrator.
2. Navigate to the *<system drive>:\Windows\System32* with folder type **slmgr.vbs /ipk XXXXX-XXXXX-XXXXX-XXXXX-XXXXX**. The **XXXXX** characters will be the 25-character product key present on the side of the device (Figure 96).
3. **Product Key** is present on the Panel PC backing module as showing below.

Figure 96: Product Key Sticker

4. The part of the Product Key is covered by the scratch layer as highlighted below. The user needs to retrieve this by removing the scratch layer (scratch-off Microsoft labeled layer) as highlighted below.

Figure 97: Revealing the Product Key

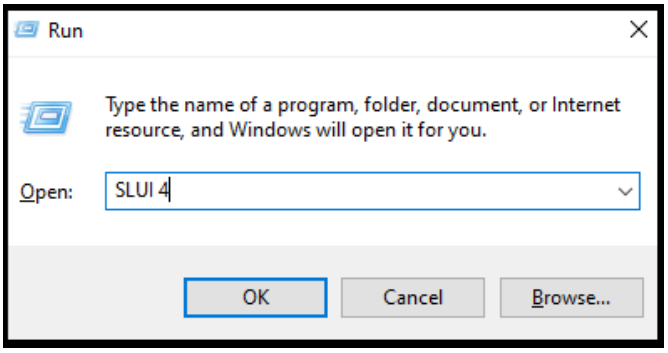


5. After step 2, a message display stating that the Product Key was installed successfully. Click **OK** to proceed.

Figure 98: Windows Script Host

6. Press the **Win+R** keys to open **Run**, then type**: SLUI 4** and click on **OK.**

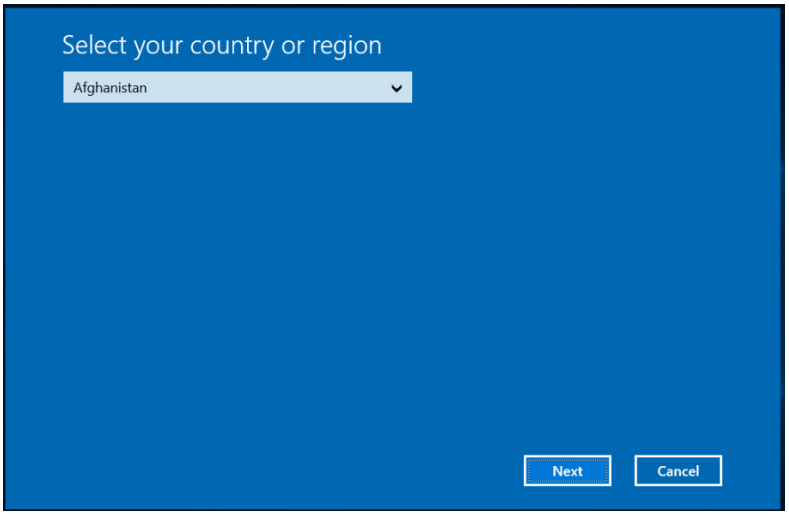
Figure 99: Run the SLUI 4 Command



Note: There is a space between SLUI and 4. The 4 option instructs SLUI to launch the telephone activation UI.

7. Select your country or region and click **Next**. It navigates to next page where we can see **Installation** ID.

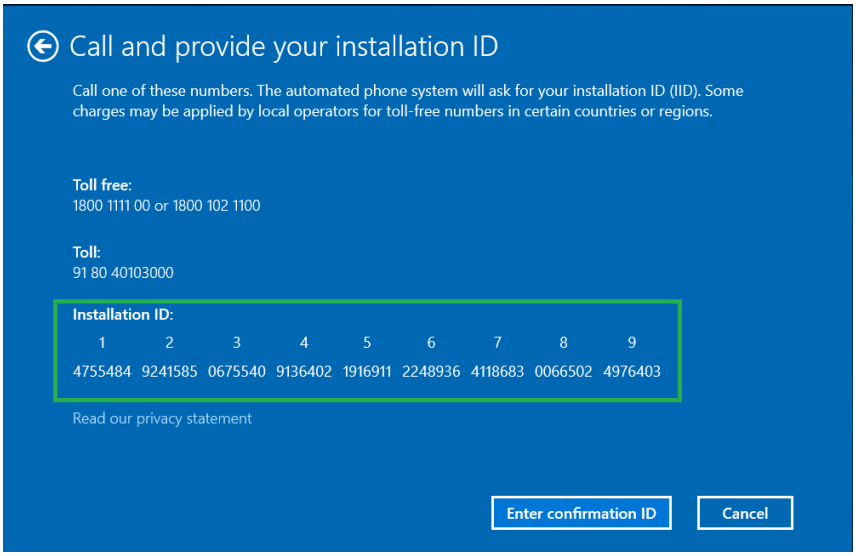
Figure 100: Select Country or Region



8. Call the Microsoft Product Activation Center. (The phone number is provided based on the selected region.) Proceed through the automated menu and answer a few questions about the Windows activation.

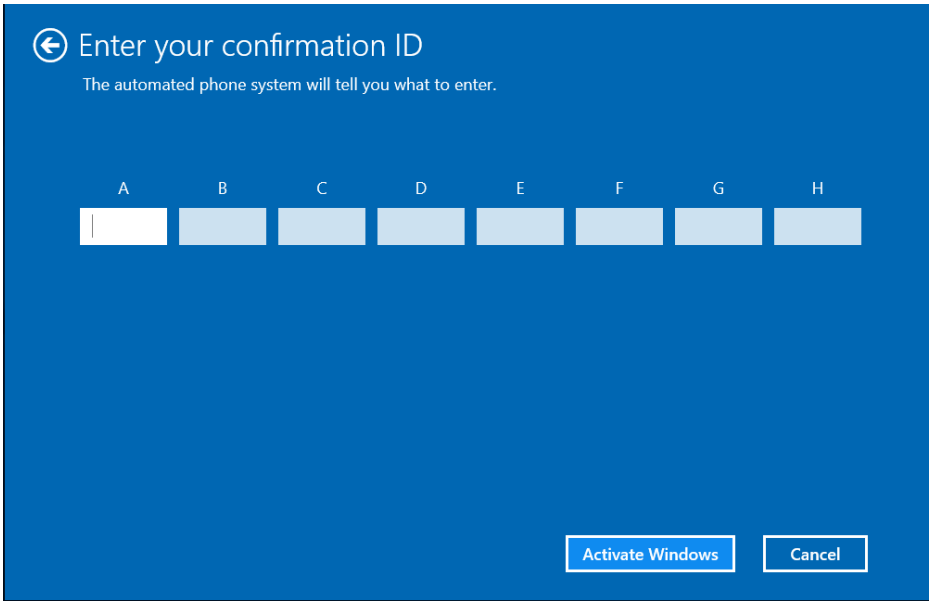
9. At the end of the automated menu, the user will need to confirm the 63-digit Installation ID number. Enter the Installation ID number as shown in Figure 101. The Installation ID number will be grouped into sets of nine (seven digits per set).

Figure 101: Technical Support



10. The phone activation system will provide the user with a 48-digit **Confirmation ID**. Enter the Confirmation ID as seen in (Figure 102).

Figure 102: Confirmation ID

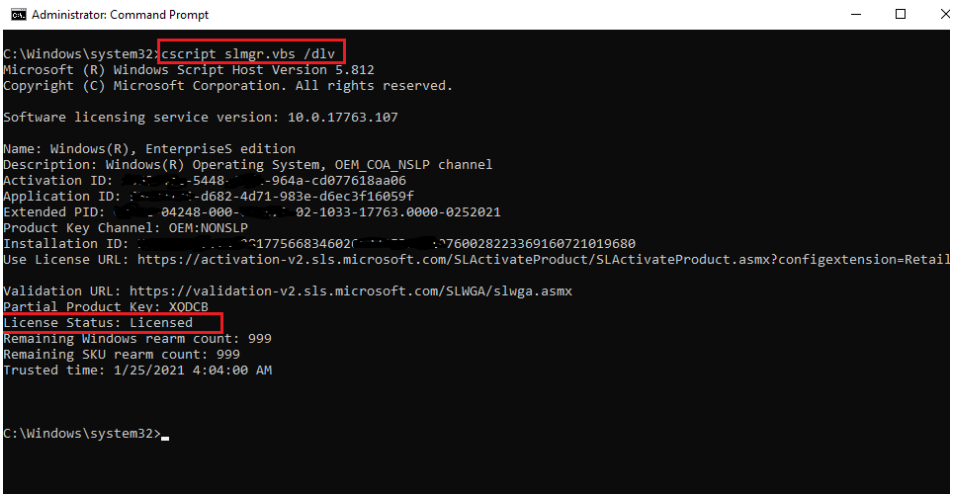


11. Once the Confirmation ID has been entered, click the **Activate Windows** button.
12. To verify the licensing status, open the command prompt as the Administrator on the device.
13. Navigate to the *<system drive >:\Windows\System32 folder, type*

cscript slmgr.vbs /dlv, and verify that the License Status now displays Licensed.

Example: *c:\Windows\System32>cscript slmgr.vbs /dlv*

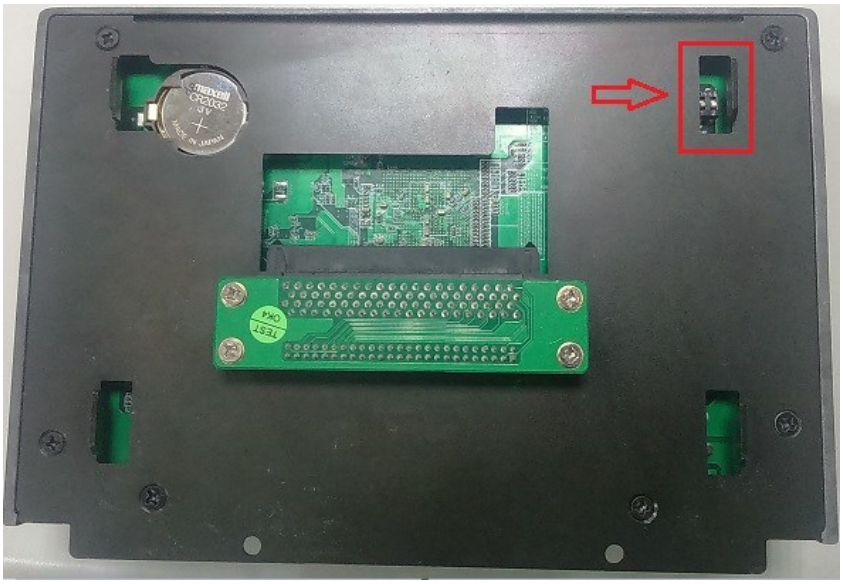
Figure 103: Command Prompt



Section 7: Firmware Update Instructions for the RXi - Web Panel

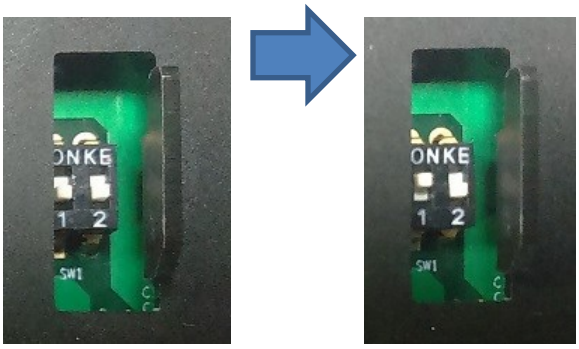
1. Locate the SW1 dip switch.

Figure 104: SW1 Dip Switch



2. Change SW1 1 to ON to enable download mode.

Figure 105: SW1 Switch Toggled to ON

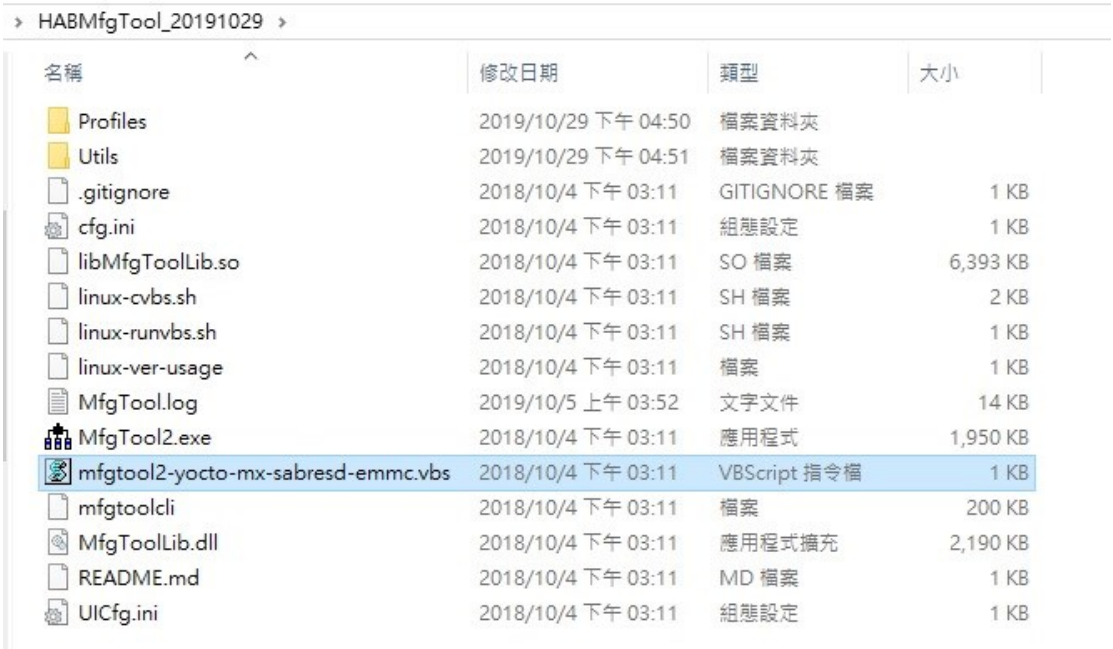


3. Connect a Micro USB Cable from your desktop/laptop PC (running windows operating system) to the web panel in the OTG port on the Web Panel.

Figure 106: OTG Port Location

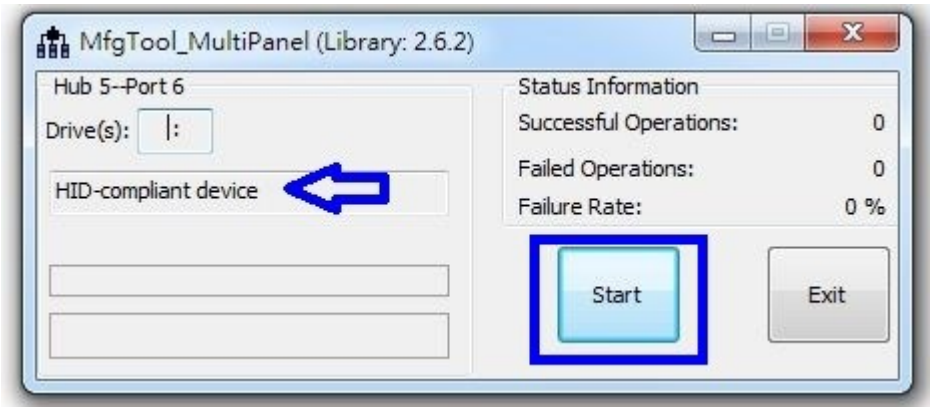
4. Power on the Web Panel and then on your desktop/laptop PC, double click the firmware update tool **mfgtool2-yocto-mx-sabresd-emmc.vbs** executable file.

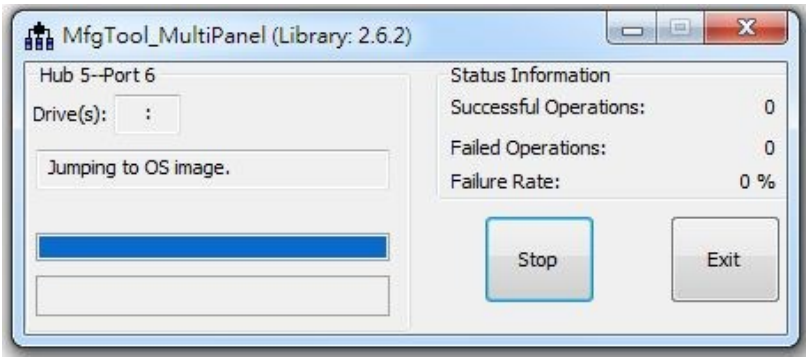
Figure 107: .VBS Location

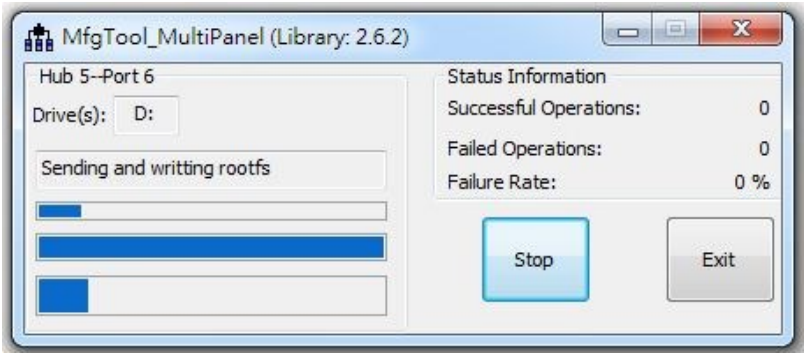


5. If a USB connection is detected, you will see the **HID-Compliance device** as shown in the following picture, then click **Start** to update the Web Panel firmware.

Figure 108: HID-Compliant Device

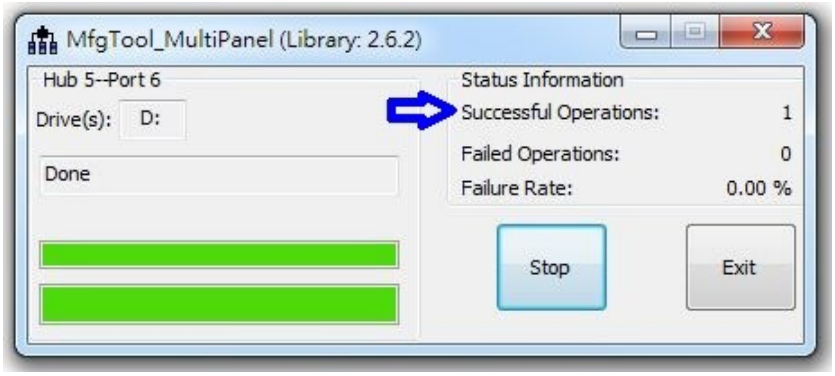






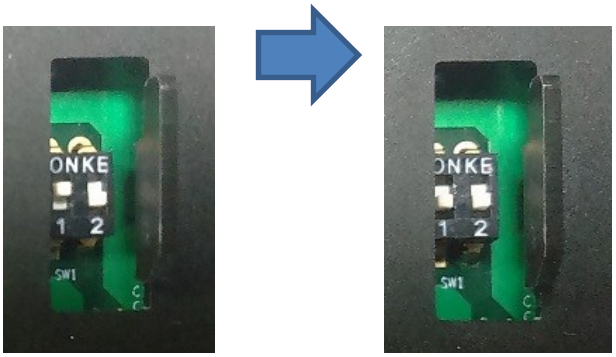
6. Upon completion of the update, you will see **1** displayed under **Successful Operations**. Click **Stop** and **Exit**, then Power-off Web Panel.

Figure 109: Successful Operations



7. Adjust SW1 **1** back to **Off** for normal operation mode.

Figure 110: SW1 Toggled to OFF



8. To check the Web Panel firmware version, upon restart of the Web Panel, the current Firmware version will be displayed.

General Contact Information

Home link: http://www.emerson.com/industrial-automation-controls

Knowledge Base: https://www.emerson.com/industrial-automation-controls/support

Technical Support

Americas
Phone: 1-888-565-4155
1-434-214-8532 (If toll free option is unavailable)

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+39-0362-228-5555 (from Italy - if toll-free 800 option is unavailable or dialing from a mobile telephone)

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Any escalation request should be sent to mas.sfdcescalation@emerson.com

Note: If the product is purchased through an Authorized Channel Partner, please contact the seller directly for any support.

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