V2426A Hardware Manual

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www.moxa.com/product

V2426A Hardware Manual

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Introduction

The V2426A series embedded computers are based on the Intel 3rd-generation processor and feature four RS-232/422/485 serial ports, dual gigabit LAN ports, and three USB 2.0 hosts. In addition, the V2426A computers provide two DVI-I outputs and are compliant with the EN 50155 specifications covering operating temperature, power input voltage, power surges, ESD, and vibration that makes the V2426A computers well suited for railway applications.

On the V2426A, the dual gigabit Ethernet ports with M12 X-coded connectors offer a reliable solution for network redundancy, promising continuous operation for data communication and management. As an added convenience, the V2426A series computers feature six DIs and two DOs for connecting digital input/output devices, and the CFast feature provides the reliability needed for industrial applications that require data buffering and storage expansion.

The V2426A computers come with two peripheral expansion slots for inserting different V2400 series expansion modules, such as a 2-port CAN module, an HSDPA, GPS, WLAN module, an 8+8 port digital input/output module, a 2-port serial module, a mini PCI expansion module, and a mini-PCI Express module, providing greater flexibility for setting up different railway applications at field sites.

Pre-installed with Windows Embedded Standard 7 or customized Debian 7 OS, the V2426A series provides programmers with a friendly environment for developing cost-effective and sophisticated application software. Wide temperature models of the V2426A series that operate reliably in a -40 to 70°C operating temperature range are also available, offering an optimal solution for applications subjected to harsh environments.

The following topics are covered in this chapter:

❑ **Package Checklist**
❑ **Product Features**
❑ **V2426A Hardware Specifications**
❑ **Hardware Block Diagram**

Package Checklist

Each model is shipped with the following items:

- V2426A series embedded computer
- Wall mounting kit
- Documentation and software CD or DVD
- Quick installation guide (printed)
- Warranty card

NOTE: Please notify your sales representative if any of the above items are missing or damaged.

Product Features

The V2426A embedded computers include the following features:

- Intel Celeron/Intel Core i7 processor suitable for diverse computing demands
- Expansion slots for various I/O, WLAN, or mini-PCIe expansion modules
- Dual independent DVI-I displays
- Gigabit Ethernet ports with M12 X-coded connectors
- 1 SATA connector and CFast socket for storage expansion
- M12 A-coded power connector
- Compliant with EN 50121-4
- Essential compliance with EN 50155*
- Ready-to-run Windows Embedded Standard 7 or Linux Debian 7 (for custom orders) platform
- -40 to 70°C wide temperature models available
- Support for SNMP-based system configuration, control, and monitoring

*Moxa defines "essential compliance" to include those EN 50155 requirements that make products more suitable for rolling stock railway applications.

V2426A Hardware Specifications

Computer
CPU:
- Intel Celeron 1047UE processor (2M cache, 1.40 GHz) for the V2406A-C2 series
- Intel Core i7-3517UE processor (6M cache, 1.7 GHz) for the V2406A-C7 series

OS: Windows Embedded Standard 7 or Linux Debian 7
System Chipset: Mobile Intel® HM65 Express
System Memory: 1 DDR3-1600 SO-DIMM SDRAM slot, 8 GB max., 4 GB pre-installed
USB: 3 bootable USB 2.0 ports (2 type A, 1 M12 D-coded)

Storage
HDD/SSD Support: 1 internal SATA-II bus for 2.5" HDD/SSD storage expansion*
*Storage drive not included. To be purchased separately.
CFast Support: 1 slot for OS*, 1 slot for backup storage
*32-bit W7E requires at least an 8 GB CFast card
*64-bit W7E requires at least a 16 GB CFast card (optional)
*Linux Debian 7 requires at least an 8 GB CFast card (to be purchased separately)

Other Peripherals
Audio: Line-in, line-out interface (M12 A-coded)
Expansion Slot: 2 peripheral expansion slots

Display

Graphics Controller: Intel® HD Graphics 4000 (integrated)

Connector Type: 2 DVI-I connectors

Display Interface:

DVI up to 1920x1200 resolution @ 60 Hz

VGA up to 1920x1200 resolution @ 60 Hz

VGA up to 2048x1536 resolution @ 75 Hz

Ethernet Interface

LAN: 2 auto-sensing 10/100/1000 Mbps ports (M12 X-coded)

Isolation Protection: 1.5 kV

Serial Interface

Serial Standards: 4 RS-232/422/485 ports, software selectable (DB9 male)

ESD Protection: 4 kV for all signals

Isolation Protection: 1.5 kV

Serial Communication Parameters

Data Bits: 5, 6, 7, 8

Stop Bits: 1, 1.5, 2

Parity: None, Even, Odd, Space, Mark

Flow Control: RTS/CTS, XON/XOFF, ADDC® (automatic data direction control) for RS-485

Baudrate: 50 bps to 921.6 kbps (non-standard baudrates supported; see user's manual for details)

Serial Signals

RS-232: TxD, RxD, DTR, DSR, RTS, CTS, DCD, GND

RS-422: TxD+, TxD-, RxD+, RxD-, GND

RS-485-4w: TxD+, TxD-, RxD+, RxD-, GND

RS-485-2w: Data+, Data-, GND

Digital Input

Input Channels: 6, source type

Input Voltage: 0 to 30 VDC at 25 Hz

Digital Input Levels for Dry Contacts:

• Logic level 0: Close to GND

• Logic level 1: Open

Digital Input Levels for Wet Contacts:

• Logic level 0: +3 V max.

• Logic level 1: +10 V to +30 V (Source to DI)

Isolation: 3 kV optical isolation

Digital Output

Output Channels: 2, sink type

Output Current: Max. 200 mA per channel

On-state Voltage: 24 VDC nominal, open collector to 30 VDC

Connector Type: 10-pin screw-fastened Euroblock terminal (6 inputs, 2 outputs, DI Source, GND)

Isolation: 3 kV optical isolation

LEDs

System: Power, Storage

LAN: 2 per port (10/100/1000 Mbps)

Serial: 2 per port (Tx and Rx)

Switches and Buttons

Power Switch: on/off (front panel)

Reset Button: For warm reboot (rear panel)

Physical Characteristics

Housing: Aluminum

Weight: 2 kg

Dimensions:

Without ears: 250 x 86 x 154 mm (9.84 x 3.38 x 6.06 in)

With ears: 275 x 92 x 154 mm (10.83 x 3.62 x 6.06 in)

Mounting: DIN rail, wall, VESA

Environmental Limits

Operating Temperature*:

Standard models: -25 to 55°C (-13 to 131°F)

Wide temp. models: -40 to 70°C (-40 to 158°F)

Storage Temperature*: -40 to 85°C (-40 to 185°F)

*without HDD installed

Ambient Relative Humidity: 5 to 95% (non-condensing)

Anti-Vibration: EN 50155 standard

Anti-Shock: EN 50155 standard

Conformal Coating: Available on request

Power Requirements

Input Voltage: 12 to 48 VDC (M12 A-coded)

Note: Compliant with EN 50155 at 24 VDC

Power Consumption:

• 3.24 A @ 12 VDC, 38.88 W

• 0.74 A @ 48 VDC, 35.52 W

Standards and Certifications

Safety: UL 60950-1, CSA C22.2 No. 60950-1-07, EN 60950-1

EMC: EN 55022 Class A, EN 61000-3-2 Class D, EN 61000-3-3, EN 55024, FCC Part 15 Subpart B Class A

Green Product: RoHS, CRoHS, WEEE

Rail Traffic: EN 50155*, EN 50121-3-2, EN 50121-4, IEC 61373

*Complies with a portion of EN 50155 specifications. Please contact Moxa or a Moxa distributor for details.

Reliability

Automatic Reboot Trigger: Software-programmable watchdog timer configurable from 1 to 255 seconds

Warranty

Warranty Period: 3 years

Details: See www.moxa.com/warranty

Note: These hardware specifications describe the embedded computer unit itself, but not its official accessories. In particular, the wide temperature specification does not apply to accessories such as power adapters and cables.

Hardware Block Diagram

2
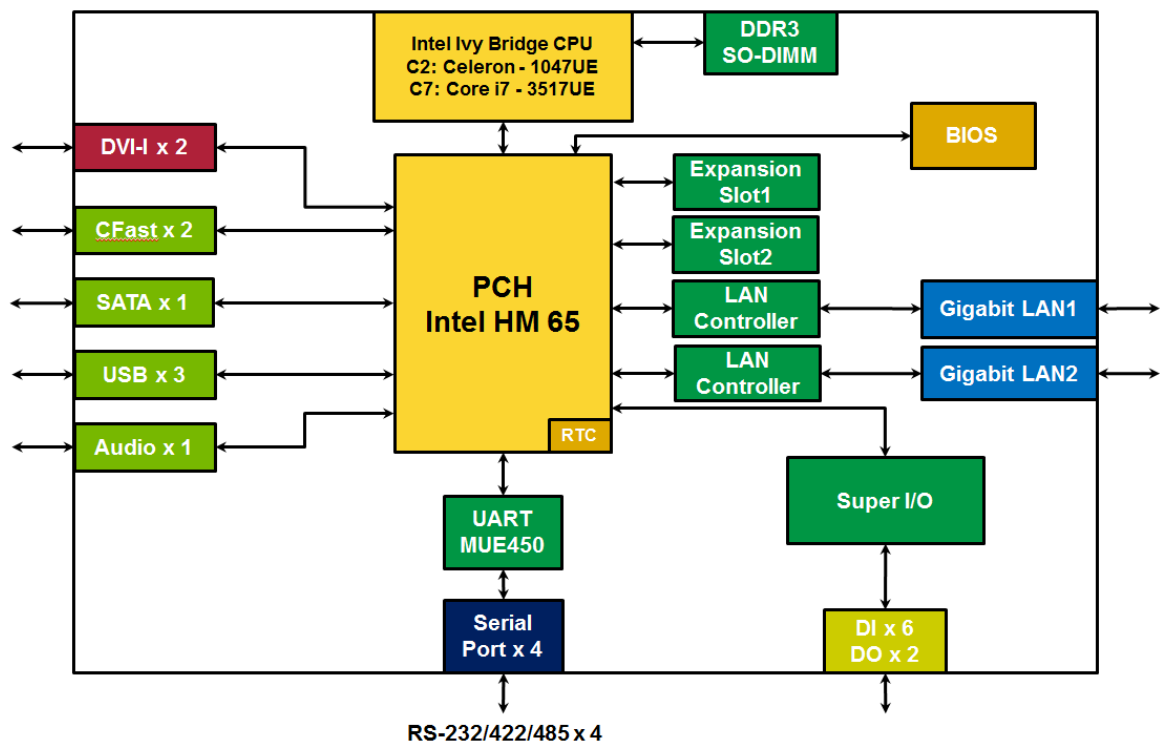
Hardware Introduction

The V2426A series embedded computers are compact, well-designed, and rugged enough for industrial applications. LED indicators help you monitor performance and identify trouble spots, multiple serial ports allow you to connect different devices for wireless operation, and the reliable and stable hardware platform lets you devote your attention to developing your applications.

The following topics are covered in this chapter:

❏ **Appearance**
❏ **Dimensions (unit = mm)**
❏ **LED Indicators**
❏ **Reset Button**
❏ **Real Time Clock (RTC)**

Appearance

Front View

LEDs
(Power,
Storage)

CFast Socket

LAN LEDs x 4

USB Host
(M12 D-coded)

DVI-I
Outputs x 2

CFast

1000Mbps 100Mbps   1000Mbps 100Mbps

DVI-I 1   DVI-I 2   ON/OFF

Battery

Audio   LAN1   LAN2   SLOT 2
SLOT 1

Audio
Input/Output
(M12 A-coded)

100/1000 Mbps
LAN Ports x 2
(M12 X-coded)

Expansion
Slots x 2

RTC Battery Holder

Power Switch

Rear View

Power Input
(M12 A-coded)

Serial Ports x 4
(RS-232/422/485, DB9)

DI x 6
DO x 2

USB 2.0 Hosts x 2
(Type A)

Power Input

P1 P2 P3 P4
TX
RX

RS-232/422/485

DI   DO
4 5 0 1 GND

Reset

N.C.   V+
V-   N.C.

P2   P4

0 1 2 3 Source

DC 12-48V

P1   P3   DI

Grounding
Connector

Power Input
Pin Assignment

Serial LEDs
(Tx/Rx)

Reset Button

Dimensions (unit = mm)

LED Indicators

LED Name	LED Color	LED Function
Power	Green	Power is on and functioning normally.
	Off	Power is off or power error exists.
Storage	Yellow	CFast card/HDD/SSD is transmitting data
	Off	CFast card/HDD/SSD is not transmitting data
LAN (1 or 2)	Green	100 Mbps Ethernet mode
	Yellow	1000 Mbps Ethernet mode
	Off	10 Mbps or no activity
TX (P1-P4)	Green	Serial port is transmitting data
	Off	Serial port is not transmitting data
RX (P1-P4)	Yellow	Serial port is receiving data
	Off	Serial port is not receiving data

Reset Button

Press the **Reset Button** on the rear panel of the V2426A to reboot the system automatically. The Ready LED will blink on and off for the first 5 seconds, and then maintain a steady glow once the system has rebooted.

The V2426A does not support a "Reset to Default" function.

Real Time Clock (RTC)

The V2426A's real-time clock is powered by a lithium battery. You can easily replace the battery yourself using an optional battery kit*. However, please note that there is a risk of explosion if the battery is replaced by an incorrect type of battery. Refer to the V2426A Hardware User's Manual or contact a qualified Moxa support engineer if you have any questions about the RTC battery.

*Moxa offers an "RTC battery kit" that you can use to easily replace the battery. For details, check the optional accessories section of the V2426A datasheet.

> **ATTENTION**
>
> There is a risk of explosion if the battery is replaced by a battery of the incorrect type.

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Hardware Connection Description

In this chapter, we show how to connect the embedded computers to the network and to various devices.

The following topics are covered in this chapter:

❒ **Installing the V2426A**

❒ **Wiring Requirements**

➢ Connecting the Power

➢ Grounding the Unit

❒ **Connecting Data Transmission Cables**

➢ Connecting to the Network

➢ Connecting to a Serial Device

➢ Installing a CFast Card

❒ **Connecting to a USB Device**

❒ **DI/DO**

❒ **Connecting to a DVI-I Monitor**

❒ **Connecting to a Speaker or a Headphone**

❒ **Installing an Expansion Module**

❒ **Installing a SATA Hard Disk**

❒ **RTC Battery Replacement**

Installing the V2426A

Wall or Cabinet Mounting

The V2426A comes with two metal brackets for attaching the device on a wall or to the inside of a cabinet. Complete the following steps to attach the mounting brackets to the V2426A.

Step 1: Use two screws for each bracket to attach the brackets to the rear of the V2426A.
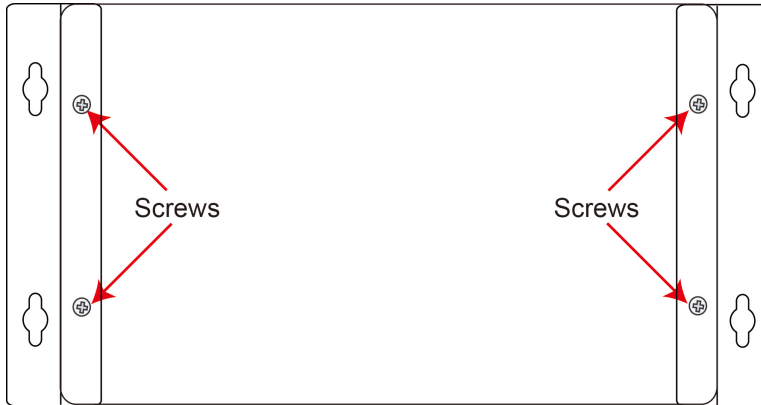
Step 2: Use two screws per side to mount the V2426A on a wall or in a cabinet.
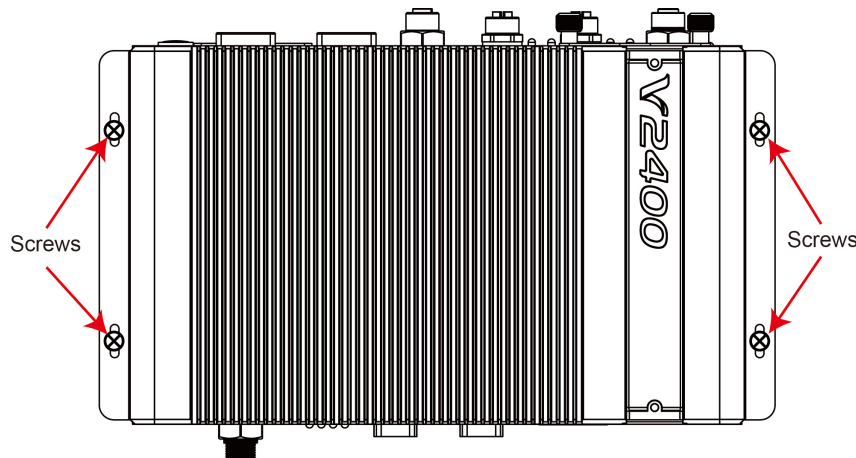
Din-Rail Mounting

The V2426A can be installed on a DIN-rail with the optional DIN-rail kit. This DIN-rail kit must be purchased separately. The DIN-rail kit includes two DIN-rail brackets and eight screws.
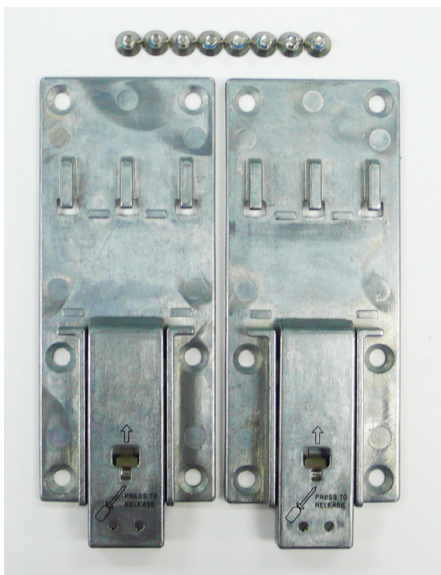
To attach the DIN-rail kit, complete the following steps:

1. Turn the V2426A over so the bottom is facing up.
2. Locate the screw holes on the bottom of the V2426A.
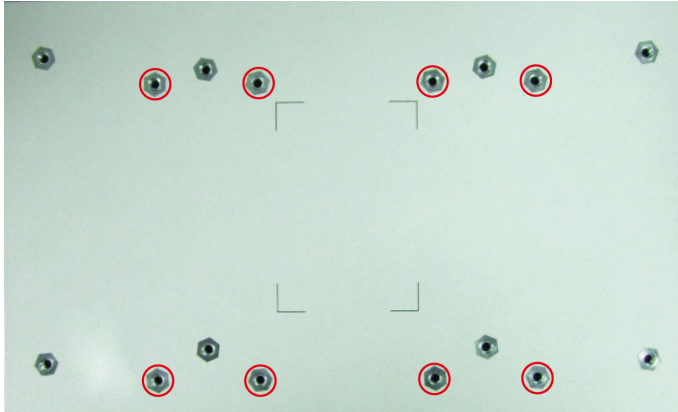
3. Place the brackets on the bottom of the V2426A and align the screw holes on the brackets with the screw holes on the V2426A.
4. Insert and tighten the screws into the screw holes.

NOTE   Use all eight screws to ensure that the V2426A is safely and securely installed on the DIN rail.

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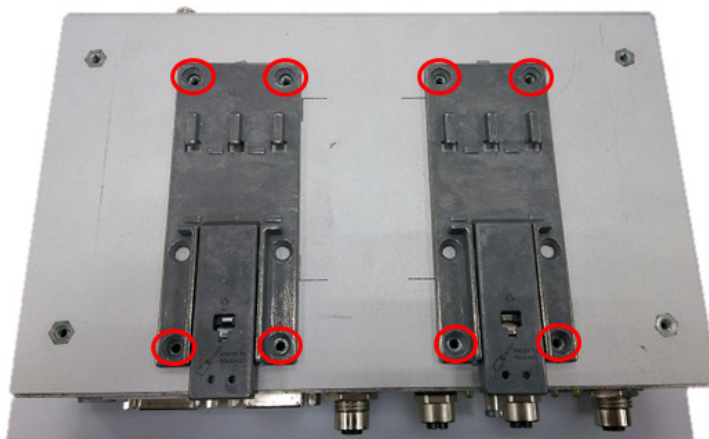
5. When the brackets are firmly attached with the screws, you can install the V2426A onto a DIN-rail.

To remove the V2426A from the DIN rail, first use a screwdriver to pull down the DIN-rail connector to unlock it. The following figure shows a locked DIN-rail connector and an unlocked DIN-rail connector.

⚠️ **WARNING**

Two people are required to remove the V2426A from a DIN rail.
When the DIN-rail connectors are unlocked, the V2426A is detached from the DIN rail automatically.
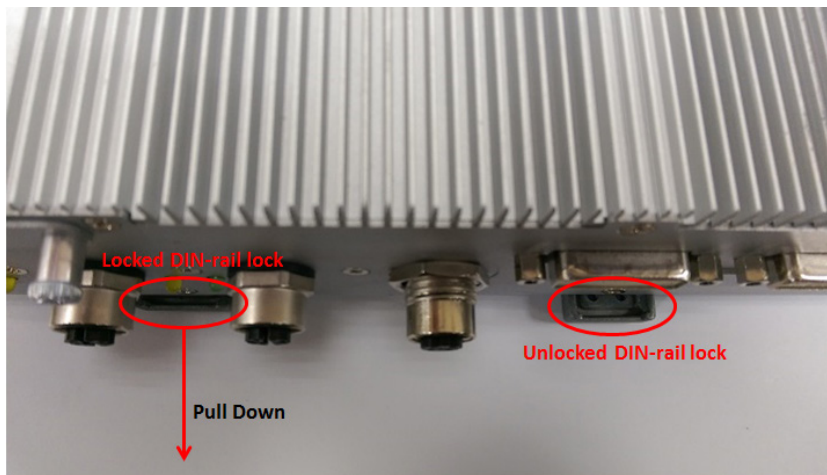
To re-install the V2426A on the DIN rail, use a screwdriver to press the buckle so that it can be released. At this point, it can be re-installed on the DIN rail.

Wiring Requirements

In this section, we describe how to connect serial devices to the V2426A embedded computer.

Be sure to read and follow these common safety precautions before proceeding with the installation of any electronic device:

- Use separate paths to route wiring for power and devices. If power wiring and device wiring paths must cross, make sure the wires are perpendicular at the intersection point.
  NOTE: Do not run signal or communication wiring together with power wiring in the same wire conduit. To avoid interference, wires with different signal characteristics should be routed separately.
- Use the type of signal transmitted through a wire to determine which wires should be kept separate. The rule of thumb is that wiring that shares similar electrical characteristics can be bundled together.
- Keep input wiring and output wiring separate.
- It is advisable to label the wiring to all devices in the system.

⚠️ **ATTENTION**

Safety First!

Be sure to disconnect the power cord before installing and/or wiring your V2426A.

Wiring Caution!

Calculate the maximum possible current in each power wire and common wire. Observe all electrical codes dictating the maximum current allowable for each wire size. If the current goes above the maximum ratings, the wiring could overheat, causing serious damage to your equipment.

Temperature Caution!

Be careful when handling the unit. When the unit is plugged in, the internal components generate heat, and consequently the outer casing may feel hot to the touch.

Connecting the Power

Connect the 12 to 48 VDC power line with M12 A-coded connector to the V2426A computer. If the power is supplied properly, the "Ready" LED will glow a solid green after a 25- to 30-second delay.

Grounding the Unit

Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). Run the ground connection from the ground screw to the grounding surface prior to connecting the power.

> **ATTENTION**
>
> This product is intended to be mounted on a well-grounded mounting surface, such as a metal panel.

PIN	PWR
1	V+
2	N.C.
3	V-
4	N.C.
5	⏚
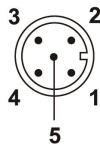
N.C. : Not connected

SG: The Shielded Ground (sometimes called Protected Ground) contact is the central pin of the power input connector. Connect the SG wire to an appropriate grounded metal surface.

Connecting Data Transmission Cables

In this section, we describe how to connect the V2426A embedded computer to a network and serial devices.

Connecting to the Network

Connect your network cable to the embedded computer's Ethernet port. The other end of the cable should be connected to your Ethernet network. When the cable is properly connected, the LEDs on the embedded computer's Ethernet port turns on to indicate a valid connection.

Two 10/100/1000 Mbps Ethernet ports using M12 X-coded connectors are located on the rear panel of the embedded computer. See the following figure for the location of the Ethernet ports and the pin assignments.

> **NOTE**   The pin assignments for the V2426A computer's Ethernet port are shown in the following figure. If you create your own Ethernet cable, make sure that you match the pin assignments on the connector of the Ethernet cable.

PIN	Con.
1	DA+
2	DA−
3	DB+
4	DB−
5	DD+
6	DD−
7	DC−
8	DC+
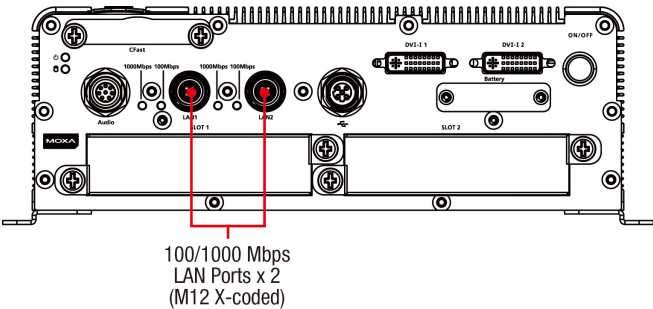
100/1000 Mbps
LAN Ports x 2
(M12 X-coded)

Connecting to a Serial Device

Use a serial cable to connect your serial device to the embedded computer's serial port. Serial ports P1 to P4 have male DB9 connectors and can be configured for RS-232, RS-422, or RS-485 communication (refer to the software manual for your operating system version). The pin assignments are shown in the following table:

Serial Ports x 4
(RS-232/422/485, DB9)

DB9 Male Port

1 2 3 4 5

6 7 8 9
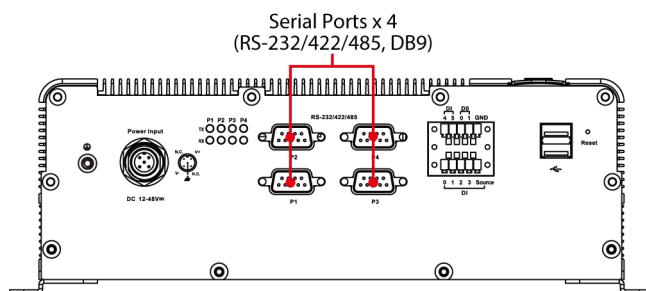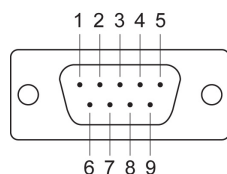
RS-232/422/485 Pinouts

Pin	RS-232	RS-422	RS-485 (4-wire)	RS-485 (2-wire)
1	DCD	TxDA(-)	TxDA(-)	–
2	RxD	TxDB(+)	TxDB(+)	–
3	TxD	RxDB(+)	RxDB(+)	DataB(+)
4	DTR	RxDA(-)	RxDA(-)	DataA(-)
5	GND	GND	GND	GND
6	DSR	–	–	–
7	RTS	–	–	–
8	CTS	–	–	–

Installing a CFast Card

The V2426A embedded computers come with a CFast socket. To insert a CFast card, complete the following steps:

1. Disconnect the V2426A from its power source.
2. The CFast slot is located on the left side of the front panel. Loosen the screws on the CFast socket cover.
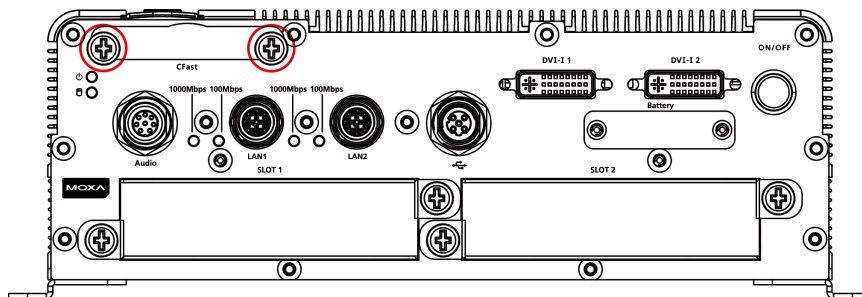
3. Press the CFast card to eject it.
   When you want to insert it back into the CFast slot, slide it into the slot and then push it in with your finger until it latches firmly.

NOTE Make sure that you properly orient the the CFast card when installing it; otherwise, you may not be able to insert the card all the way into the slot.
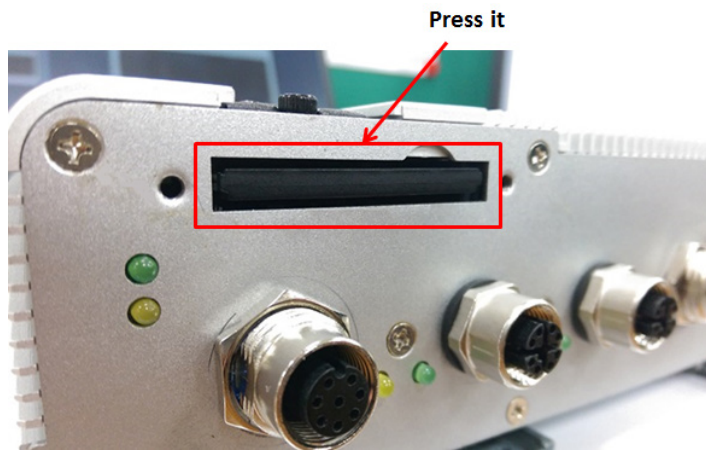
> ⚠️ **ATTENTION**
>
> Make sure that you orient the CFast card properly before pushing it into the slot. The bottom of the CFast card must be facing up for the card to work properly, and for the CFast socket cover to be installed properly.

4. After the CFast card is installed correctly, fasten the screws on the CFast card socket cover to install it.

> ⚠️ **ATTENTION**
>
> The V2426A embedded computer does not support the CFast hot swap and PnP (Plug and Play) functions. You must disconnect the power source first, before inserting or removing the CFast card.

Connecting to a USB Device

The V2426A comes with one USB 2.0 host with M12 D-coded connector on the front panel and two USB 2.0 hosts with type A connectors on the rear panel. These ports can be used for connecting to an external flash disk or hard drive for storing data. You can also use these USB ports to connect to a keyboard or a mouse.

The following figures show the locations of the USB ports and the M12 D-coded connector pin assignment.

DI/DO
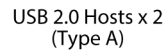
The V2426A comes with a 6-ch digital input and a 2-ch digital output that connect through a terminal block connector. The pin assignments and wiring methods are shown below.

DI Wiring: Dry Contact   **DI Wiring: Wet Contact**   **DO Wiring: Dry Contact**

Connecting to a DVI-I Monitor

The V2426A computers come with two DVI-I connectors that you can connect to two DVI monitors. Use the cable to connect one end to the DVI-I connector on the V2426A and the other end to the monitor.

The following table lists the DVI-I connector pin assignments.

DVI-I Connector
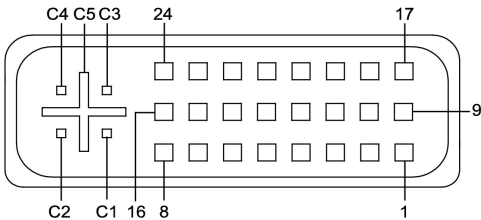
Pin No.	Signal Definition		Pin No.	Signal Definition
1	T.M.D.S. Data2-		16	Hot Plug Detect
2	T.M.D.S. Data2+		17	T.M.D.S. Data0-
3	T.M.D.S. Data2/4 Shield		18	T.M.D.S. Data0+
4	T.M.D.S. Data4-		19	T.M.D.S. Data0/5 Shield
5	T.M.D.S. Data4-		20	T.M.D.S. Data5-
6	DDC Clock		21	T.M.D.S. Data5+
7	DDC Data		22	T.M.D.S. Clock Shield
8	Analog Vertical Sync		23	T.M.D.S. Clock+
9	T.M.D.S. Data1-		24	T.M.D.S. Clock-
10	T.M.D.S. Data1+		C1	Analog Red
11	T.M.D.S. Data1/3 Shield		C2	Analog Green
12	T.M.D.S. Data3-		C3	Analog Blue
13	T.M.D.S. Data3+		C4	Analog Horizontal Sync
14	+5V Power		C5	Analog Ground (analog R, G, B return)
15	Ground (return for +5V, HSync, and VSync)			

Connecting to a Speaker or a Headphone

The V2426A comes with an M12 A-coded audio connector for connecting a microphone and speaker or headphones. See the following figure for details.

Audio
Input/Output
(M12 A-coded)
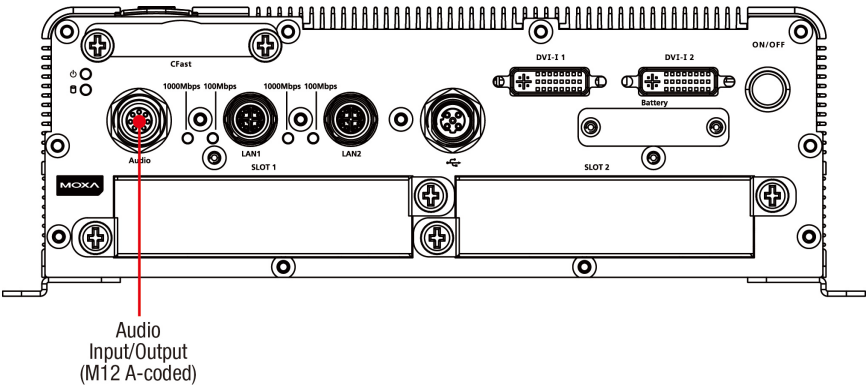
The following table lists the audio connector pin assignments.
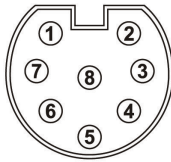
Pin No.	Audio
1	Line in – Right
2	GND
3	Line in – Jack Detect
4	Line in – Left
5	Line out – Left
6	Line out – Jack Detect
7	Line out – Right
8	GND

Installing an Expansion Module

NOTE	For more information on the list of expansion modules for the V2426A series, visit the product website at http://www.moxa.com/product/V2400_Series_Expansion_Modules.htm.

You can install up to two V2400 series expansion modules in the V2426A computers.

1. Disconnect the V2426A from its power source.
2. Loosen the four screws as indicated in the following figure and pull to remove the expansion modules or remove the slot covers.
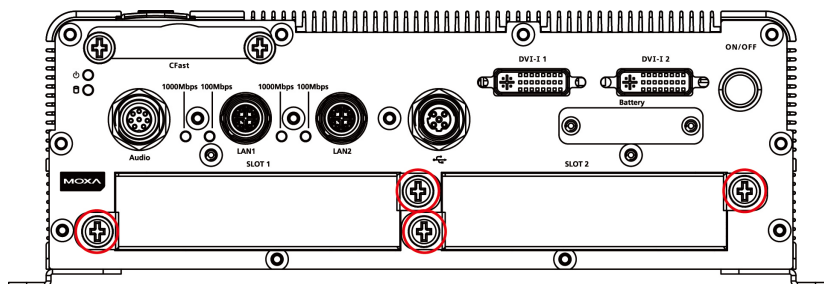
3. Install the new expansion modules and tighten the screws to secure the expansion modules in place.

Installing a SATA Hard Disk

The V2426A has one SATA-I/II connector for 2.5" SSD/HDD storage expansion. To expand storage capacity, purchase an SSD/HDD and an internal storage kit* through Moxa's CTO** service.

*This must be purchased separately to install an SSD / HDD. For details, check the optional accessories section of the V2426A datasheet.

**CTO = Configure to order

RTC Battery Replacement

⚠	**WARNING** There is a risk of explosion if the battery is replaced by an incorrect type of battery. Consult with a qualified Moxa support engineer if you have any questions or are unclear about any these instructions.

Complete the following steps to replace the battery:

1. You will need to use the "RTC Battery Kit," which is listed as an optional accessory in the V2426A datasheet's list of optional accessories.
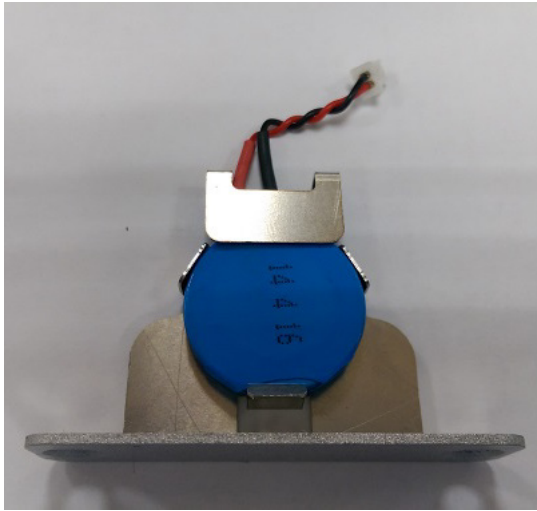
2. Make sure that the V2426A is turned off and is disconnected from its power source.
3. The RTC battery socket is located to the left of the "ON/OFF" power button, below the "DVI-I 2" connector. Loosen two screws used to attach the RTC battery socket cover to the V2426A.
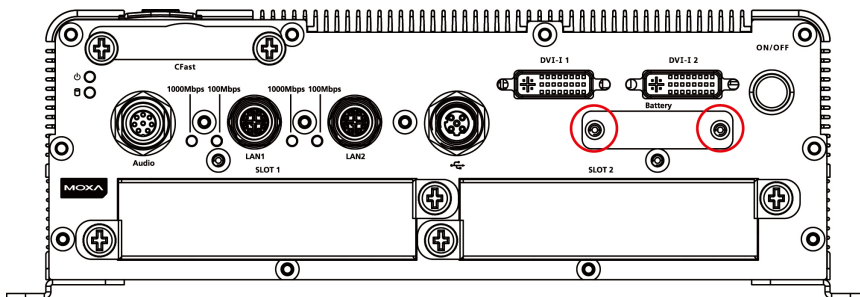
4. Pull the RTC battery holder out of the V2426A.
5. Disconnect the power cable between the battery and the V2426A, and then connect the new RTC Battery Kit to the V2426A.
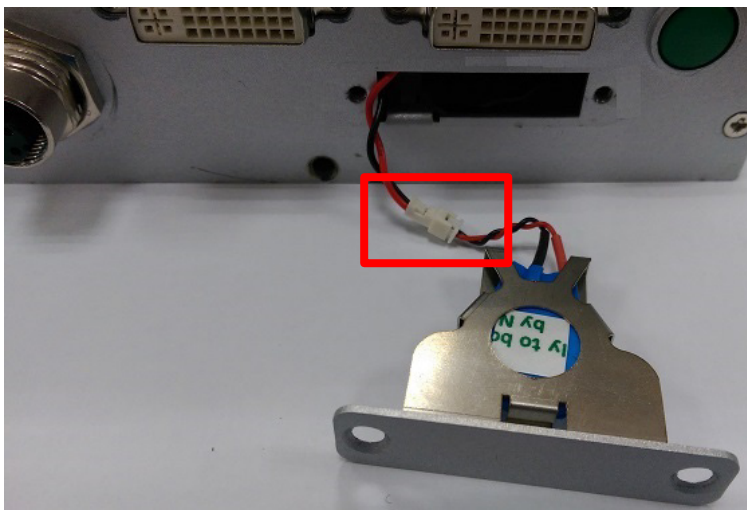
6. Slide the battery holder back into the RTC battery socket and then fasten the socket cover to the V2426A using the screws you removed in Step 3 above.

4

BIOS Setup

In this chapter, we describe the BIOS settings for the V2426A embedded computer. The BIOS is a set of input/output control routines for peripherals. The BIOS is used to initialize basic peripherals and helps boot the operating system before the operating system is loaded. The BIOS setup allows the user to modify the system configurations of these basic input/output peripherals. All of the configurations are stored in the CMOS RAM, which has a backup battery power in case the computer is not connected to a power source. Consequently, the data stored in the CMOS RAM is retained when the system is rebooted or the power is disconnected.

The following topics are covered in this chapter:

❒ **Entering the BIOS Setup**

❒ **Main Information**

❒ **Advanced Settings**

> Boot Configuration

> HDC Configuration

> Video Configuration

> Chipset Configuration

> Hardware Monitor

> SMART RECOVERY Info

❒ **Security Settings**

> Set Supervisor Password

❒ **Power Settings**

> Turbo Mode

> Auto Wake on S5

> Wake on LAN

❒ **Boot Settings**

> Boot Type

> PXE Boot to LAN

> Add Boot Options

> USB Boot

> EFI Device First

> Boot Delay Time

> Legacy

❒ **Exit Settings**

> Exit Saving Changes

> Save Change Without Exit

> Exit Discarding Changes

> Load Optimal Defaults

> Load Custom Defaults

> Save Custom Defaults

> Discard Changes

❒ **Upgrading the BIOS**

Entering the BIOS Setup

To enter the BIOS setup utility, press the **F2** key while the system is booting up. The main **BIOS Setup** screen appears with the following options:

- **Continue:** Continue to boot up
- **Boot Manager:** Select the device to boot up
- **Boot From File:** Select the UEFI boot up file
- **SCU:** Enter the BIOS configuration.

Click **SCU** to enter the **BIOS configuration**.

When you click **SCU**, a basic description of each function key is listed at the bottom of the screen. Refer to these descriptions to learn how to use them.

F1: Help
F5/F6: Change Values
F9: Setup Defaults
F10: Save and Exit
↑↓: Select Item
← →: Select Menu
ESC: Exit
ENTER: Select or go to Submenu.

Main Information

The main page shows basic system information, such as the model name, BIOS version, and CPU type.

NOTE	The "Processor Type" varies depending on the product model.

```
                        InsydeH20 Setup Utility                    Rev. 3.7
 Main  Advanced  Security  Power  Boot  Exit

 MODEL NAME              V2400A                      This is the help for the hour, minute,
 BIOS Version            V1.00S05                    second field. Valid range is from 0 to
 Processor Type          Intel(R) Core(TM) i7-3517UE CPU @ 1.70GHz  23, 0 to 59, 0 to 59. INCREASE/REDUCE : +
 System Bus Speed        100 MHz                     /-.
 System Memory Speed     1600 MHz
 Cache RAM               256 KB
 Total Memory            4096 MB
 System Time             [03:13:48]
 System Date             [02/19/2012]

 F1  Help           ↑↓ Select Item      F5/F6 Change Values        F9  Setup Defaults
 Esc Exit           ↔  Select Menu      Enter Select ▶ SubMenu     F10 Save and Exit
```

Advanced Settings

The **Advanced** screen appears when you select "Advanced" from the main menu.

```
                        InsydeH20 Setup Utility                    Rev. 3.7
 Main  Advanced  Security  Power  Boot  Exit

 ▶Boot Configuration                                 Configures Boot Settings.
 ▶HDC Configuration
 ▶Video Configuration
 ▶Chipset Configuration
 ▶Hardware Monitor
 ▶SMART RECOVERY Info

 F1  Help           ↑↓ Select Item      F5/F6 Change Values        F9  Setup Defaults
 Esc Exit           ↔  Select Menu      Enter Select ▶ SubMenu     F10 Save and Exit
```
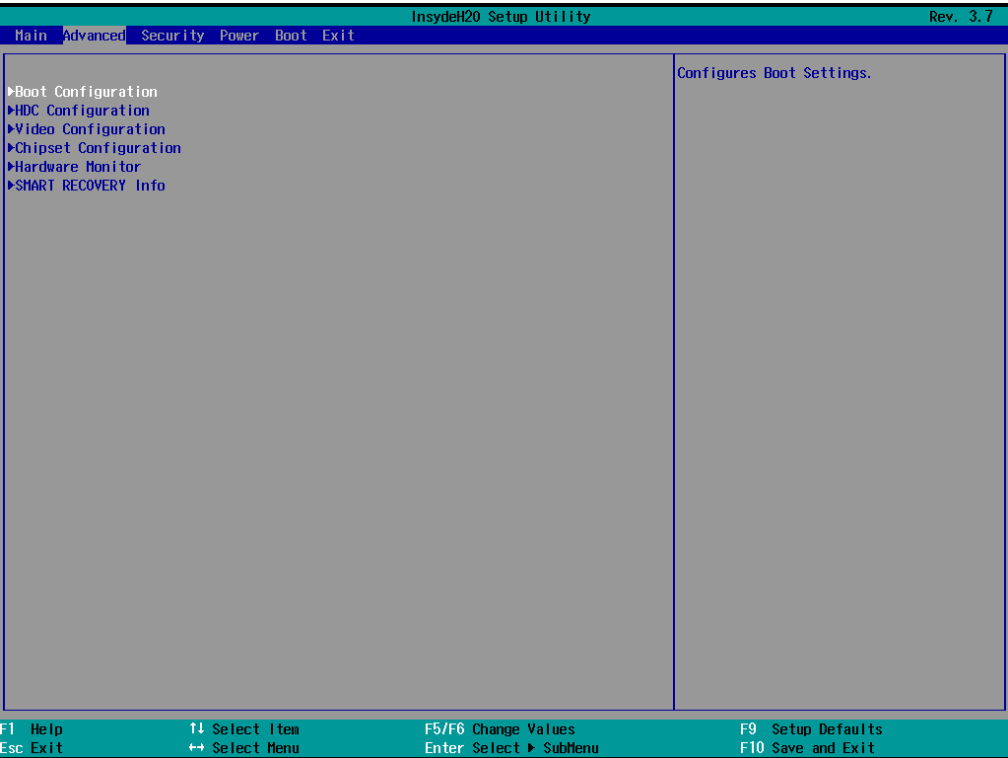
Boot Configuration

This screen allows you to configure the initial status of the Numlock key when the computer boots up.

Options: On (default), Off

```
                              InsydeH20 Setup Utility                    Rev. 3.7
   Advanced

   Boot Configuration                                    Selects Power-on state for Numlock

   Numlock                          <On>













 F1  Help             ↑↓ Select Item        F5/F6 Change Values         F9  Setup Defaults
 Esc Exit             ↔  Select Menu        Enter Select ▶ SubMenu     F10 Save and Exit
```
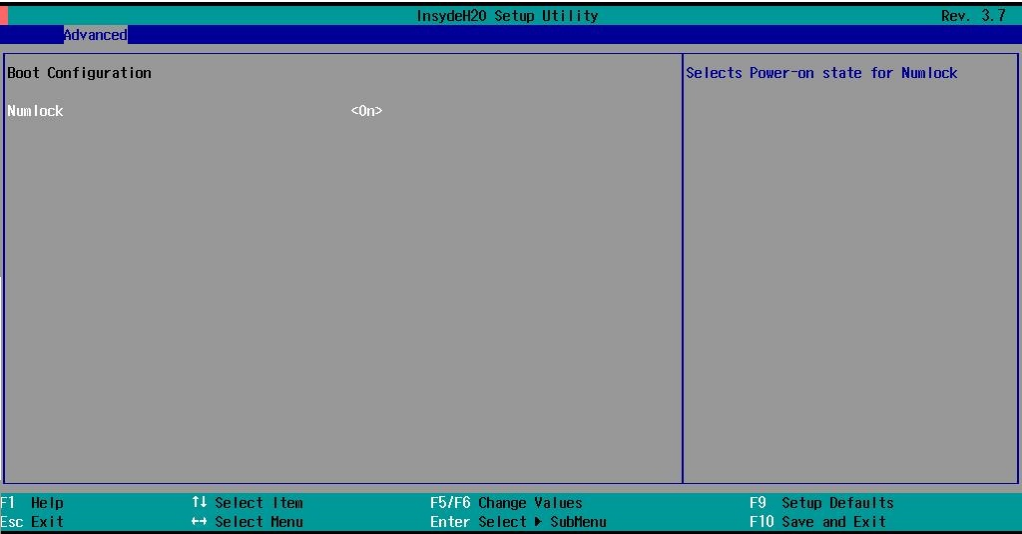
HDC Configuration

The host drive controller can be configured in IDE or AHCI (default) mode.

When you select the AHCI mode, the following screen appears.

```
                              InsydeH20 Setup Utility                    Rev. 3.7
   Advanced

   HDC Configuration                                     Set Harddisk Controller Configure Type.
                                                         Smart recovery doesn't suppport in RAID
   HDC Configure As                  <AHCI>              mode
   AHCI SALP                         <Enabled>
   SATA Port 0 HotPlug               <Disabled>
   SATA Port 1 HotPlug               <Disabled>
   SATA Port 2 HotPlug               <Disabled>
   SATA Port 3 HotPlug               <Enabled>
   SATA Port 4 HotPlug               <Enabled>
   SATA Port 5 HotPlug               <Disabled>

  ▶Serial ATA Port 0      [Not Installed]
  ▶Serial ATA Port 1      [Not Installed]
  ▶Serial ATA Port 2      [Not Installed]
  ▶Serial ATA Port 3      [Not Installed]
  ▶Serial ATA Port 4      [Not Installed]
  ▶Serial ATA Port 5      [Not Installed]









 F1  Help             ↑↓ Select Item        F5/F6 Change Values         F9  Setup Defaults
 Esc Exit             ↔  Select Menu        Enter Select ▶ SubMenu     F10 Save and Exit
```

Serial ATA Port 0 to 5

This setting allows you to display information about the installed drives.

AHCI SALP

Note that the "AHCI SALP" setting only appears when you select the AHCI mode. This setting allows you to enable aggressive **link power management** (SALP) in AHCI. SALP enables the host bus adapter to conserve power by directly detecting when a SATA drive is no longer processing information and then immediately transition the drive into suspended or sleep mode without waiting for software processes to initiate a power-down process.

Options: Enabled (default), Disabled

SATA Port 0 to 5—HotPlug

This setting allows you to enable or disable the hotplug feature (the ability to remove the drive while the computer is running) for the installed storage drives.

Options: Disabled (default for Ports 0, 1, 2, and 5), Enabled (default for Ports 3 and 4)

Video Configuration

This setting allows you to configure the Internal Graphics Device (IGD) settings, such as memory allocation (**DVMT**).

```
InsydeH20 Setup Utility                                          Rev. 3.7
 Advanced

Video Configuration                                    Internal Graphic Device Options

▶Internal Graphic Device












F1  Help          ↑↓ Select Item      F5/F6 Change Values       F9  Setup Defaults
Esc Exit          ↔  Select Menu      Enter Select ▶ SubMenu    F10 Save and Exit
```
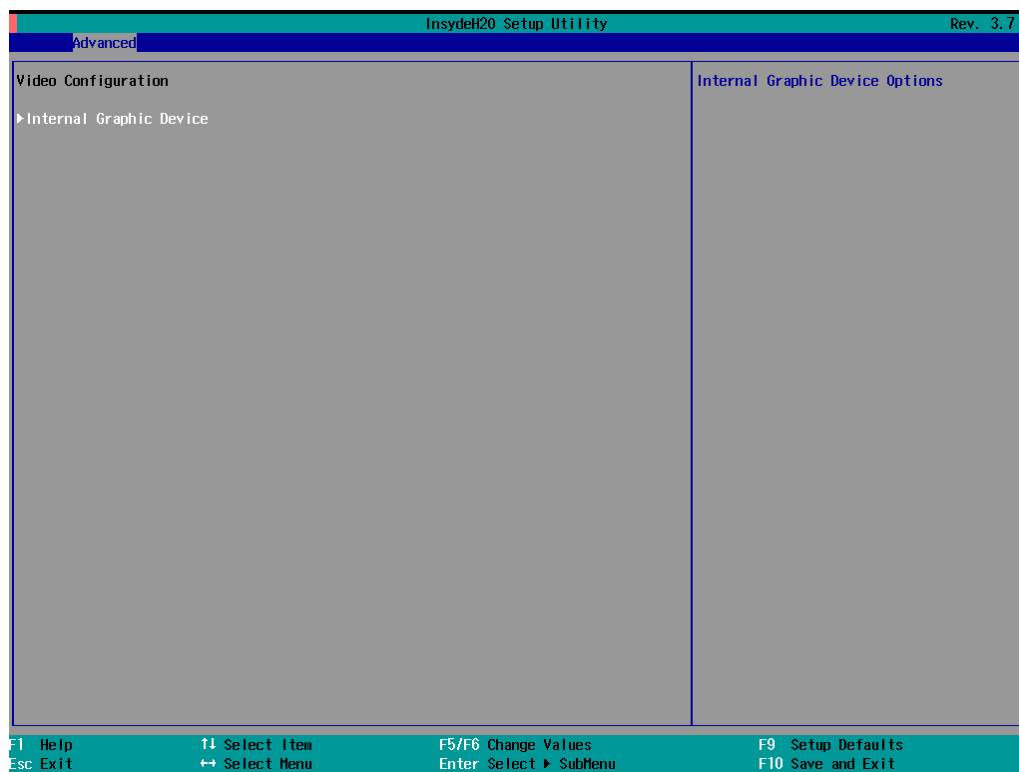
Internal Graphics Device

This screen allows you to enable or disable the internal graphics device.

```
                            InsydeH20 Setup Utility                          Rev. 3.7
      Advanced

  Internal Graphic Device                                  Select DVMT5.0 Pre-Allocated(Fixed)
                                                           Graphics Memory size used by the Internal
  IGD - DVMT Pre-Allocated          <64 MB>                 Graphics Device.
  IGD - DVMT Size                   <256 MB>
  IGD - Boot Type                   <VBIOS Default>




  F1  Help              ↑↓ Select Item      F5/F6 Change Values        F9  Setup Defaults
  Esc Exit              ↔ Select Menu        Enter Select ▶ SubMenu    F10 Save and Exit
```
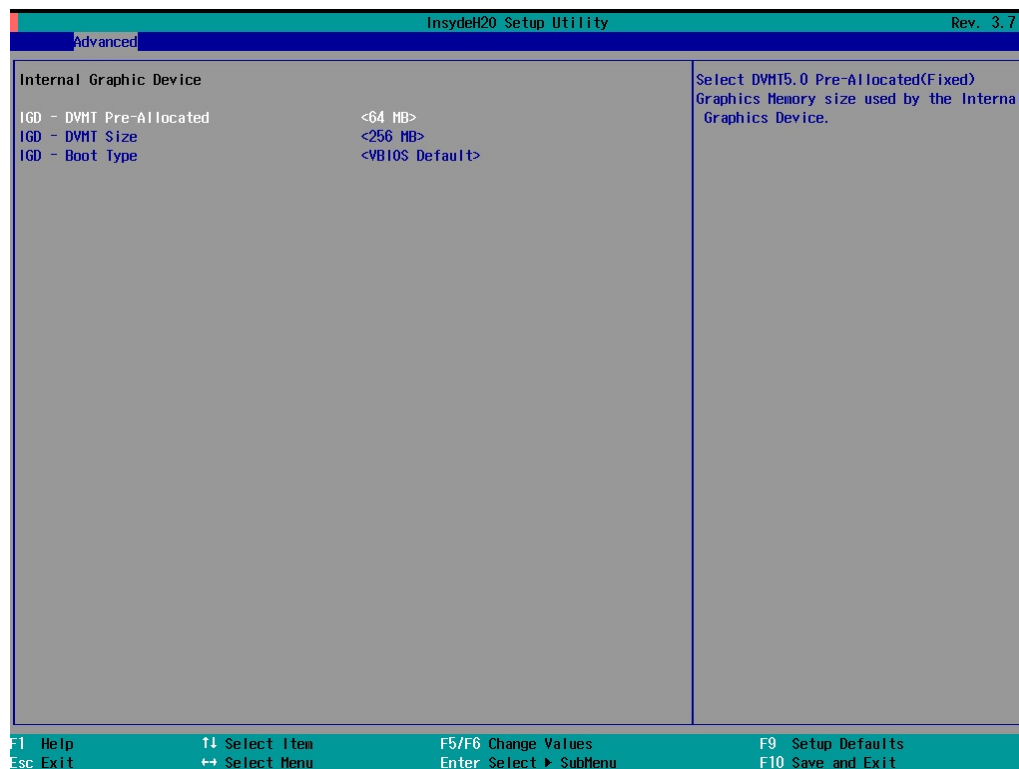
IGD—DVMT Pre-Allocated

This setting allows you to configure the pre-allocated memory capacity of the IGD. Pre-allocated graphics memory is invisible to the operating system.

Options: 64 MB (default), 32 MB, 96 MB, 128 MB, 256 MB, 512 MB

DVMT is a BIOS solution where the optimum amount of memory is dynamically allocated and de-allocated as needed for balanced graphics and system performance, through Intel® Direct AGP and a highly efficient memory utilization scheme. DVMT ensures the most efficient use of available system memory resources for maximum 2D/3D graphics performance.

IGD—DVMT Size

This setting allows you to configure the maximum amount of memory DVMT uses when allocating additional memory for the IGD.

Options: 256 MB (default), 128 MB, Max

IGD—Boot Type

This setting allows you to select the video device activated during POST.

Options: VBIOS Default (default), Analog, Digital

Chipset Configuration

This screen allows you to configure the chipset settings.

```
                              InsydeH20 Setup Utility                                    Rev. 3.7
        Advanced
Chipset Configuration                                           Specify what state to go to when power is
                                                                 re-applied after a power failure (G3
Setup Warning:                                                  state).
Setting items on this screen to incorrect values
may cause your system to malfunction!

Power ON after Power Fail            <ON>
Power Button                         <Enabled>
DO-0 Level                           <High>
DO-1 Level                           <High>




F1  Help              ↑↓ Select Item      F5/F6 Change Values        F9   Setup Defaults
Esc Exit              ↔ Select Menu       Enter Select ▶ SubMenu     F10  Save and Exit
```

Power ON after Power Fail

This setting allows you to configure whether or not the computer automatically powers up after a system crash. When set to ON, the computer will automatically power up after a system crash; when set to OFF, it won't automatically power up after a system crash.

Options: ON (default), OFF, Last State

Power Button

This setting allows you to enable or disable the power button. If the power button is enabled, you can press the power button to power on or power off the computer. If the power button is disabled, you need to press the power button for more than four seconds to power off the computer.

Options: Enabled (default), Disabled

DO-0 Level

This setting allows you set the DO-0 as high or low.

Options: High (default), Low

DO-1 Level

This setting allows you set the DO-1 as high or low.

Options: High (default), Low.

Hardware Monitor

This screen allows you to view voltage levels, system temperature, and CPU temperature.

```
                                  InsydeH20 Setup Utility                              Rev. 3.7
      Advanced

 Hardware Monitor

 Voltage
   V_CPU (V)                          0.800 V
   VTT_CPU (V)                        0.992 V
   VCCSA_CPU (V)                      0.832 V
   V1.05 (V)                          1.024 V
   V5.0 (V)                           4.992 V
 Temperature
   Tempin1                            33°C/  91°F
   CPU Temperature                    43°C/ 109°F




 F1  Help               ↑↓ Select Item      F5/F6 Change Values        F9  Setup Defaults
 Esc Exit               ↔ Select Menu       Enter Select ▶ SubMenu     F10 Save and Exit
```
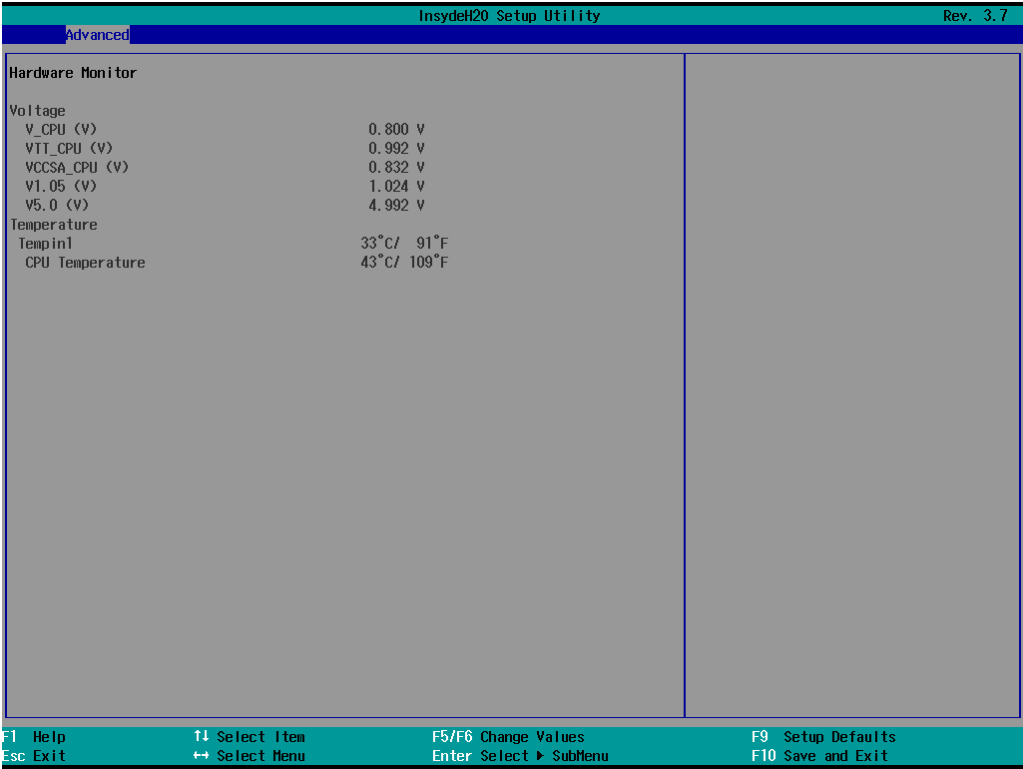
Note that the voltage values vary depending on the model. The temperature readings shown on the screen are within ±5% of the actual readings. However, the temperature readings are only valid when the ambient temperature is above 0°C.

SMART RECOVERY Info

This screen allows you to view Smart Recovery information.

```
                              InsydeH20 Setup Utility                          Rev. 3.7
        Advanced

SMART RECOVERY Info                                          Load SMART RECOVERY Default to [Manual
                                                            Recovery using USB] MODE, Port to [Any
SMART RECOVERY Mode           Manual Recovery using USB     USB port]. Please notice that smart
Port                          Any USB port                  recovery doesn't support RAID mode
Load SMART RECOVERY Default




F1  Help             ↑↓ Select Item        F5/F6 Change Values          F9  Setup Defaults
Esc Exit             ↔ Select Menu         Enter Select ▶ SubMenu       F10 Save and Exit
```
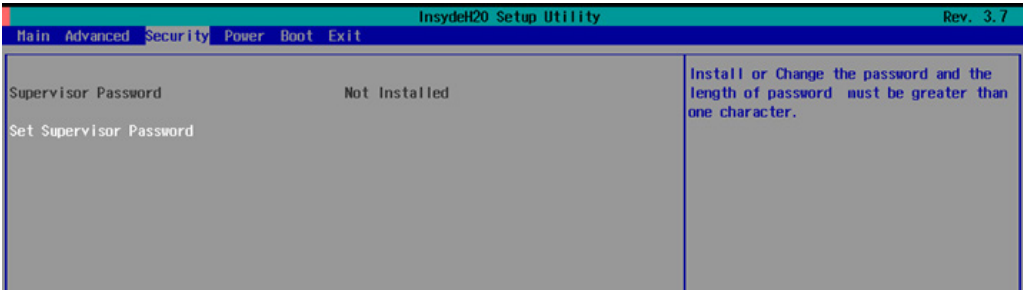
Load SMART RECOVERY Default

This setting allows you to load the Smart Recovery default value. Refer to the Smart Recovery Website at http://www.moxa.com/product/Smart-Recovery.htm for details

Options: Yes (default), No

Security Settings

This screen allows you to configure a supervisor password.

```
                              InsydeH20 Setup Utility                          Rev. 3.7
  Main  Advanced  Security  Power  Boot  Exit

                                                            Install or Change the password and the
Supervisor Password           Not Installed                length of password  must be greater than
                                                            one character.
Set Supervisor Password
```
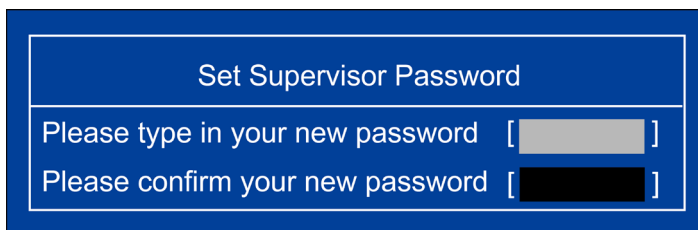
Set Supervisor Password

This setting allows you set the supervisor password.

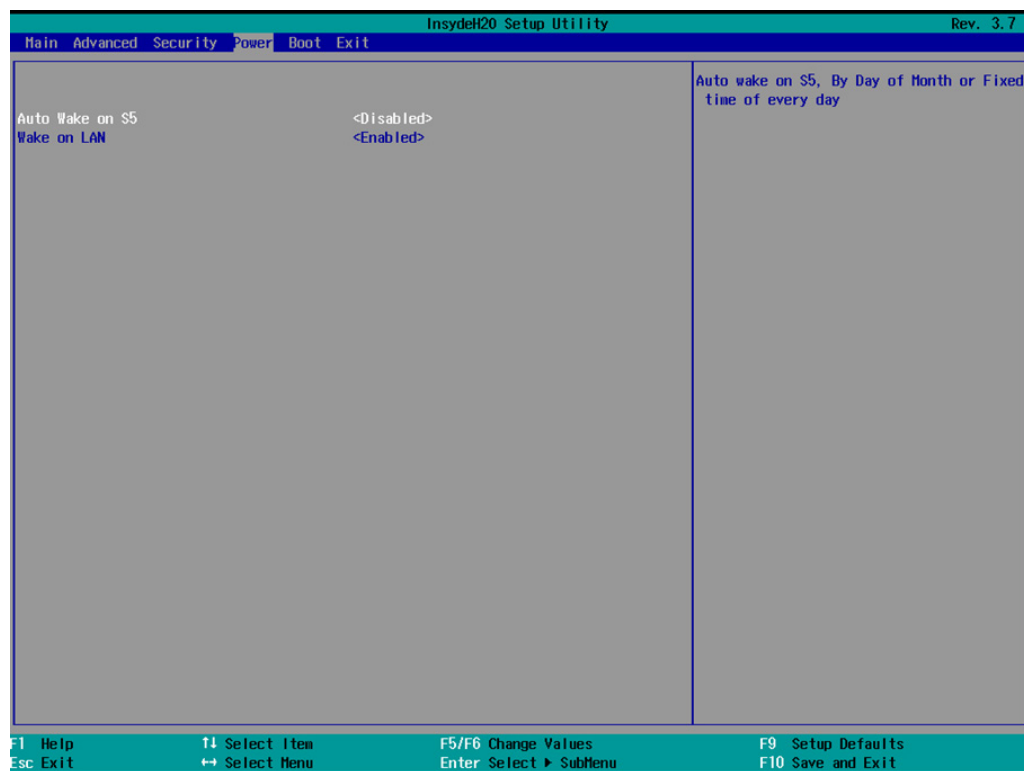Type the new password, and then retype the password again to confirm.

To delete the password, enter the existing password in the **Set Supervisor Password** field and leave the new password fields blank; then, press [Enter].

Power Settings

The screen allows you to configure power settings.

Turbo Mode

This field is only for models with an Intel Core-i7 processor.

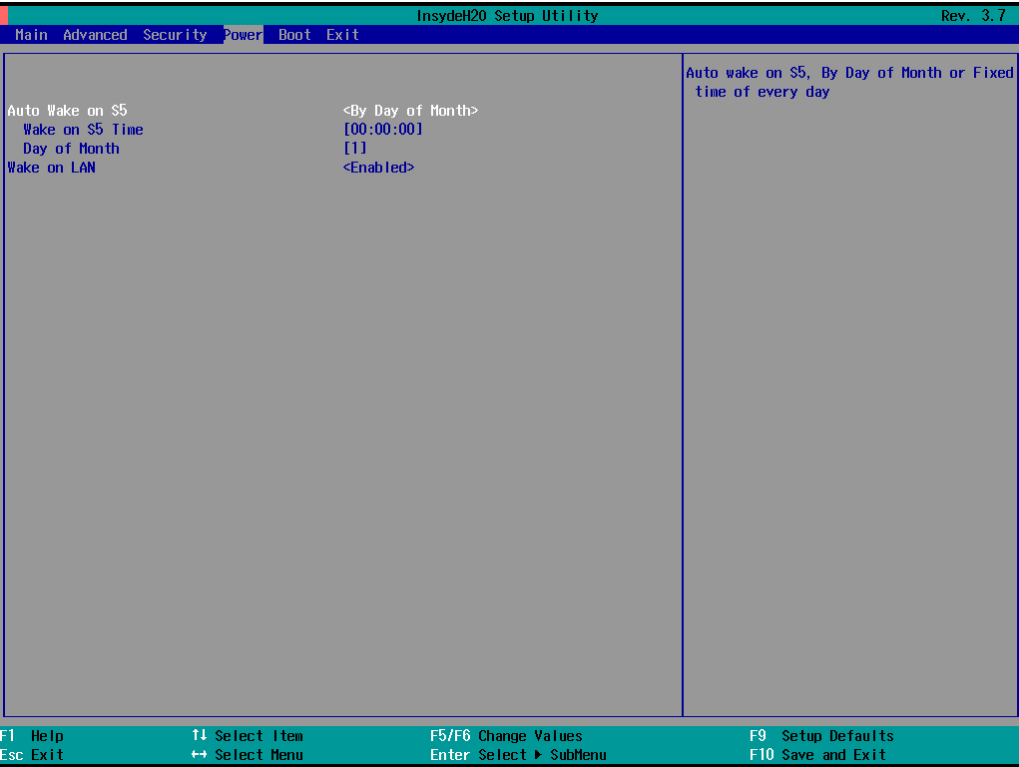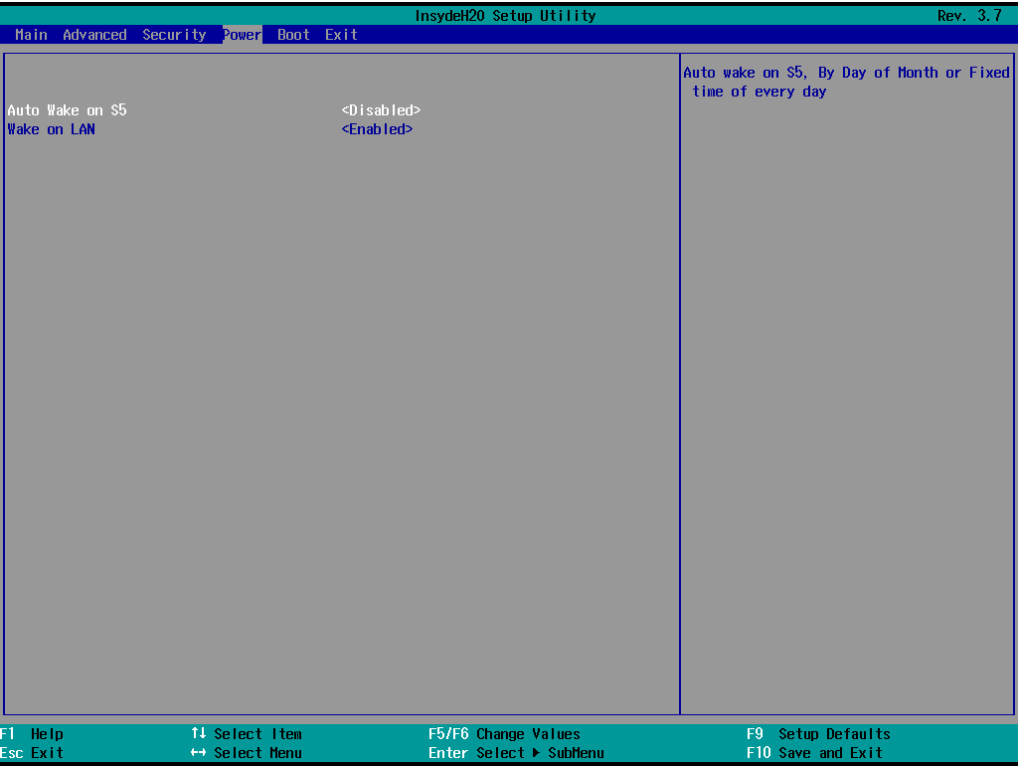This field allows you to determine whether to enable the Intel CPU Turbo Boost technology.

Options: Enabled (default), Disabled.

Auto Wake on S5

This setting allows you to configure the computer to wake from the S5 (Soft Off) state where the power supply remains engaged but is not supplying power to all other parts of the system.

You can set the auto-wake on S5 schedules for the system to perform a soft-reboot at specific times.

Options: Disabled (default); By Every Day (user specifies at what time each day the computer will power up); By Day of Month (user specifies which day of each month the computer will power up)

```
                              InsydeH20 Setup Utility                      Rev. 3.7
  Main  Advanced  Security  Power  Boot  Exit
                                                      Auto wake on S5, By Day of Month or Fixed
                                                        time of every day
  Auto Wake on S5                   <Disabled>
  Wake on LAN                       <Enabled>




















 F1  Help              ↑↓ Select Item        F5/F6 Change Values         F9  Setup Defaults
 Esc Exit              ↔ Select Menu         Enter Select ▶ SubMenu     F10 Save and Exit
```

```
                              InsydeH20 Setup Utility                      Rev. 3.7
  Main  Advanced  Security  Power  Boot  Exit
                                                      Auto wake on S5, By Day of Month or Fixed
                                                        time of every day
  Auto Wake on S5                   <By Day of Month>
    Wake on S5 Time                 [00:00:00]
    Day of Month                    [1]
  Wake on LAN                       <Enabled>




















 F1  Help              ↑↓ Select Item        F5/F6 Change Values         F9  Setup Defaults
 Esc Exit              ↔ Select Menu         Enter Select ▶ SubMenu     F10 Save and Exit
```
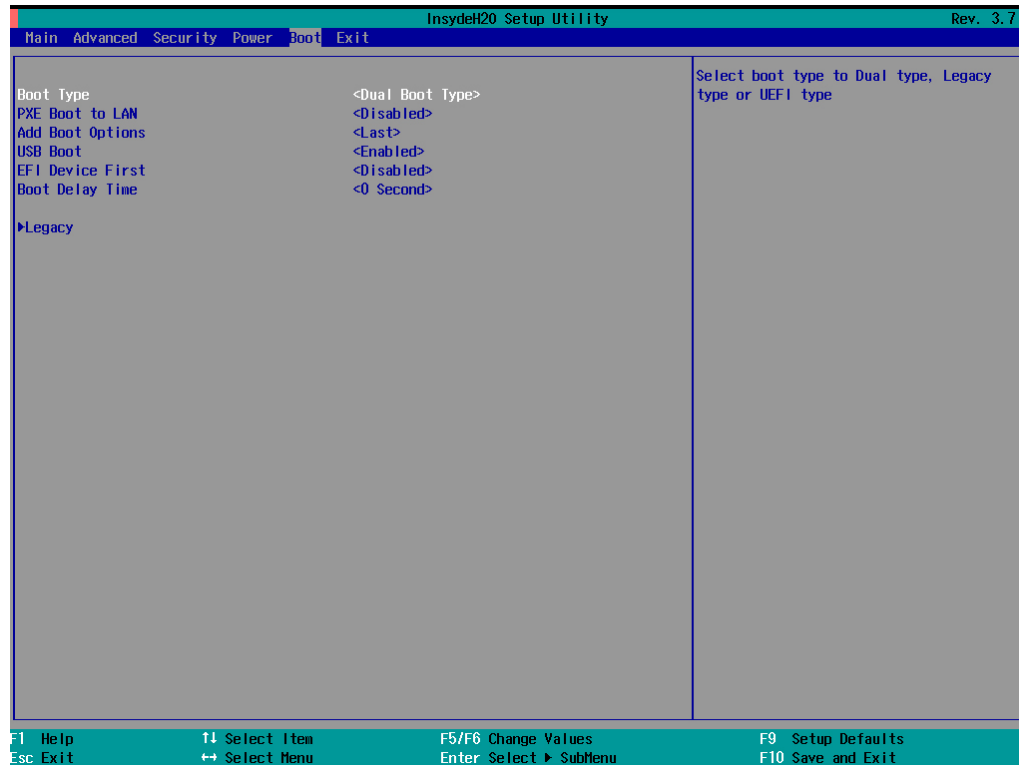
Wake on LAN

This setting allows you to wake the system over the LAN from a remote host.

Options: Enabled (default), Disabled.

Boot Settings

The screen allows you to configure boot settings.

```
                              InsydeH20 Setup Utility                              Rev. 3.7
 Main  Advanced  Security  Power  Boot  Exit

                                                      Select boot type to Dual type, Legacy
 Boot Type                    <Dual Boot Type>        type or UEFI type
 PXE Boot to LAN              <Disabled>
 Add Boot Options             <Last>
 USB Boot                     <Enabled>
 EFI Device First             <Disabled>
 Boot Delay Time              <0 Second>

 ▶Legacy












 F1  Help              ↑↓ Select Item        F5/F6 Change Values      F9  Setup Defaults
 Esc Exit              ↔  Select Menu        Enter Select ▶ SubMenu   F10 Save and Exit
```

Boot Type

This setting allows you to enable or disable the quick boot function.

Options: Dual Boot Type (default), Legacy Boot Type, UEFI Boot Type

PXE Boot to LAN

This setting allows you to enable or disable the PXE boot to LAN function.

Options: Disabled (default), Enabled

Add Boot Options

This setting allows you to add boot order options for new boot devices and removable devices, such as a USB drive.

Options: Last (default), First

USB Boot

This setting allows you to enable or disable the USB boot function.

Options: Enabled (default), Disabled

EFI Device First

This setting allows you to determine the booting priority of the EFI device. If this setting is enabled, the EFI device will boot first; if disabled, the legacy device will boot first.

Options: Disabled (default), Enabled

Boot Delay Time

This setting allows you to configure the delay time to enter a hot key during POST.

Options: 0 Second (default), 3 Seconds, 5 Seconds, 10 Seconds

Legacy

Normal Boot Menu

This setting allows you to configure the boot menu.

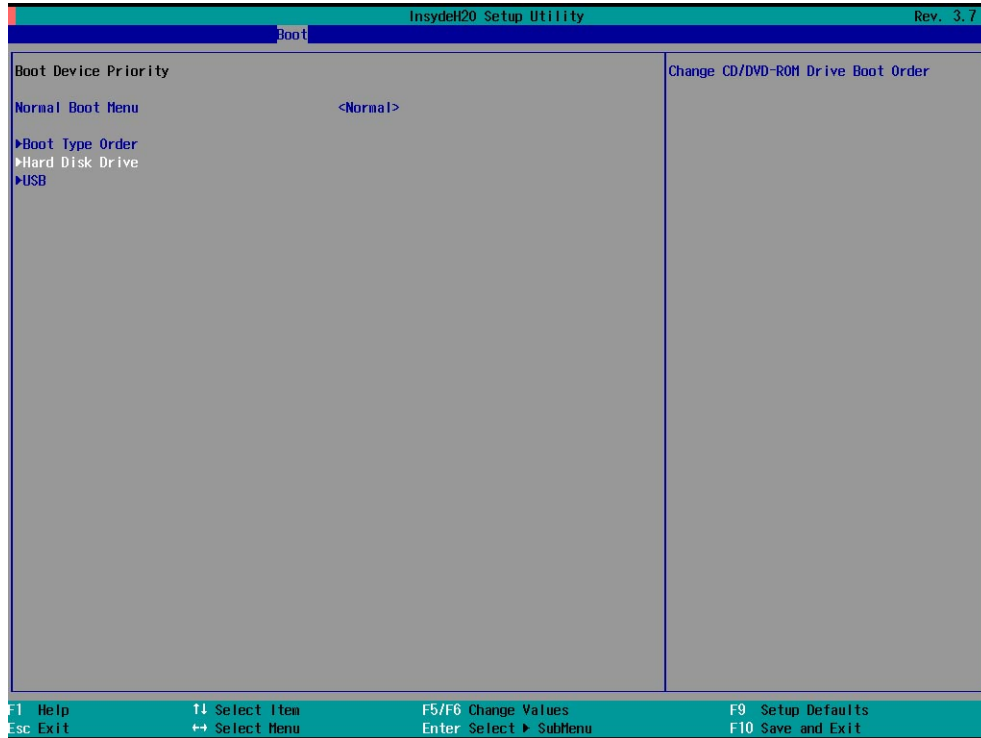Options: Normal (default), Advance

Boot Type Order

This setting allows you to configure the boot order. To change the boot order, press the "-" or "F5" key to an item move down the list, and the "+" or "F6" key to move up.

Options: Hard Disk Drive (default), CD/DVD-ROM Drive, USB, Others
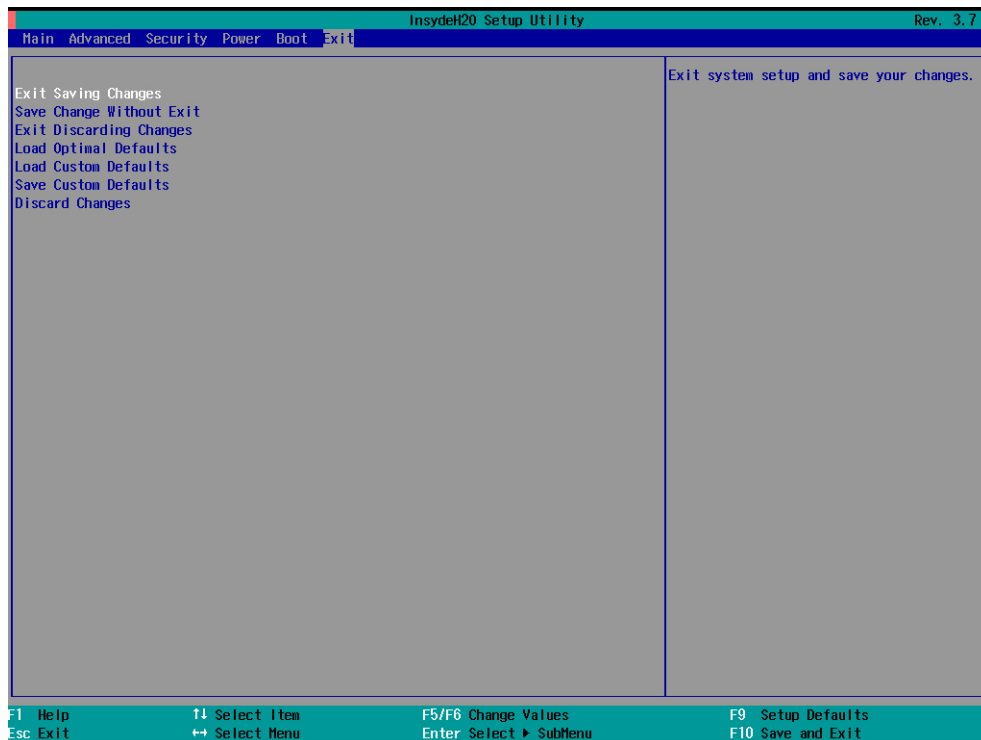
Hard Disk Drive/USB Drive

This setting allows you to view the installed devices, such as hard disk drives, USB drives, and CD-ROMs. For example, if you have inserted a USB drive into the computer, the USB drive entry is listed here.

You can view and select the boot order for the same type of storage devices. For example, if you have two hard drives connected to the V2426A, you can specify which of the two drives boots first, and which boots second.

```
                              InsydeH20 Setup Utility                          Rev. 3.7
                        Boot

Boot Device Priority                                  Change CD/DVD-ROM Drive Boot Order

Normal Boot Menu                    <Normal>

▶Boot Type Order
▶Hard Disk Drive
▶USB

F1  Help              ↑↓ Select Item       F5/F6 Change Values      F9  Setup Defaults
Esc Exit              ↔ Select Menu        Enter Select ▶ SubMenu   F10 Save and Exit
```

Exit Settings

The screen shows the various options to exit from the BIOS setup utility.

```
                              InsydeH20 Setup Utility                          Rev. 3.7
 Main  Advanced  Security  Power  Boot  Exit

                                                      Exit system setup and save your changes.
Exit Saving Changes
Save Change Without Exit
Exit Discarding Changes
Load Optimal Defaults
Load Custom Defaults
Save Custom Defaults
Discard Changes

F1  Help              ↑↓ Select Item       F5/F6 Change Values      F9  Setup Defaults
Esc Exit              ↔ Select Menu        Enter Select ▶ SubMenu   F10 Save and Exit
```

Exit Saving Changes

This option allows you to exit the BIOS setup utility and save the values you have just configured.

Options: Yes (default), No

Save Change Without Exit

This option allows you to save changes without exiting the BIOS setup utility.

Options: Yes (default), No

Exit Discarding Changes

This option allows you to exit without saving that changes that might have been made to the BIOS.

Options: Yes (default), No

Load Optimal Defaults

This option allows you to revert to the factory default BIOS values.

Options: Yes (default), No

Load Custom Defaults

This option allows you to load the custom default BIOS settings.

Options: Yes (default), No

Save Custom Defaults

This option allows you to save the current BIOS settings as a "custom default" that you can load at any time using the "Load Custom Defaults" option.

Options: Yes (default), No

Discard Changes

This option allows you to discard all settings you have just configured.

Options: Yes (default), No

Upgrading the BIOS

This section describes how to upgrade the BIOS.

⚠️ **WARNING**

An improper BIOS upgrade process may permanently damage the computer. We strongly recommend that you contact Moxa technical support for assistance to obtain all the necessary tools and the most up-to-date advice before attempting to upgrade the BIOS on any Moxa device.


Step 1: Create a Bootable USB Disk

Before upgrading the BIOS, every user should first create a bootable USB drive as a system rescue device.

A useful software suite for creating USB RAM drives can be found by searching for Rufus, which can then be downloaded and used to create a bootable RAM drive.

Complete the following steps to create a bootable USB disk using Rufus:

1. Start Rufus and then in the "Device" drop-down list select the USB device that you want to use as a bootable disk.

2. Select **MBR partition scheme for BIOS or UEFI computers** from the "Partition scheme and target system type" drop-down list so it can boot from a legacy BIOS or UEFI.

3. Select **FAT32 (Default)** from the "File system" drop-down list.

4. Select **4096 bytes (Default)** from the "Cluster size" drop-down list.

5. Enter a drive name in the "New volume label" input box.

6. Select the **Quick format**, **Create a bootable disk using FreeDOS**, and **Create extended label and icon files** options.

7. Click **Start** to format and create the bootable USB drive.
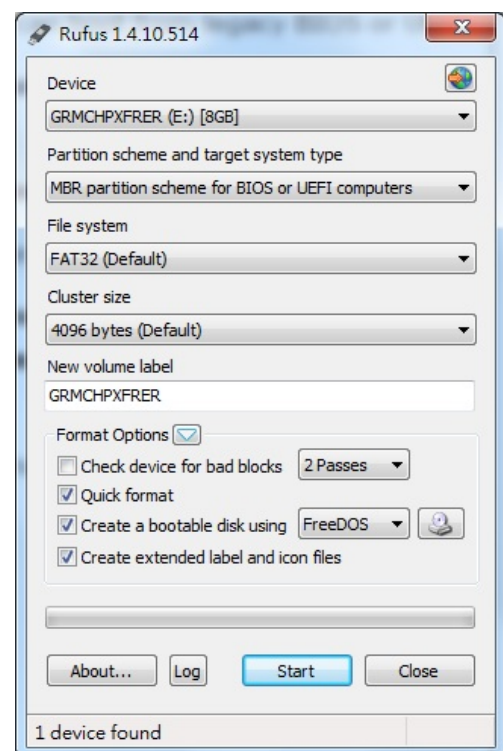
⚠️ **ATTENTION**

When you use a USB drive larger than 4 GB, you will need to convert the file system type to FAT32.

Step 2: Prepare the Upgrade File

You must use the BIOS upgrade installation file to upgrade the BIOS. Contact Moxa technical support for assistance.

1. Get the BIOS upgrade installation file.
   The file name should be in the format: **24AxxSxx.exe** (where "xx" refers to the version numbers).
2. Copy the file to the bootable USB drive.

Step 3: Run the Upgrade Program on the V2426A

1. Reboot the computer, and press [F2] during the booting process to display the Boot Manager.

2. Select USB Disk as the first boot source and press [Enter] to continue.
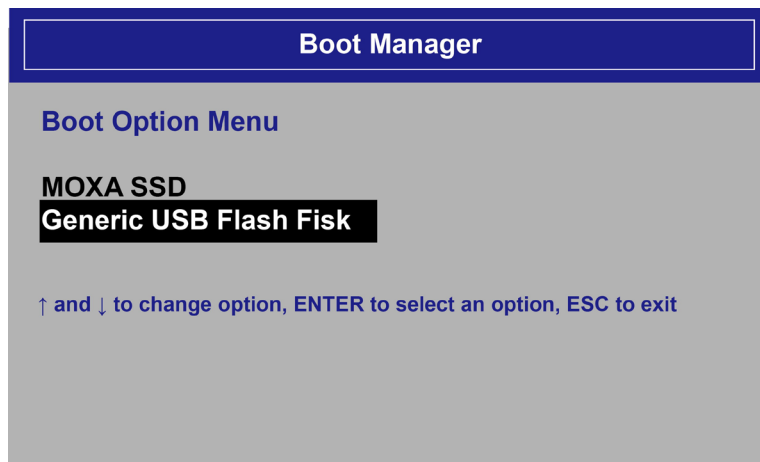
3. When the computer finishes booting up, a command window appears. Go to the directory where the upgrade file is located. For example, if the upgrade file is stored in the V2400A folder, type **cd V2400A**.

```
C:\cd V2400A
```

4. Run the upgrade program by typing **24A10S05.exe**.

Note that the filename for the upgrade program may vary depending on the version.

```
C:\V2400A>24A10S05.exe
```

5. The upgrade program will run automatically. Wait until the procedure is complete.

⚠️ **ATTENTION**

Do NOT remove the power supply during a BIOS upgrade.

```
C:\>V2400A\24A10S05.exe
Reading file…
Flash package mode.
Option: -BIOS –C –Desc –ME
```

Please do not remove the AC power!

```
                    Insyde Flash Utility for InsydeH20
                                        Version 1.5t


            Initializing

            Current BIOS Model name: V2400A
            New BIOS Model name: V2400A

            Current BIOS version: V1.00S05
            New BIOS version: V1.00S05

            Updating Block at FFFFF000
            Flash Complete!
```

6. When the upgrade is finished, the computer automatically reboots. You may check the BIOS version on the Main page of the BIOS setup utility.

```
MODEL NAME              V2400A
BIOS Version           V1.00S05
```

A

Regulatory Approval Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Class A : FCC Warning! This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his or her own expense.

European Community

Warning:
This is a class A product. If used in a domestic environment, this product may cause undesirable radio interference, in which case the user may be required to take adequate measures to prevent the interference