

DA-820E Series Quick Installation Guide

Version 1.1, June 2025

Technical Support Contact Information
www.moxa.com/support



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P/N: 1802008202011



Overview

The DA-820E computer is built around an Intel® Core™ i3, i5, or i7 CPU, ensuring robust performance for various applications. It features three display ports (2 HDMI and 1 VGA), five USB ports, four Gigabit LAN ports, two 3-in-1 RS-232/422/485 serial ports, six digital input ports, and two digital output ports, providing extensive connectivity options.

Designed for flexibility and scalability, the DA-820E is equipped with four hot-swappable 2.5" SSD slots and supports Intel® Rapid Storage Technology (RST) with RAID 0/1 functionality on SSD slots 1 and 2. Additionally, the DA-820E comes with four standard PCIe slots, enabling users to install a variety of peripheral interface expansion modules. The system also offers options for redundant hot-swappable power supplies, enhancing its reliability and uptime.

The DA-820E is compliant with IEC-61850-3 and IEEE 1613 standards, ensuring stable and reliable operation in power applications. Furthermore, the DA-820E is compliant with IEC 60255 standards, which govern the protection of electrical relays in smart substations. This certification is critical as it is one of the most widely recognized standards for testing relays and protection equipment. Compliance guarantees that the DA-820E will operate reliably and seamlessly with Intelligent Electronic Devices (IEDs) as part of a comprehensive substation automation system.

Package Checklist

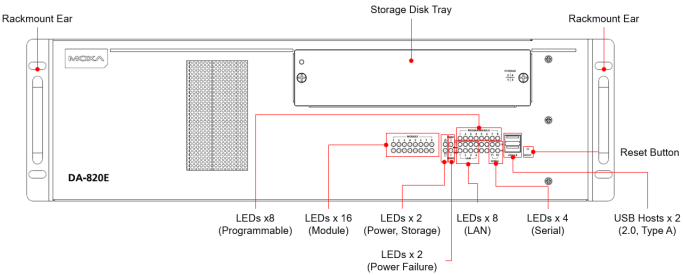
Each basic system model is shipped with the following standard items:

- DA-820E rackmount computer
- Rack-mounting kit
- A pack of thermal pads for the optional M.2 storage and memory modules
- A pack of 16 screws for mounting the SSD
- A pack of 4 backup screws for M.2 storage and memory modules
- USB dongle kit
- Quick Installation Guide
- Warranty card

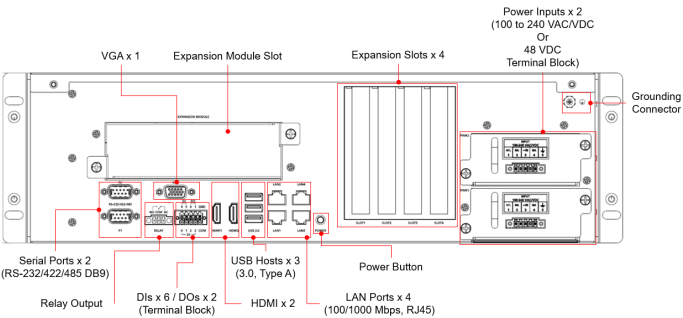
NOTE Notify your sales representative if any of the above items are missing or damaged.

Panel Layouts

Front View



Rear View



LED Indicators

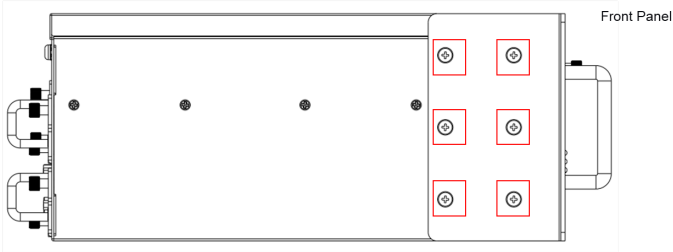
The front panel is equipped with 40 LED indicators. A detailed description of the LEDs is provided in the following table:

LED	Color	Status	Function
Power	Green	On	Power is on
		Off	No power
Storage	Yellow	Steady On	Slot 3 and 4 only: The SSD is connected
		Blinking	Data is being written to or read from the SSD
		Off	No activity
PWR1	Red	Off	The 1st power supply is plugged in and active
		On	Error in the 1st power supply
PWR2	Red	Off	In dual power supply mode, the 2nd power supply is plugged in and active
		On	Error in the 2nd power supply
Gigabit LAN LEDs 1 to 4	Green	Steady On	10/100 Mbps Ethernet link
		Blinking	Data is being transmitted or received
	Yellow	Steady On	1000 Mbps Ethernet link
		Blinking	Data is being transmitted or received
	Off	Off	No activity

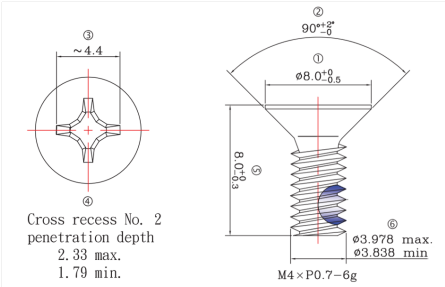
Serial Port P1/P2	Green	On	Tx: Serial data is being transmitted
	Yellow	On	Rx: Serial data is being received
Module LEDs 1 to 8	Green/ Yellow	Steady On	Reserved for LAN-port and serial-port expansion cards
		Blinking	
Programmable LEDs 1 to 8	Green	Steady On	Indicator of statuses or for debugging, as defined by users.
		Blinking	

Mounting the DA-820E on a Rack

The DA-820E comes with rack-mounting kit that includes two rackmount ears. To attach the rackmount ears to the DA-820E, place a rackmount ear on one side of the front-panel and secure it using 6 screws (included in the package) as shown in the following image. Attach the other mounting ear on the other side of the front panel in a similar manner.



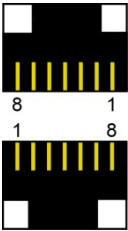
The 6 screws included in the package are of the following specifications:



Ethernet Ports

The DA-820E is equipped with four 100/1000 Mbps RJ45 Ethernet ports located on the rear panel. The pin assignments are listed in the following table:

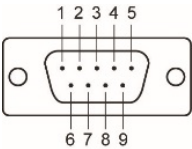
Pin	100 Mbps	1000 Mbps
1	Tx+	TRD(0)+
2	Tx-	TRD(0)-
3	Rx+	TRD(1)+
4	-	TRD(2)+
5	-	TRD(2)-
6	Rx-	TRD(1)-
7	-	TRD(3)+
8	-	TRD(3)-



Serial Ports

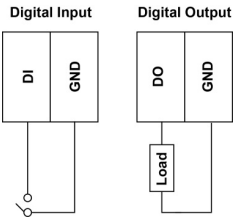
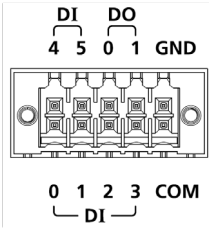
The DA-820E comes with two software-selectable RS-232/422/485 serial ports on the rear panel. The ports use DB9 male connectors. Refer to the following table for the pin assignments:

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	-	-	-



Digital Inputs/Digital Outputs

The DA-820E features six digital inputs and two digital outputs, accessible via a terminal block. The pin definitions and wiring methods are shown in the following figures.



Connecting the Power

The DA-820E features dual power inputs via a terminal block located on the rear panel. To establish a power connection, attach the power cord wires to the corresponding screws and securely tighten them. Upon successful power connection, the Power LED will illuminate, indicating that power is being supplied to the DA-820E. Subsequently, the BIOS will initialize the flash disk module, resulting in the Storage LED blinking. The operating system boot-up process typically takes between 30 to 60 seconds to complete.



ATTENTION

This product is intended to be supplied by a listed power supply with the output marked with and rated to deliver the following:

- Listed power rating
 - 240 VAC at a maximum of 0.66 A
 - 240 VDC at a maximum of 0.66 A
 - 100 VAC at a maximum of 1.75 A
 - 100 VDC at a maximum of 1.65 A
 - 48 VDC at a maximum of 3.12 A
- Maximum Tma = 70°C



ATTENTION

Before connecting the DA-820E computer to an AC/DC power source, ensure that the AC/DC power source voltage is stable.

The wiring for the input terminal block shall be installed by qualified and experienced professionals.

- Wire type: Cu, FW2
- Wire size: 18-12 AWG

Use only one conductor in a clamping point between the AC power source and the power input.

The rear panel is equipped with a Power button for power on the computer from sleep or hibernate mode.

Wiring the Power Inputs and Powering the Computer

To establish a power connection, insert the power cord wires in the correct terminals and tighten the screws to secure the wires. Refer to the following diagrams and table for a detailed description of the power input wiring terminals.

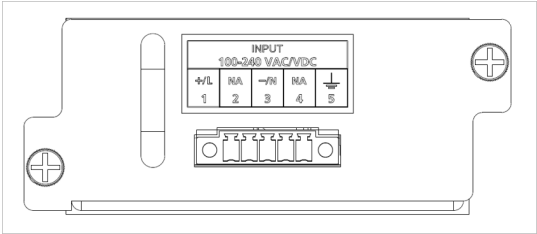
NOTE The Power LED on the front panel will turn on if the computer loses power. For details on power LED behavior, refer to the *LED Indicators* section.

Installing/removing the Hot-swappable Power Supplies

To install the hot-swappable power supply, insert it into either the PWR1 or PWR2 slot. Ensure that it is inserted all the way to the end of the slot. Secure the power supply by fastening screws on both sides.

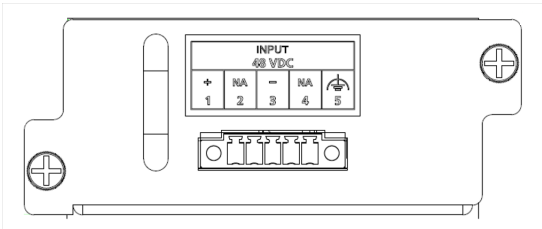
To remove the power supply, first unfasten the two screws. Then, grasp the handle of the power supply and gently pull it out of the slot.

DA-PWR-150-HV



Applicable Products: DA-820E-C3-H-T, DA-820E-C3-HH-T, DA-820E-C5-H-T, DA-820E-C5-HH-T, DA-820E-C7-H-T, and DA-820E-C7-HH-T

DA-PWR-120-LV



Applicable Products: DA-820E-C3-L-T, DA-820E-C3-LL-T, DA-820E-C5-L-T, DA-820E-C5-LL-T, DA-820E-C7-L-T, DA-820E-C7-LL-T

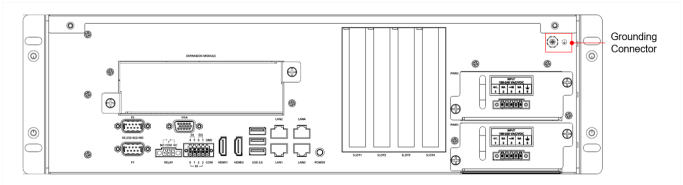
Terminal Number	Usage	Description
1	Power Line	PWR Line is connected to the Line (L) terminal for the AC power source.
	Power Positive	PWR Positive is connect to the + terminal for the DC power source
2	N/A	No function
3	Power Neutral	PWR Neutral is connected to the Neutral (N) terminal for the AC power source.
	Power Negative	PWR Negative is connect to the – terminal for the DC Power
4	N/A	No function
5	Bond Earth	Bond Earth is connected to the Chassis Ground via a jumper on the terminal block.

Upon successful power connection, the Power LED will glow with a Green light, indicating that power is being supplied to the DA-820E. Subsequently, the BIOS will initialize the flash disk module, resulting in the Storage LED blinking. The operating system boot-up process typically takes between 30 to 60 seconds to complete.

For details on power connection and surge protection, refer to the *DA-820E Hardware User Manual*.

Grounding the Chassis

A grounding connector is located on the rear panel of the DA-820E computer.



Connect the grounding connector to the chassis ground source.

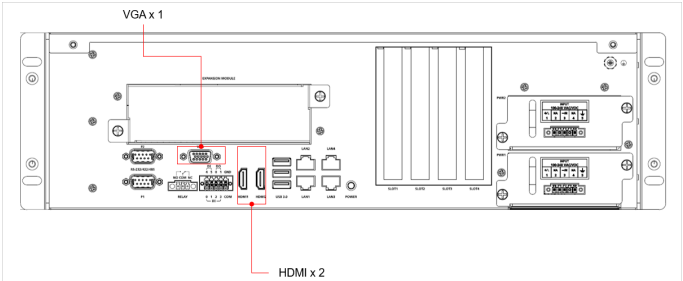


ATTENTION

If protective earthing is used as a safeguard, it is required to connect the equipment protective earthing conductor to the installation protective earthing conductor (for example, using a power cord connected to a socket outlet with an earthing connection).

Connecting Displays

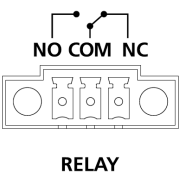
The DA-820E comes with one VGA interface with 1920 x 1200 resolution at 60 Hz and D-Sub 15-pin female connector and two HDMI interfaces with 3840 x 2160 resolution at 60 Hz. All three are located on the rear panel of the computer.



NOTE For optimal video streaming reliability, we recommended using premium certified HDMI cables.

Relay Output

The DA-820E includes a relay output located on the rear panel. The pin definitions of the relay output connectors are shown in the figure.

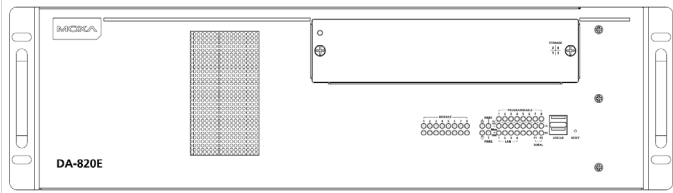


USB Ports

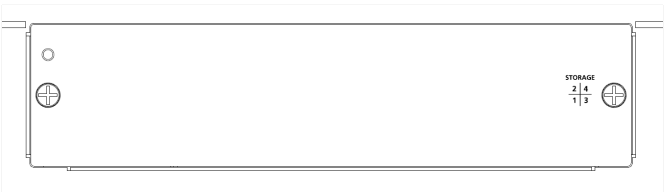
The DA-820E comes with 2 USB 2.0 ports on the front panel and 3 USB 3.0 ports on the rear panel. The USB ports can be used to connect peripherals, such as flash drives, for expanding the system’s storage capacity.

Installing Storage Disks

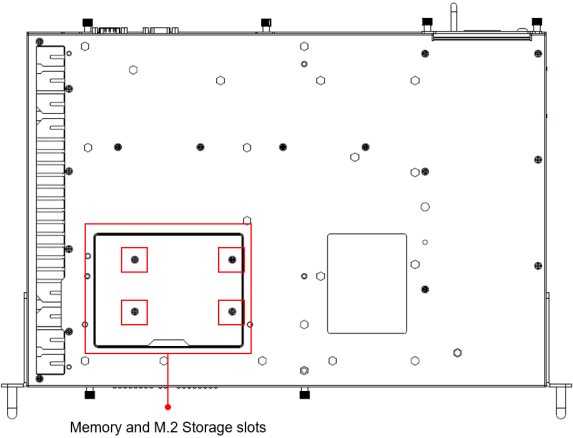
The DA-820E is provided with four sockets for storage disks, enabling installation of up to four 2.5” SSDs. To begin the installation, unfasten the two screws on the storage disk tray cover and remove the cover. Then, pull out the tray to install the SSDs. For detailed instructions, refer to the *DA-820E Hardware User Manual*.



The installation sequence for the SSDs is indicated on the right side of the storage cover.



Installing Memory and M.2 Storage



The DA-820E comes with 2 DDR4 slots and 1 M.2 M-Key 2280 slot. The slots are located on the bottom side of the DA-820E. To access the slots, you will need to remove the cover indicated in the figure above by unfastening the four screws securing the cover. For detailed instructions, refer to the *DA-820E Hardware User Manual*.

Installing Expansion Modules

The DA-820E is equipped with a proprietary expansion module socket located on the rear panel, enabling the installation of Moxa-proprietary expansion modules. Additionally, the system features four full-height standard PCIe slots, providing flexibility for the extension of customized interfaces. Information on the interfaces available for each slot is listed in the following table:

Slot 1	Slot 2	Slot 3	Slot 4
PCIe x8 (4-lane)	PCIe x1	PCIe x1	PCIe x1

For additional details, refer to the *DA-820E Hardware User Manual*.



WARNING

Power off the computer before installing the expansion modules to avoid damage to the computer.

RTC Battery



WARNING

There is a risk of explosion if the wrong type of battery is used. To avoid this potential danger, always be sure to use the correct type of battery. Contact the Moxa RMA service team if you need to replace your battery. Dispose of used batteries according to the instructions on the batteries.



警告

更換不正確之電池形式會有爆炸的風險，請依製造商說明書處理用過之電池。

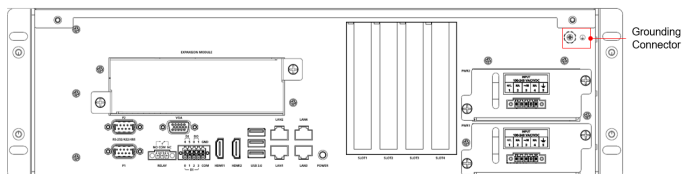


警告

為避免電磁干擾，本產品不應安裝或使用於住宅環境。

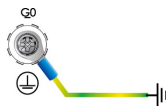
Grounding the Chassis

There is a grounding connector located on the DA-820E's rear panel.



Connect the connector to the chassis ground source.

Ground
(Green & Yellow)



ATTENTION

If protective earthing is used as a safeguard, the instructions shall require the connection of the equipment protective earthing conductor to the installation protective earthing conductor (for example, using a power cord connected to a socket-outlet with an earthing connection).

Specifications

Input Current	100 to 240 VAC, 50/60 Hz, 1.75 to 0.66 A 100 to 240 VDC, 1.65 to 0.66 A 48 VDC, 3.12 A
Input Voltage	100 to 240 VAC 100 to 240 VDC 48 VDC
Operating Temperature	-40 to 70°C (-40 to 158°F)
Storage Temperature	-40 to 85°C (-40 to 185°F)

For a full set of specifications, refer to the Moxa website.

BSMI—限用物質含有情況標示聲明書

Declaration of the Presence Condition of the Restricted Substances Marking

設備名稱：嵌入式電腦		型號（型式）：DA-820E (系列型號參考次頁)				
Equipment name		Type designation (Type)				
單元 Unit	限用物質及其化學符號 Restricted substances and its chemical symbols					
	鉛 Lead (Pb)	汞 Mercury (Hg)	鎘 Cadmium (Cd)	六價鉻 Hexavalent chromium (Cr+6)	多溴聯苯 Polybrominated biphenyls (PBB)	多溴二苯醚 Polybrominated diphenyl ethers (PBDE)
外殼	○	○	○	○	○	○
印刷電路板及其電子組件	-	○	○	○	○	○
電纜/電線/連接器	-	○	○	○	○	○
電源設備	-	○	○	○	○	○
機械部件-金屬	○	○	○	○	○	○
機械部件-非金屬	○	○	○	○	○	○
如存在此情況:						
備考1. “超出0.1 wt %” 及 “超出0.01 wt %” 係指限用物質之百分比含量超出百分比含量基準值。 Note 1 : “Exceeding 0.1 wt %” and “exceeding 0.01 wt %” indicate that the percentage content of the restricted substance exceeds the reference percentage value of presence condition.						
備考2. “○” 係指該項限用物質之百分比含量未超出百分比含量基準值。 Note 2 : “○” indicates that the percentage content of the restricted substance does not exceed the percentage of reference value of presence.						
備考3. “-” 係指該項限用物質為排除項目。 Note 3 : The “-” indicates that the restricted substance corresponds to the exemption.						

製造商資訊：

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