DA-820E Series

IEC 61850-3 3U rackmount computers with 13th Gen Intel® Core™ processor, hot-swappable power module, -40 to 70°C operating temperature

Features and Benefits

- IEC 61850-3, IEEE 1613, and IEC 60255 compliant power-automation computer

- EN 50121-4 compliant for railway wayside applications

- 13th Gen Intel® Core™ processor

- 4 SSD slots with Intel® RST RAID 0/1 support for SSD slot 1 and 2

- Up to 64 GB RAM (two built-in SODIMM DDR4 memory slots)

- PRP/HSR technology for network redundancy (with a PRP/HSR expansion module)

- Security options such as TPM 2.0, UEFI Secure Boot and physical security

- 1 PCIe x8 (4-lane) and 3 PCIe x1 for expansion modules

- Redundant power supplies (100 to 240 VAC/VDC and 48 VDC) with hot-swappable power module design

Certifications

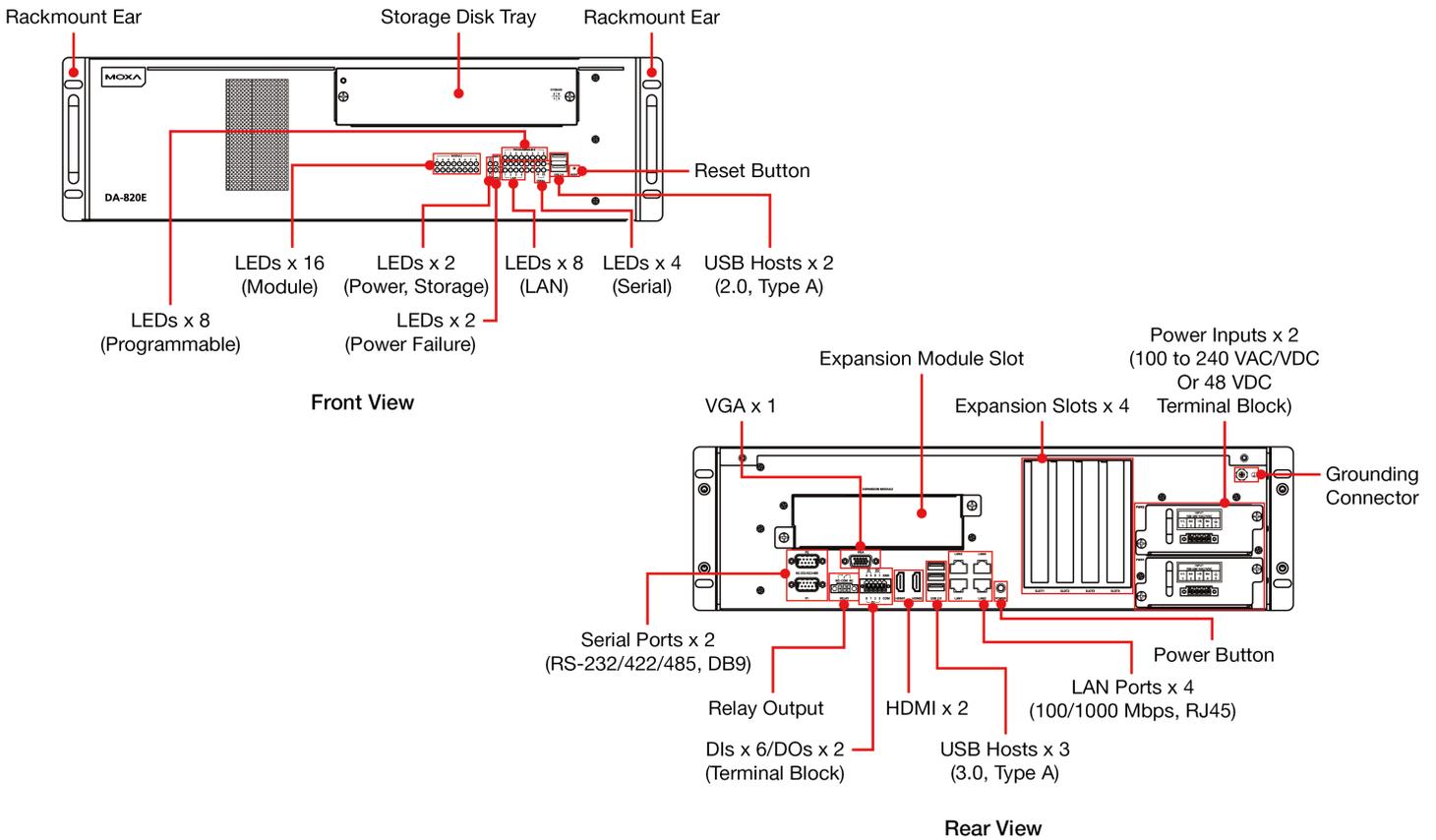IEC 61850-3 / IEEE 1613   EN 50121-4   CE   c UL us

Introduction

The DA-820E Series is a high-performance 3U rackmount industrial computer powered by 13th Gen Intel® Core™ i3/i5/i7 processors, offering exceptional computing capabilities. It features a versatile I/O design, including 3 display ports (2 HDMI and 1 VGA), 6 USB ports, 4 Gigabit LAN ports, two 3-in-1 RS-232/422/485 serial ports, 6 DI ports, 2 DO ports, 4 standard PCIe expansion slots, and 1 proprietary expansion slot. Additionally, it is equipped with 4 hot-swappable 2.5" SSD slots, supporting Intel® RST RAID 0/1 functionality on SSD slots 1 and 2 for enhanced storage performance and reliability.

Engineered specifically for substation applications, the DA-820E complies with IEC 61850-3, IEEE 1613, and IEC 60255 standards, guaranteeing ruggedness, reliability, and seamless integration with Intelligent Electronic Devices (IEDs) in demanding substation automation systems. Leveraging its 13th Gen Intel® processor, the DA-820E delivers the high computing power required for modern, complex software applications, such as virtualization, in addition to traditional OT SCADA functionalities.

Appearance

Front View

Rackmount Ear — Storage Disk Tray — Rackmount Ear

- LEDs x 16 (Module)
- LEDs x 8 (Programmable)
- LEDs x 2 (Power, Storage)
- LEDs x 2 (Power Failure)
- LEDs x 8 (LAN)
- LEDs x 4 (Serial)
- USB Hosts x 2 (2.0, Type A)
- Reset Button

Rear View

- VGA x 1
- Expansion Module Slot
- Expansion Slots x 4
- Power Inputs x 2 (100 to 240 VAC/VDC Or 48 VDC Terminal Block)
- Grounding Connector
- Serial Ports x 2 (RS-232/422/485, DB9)
- Relay Output
- DIs x 6/DOs x 2 (Terminal Block)
- HDMI x 2
- USB Hosts x 3 (3.0, Type A)
- LAN Ports x 4 (100/1000 Mbps, RJ45)
- Power Button

Specifications

Computer

CPU	Intel® Core™ i3-1320PE Intel® Core™ i5-1340PE Intel® Core™ i7-1370PE
System Memory Slot	SODIMM DDR4 slots x 2
DRAM	64 GB max. (SODIMM x 2, each supporting 3200 MHz and 32 GB max. per module)
Graphics Controller	Intel® Core™ i3-1320PE: Intel® UHD Graphics Intel® Core™ i5-1340PE: Intel® Iris® Xe Graphics eligible Intel® Core™ i7-1370PE: Intel® Iris® Xe Graphics eligible
Storage Slot	2.5-inch HDD/SSD slots x 4 M.2 M-key 2280 slot x 1
Supported OS	Windows 10 IoT Enterprise LTSC 2021 Windows 11 IoT Enterprise LTSC 2024 Windows Server 2022 Ubuntu 22.04.3 LTS Debian 12 RHEL 9.4

Computer Interface

Ethernet Ports	Auto-sensing 10/100/1000 Mbps ports (RJ45 connector) x 4
Serial Ports	RS-232/422/485 ports x 2 (software-selectable, DB9 male connector)
Digital Input	DIs x 6
Digital Output	DOs x 2
USB 2.0	USB 2.0 hosts x 3, type-A connectors

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	2 ports on the front panel, 1 port inside the computer for USB dongle-based security
USB 3.0	USB 3.0 hosts x 3, type-A connectors 3 ports on the rear panel
Expansion Slots	PCIe x8 (4-lane) slot x 1 PCIe x1 slots x 3 Proprietary slot x 1
Video Output	HDMI x 2, HDMI connector (type A) (up to 3840 x 2160 resolution at 60Hz) VGA x 1, 15-pin D-sub connector (female) (up to 1920 x 1200 resolution at 60 Hz)
TPM	TPM v2.0
Secure Boot	UEFI

LED Indicators

System	Power x 1 Storage x 1 Power failure detection x 2 Programmable x 8
Serial	2 per port (Tx, Rx)
LAN	8 per port (10/100/1000 Mbps)

Serial Interface

Baudrate	300 bps to 115.2 kbps
Connector	DB9 male
Isolation	2 kV
Serial Standards	RS-232/422/485

Serial Signals

RS-232	TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND
RS-422	Tx+, Tx-, Rx+, Rx-, GND
RS-485-2w	Data+, Data-, GND
RS-485-4w	Tx+, Tx-, Rx+, Rx-, GND

Digital Inputs

Digital Input Channels	DIs x 6
Connector	Screw-fastened Euroblock terminal
I/O Mode	DI
Isolation	3k VDC
Sensor Type	Dry contact Wet contact (NPN)
Dry Contact	Logic 0: Close to GND Logic 1: Open
Wet Contact (COM to DI)	Logic 0: 10 to 30 VDC Logic 1: 0 to 3 VDC

Digital Outputs

Digital Output Channels	DOs x 2
Connector	Screw-fastened Euroblock terminal
Current Rating	200 mA per channel
I/O Type	Sink
Voltage	0 to 30 VDC
Isolation	3k VDC

Power Parameters

Input Current	100 to 240 VAC, 50/60 Hz, 1.75 to 0.66 A (max) 100 to 240 VDC, 1.65 to 0.66 A (max) 48 VDC, 3.12 A
Input Voltage	100 to 240 VAC 100 to 240 VDC 48 VDC
Power Consumption	DA-PWR-150-HV: 140 W (max.) DA-PWR-120-LV: 130 W (max.)
Power Button	Reset button (front panel) ON/OFF (rear panel)

Physical Characteristics

Housing	Metal
Dimensions (without ears)	440 x 301 x 132,55 mm (17.32 x 11.85 x 5.22 in)
Weight	11,860 g (26.15 lb)
Installation	19-inch rack mounting

Environmental Limits

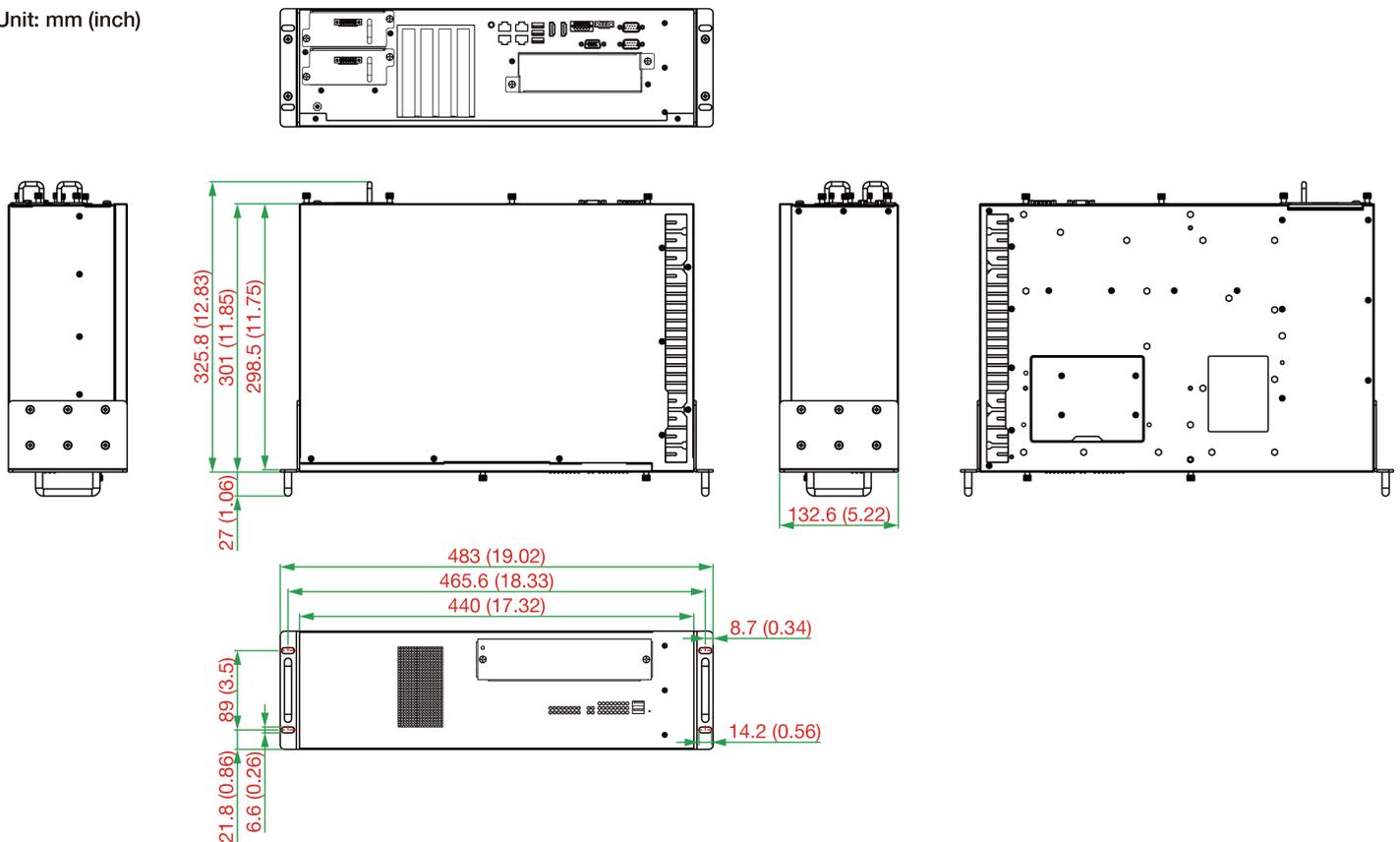|	
Operating Temperature	-40 to 70°C (-40 to 158°F)
Storage Temperature (package included)	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)

Standards and Certifications

EMC	EN 61000-6-2/-6-4 EN 55032/35
EMI	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV IEC 61000-4-5 Surge: Power: 4 kV; Signal: 4 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8: 20 A/m IEC 61000-4-11
Power Substation	IEC 61850-3 IEEE 1613
Protection Relay	IEC 60255

Safety	IEC 62368-1
	UL 62368-1
Shock	IEC 61850-3 Edition 2.0, IEC 60068-2-27, IEC 60255-21-2

Declaration

Green Product	RoHS, CRoHS, WEEE

MTBF

Time	293,786 hrs
Standards	Telcordia Standard SR-332

Warranty

Warranty Period	3 years
Details	See www.moxa.com/warranty

Package Contents

Device	1 x DA-820E Series computer
Installation Kit	1 x rack-mounting ear
	A pack of thermal pads for installing optional M.2 storage and memory modules
	1 x USB dongle kit
Documentation	1 x quick installation guide
	1 x warranty card
Note	This product requires additional modules (sold separately) to function.

Dimensions

Unit: mm (inch)

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Ordering Information

Model Name	CPU	Power Modules	Operating Temp.
DA-820E-C3-H-T	Intel® Core™ i3-1320PE	1 x DA-PWR-150-HV	-40 to 70°C
DA-820E-C3-HH-T	Intel® Core™ i3-1320PE	2 x DA-PWR-150-HV	-40 to 70°C
DA-820E-C5-H-T	Intel® Core™ i5-1340PE	1 x DA-PWR-150-HV	-40 to 70°C
DA-820E-C5-HH-T	Intel® Core™ i5-1340PE	2 x DA-PWR-150-HV	-40 to 70°C
DA-820E-C7-H-T	Intel® Core™ i7-1370PE	1 x DA-PWR-150-HV	-40 to 70°C
DA-820E-C7-HH-T	Intel® Core™ i7-1370PE	2 x DA-PWR-150-HV	-40 to 70°C
DA-820E-C3-L-T	Intel® Core™ i3-1320PE	1 x DA-PWR-120-LV	-40 to 70°C
DA-820E-C3-LL-T	Intel® Core™ i3-1320PE	2 x DA-PWR-120-LV	-40 to 70°C
DA-820E-C5-L-T	Intel® Core™ i5-1340PE	1 x DA-PWR-120-LV	-40 to 70°C
DA-820E-C5-LL-T	Intel® Core™ i5-1340PE	2 x DA-PWR-120-LV	-40 to 70°C
DA-820E-C7-L-T	Intel® Core™ i7-1370PE	1 x DA-PWR-120-LV	-40 to 70°C
DA-820E-C7-LL-T	Intel® Core™ i7-1370PE	2 x DA-PWR-120-LV	-40 to 70°C

Accessories (sold separately)

Power Modules

DA-PWR-150-HV	Hot-swappable power-supply module (100 to 240 VAC/VDC) with system power input and terminal block for DA-820E computers
DA-PWR-120-LV	Hot-swappable power-supply module (48 VDC) with system power input and terminal block for DA-820E computers

Expansion Modules

DA-GX02-SFP-T	2-port 100/1000 Mbps fiber card with 2 SFP slots, 1 PCIe interface
DA-PRP-HSR-I210	PRP/HSR expansion card with RJ45 and SFP combo port
DN-FX04	4-port 100M/1000M SFP Ethernet module
DN-LN04-RJ	4-port 10/100/1000 Mbps PCIe LAN module with RJ45 connectors
DN-SP08-I-DB	8-port software-selectable RS-232/422/485 PCIe serial module with DB9 connector
DN-SP08-I-TB	8-port software-selectable RS-232/422/485 PCIe serial module with terminal-block connector
DN-PRP-HSR-I210	PRP/HSR expansion module with RJ45 and SFP combo port

Connectors

Mini DB9F-to-TB	DB9 female to terminal block connector