DA-820 Series *Preliminary*

x86 rackmount computers with dual/quad core i7 processor, 2 VGA, 4 Gigabit LANs, 6 USB, CFast socket

> Intel Core i7 dual/quad core processor
> 2/4 GB DDR3 ECC RAM
> 4 Gigabit Ethernet ports
> 2 RS-232/422/485 serial ports (DB9 male)
> Dual VGA outputs
> 6 USB 2.0 ports for high speed peripherals
> 3 PCIe slots/2 PCI slots for expansion
> 1 PCIe x16 slot for additional video card
> IEEE 1613, IEC 60255 compliant
> Cyber security function
> IEC 61850-3 compliant (EMC Level 4, C3, Bm)

Overview

The DA-820's main operating system is based on the Intel Quad core i7-3612QE CPU and QM77 chipset, which supports standard X86, 2 VGA, USB, 4 Gigabit LAN ports, 2 RS/232/422/485 3-in-1 serial port. DA-820 equipped with 4 SATA disk interface and default support RAID 0/1/5/10 function. In addition, the DA-820 is specifically designed for substation applications that require precise time synchronization and the IEC 61850-3 standards. The flexible design

gives the DA-820 suitable for local SCADA, environmental monitoring, video surveillance, protocol conversion, and PRP/HSR redundancy applications. The cyber security function also makes the DA-820 the ideal solution for a secured network communication

The housing is a standard 3U, 19-inch wide rack-mounted rugged enclosure. This robust, rack-mountable design provides the hardened protection needed for industrial environment applications.

Appearance

Front View

Power LEDs (Power, Storage) | LAN and Programmable LED Indicators | 2 USB 2.0 Ports
4 2.5" SSD/HDD Storage Trays | Reset Button

Rear View

2 RS-232/422/485 Serial Ports | 4 USB 2.0 Ports | 6 Peripheral Expansion Module Slots
2 VGA Outputs | 4 Gigabit LAN Ports | Power Input
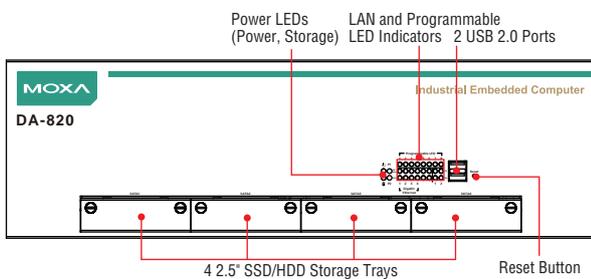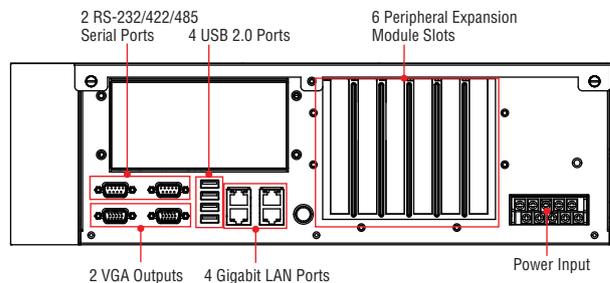
Dimensions

Unit: mm (inch)

361 (14.23) · 440 (17.32) · 133 (5.24) · 89 (3.50) · 465 (18.31) · 483 (19.02)
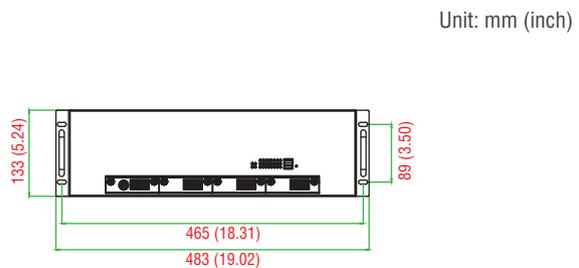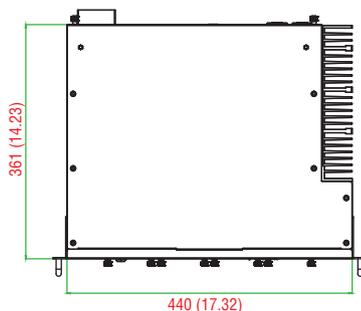
:: Hardware Specifications

Computer

CPU:
• Intel dual core i7-3555LE 2.5 GHz processor
• Intel quad core i7-3612QE 2.1 GHz processor
OS: 64-bit Debian 7 or 64-bit Windows Embedded Standard 7
System Chipset: QM77
BIOS: 64 Mbit Flash BIOS, PCI Plug & Play, ACPI function support
System Memory: 16 GB capacity, 2 GB (Linux)/4 GB (W7E)
pre-installed: 2 slots of 8 GB 200-pin DDR2-667 SO-DIMM
USB:
• 4 x USB 2.0 ports type A (rear panel)
• 2 x USB 2.0 ports type A (front panel)

Storage

Built-in: CFast card onboard to store OS
Storage Expansion: 4 SATA 3.0 interfaces, supporting RAID 0, 1, 5, 10, and hot-swappable

Display

Graphics Controller: Intel® HD Graphics 4000
Display Interface: 2 VGA outputs (DB15 female connector)
Resolution: CRT display mode with pixel resolution up to 2048 x 1536 at 75 Hz

Ethernet Interface

LAN: 4 auto-sensing 10/100/1000 Mbps ports
Magnetic Isolation Protection: 1.5 kV built-in

Serial Interface

Serial Standards:
2 RS-232/422/485 ports (DB9 male)

Serial Signals

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

LEDs

System: Power, Storage
Gigabit LAN: 100M x 4, 1000M x 4
Serial: TX/RX
Programmable: LED x 8

Switches and Buttons

Power Switch: on/off (on rear panel)

Physical Characteristics

Housing: SECC sheet metal (1 mm)
Weight: 6 kg
Dimensions: 315 x 440 x 90 mm (12.40 x 17.32 x 3.54 in) (without rackmount ears)
Mounting: Standard 19-inch rackmount

Environmental Limits

Operating Temperature:
• Standard models: -40 to 60°C (-40 to 140°F)
• Wide temp. models: -40 to 75 °C (-40 to 167°F)
Storage Temperature: -40 to 80°C (-40 to 176°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)
Anti-vibration: 2 G$_{rms}$ @ IEC-68-2-34, random wave, 5-500 Hz, 1 hr per axis
Anti-shock: 20 g @ IEC-68-2-27, half sine wave, 11 ms

Power Requirements

Input Voltage: 100 to 240 VAC, 50/60 Hz, 0.9-0.4 A
Power Consumption: 60 W

Standards and Certifications

Safety: LVD, UL, cUL, CCC
EMC: FCC, CE (Class A)
Green Product: RoHS, CRoHS, WEEE

Reliability

Alert Tools: Built-in buzzer and RTC (real-time clock) with lithium backup battery
Automatic Reboot Trigger: Built-in WDT (watchdog timer) supporting 1-255 level time interval system reset, software programmable

Warranty

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

:: Software Specifications

Linux

OS: Linux Debian 7
File System: EXT 4
Internet Protocol Suite: TCP, UDP, IPv4, SNMPv1/v2c/v3, ICMP, ARP, HTTP, SSH 1.0/2.0, SSL, DHCP, NTP, NFS, Telnet, FTP, TFTP, PPP, PPPoE
Internet Security: OpenVPN, Netfileter/iptables
Web Server (Apache): Allows you to create and manage web sites; supports PHP and XML
Secure Shell for Remote Access: SSH allows remote logins to a secure encrypted console from any connected network
Dial-up Networking: PPP Daemon for Linux that allows Unix machines to connect to the Internet through dialup lines, using the PPP protocol, as a PPP server or client. Works with 'chat', 'dip', and 'diald', among (many) others. Supports IP, TCP, UDP, and (for Linux) IPX (Novell).
File Server: Enables remote clients to access files and other resources over the network
Watchdog: A watchdog timer that triggers a system reset upon software freezes, for both specific applications and system-wide failures.

Application Development Software:
• Moxa API Library (Watchdog timer, Moxa serial I/O control)
• GNU C/C++ cross-compiler
• GNU C library
• Perl
Software Package:
• SNMP
• SafeGuard technology

Windows Embedded Standard 7

Core OS:
• 32-bit support
• Remote Client
• Remote Procedure Call
Applications and Services Development:
• .Net Framework 3.5
• Remote Desktop Protocol 7.1
• COM OLE Application Support
• COM+ Application Support
• MSMQ
Internet Services:
• Internet Explorer 8.0
• IIS 7.0

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Power Computers ＞ *DA-820 Series*

File Systems and Data Storage:
• Windows Data Access Components
• Windows Backup and Restore
Diagnostics: • Common Diagnostic Tools
• Problem Reports and Solutions
Fonts: Chinese (Trad. and Simp.), Japanese, Korean, Western, Middle Eastern, South East Asian, and South Asian Fonts
Graphics and Multimedia:
• MPEG DTV-DVD Audio Decoder (MPEG-2, AAC)
• MPEG Layer-3 Audio Codecs(MP3)
• MPEG4 Decoders
• Windows Media Video VC-1 (WMV) Codecs
• DirectX and Windows Device Experience
• Windows Media Player 12
International:
• IME Simplified Chinese Support
• IME Traditional Chinese Support
• IME Japanese Support
• IME Korean Support
Management:
• Group Policy Management
• Windows Management Instrument (WMI)
• Windows Update
Networking:
• Extensible Authentication Protocol (EAP)
• Internet Authentication Service
• Telnet Server

• Bluetooth
• Domain Services
• Network Access Protection
• Network and Sharing Center
• Quality of Service
• Remote Access Service (RAS)
• Telephony API Client
• Windows Firewall
• Wireless Networking
Security:
• Credential Roaming Service
• Credentials and Certificate Management
• Windows Authorization Manager (AZMAN)
• Windows Security Center
• Active Directory Rights Management
• Security Base
• Encrypted File System (EFS)
Embedded Features:
• Enhanced Write Filter (EWF)
• File-Based Write Filter (FBWF)
• Message Box Default Reply
• Registry Filter
• WSDAPI for .NET
Embedded Self-Health Diagnostics: SNMP-based remote scripting layer for monitoring, reporting, and control

⋮ Ordering Information

Available Models

DA-820-C7-T: x86 rackmount computer with dual core i7-3555LE, 2.5 GHz CPU, without CFast/RAM/OS, 2 VGA, 4 Gigabit LANs, 6 USB, CFast, -40 to 75°C operating temperature, IEC 61850-3 C3

DA-820-C7-T-LX: x86 rackmount computer with dual core i7-3555LE, 2.5 GHz CPU, 2 VGA, 4 Gigabit LANs, 6 USB, CFast socket, 2 GB system memory, Debian 7, -40 to 75°C operating temperature, IEC 61850-3 C3

DA-820-C7-T-W7E: x86 rackmount computer with dual core i7-3555LE, 2.5 GHz CPU, 2 VGA, 4 Gigabit LANs, 6 USB, CFast socket, 2 GB system memory, Windows Embedded Standard 7, -40 to 75°C operating temperature, IEC 61850-3 C3

DA-820-C8: x86 rackmount computer with dual core i7-3612QE, 2.1 GHz CPU, without CFast/RAM/OS, 2 VGA, 4 Gigabit LANs, 6 USB, CFast, -40 to 60°C operating temperature, IEC 61850-3 C2

DA-820-C8-LX: x86 rackmount computer with dual core i7-3612QE, 2.1 GHz CPU, 2 VGA, 4 Gigabit LANs, 6 USB, CFast socket, 2 GB system memory, Linux Debian 7, -40 to 60°C operating temperature, IEC 61850-3 C2

DA-820-C8-W7E: x86 rackmount computer with dual core i7-3612QE, 2.1 GHz CPU, 2 VGA, 4 Gigabit LANs, 6 USB, CFast socket, 2 GB system memory, Windows Embedded Standard 7, -40 to 60°C operating temperature, IEC 61850-3 C2

Expansion Modules (can be purchased separately)

DA-IRIG-B-S: Slave card for time synchronization with terminal block, Fiber and DB9 connectors
DE-GX02-SFP: 2-port Gigabit Fiber card with SFP connector
CP-116E-A: EMC Level 4 serial port card
CP-118E-A-I: EMC Level 4 serial port card
CP-138E-A-I: EMC Level 4 serial port card
CP-134EL-A-I: EMC Level 4 serial port card
DE-PRP/HSR: 2-port Gigabit Fiber card with SFP and RJ45 connectors

Optional Accessories (can be purchased separately)

FK-12072-01: Hard disk installation package (8 screws, 4 brass standoffs, 1 SATA cable, 1 hard disk mounting bracket)

Package Checklist

• DA-820 rackmount computer
• Rackmount kit
• Ethernet cable: RJ45 to RJ45 cross-over cable, 100 cm
• Documentation CD or DVD
• Quick installation guide (printed)
• Warranty card