

# DA-685 Series

**x86 rackmount substation computers with VGA, 2 RS-232/422/485 and 6 RS-485 serial ports, 6 LAN Ports, CompactFlash, USB**



- > Intel Atom D510 1.66 GHz processor
- > 1 DDR2 SO-DIMM sockets supporting DDR2 667 up to 2 GB (max.)
- > 6 10/100/1000 Mbps Ethernet ports
- > 2 RS-232/422/485 serial ports (DB9 male)
- > 6 RS-485 serial ports (terminal block)
- > 2 USB 2.0 ports for high speed peripherals
- > CompactFlash socket for storage expansion
- > 1 SATA interface for hard disk drive expansion
- > EMC Level 4 certified



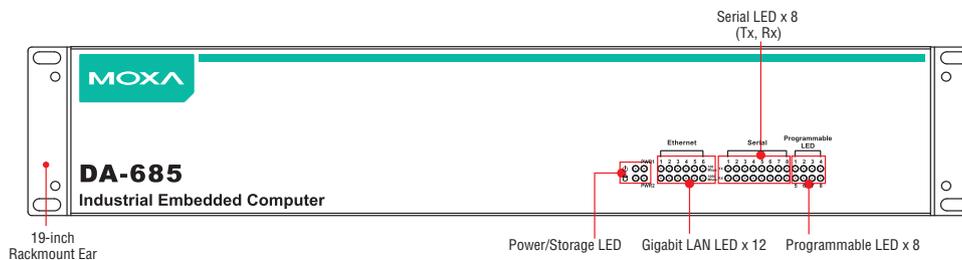
## Overview

DA-685 industrial computers excel in a wide array of power automation applications. The DA-685 series is based on the Intel x86 processor and supports VGA, 6 gigabit Ethernet ports, 2 RS-232/422/485 and 6 RS-485 serial ports, CompactFlash, and USB. The computers come standard in a 19-inch, 2U high form factor, and the Intel Atom processor gives them enough punch to perform demanding industrial tasks without consuming a lot of power.

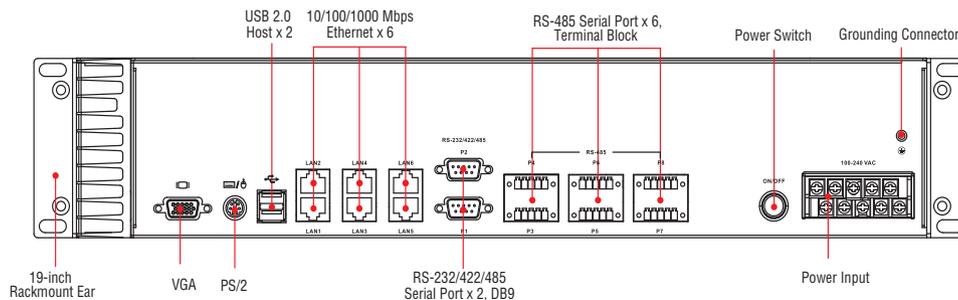
The DA-685 computer are pre-installed with Linux, Windows Embedded Standard 2009, or Windows Embedded Standard 7 operating systems, providing a familiar environment for developing sophisticated application software.

## Appearance

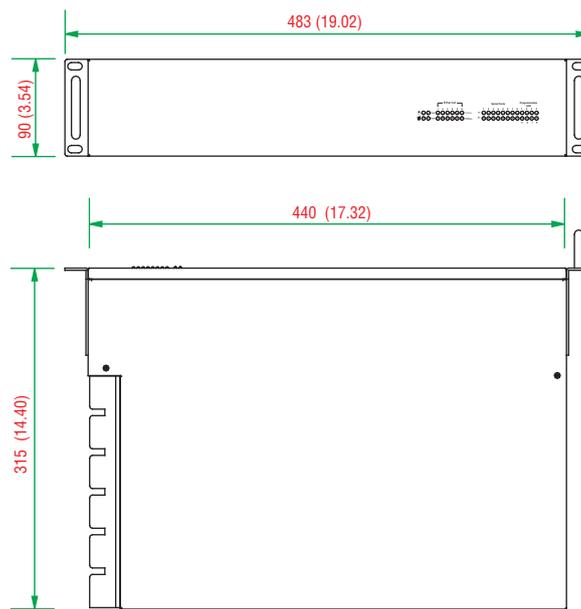
### Front View



### Rear View



## Dimensions



Unit: mm (inch)

## Hardware Specifications

### Computer

**CPU:** Intel Atom D510 1.66 GHz processor

**OS:** Linux, Windows Embedded Standard 2009, or Windows Embedded Standard 7

**System Chipset:** Intel Pineview-D + ICH8M

**BIOS:** 16 Mbit Flash BIOS, PCI Plug & Play, ACPI function support

**FSB:** 667 MHz

**System Memory:** 2 GB capacity, 1 GB (LX and XPE)/ 2 GB (W7E) pre-installed; 1 or 2 slots of 2 GB 200-pin DDR2-667 SO-DIMM

**Expansion Bus:** PCI/104 interface reserved

**USB:** USB 2.0 hosts x 2, Type A connector, supports system boot up

### Storage

**Built-in:** 2 GB (LX and XPE) / 8 GB (W7E) industrial DOM onboard to store OS

**Storage Expansion:** CompactFlash socket for CF card expansion, supporting CF Type-I/II

**HDD Support:** 1 SATA connector for drive expansion

### Other Peripherals

**KB/MS:** 1 PS/2 interface, supports standard PS/2 keyboard and mouse through Y-type cable

### Display

**Graphics Controller:** Intel® GMA3150 graphics controller on Intel D510 card

**Display Interface:** VGA output (DB15 female connector)

**Resolution:** CRT display mode with pixel resolution up to 2048 x 1536 at 75 Hz

### Ethernet Interface

**LAN:** Auto-sensing 10/100/1000 Mbps ports x 6

**Magnetic Isolation Protection:** 1.5 kV built-in

### Serial Interface

**Serial Standards:**

- 2 RS-232/422/485 ports (DB9 male)
- 6 RS-485-2W ports (terminal block)

### 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 6, 1000M x 6

**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:** 4 kg (8.89 lb)

**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:** -10 to 55°C (14 to 131°F)

**Storage Temperature:** -20 to 80°C (-4 to 176°F)

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

**Anti-Vibration:** 2 Grms @ 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:** 40 W

## Standards and Certifications

**Safety:** LVD, UL, cUL, CCC

**EMC:** EN 61000-6-2/6-4

**EMI:** CISPR 22, 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: Signal: 10 V

IEC 61000-4-8: 20 A/m

IEC 61000-4-9: 300 A/m

IEC 61000-4-11: (AC models only)

**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

**MTBF** (mean time between failures)

**Time:**

DA-685-W7E: 240,825 hrs

DA-685-LX: 168,379 hrs

**Standard:** Telcordia (Bellcore) Standard TR/SR

## Warranty

**Warranty Period:** 3 years

**Details:** See [www.moxa.com/warranty](http://www.moxa.com/warranty)

## Software Specifications

### Linux

**OS:** Debian 5 Linux, Lenny; kernel 2.6.26

**Web Server (Apache):** Allows you to create and manage web sites; supports PHP and XML

**Terminal Server (SSH):** Provides secure encrypted communications between two un-trusted hosts over an insecure network

**File System:** EXT2, JFFS2

**Internet Protocol Suite:** TCP, UDP, IPv4, SNMPv1/v2c/v3, ICMP, ARP, HTTP, CHAP, PAP, SSH 1.0/2.0, SSL, DHCP, NTP, NFS, Telnet, FTP, TFTP, PPP, PPPoE, PTP

**Internet Security:** OpenVPN, iptables firewall

**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:** Features a hardware function to trigger system reset in a user specified time interval (Moxa API provided)

**Application Development Software:**

- Moxa API Library (Watchdog timer, Moxa serial I/O control)
- GNU C/C++ cross-compiler
- GNU C library
- Perl

### 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

**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

### Windows XP Embedded

**OS:** Windows Embedded Standard 2009

**File System:** NTFS

**Internet Protocol Suite:** HCP, DNS, FTP, HTTP, SNMP, NTP, Telnet, SMTP, SNMPv2, TCP, UDP, IPv4, ICMP, IGMP, IPsec, TAPI, ICS, PPP, CHAP, EAP, PPPoE, PPTP, NetBIOS, PTP

**Web Server (IIS):** Allows users to create and manage websites

**Remote Registry Service:** Enables remote users to modify registry settings on this computer

**Watchdog:** Features a hardware function to trigger system reset at a user specified time interval (Moxa API provided)

**Enhanced Write Filter:** Redirect disk write operations to volatile(RAM) or non-volatile (disk) storage

**File-based Write Filter:** Redirects all write requests directed at protected volumes to the overlay cache, which records and displays the changes while preserving the protected status of the target volume.

### Application Development Software:

- Moxa API Library
- Microsoft .Net Framework 3.5 with SP1
- Active Directory Service Interface (ADSI) Core
- Active Template Library (ATL)
- Common Control Libraries
- Common File Dialogs
- Direct3D, DirectPlay, DirectShow, and Direct show filters
- Mapi32 Libraries
- Message Queuing (MSMQ) Core
- Microsoft Visual C++ Run Time Libraries
- Power Management dynamic-link library
- RPC
- Windows API, Script Engines, and WMI

## Ordering Information

### Available Models

**DA-685-XPE:** x86 rackmount computer with 1.66 GHz CPU, VGA, 6 gigabit Ethernet ports, 2 RS-232/422/485 and 6 2-wire RS-485 ports, CompactFlash, 2 USB ports, single power input, Windows Embedded Standard 2009

**DA-685-LX:** x86 rackmount computer with 1.66 GHz CPU, VGA, 6 gigabit Ethernet ports, 2 RS-232/422/485 and 6 2-wire RS-485 ports, CompactFlash, 2 USB ports, single power input, Linux

**DA-685-W7E:** x86 rackmount computer with 1.66 GHz CPU, VGA, 6 gigabit Ethernet ports, 2 RS-232/422/485 and 6 2-wire RS-485 ports, CompactFlash, 2 USB ports, single power input, Windows Embedded Standard 7

### 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-685 embedded computer
- 19-inch rackmount kit
- Ethernet cable: RJ45-to-RJ45 cross-over cable, 100 cm
- Documentation CD or DVD
- Quick installation guide (printed)
- Warranty card