

# DA-682A-DPP Series

***x86 2U 19-inch rackmount computer with Intel® i7 CPU, 6 gigabit Ethernet ports, 2 PCI expansion slots, fanless design***



- > IEC 61850-3, IEEE 1613, and IEC 60255 compliant for power substation automation systems
- > 3rd generation Intel core processors (Ivy Bridge)
- > Built-in DDR3 SDRAM and industrial DOM
- > 6 gigabit Ethernet ports for network redundancy
- > 2 PCI expansion slots for expansion modules
- > 1 CompactFlash socket for storage expansion
- > 4 high-speed, system-bootable USB 2.0 ports
- > Supports both 100 to 240 VAC and VDC power inputs (dual power)
- > Optional IRIG-B expansion module available



## Overview

The DA-682A-DPP computers have an x86 platform with VGA, 6 gigabit Ethernet ports, CompactFlash, USB, and two PCI ports for DA Series expansion modules. The DA-682A-DPP comes with three different CPU options, and basic models that allow system designers to install the DOM, RAM, and operating system according to their specific requirements.

IEC-61850-3 and IEEE 1613 compliance confirms that the DA-682A-DPP can deliver stable and reliable system operations in power applications. Additional value and convenience is provided through a modular design with two independent slots for flexible system

integration and expansion. Users have the option to add a variety of different communications modules, including an 8-port RS-232/422/485 module, 8-port RS-422/485 module, 8-port 10/100 Mbps switch module, IRIG-B time synchronization card and a universal PCI expansion module.

The DA-682A-DPP also complies with the IEC 60255 standards to enable the protection of electrical relays in a smart substation. IEC 60255 is one of the most widely used standards for testing relays and protection equipment, and compliance ensures that the DA-682A-DPP will work reliably and seamlessly with IEDs (intelligent electronic devices) as a part of the robust substation automation system.

### Smart Recovery Function

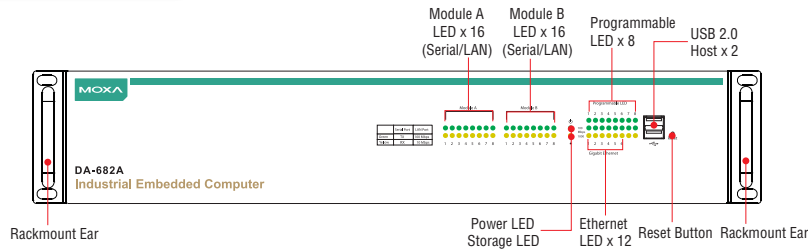
The DA-682A-DPP's Smart Recovery function minimizes downtime by making it easy to recover from operating system crashes. Engineers who are experts in a particular vertical market may not have enough computer domain knowledge to know how to fix operating system problems. Moxa Smart Recovery™ is an automated BIOS-level software recovery system that allows engineers to automatically trigger OS recovery to minimize downtime.

### Proactive Monitoring Function

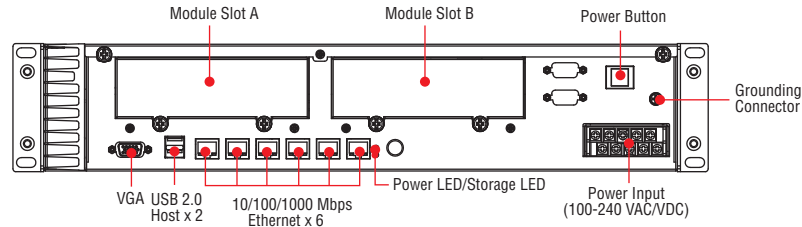
The DA-682A-DPP's Proactive Monitoring function monitors the computer's health by keeping an eye on CPU usage, memory usage, storage partition usage, the operating temperature of the CPU and motherboard, and can trigger a relay to provide either audio or visual alarms.

## Appearance

### Front View



### Rear View



## Hardware Specifications

### Computer

**CPU:** 3rd generation Intel core processors (Ivy Bridge)

- Intel Celeron 1047UE, 1.4 GHz dual-core processor
- Intel Core i3-3217UE, 1.6 GHz dual-core processor
- Intel Core i7-3517UE, 1.7 GHz dual-core processor

**OS:** Linux Debian 8 (pre-installed)

*Note: W7E available by CTOS*

**System Chipset:** Intel HM65

**BIOS:** SPI Flash 64-Mbit BIOS, PCI Plug & Play, ACPI function support

**System Memory:** 8 GB capacity, 1 GB for Linux pre-installed; 1 slot of DDR3-1066/1333 SO-DIMM SDRAM

**USB:** USB 2.0 hosts x 2, system bootable, type A connector

### Storage

**Built-in:** 2 GB for Linux (pre-installed industrial DOM)

**Storage Expansion:**

- 1 x CompactFlash socket
- 2 x SATA-300 connector

### Display

**Graphics Controller:** Intel® HD Graphics (Integrated)

**Display Interface:** 1 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

### LEDs

**System:** Power, Storage

**LAN:** 100/1000M mode

**Programmable:** 8 LEDs

**Communication:** Module A x 16, Module B x 16

### Switches and Buttons

**Power Button:** On/Off (on rear panel)

**Reset Button:** Hard Reset (on front panel)

### Physical Characteristics

**Housing:** SECC sheet metal (1 mm)

**Weight:** 6.5 kg (14.33 lb)

**Dimensions:** 440 x 315 x 90 mm (17.32 x 12.40 x 3.54 in) (without rackmount ears)

**Mounting:** Standard 19-inch rack

### Environmental Limits

**Operating Temperature:** -25 to 60°C (-13 to 140°F)

**Storage Temperature:** -40 to 80°C (-40 to 176°F)

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

**Anti-Vibration:** 7 mm (2-9 Hz), 20 m/s/s (9-200 Hz), 15 m/s/s (200-500 Hz) @ IEC-61850-3, IEC 60870-2-2/Bm/(3M6)/(4M6), sine wave, 2-500 Hz, 1 Oct/min, 10 cycles, 2 hrs 40 mins per axis

**Anti-Shock:** 300 m/s/s @ IEC-61850-3, IEC 60870-2-2/Bm/(3M6)/(4M6), half sine wave, 11 ms

### Power Requirements

**Input Voltage:** 100 to 240 VAC; 100 to 240 VDC

**Input Current:** 1.37 A @ 100 VAC; 0.77 A @ 100 VDC

### Standards and Certifications

**Safety:** UL 60950-1, IEC 60950-1, EN 60950-1

**Electrical Substation:** IEC 61850-3, IEEE 1613, IEC 60255

**Protection Relay:** IEC 60255

**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: 10 V

IEC 61000-4-8

IEC 61000-4-11

**Green Product:** RoHS, CRoHS, WEEE

### Reliability

#### Alert Tools:

- Built-in buzzer and RTC (real-time clock) with lithium battery backup
- Built-in relay for audio/visual alarm

**Automatic Reboot Trigger:** Built-in watchdog timer, configurable for restarts at 1 to 255 second intervals

**MTBF** (mean time between failures)

**Time:** 360,807 hrs

### Warranty

**Warranty Period:** 3 years

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

## • Software Specifications

### Linux

**OS:** Linux Debian 7

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

**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

**Internet Security:** OpenVPN, iptables firewall

**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 Point-to-Point Protocol (PPP). 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

### Windows Embedded Standard 7 (by CTOS)

#### Core OS:

- Windows 7 Embedded, 32 bit
- Sensor and Location Platform
- 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.), Middle East, South East Asian, and South Asian Fonts
- True Type Fonts

#### International:

- IME Simplified Chinese Support
- IME Traditional Chinese 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)

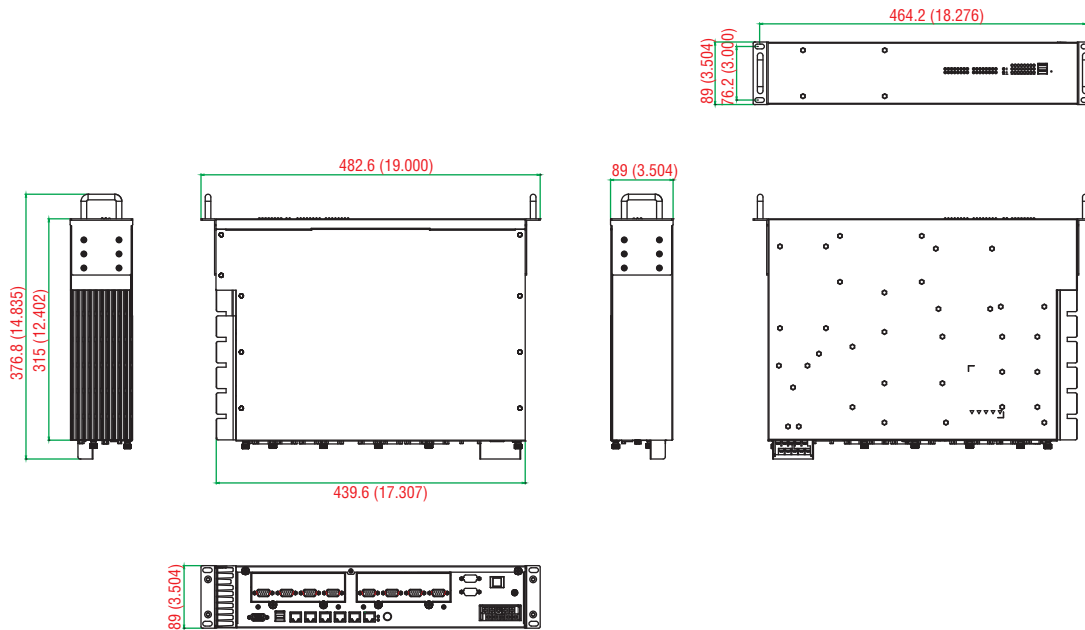
#### Embedded Features:

- 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

**Dimensions**

Unit: mm (inch)



**Ordering Information**

**Available Models**

**DA-682A-C1-DPP:** Rackmount computer with Celeron, 1047UE, 1.4 GHz, dual-core CPU, without DOM/RAM/OS; VGA, 6 Gigabit LANs, USB x 4, Compact Flash socket

**DA-682A-C1-DPP-LX:** Rackmount computer with Celeron, 1047UE, 1.4 GHz, dual-core CPU, VGA, 6 Gigabit LANs, USB x 4, Compact Flash socket, 1 GB system memory, 2 GB DOM, Linux Debian 7 pre-installed flash disk module

**DA-682A-C3-DPP:** Rackmount computer with Core i3-3217UE 1.6 GHz, dual-core CPU, without DOM/RAM/OS; VGA, 6 Gigabit LANs, USB x 4, Compact Flash socket

**DA-682A-C3-DPP-LX:** Rackmount computer with Core i3-3217UE 1.6 GHz, dual-core CPU, VGA, 6 Gigabit LANs, USB x 4, Compact Flash socket, 1 GB system memory, 2 GB DOM, Linux Debian 7 pre-installed flash disk module

**DA-682A-C7-DPP:** Rackmount computer with Core i7-3517UE 1.7 GHz, dual-core CPU, without DOM/RAM/OS; VGA, 6 Gigabit LANs, USB x 4, Compact Flash socket

**DA-682A-C7-DPP-LX:** Rackmount computer with Core i7-3517UE 1.7 GHz, dual-core CPU, VGA, 6 Gigabit LANs, USB x 4, Compact Flash socket, 1 GB system memory, 2 GB DOM, Linux Debian 7 pre-installed flash disk module

**Expansion Modules** (can be purchased separately)

**DA-SP08-I-EMC4-DB:** 8-port RS-232/422/485 serial module with DB9 connector and isolation; suitable for EMC Level 4 environments

**DA-SP08-I-EMC4-TB:** 8-port RS-232/422/485 serial module with terminal block connector and isolation; suitable for EMC Level 4 environments

**DA-SP08-I-DB:** 8-port RS-232/422/485 serial module with a digitally isolated DB9 connector

**DA-SP08-DB:** 8-port RS-232/422/485 serial module with DB9 connector

**DA-SP08-I-TB:** 8-port RS-422/485 serial module with digitally isolated terminal block

**DA-SP38-I-TB:** 8-port RS-422/485 serial module with digitally isolated terminal block

**DA-SW08-RJ:** 8-port 10/100 Mbps unmanaged switch module

**DA-UPCI-DK:** Universal PCI development kit

**DA-FX04-MM-ST-T:** 4-port (100BaseFX) fiber LAN module with multi-mode, ST connector, supports IP Teaming

**DA-IRIGB-4DIO-PCI104-EMC4:** Time synchronization expansion module, 1 IRIG-B signal input port, 3 digital inputs, 4 digital outputs

**Optional Accessories** (can be purchased separately)

**DA-682A HDD Kit:** Hard disk installation package

**Package Checklist**

- DA-682A-DPP embedded computer
- Rackmount kit
- Documentation and software CD or DVD
- Quick installation guide (printed)
- Warranty card