

# DA-681A Series

Intel® 3rd Gen Core™ CPU IEC-61850, 1U rackmount computer



## Features and Benefits

- IEC 61850-3, IEEE 1613, and IEC 60255 compliant for power substation automation systems (DPP and DPP-T models only)
- 3rd Gen Intel® Core™ Celeron 1047UE 1.4 GHz CPU
- 1 built-in DDR3 memory socket
- 1 mSATA for OS and 1 SATA III for storage expansion
- 6 Gigabit Ethernet ports for network redundancy
- 4 USB 2.0 ports for high-speed peripherals
- 2 isolated RS-232/422/485 and 10 isolated RS-485 ports
- Embedded Debian 8 Linux (W7E by CTOS)
- Supports both 100 to 240 VAC and 100 to 240 VDC power inputs (single-power and dual-power models available)
- Optional IRIG-B expansion module available for DPP and DPP-T models

## Certifications



## Introduction

The DA-681A Series x86-based rackmount embedded computers are designed for control, monitoring, data acquisition, and protocol conversion applications. With their high density and robust design, the DA-681A computers are suitable for industrial automation applications, such as power automation, transportation, oil and gas, and factory automation.

The DA-681A is based on the 3rd Gen Intel® Core™ Celeron 1047UE 1.4 GHz CPU and HM65 chipset, which supports standard x86, 1 x VGA, 4 x USB, 6 Gigabit LAN ports, 2 RS/232/422/485 3-in-1 serial ports, and 10 RS-485 (RS-422 by CV) ports. The DA-681A has a mini PCIe slot for mSATA and comes with Linux preinstalled; Windows 7 Embedded is also supported by a CTOS (Configuration To Order Service) process.

Another plus is that the serial ports come with 2 kV digital galvanic isolation protection to guarantee communication reliability in harsh industrial environments. In addition, the state-of-art IEC 61850-3, IEEE 1613, and IEC 60255 compliance all-in-one design provides rich interfaces, especially well-suited for power substation automation applications.

## Smart Recovery Function

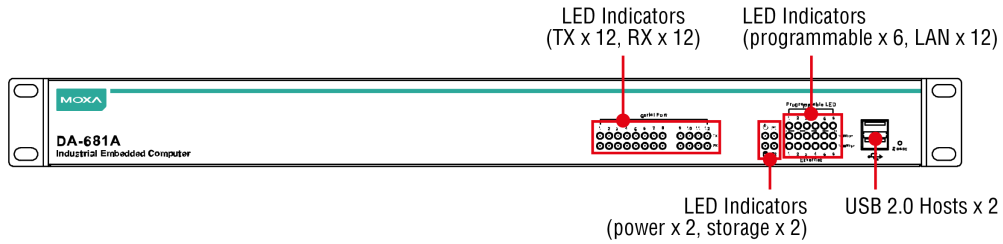
The DA-681A's Smart Recovery function minimizes downtime by making it easy to recover from operating system crashes. Engineers who are experts in a particular vertical market may not have enough computer domain knowledge to know how to fix the operating system problems. Moxa Smart Recovery™ is an automated BIOS-level recovery system tool that allows engineers to automatically trigger OS recovery to minimize downtime.

## Proactive Monitoring Function

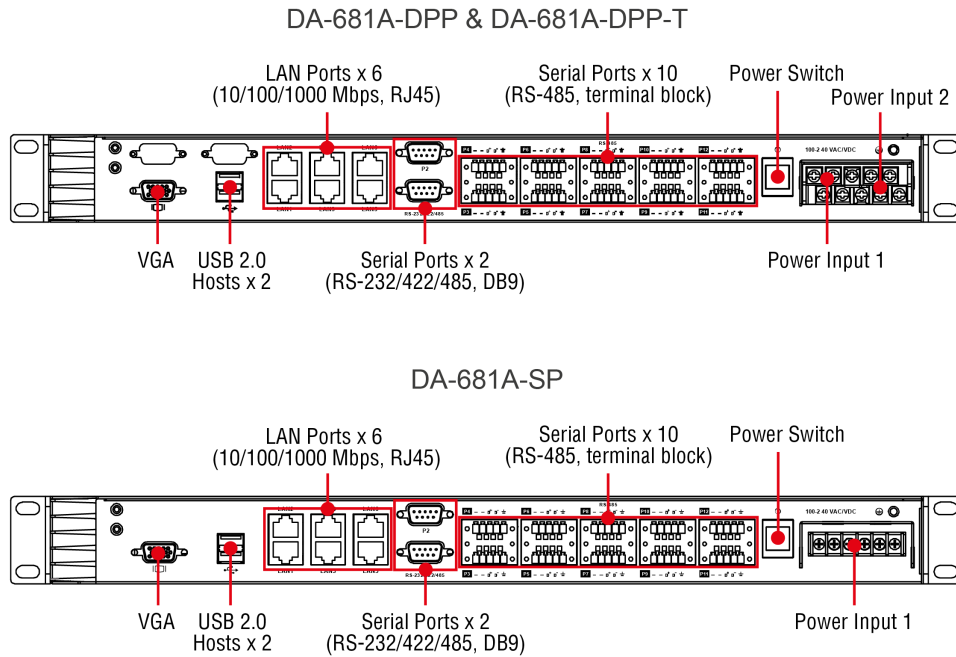
Moxa Proactive Monitoring is a small-footprint, resource-friendly, easy-to-use utility that allows users to track a number of system parameters. Users can view the current parameter values for these key parts by simply clicking on the icons corresponding to the parameters in the user interface. User-defined key part indicators (KPIs) are used to monitor the computer's key parts. Visible and/or audio alerts are triggered automatically via relay and SNMP traps when these KPIs exceed their preset threshold values, making it extremely convenient for operators to avoid system downtime by setting up predictive maintenance tasks well in advance.

# Appearance

## Front View



## Rear View



# Specifications

## Computer

CPU	Intel® Celeron® Processor 1047UE (2M Cache, 1.40 GHz)
System Chipset	Mobile Intel® HM65 Express Chipset
Graphics Controller	Intel® HD Graphics
Storage Slot	2.5-inch HDD/SSD slots x 1 mSATA x 1
System Memory Slot	SODIMM DDR3/DDR3L slot x 1
Supported OS	Linux Debian 8 (Linux kernel v4.1) Windows Embedded Standard 7 (WS7P) 32-bit Windows Embedded Standard 7 (WS7P) 64-bit Note: W7E available by CTOS

## Computer Interface

Ethernet Ports	Auto-sensing 10/100/1000 Mbps ports (RJ45 connector) x 6
USB 2.0	USB 2.0 hosts x 4, type-A connectors
Serial Ports	RS-232/422/485 ports x 2, software selectable (DB9 male) RS-485 ports x 10, software-selectable (terminal block)
Video Input	VGA x 1, 15-pin D-sub connector (female)

## LED Indicators

System	Power x 1 Storage x 1 Programmable x 6
LAN	2 per port (10/100/1000 Mbps)

## Serial Interface

Baudrate	50 bps to 115.2 kbps
Data Bits	5, 6, 7, 8
Flow Control	RTS/CTS, XON/XOFF
Isolation	2 kV
Parity	None, Even, Odd, Space, Mark
Stop Bits	1, 1.5, 2
Surge	DA-681A-I-DPP models only: 4 kV
Terminator for RS-485	N/A

## 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

## Power Parameters

Operating Voltage	100 to 240 VDC, 100 to 240 VAC
Power Button	ON/OFF (rear panel) Reset button (front panel)
Power Consumption	25 W (max.)

## Physical Characteristics

Housing	Metal
Dimensions (without ears)	440 x 315 x 45 mm (17.32 x 12.40 x 1.77 in)
Weight	4,500 g (10 lb)
Installation	19-inch rack mounting

## Environmental Limits

Operating Temperature	Standard Models: -25 to 55°C (-13 to 131°F) Wide Temp. Models: -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)

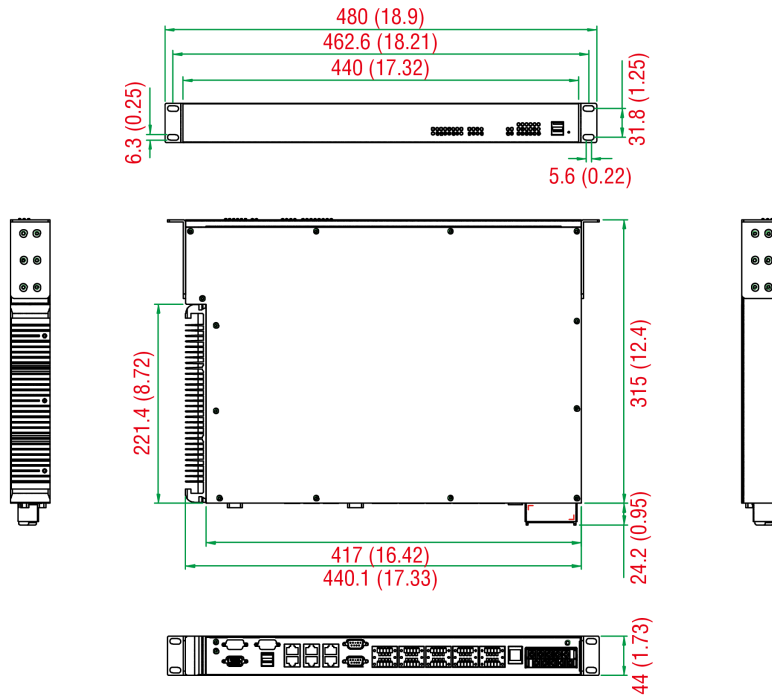
## Standards and Certifications

EMC	EN 61000-6-2/-6-4
EMI	CISPR 32, FCC Part 15B Class A

EMS	IEC 61000-4-11 DIPs 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
Power Substation	IEC 61850-3, IEEE 1613
Protection Relay	IEC 60255
Safety	EN 60950-1, IEC 60950-1, UL 60950-1
Shock	IEC 60068-2-27, IEC 60870-2-2, IEC 61850-3 Edition 1.0
<b>Declaration</b>	
Green Product	RoHS, CRoHS, WEEE
<b>MTBF</b>	
Time	SP models: 240,784 hrs DPP models: 215,436 hrs
<b>Warranty</b>	
Warranty Period	3 years
Details	See <a href="http://www.moxa.com/warranty">www.moxa.com/warranty</a>
<b>Package Contents</b>	
Device	1 x DA-681A Series computer
Installation Kit	1 x rack-mounting ear
Documentation	1 x quick installation guide 1 x warranty card
Note	This product requires additional modules (sold separately) to function.

## Dimensions

Unit: mm (inch)



## Ordering Information

Model Name	CPU	DDR3 RAM	OS Storage (mSATA)	Linux Debian 8 64-bit	Power Input 100-240 VAC/VDC	Operating Temp.
DA-681A-I-SP	Celeron 1047UE	-	-	-	✓	-25 to 55°C
DA-681A-I-SP-LX	Celeron 1047UE	2 GB	8 GB	✓	✓	-25 to 55°C
DA-681A-I-DPP	Celeron 1047UE	-	-	-	✓	-25 to 55°C
DA-681A-I-DPP-T	Celeron 1047UE	-	-	-	✓	-40 to 70°C
DA-681A-I-DPP-LX	Celeron 1047UE	2 GB	8 GB	✓	✓	-25 to 55°C
DA-681A-I-DPP-T-LX	Celeron 1047UE	2 GB	8 GB	✓	✓	-40 to 70°C

## Accessories (sold separately)

### Expansion Modules

DA-IRIGB-4DIO-PCI104-EMC4	Expansion module with time-synchronization ports and DI/DO  Applicable Models: DA-681A-I-DPP DA-681A-I-DPP-T DA-681A-I-DPP-LX DA-681A-I-DPP-T-LX
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### USB Dongle Kits

USB Dongle Kit	Internal USB dongle kit installation package
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### Storage Kits

DA-681A HDD Kit	HDD/SSD installation package, supports single HDD/SSD
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