DA-681A Series
Quick Installation Guide

x86 Rackmount Embedded Computers

Edition 1.0, November 2015

P/N: 1802006810030

Overview

The Moxa DA-681A Series x86-based rack-mount embedded computers are designed for control, monitoring, data acquisition, and protocol conversion applications. With its robust design, the DA-681A is suitable for industrial automation applications, such as power automation, transportation, and oil and gas.

The DA-681A's main operating system 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 socket for mSATA and comes with Linux pre-installed; Windows 7 Embedded is also supported by the CTOS 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.

Package Checklist

Each basic system model is shipped with following standard items:
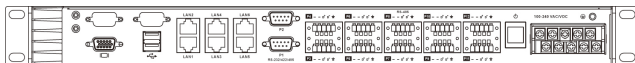
- DA-681A rackmount computer
- Rackmount kit
- Documentation CD or DVD
- Quick installation guide (printed)
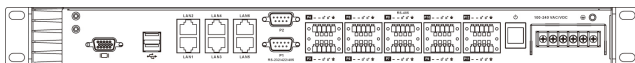- Warranty card

Hardware Installation

Front View


Rear View: DPP/DPP-T Models

Rear View: SP Models

Connecting the Power

The DA-681A offers both single power and dual power inputs. Use a phillips screwdriver to remove the terminal clamp screws. Connect the power cord to the screws, and then fasten the screws to the unit. Refer to the following figure for detailed information.

DPP and DPP-T Models	SP Models

AC Terminal

AC Terminal

DC Terminal
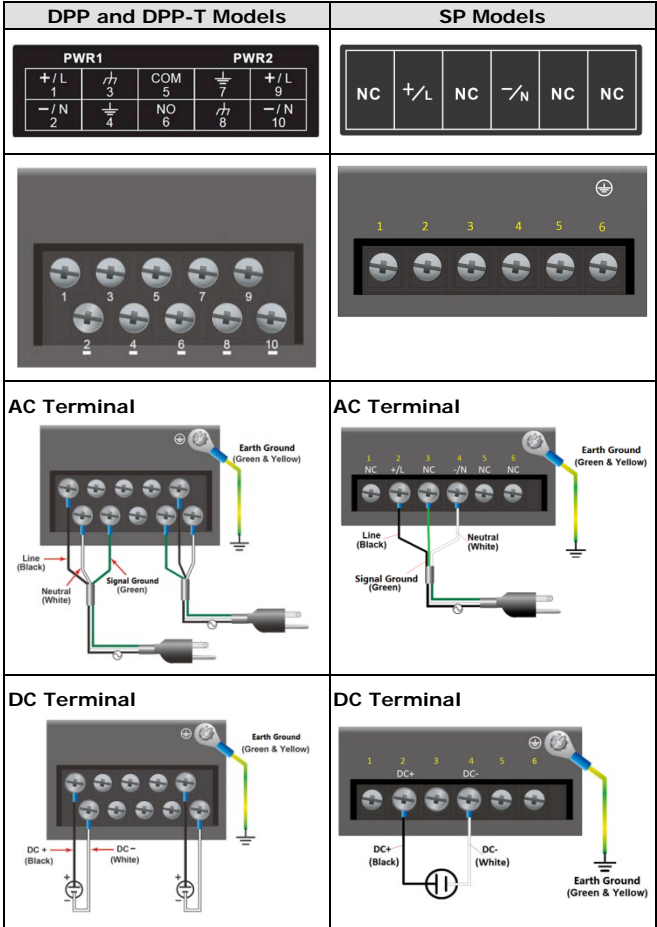
DC Terminal

NOTE	1. Disconnect all power supply cords before performing maintenance on the product.
	2. Fuses (fuse F1, F2 T6.3A, 500VAC/400VDC) should be replaced by a qualified Moxa RMA service technician.

SP Model Power Terminal Block Pin Assignment

Terminal Number	Description	Note
1	N/C	No function
2	Line/DC+	Line/DC+ is connected to the positive (+) terminal if the power source is DC, or to the Line terminal if the power source is AC.
3	N/C	No function
4	Neutral/DC–	Neutral/DC– is connected to the negative (–) terminal if the power source is DC, or to the Neutral terminal if the power source is AC.
5	N/C	No function
6	N/C	No function

DPP and DPP-T Model Power Terminal Block Pin Assignment

Terminal Number	Description	Note
1	PWR1 Line/DC+	**PWR1 Line/DC+** is connected to the positive (+) terminal if the power source is DC, or to the Line terminal if the power source is AC.
2	PWR1 Neutral/DC-	**PWR1 Neutral/DC-** is connected to the negative (-) terminal if the power source is DC, or to the Neutral terminal if the power source is AC.
3	NC	Reserved for future customization.
4	Signal Ground	**Signal Ground** should be connected to the ground terminal for AC power source 1.
5	COM	COM pin for the alarm relay.
6	NO	Normal Open pin for the alarm relay.
7	Signal Ground	**Signal Ground** should be connected to the ground terminal for AC power source 1.
8	NC	Reserved for future customization.
9	PWR2 Line/DC+	**PWR2 Line/DC+** is connected to the positive (+) terminal if the power source is DC, or to the Line terminal if the power source is AC.
10	PWR2 Neutral/DC-	**PWR2 Neutral/DC-** is connected to the negative (-) terminal if the power source is DC, or to the Neutral terminal if the power source is AC.

When finished, press the **Power Switch** button on the rear panel to start the system. It will take about 30 to 60 seconds to boot up, depending on your operating system.

Front Panel LEDs

There are 46 LED indicators on the front panel. Information about each LED is given in the following table.

LED	Color	Description
Serial Port TX 1-12	Green	Serial port is transmitting data
	Off	Not operating
Serial Port RX 1-12	Yellow	Serial port is receiving data
	Off	Not operating
Power	Green	Power is on
	Off	No power input or power error exists
Storage	Yellow/ Blinking	Data is being written to or read from the storage unit
	Off	Storage unit is idle
Power Fail 1	Red	Power 1 has failed (for dual power models only)
	Off	Power is being properly supplied
Power Fail 2	Red	Power 2 has failed (for dual power models only)
	Off	Power is being properly supplied
Gigabit LAN LEDs 1-6	Green	100 Mbps Ethernet mode
	Yellow	1000 Mbps (Gigabit) Ethernet mode
	Off	Not operating, or in 10 Mbps Ethernet mode
Programmable 1-6	Green	Defined by user

Reset Button

Pressing the **Reset** button initiates a warm reboot. The button plays the same role as a desktop PC's reset button. After pressing the reset button, the system will reboot automatically. Note that all unsaved data will be lost when you push the reset button.

Connecting to a Display

Your DA-681A embedded computer comes with a D-Sub 15-pin female connector to connect to the VGA monitor. Be sure to remove the power before you connect or disconnect the monitor cable.

Serial Ports

The DA-681A offers 2 RS-232/422/485 ports with DB9 connectors and 10 RS-485 ports with terminal blocks. The pin assignments for the ports are shown in the following table:

DB9 Pin Assignment
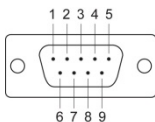
Pin	RS-232	RS-485 (4W)	RS-485 (2W)	RS-422
1	DCD	TxD-(A)	–	TxD-(A)
2	RXD	TxD+(B)	–	TxD+(B)
3	TXD	RxD+(B)	Data+(B)	RxD+(B)
4	DTR	RxD-(A)	Data-(A)	RxD-(A)
5	GND	GND	GND	GND
6	DSR	–	–	–
7	RTS	–	–	–
8	CTS	–	–	–
9	–	–	–	–

Terminal Block Pin Assignment
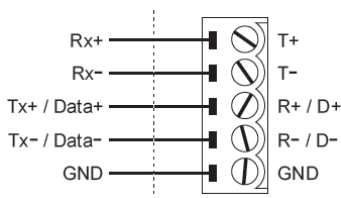
Ethernet Ports

The DA-681A has 6 10/100/1000 Mbps LAN ports with RJ45 connectors. The pin assignments for the ports are shown in the following table:
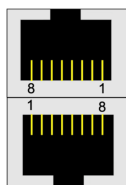
Pin No.	10/100 Mbps	1000 Mbps
1	TX+	TRD(0)+
2	TX-	TRD(0)-
3	RX+	TRD(1)+
4	–	TRD(2)+
5	–	TRD(2)-
6	RX-	TRD(1)-
7	–	TRD(3)+
8	–	TRD(3)-

The default IP addresses and netmasks of the Ethernet ports are as follows:

	Default IP Address	Netmask
LAN 1	192.168.3.127	255.255.255.0
LAN 2	192.168.4.127	255.255.255.0
LAN 3	192.168.5.127	255.255.255.0
LAN 4	192.168.6.127	255.255.255.0
LAN 5	192.168.7.127	255.255.255.0
LAN 6	192.168.8.127	255.255.255.0

Configuring the Ethernet Interface

Linux users should follow these steps:

If you use the console cable to configure network settings for the first time, use the following commands to edit the interfaces file. First, take all network interfaces offline, before you reconfigure the LAN settings:

```
# ifdown –a
```

Next, edit the network interfaces file; you may use the text editor of your choice, but VI is the default editor **on the DA-681A-LX**:

```
#vi /etc/network/interfaces
```

You may set the DA-681A for either dynamic IP addressing or static addressing. To set it for dynamic IP addressing, enter the following lines into the network interfaces file:

```
# The primary network interface
auto eth0
iface eth0 inet dhcp
```

If you wish to set an interface for static IP addressing, then use the following configuration. Each interface must be configured with separate entries in the network/interfaces file; LAN1 corresponds to eth0, LAN 2 corresponds to eth1, and so forth for the remaining interfaces.

```
# The loopback network interface
auto lo
iface lo inet loopback

# The first LAN interface, LAN 1
auto eth0
iface eth0 inet static
address 192.168.3.127
netmask 255.255.255.0
broadcast 192.168.3.255

# The second LAN interface, LAN 2
auto eth1
iface eth1 inet static
address 192.168.4.127
netmask 255.255.255.0
broadcast 192.168.4.255
```

Exit VI by typing:

:wq

After the interfaces file has been configured, use the following commands to reinitialize the network interfaces and activate the new settings immediately:

#sync; ifup –a

Win7 users should follow these steps:

Step 1: Go to **Start → Control Panel → Network and Internet → Network Connections**.

Step 2: From the **Local Area Connection Properties** screen click **Internet Protocol (TCP/IP)** and then select **Properties**.

Step 3: Click **OK** after inputting the preferred IP address and netmask.