MOXA®

DA-681 Series
Embedded Computer
Quick Installation Guide

Third Edition, June 2012

1. Overview

The DA-681 computer uses the Intel x86 processor and supports VGA, 6 Ethernet ports, 4 RS-232 and 8 RS-485 serial ports with digital galvanic isolation, CompactFlash, and USB. The DA-681 comes in a standard 19-inch, 1U high form factor, making it an ideal platform for industrial applications.

With its robust design, the DA-681 is suitable for industrial automation applications that require standard 19-inch rackmount solutions, such as power automation, transportation, and oil and gas. Another plus is that the serial ports come with 2 KV digital galvanic isolation protection to guarantee communication reliability in harsh industrial environments.

Moreover, the DPP-T models are in full compliance with IEC 61850-3 standards to meet the demands of power substation automation.

2. Model Names and Package Checklist

The DA-681 Series includes the following models:

- **DA-681-I-SP-XPE:**
  x86 Ready-to-Run Rackmount Computer with VGA, 6 Ethernet, 4 RS-232, 8 RS-485, CompactFlash, SATA, USB, Single Power Input, WinXPe SP2
- **DA-681-I-SP-LX:**
  x86 Ready-to-Run Rackmount Computer with VGA, 6 Ethernet, 4 RS-232, 8 RS-485, CompactFlash, SATA, USB, Single Power Input, Linux 2.6
- **DA-681-I-DP-XPE:**
  x86 Ready-to-Run Rackmount Computer with VGA, 6 Ethernet, 4 RS-232, 8 RS-485, CompactFlash, SATA, USB, Dual Power Inputs, WinXPe SP2
- **DA-681-I-DP-LX:**
  x86 Ready-to-Run Rackmount Computer with VGA, 6 Ethernet, 4 RS-232, 8 RS-485, CompactFlash, SATA, USB, Dual Power Inputs, Linux 2.6
- **DA-681-I-DPP-T-XPE:**
  IEC 61850-3 certified x86 Ready-to-Run Rackmount Computer with VGA, 6 Ethernet, 4 RS-232, 8 RS-485, CompactFlash, SATA, USB, Dual Power Inputs, WinXPe SP2
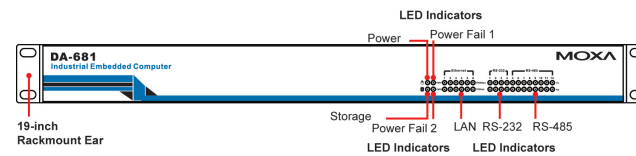
P/N: 1802006810012

- **DA-681-I-DPP-T-LX:**
  IEC 61850-3 certified x86 Ready-to-Run Rackmount Computer with VGA, 6 Ethernet, 4 RS-232, 8 RS-485, CompactFlash, SATA, USB, Dual Power Inputs, Linux 2.6

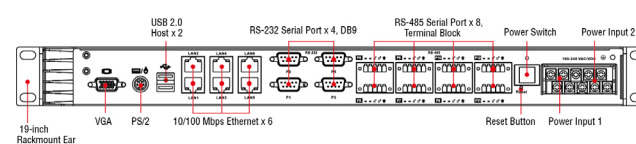Each basic system model is shipped with following standard items:

- 1 DA-681 Embedded Computer
- Quick Installation Guide
- Documentation & Software CD
- Ethernet Cable: RJ45 to RJ45 cross-over cable, 100 cm
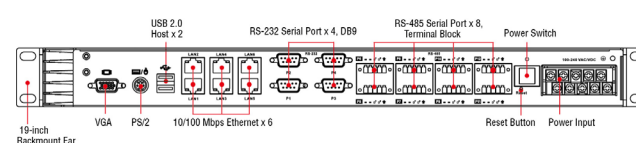- Product Warranty Statement
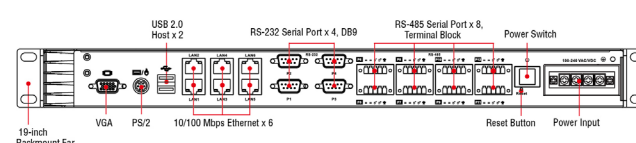
3. Hardware Installation

Front View

Rear View: DP/DPP Models

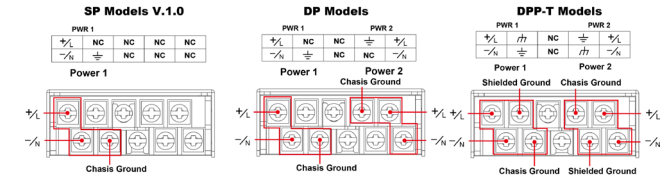### Rear View: SP Models V1.0

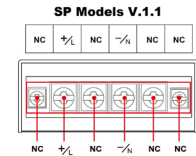### Rear View: SP Models V1.1

Connecting the Power

The DA-681 offers both single power and dual power inputs. Please use a philip's head 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.

If your DA-681-SP is equipped with the V1.1 terminal block, please see the figure to the right for detailed information.

If you are unsure which terminal block your DA-681 SP is equipped with, please refer to the product label located on the bottom of the computer.

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.

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.

Front Panel LEDs

There are 40 LED indicators on the front panel. Information about each LED is given in the following table.
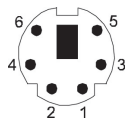
LED Name	Color	LED Description
Power	Green	Power is on
	Off	No power or power error
Storage	Yellow / Blinking	Data is being written to or read from the storage unit
	Off	Storage unit is idle
Ethernet Port 100 Mbps	Green	100 Mbps Ethernet port is active
	Off	No activity
Ethernet Port 10 Mbps	Yellow	10 Mbps Ethernet port is active
	Off	No activity
Serial Port TX 1-12	Green	Serial port is transmitting data
	Off	No activity
Serial Port RX 1-12	Yellow	Serial port is receiving data
	Off	No activity
Power Fail 1	Red	Power 1 failure (For single and dual power inputs)
	Off	Power is being supplied
Power Fail 2	Red	Power 2 failure (For dual power inputs only)
	OFF	Power is being supplied

Connecting to a Display

Your DA-681 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.

Connecting to a Keyboard and Mouse

The DA-681 comes with a PS/2 mini-DIN connector to connect a PS/2 keyboard and PS/2 mouse. This 6-pin mini-DIN connector's pin assignments are shown below.
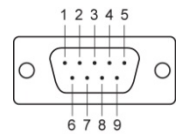
Pin No.	Signal Definition
1	PS/2 Keyboard Data
2	PS/2 Mouse Data
3	GND
4	VCC
5	PS/2 Keyboard Clock
6	PS/2 Mouse Clock

Use the Y-type cable to convert the mini-DIN connector into two 6-pin mini-DIN connectors to connect both a PS/2 keyboard and PS/2 mouse at the same time. (The Y-type cable is not included in the accessory package. It should be purchased separately. You may also use the USB ports to connect your USB-based keyboard and mouse.)
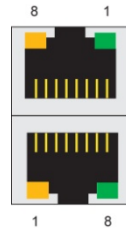
PS/2 Mouse

PS/2 Keyboard

Serial Ports

The DA-681 offers six RS-232 ports with DB9 connectors and eight RS-485 ports with Terminal Blocks. The pin assignments for the ports are shown in the following table:

Pin	RS-232	RS-485 (2-wire)
1	DCD	---
2	RxD	---
3	TxD	Data(+)
4	DTR	Data(-)
5	GND	GND
6	DSR	---
7	RTS	---
8	CTS	---

Ethernet Ports

The DA-681 provides 6 10/100 Mbps Ethernet ports with RJ45 connectors. The pin assignments for the ports are shown in the following table:

Pin No.	Signal Definition
1	TX+
2	TX-
3	RX+
4	---
5	---
6	RX-
7	---
8	---

The LEDs on the RJ45 port indicate the following conditions:

LED	Color	Description
RJ45 Connector	Green	100 Mbps Ethernet mode
	Yellow	10 Mbps Ethernet mode
	Off	No activity

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

4. 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:

#ifdown –a
//Disable LAN1~LAN6 interface first, before you reconfigure the LAN settings. LAN1 = eth0, LAN2 = eth1 and so on//
#vi /etc/network/interfaces
//check the LAN interface first//

After the boot setting of the LAN interface has been modified, use the following commands to activate the LAN settings immediately:
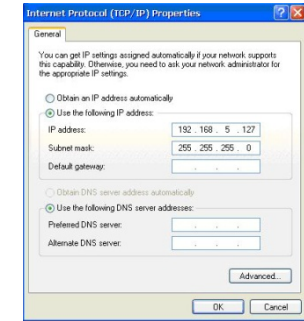
#sync; ifup –a

WinXPE users should follow these steps:

Step 1:   Go to **Start → Settings → Network Connections**.

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

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

NOTE   Refer to the User's Manual for additional configuration information.