DPCOM7000 Series Industrial Ethernet Switch

Quick Installation Guide

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1 DPCOM7000 Industrial Switch Overview

This chapter is about the general feature and parameter of DPCOM7000 series Industrial Switch, and offering readers an overall knowledge about DPCOM7000 Switch.

1.1 Quick Start

- Supporting AC/DC power supply;

- Powered up by industrial isolated power supply (90～264VAC/88～300VDC)

- Maximum power consumption 75W

- Fanless design, and switch's heat dissipation slot is unimpeded; the cooling space should be at least 50 millimeter away from the device.

1.2 Type Description

Modular industrial Ethernet switch; multiple modular service slotsand two built-in power supply slots;adopting American Broadcom dedicated ASIC chipset. PCB adopts turmeric technology and it is also with Pericom wide temperature range crystal oscillator, all imported tantalum capacitor design and according to IPC standard. The working temperature is -40~85℃. The MTBF working time is more than 800,000 hours. EMC meets industrial level 4 standard, redundant dual power supplies (90～264VAC/88～300VDC). It is with CE, CCC or UL508 certifications. IP protection grade achieves IP41. It is with one console port and one relay warning output port.

Service modules

DPCOM-4FG	4 100/1000M SFP slots
DPCOM-4FX	4 100M SFP slots
DPCOM-4TX	4 100M TX ports
DPCOM-4GT	4 Gigabit TX ports

P/N	Description
DPCOM7000-BA04000024	Managed switch,24 100M TX ports+4 100/1000M SFP slots
DPCOM7000-BA04000024P	Managed switch,100M PoE+ports+4 100/1000M SFP slots
DPCOM7000-BA04000420	Managed switch,20 100M TX ports+4 100/1000M SFP slots+4 100M SFP slots
DPCOM7000-BA04000816	Managed switch,16 100M TX ports+4 100/1000M SFP slots+8 100M SFP slots
DPCOM7000-BA04001212P	Managed switch,12 100M PoE+ports+4 100/1000M SFP slots+12 100M SFP slots
DPCOM7000-BA04002400	Managed switch,4 100/1000M SFP slots+24 100M SFP slots
DPCOM7000-BA04240000	Managed switch,24 Gigabit TX ports+4 100/1000M SFP slots
DPCOM7000-BA04240000P	Managed switch,24 Gigabit PoE+ports+4 100/1000M SFP slots
DPCOM7000-BA08200000	Managed switch,20 Gigabit TX ports+8 100/1000M SFP slots
DPCOM7000-BA12160000	Managed switch,16 Gigabit TX ports+12 100/1000M SFP slots
DPCOM7000-BA12160000P	Managed switch,12 Gigabit PoE+ports+16 100/1000M SFP slots
DPCOM7000-BA28000000	Managed switch,28 100/1000M SFP slots
DPCOM7000-CA04000024	Layer 3 switch,24 100M TX ports+4 100/1000M SFP slots

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DPCOM7000-CA04000024P	Layer 3 switch,24 100M PoE+ports+4 100/1000M SFP slots
DPCOM7000-CA04000420	Layer 3 switch,20 100M TX ports+4 100/1000M SFP slots+4 100M SFP slots
DPCOM7000-CA04000816	Layer 3 switch,16 100M TX ports+4 100/1000M SFP slots+8 100M SFP slots
DPCOM7000-CA04001212P	Layer 3 switch,12 100M PoE+ports+4 100/1000M SFP slots+12 100M SFP slots
DPCOM7000-CA04002400	Layer 3 switch,4 100/1000M SFP slots+24 100M SFP slots
DPCOM7000-CA04002400	Layer 3 switch,24 Gigabit TX ports+4 100/1000M SFP slots
DPCOM7000-CA04002400P	Layer 3 switch,24 Gigabit PoE+ports+4 100/1000M SFP slots
DPCOM7000-CA08200000	Layer 3 switch,20 Gigabit TX ports+8 100/1000M SFP slots
DPCOM7000-CA12160000	Layer 3 switch,16 Gigabit TX ports+12 100/1000M SFP slots
DPCOM7000-CA16120000P	Layer 3 switch,12 Gigabit PoE+ports+16 100/1000M SFP slots
DPCOM7000-CA280000	Layer 3 switch,28 100/1000M SFP slots

Related SFP/XFP modules

SFP/XFP	Description
DPCOM-SFP-20	100M, single-mode (1310nm), LC connector, 20KM
DPCOM-SFP-40	100M, single-mode (1310/1550nm), LC connector, 40KM
DPCOM-SFP-80	100M, single-mode (1550nm), LC connector, 80KM
DPCOM-SFP-2	100M, multi-mode (850nm), LC connector, 2KM
DPCOM-SFP-2	100M, multi-mode (1310nm), LC connector, 2KM
DPCOM-SFP-20-13	100M, single fiber (1310nm TX/ 1550nm RX), LC connector, 20KM
DPCOM-SFP-20-15	100M, single fiber (1550nm TX/ 1310nm RX), LC connector, 20KM
DPCOM-SFP-40-13	100M, single fiber (1310nm TX/ 1550nm RX), LC connector, 40KM
DPCOM-SFP-40-15	100M, single fiber (1550nm TX/ 1310nm RX), LC connector, 40KM
DPCOM-GSFP-GTX	1000BASE-T SFP, RJ45 connector, 100M
DPCOM-GSFP-GTT	100/1000BASE-T SFP, RJ45 connector, 100M
DPCOM-GSFP-20	Gigabit single-mode (1310nm), LC connector, 20KM
DPCOM-GSFP-40	Gigabit, single-mode (1310/1550nm), LC connector, 40KM
DPCOM-GSFP-80	Gigabit, single-mode (1550nm), LC connector, 80KM
DPCOM-GSFP-GSX-850	Gigabit, multi-mode (850nm), LC connector, 550M
DPCOM-GSFP-GSX	Gigabit, multi-mode (1310nm), LC connector, 550KM

|	
DPCOM-GSFP-20-13	Gigabit, single fiber (1310nm TX/ 1550nm RX), LC connector, 20KM
DPCOM-GSFP-20-15	Gigabit, single fiber (1550nm TX/ 1310nm RX), LC connector, 20KM
DPCOM-GSFP-40-13	Gigabit, single fiber (1310nm TX/ 1550nm RX), LC connector, 40KM
DPCOM-GSFP-40-15	Gigabit, single fiber (1550nm TX/ 1310nm RX), LC connector, 40KM
DPCOM-10GSFP-10	10G, single-mode (1310nm), LC connector, 10KM
DPCOM-10GSFP-40	10G, single-mode (1550nm), LC connector, 40KM
DPCOM-10GSFP-80	10G, single-mode (1550nm), LC connector, 80KM
DPCOM-10GSFP-GSX	10G, multi-mode (850nm), LC connector, 300M

1.3   Cosmetic Description

DPCOM7000 Industrial Switch supports maximum four 100/1000M SFP and 24 ports, and please check the following diagram:
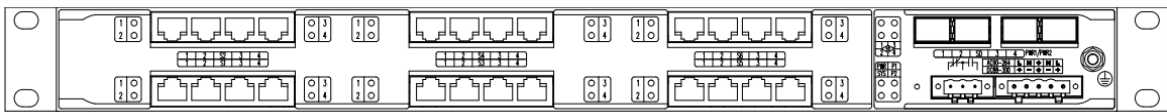
Front Panel: 4 SFP slots+28 TX ports
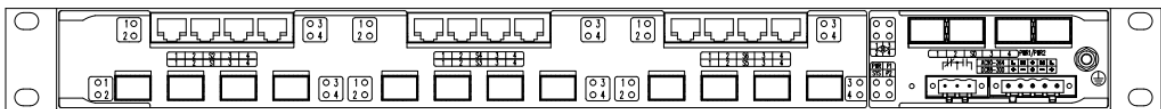
Front Panel: 4 SFP slots+12 TX ports+12 SFP slots
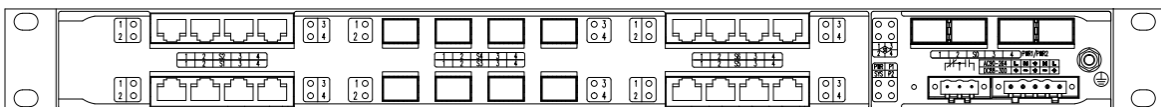
Front Panel: 4 SFP slots+16 TX ports+8 SFP slots

Front Panel: 4 SFP slots+24 SFP slots

Front Panel: 4 SFP slots+20 TX ports+4 SFP slots

Figure1-1Front Panel Diagram of DPCOM7000 Series Industrial Switch
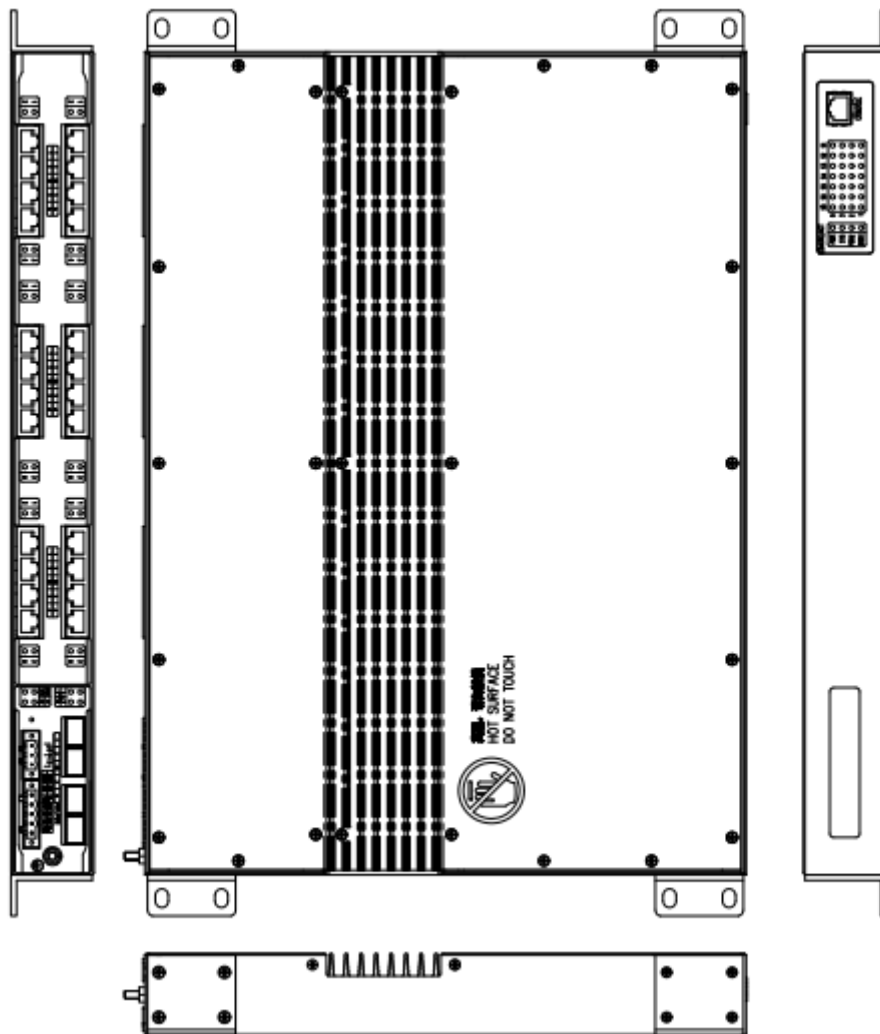
Figure 1-2Whole Unit Diagram of DPCOM7000 Industrial Switch

Chart1-1Front and Back Components List of DPCOM7000 Industrial Switch

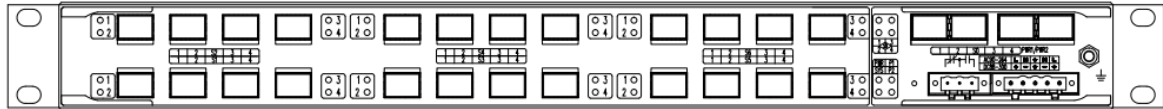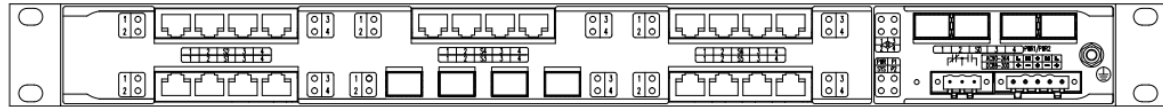| No.	Name	Description
1	CONSOLE	Rate 9600bps，RJ45 interface
2	RELAY	European 3-pin connector
3	POWER	European 5-pin connector
4	GND	Requiring good ground connection

Chart1-3 European Socket Description

AC90-264	L	N	✚	N	L
DC88-300	✚	—	✚	—	✚

Power

No.	Identification	Description
1	L/+	90-264VAC/88-300VDC
2	N/-	90-264VAC/88-300VDC
3	GND ⏚	Requiring good ground connection
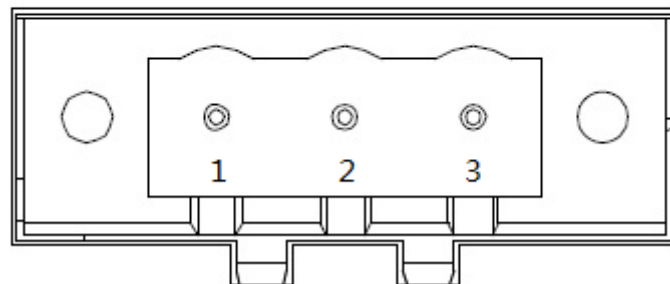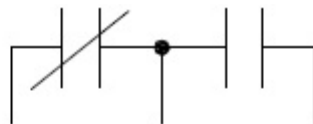
Relay

No.	Identification	Description
1	normally closed contact	It is closed when the relay is de-energized; it is open when the relay is energized.
2	changeover contact	Intermediate contact.

3	normally open contact	It is open when the relay is de-energized; it is closed when the relay is energized.

1.4 System Feature Parameter of DPCOM7000 Industrial Switch

Protocols	Supported Standard	IEEE 802.3 CSMA/CD method and physical layer specifications
		IEEE 802.1p Priority Queuing
		IEEE 802.1q VLAN tagging
		IEEE 802.1d Spanning Tree Algorithm
		IEEE 802.1w Rapid Spanning Tree
		IEEE 802.1s Multiple Spanning Tree
		IEEE 802.3ac VLAN Tagging
		IEEE 802.1x Authentication
		IEEE 802.3ad Link Aggregation
		IEEE 802.3x Flow Control
		IEEE 802.3 Ethernet
		IEEE 802.3u Fast Ethernet
		IEEE 802 Networks
		RFC 768 UDP
		RFC 791 IP
		RFC 792 ICMP
		RFC 793 TCP
		RFC 826 ARP
	IP Router Protocol Standards	RFC 1058 RIP
		RFC 1723 RIP v2
		RFC 1583 OSPF v2
	Management Method	Web, serial port, STD-17 MIB-II, STD-58 SMIv2, STD-59 RMON, STD-62 SNMPv3, SNMPv2c, SNMPv1, RFC2668 MAU, RFC2925 Ping MIB, Private MIBs
	Backplane Bandwidth	96Gbps
	Standard Configuration	24*100/1000M ports (RJ45 or SFP); 4*100/1000M ports (optical port is SFP);
	Dimensions (mm)	Height 44.4*Width 440*Depth321

	Working Temperature/Humidity	-40℃～85℃; 5%～95% no condensing
	Storage Temperature/Humidity	-40℃～85℃; 5%～95% no condensing
	Power Supply Feature	90～264VAC/88～300VDC
	Power Consumption	Maximum 75W

1.5 ROHS Declaration

Part Name	Harmful Toxic Substances						
	Pb	Hg	Cd	Cr(VI)	PBB	PBDE	
Chassis	O	O	O	O	O	O	
Frame	O	O	O	O	O	O	
Module	O	O	O	O	O	O	
Base plate	O	O	O	O	O	O	
Interface card	O	O	O	O	O	O	

O:Indicates that this hazardous substance contained in all homogeneous materials of this part is below the limit requirement in SJ/T11363-2006.

X:Indicates that this hazardous substance contained in at least one of the homogeneous materials of this part is above the limit requirement in SJ/T11363-2006.

Note:

The referenced environmental life time remark is defined by normal operational conditions, like temperature and humidity.

These statements only apply to the China RoHS regulations.

2 Installation Preparation

2.1 Cautions

Similar to other electronic products, the semiconductor chip easily gets damaged if you power on and off abruptly and frequently. To restart up theDPCOM7000 Industrial Switch, you have to open the power on-off three or five seconds after the power is cut off.

Avoid severe collision or falling down from the height to protect the parts in the switch. Use correct outside ports to connect the DPCOM7000 Industrial Switch. Do not insert the Ethernet plug into the console port (RJ45 8-line socket). Similarly, do not insert the console cable into the console port (RJ45 8-line socket).

Notes:

1) When you plug or dial out the power line, keep the power line horizontal with the European power socket.

2) When the lifetime of our products ends, handle them according to national laws and regulations, or send these products to our company for collective processing.

2.2 Safety Advice

2.2.1 Safety Principles

- Keep dustless and clean during or after the installation.

- Put the cover at the safe place.

- Put tools at the right place where they are not easily falling down.

- Put on relatively tight clothes, fasten the tie or scarf well and roll up the sleeve,avoiding stumbling the chassis.

- Put on the protective glasses if the environment may cause damage to youreyes.

- Avoid incorrect operations that may cause damage to human or devices.

2.2.2 Safety Notices

The safety notices mentioned here means that improper operation may lead to body damage.

● Read the installation guide carefully before you operate the system.

● Only professionals are allowed to install or replace the switch.

● Pull out the AC power socket and close the direct-current power before operating on the chassis or working beside the power source.

● The final configuration of products must comply with relative national laws and regulations.

2.2.3 Safety Principles for Live Working

When you work under electricity, following the following principles:

● Put off ornaments, such as ring, necklace, watch and bracelet, before you operate under live working. When metal articles connect the power to the ground, short circuit happens and components may be damaged.

● Please cut off the direct-current connection when you operate the hull or work near the power source.

● When the power is on, do not touch the power.

● Correctly connect the device and the power socket.

● Only professionals are allowed to operate and maintain the device.

● Read the installation guide carefully before the system is powered on.

Notes:

1) Check potential dangers, such as the humid floor, ungrounded extensible powerline and tatty power line.

2) Install the emergent on-off at the working room for turning off the power whentrouble happens.

3) Turn off the power on-off of the switch and plug off the power line beforeinstalling or uninstalling the chassis or working beside the power.

4) Do not work alone if potential dangers exist.

5) Cut off the power before checkout.

6) If trouble happens, take the following measures:

    A. Cut off the system's power.

    B. Alarm.

C. Take proper measures to help persons who are hit by the disaster. Artificialrespiration is needed if necessary.

D. Seek for medical help, or judge the loss and seek for available help.

2.2.4 Electrostatic Discharge Prevention

Electrostatic discharge may damage devices and circuits. Improper treatment may cause the switch to malfunction completely or discontinuously.

Move or locate the devices according to the measures of electrostatic discharge prevention, ensuring the chassis connects the ground. Another measure is to wear the static-proof hand ring. If there is no hand ring, use the metal clip with the metal cable to clip the unpainted metal part of the chassis. In this case, the static is discharged to the ground through the metal cable of the clip. You can also discharge the static to the ground through your body.

2.3 Requirements for Common Locations

This part describes the requirements for the installation locations.

2.3.1 Environment

The switch can be installed on the desk or the cabinet. The location of the chassis, cabinet planning and indoor cabling are very important for normal system's function. Short distance between devices, bad ventilation and untouchable control plate will cause maintenance problems, systematic faulty and breakdown.

For location planning and device locating, refer to section "Location Configuration Prevention".

2.3.2 Location Configuration Prevention

The following preventive measures assist you to design the proper environment for the switch.

● Make sure that the workshop is well-ventilated, the heat of TX devices is well-discharged and sufficient air circulation is provided for device cooling. The air hole of DPCOM7000 Industrial Switch cannot be blocked. The standard installation principle is that at least 50mm space is reserved for air hole.

- Avoid to damage devices by following the electrostatic discharge prevention procedure. Electrostatic discharge would cause the instant or internal failure of system.

- Put the chassis at the place where cool air can blow off the heat inside the chassis. Make sure the chassis is sealed because the opened chassis will reverse the cool air flow. The best installation method is vertical installation; therefore cool air could enter the chassis from the bottom and get out from the top after heated. It creates best air flue.

2.3.3   Cabinet Configuration

The following content assists you to make a proper cabinet configuration:

- Each device on the cabinet gives off heat when it runs. Therefore, the sealed cabinet must have the heat-discharge outlet and the cooling fan. Do not put the devices too close, avoiding bad ventilation.

- When you install the chassis at the open cabinet, prevent the frame of the cabinet from blocking the airway of the chassis.

- Ensure that nice ventilation is provided for the devices installed at the bottom of the cabinet.

- The clapboard separates exhaust gas and inflow air, and boost the cool air to flow in the chassis. The best location of the clapboard is decided by the air flow mode in the chassis, which can be obtained through different location tests.

2.3.4   Power Requirements

Make sure that the power supply has nice grounding and the power at the input side of the switch is reliable. The voltage control can be installed if necessary. At least a 240 V and 10A fuse or a breaker is provided in the phase line if you prepare the short-circuit prevention measures for a building.

Caution:

If the power supply system does not have good grounding, or the input power disturbs too much and excessive pulses exist, the error code rate of communication devices increases and even the hardware system will be damaged.

2.4   Installation Tools and Device

The tools and devices to install the industrial switch are not provided by the standard configuration of DPCOM7000 Industrial Switch. You yourself need to prepare them.
The following are the tools and devices needed for the typical installation of the industrial switch:

- Screwdriver

- Static armguard

- Bolt

- Ethernet cable

- Other Ethernet terminal devices

- Control terminal

Caution:

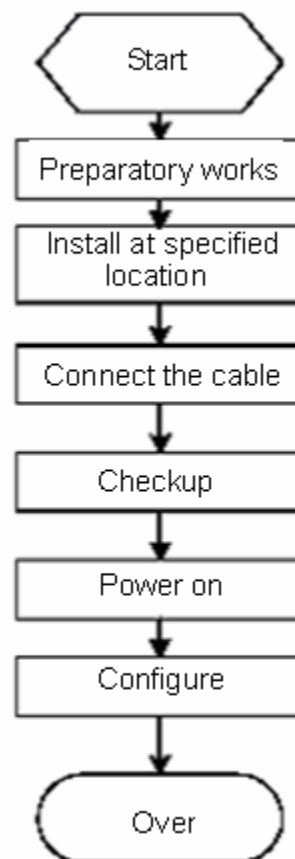Only professionals are allowed to install or replace the devices of the switch.

3 Installation of DPCOM7000Industrial Switch

Caution:

Only professionals are allowed to install or replace the switch.

3.1 Installation Flow

3.2 Installing the Chassis of the DPCOM7000 Industrial Switch

The chassis of the router can be installed on the desk or can be fixed to other cabinets. Your network installation requirements can be met if you conduct the operations according to the following procedure. It can be described in the following two parts:

- Installing the Chassis on the Desk

- Installing the Chassis on the Cabinet

3.2.1　Installing the Chassis on the Desk

DPCOM7000 Industrial Switch can be directly put on the smooth and safe desk.
Note:

Do not put things weighing 4.5 kg or over 4.5 kg on the top of the switch.

3.2.2　Installation Method

Industrial Switch's chassis could be fixed at cabinet by installation accessories or put on desk.

3.3　Connecting Ports

3.3.1　Connecting Power Supply

● AC/DC Power supply module's connection

AC90-264	L	N	+	N	L
DC88-300	+	—	+	—	+

Figure 3-1　　Silk screen of DPCOM7000 Industrial Switch's AC/DC power input

3.3.2　Connecting the Console Port

The DPCOM7000 Industrial Switch has a Console port.

The rate of the console port is 9600bps. It has a standard RJ45 plug. After you connect the console port to the serial port of PC through a console cable, you can configure and monitor the industrial switch by running a terminal emulation software, such as super Windows terminal. The cable is provided according to the host.

The communication parameters of the terminal serial port can be set to a rate of 9600bps, eight data bits, one stop bit, no sum check bit and traffic control.

RJ-45 connector used by console port is shown as the following picture. RJ45 plug is corresponding to RJ45 socket, and the serial numbers are 1-8 successively from left to right.
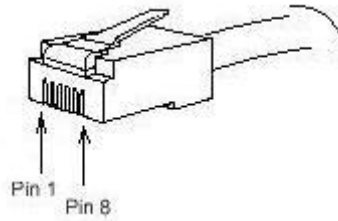
Figure3-2   RJ-45 connector used by console port

Chart3-1Pin Definition of Console Port

Pin Number	Name	Description
1	CD	No connect
2	RXD	Input
3	DSR	No connect
4	TXD	Output
5	RTS	No connect
6	CTS	No connect
7	DTR	No connect
8	SG	GND

Note:

Because the console port of DPCOM7000 Industrial Switch bears no flow control, you need to set Data flow control to none when using a superior terminal to manage industrial switch configurations, or the single-pass problem will arise from the superior terminal.

3.3.3 Connecting Ethernet Electric Port

The DPCOM7000 Industrial Switch has four or eight 100/1000M ports, and every port corresponds to an indicator to indicate the link/ACT state of the port. You can connect other Ethernet terminal devices to the electric port through the cut-through or cross network cable.

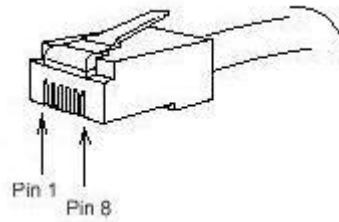The numbering order of the pins in the RJ-45 connector is the same as theconsole port.

Figure3-4   RJ-45 Pins used by Ethernet Electric Port

Because all DPCOM7000 Industrial Switch's Ethernet electric ports support the MDI/MDIX auto-identification of the cable, DPCOM7000 Industrial Switch can adopt five classes of direct-through/cross network cables when it connects other Ethernet terminals.
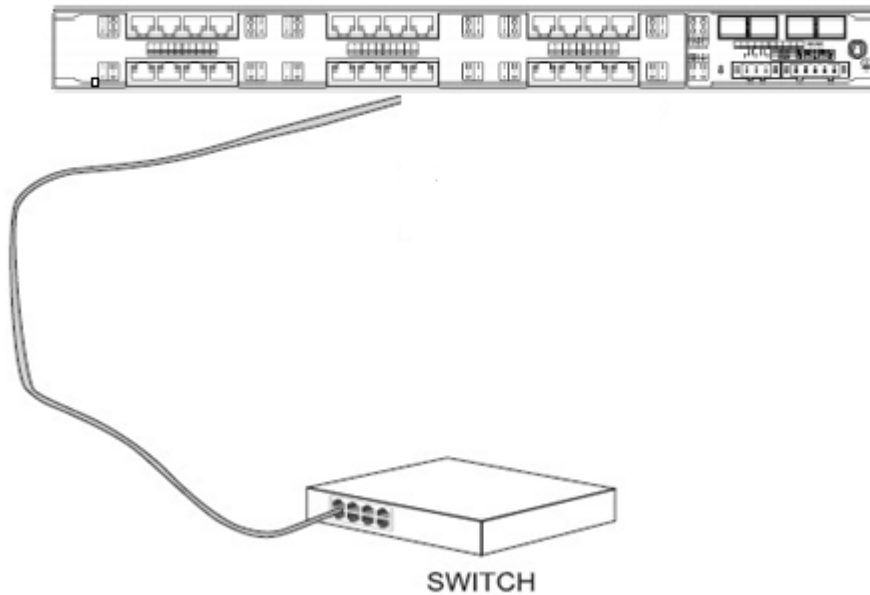

Figure3-5   DPCOM7000 Industrial Switch's Electric Port's Connection with Other Ethernet Terminal

Chart3-2 Definition of the pins of the RJ45 port

No.	Pin name	Symbol	Description
1	Normal phase of transmitting data	TXD1+	Output
2	Paraphase of transmitting data	TXD1-	Output
3	Normal phase of receiving data	RXD1+	Input

6	Paraphase of receiving data	RXD1-	Input

3.3.4 Connecting SFP Port

DPCOM7000 Industrial Switch provides four 100/1000M SFP ports. You can insert the SFP optical module into the port and then connect the module to other Ethernet terminal devices through the optical fiber if you want to use the SFP port.
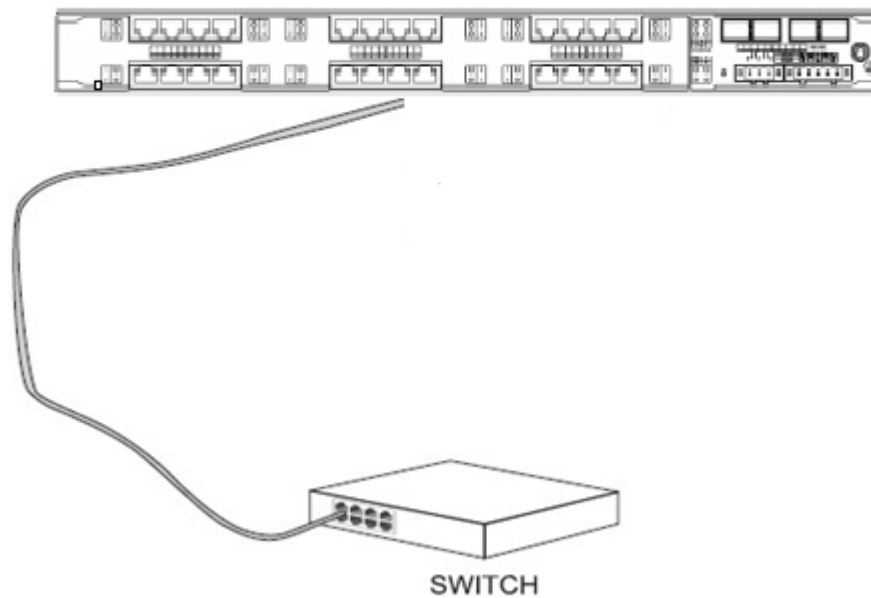

Figure3-6 the connection of DPCOM7000 Industrial Switch's SFP port with other Ethernet Terminal

3.4   Checkup after Installation

Before electrically starting up the switch, perform the following checkups after theswitch is installed:

● If the switch is installed on the cabinet, check whether the installation point between the cabinet and the switch is strong. If the switch is installed on the desk, check

whether there is enough space for the switch to discharge its heat and whether the desk is stable.

● Check whether the connected power meets the power requirements of the switch.

● Check whether the grounding line is correctly connected.

● Check whether the switch is correctly connected to other terminal devices.

4 Maintaining the DPCOM7000Industrial Switch

Caution:

Only professionals are allowed to install or replace the devices of the switch.

The unauthorized opening of chassis would terminate the valid warranty instantly.

Before opening the chassis, make sure that you have released the static electricity you carried and then turn off the power on-off of the switch. Before operating any step, read the section "Safety Advice".

Before performing operations beside the power source or on the chassis, turn off the power on-off and plug out the power cable.

4.1 Opening the Chassis

This section describes how to open the cover of the switch, required tools andoperation methods.

Caution:

When the power cable still connects with the power supply, do not touch it.

When you open the cover the switch, you may use the following tools: These tools are:

- Crossed screwdriver

- Inner hexagon screwdriver

- Static armguard

Perform the following steps to open the cover of the switch:

(1) Turn off the power on-off of the switch (plug off power cord).

(2) Plug out all cables connected the back of the switch.

(3) Take out the bolt from the chassis with the screwdriver.

Open the cover by holding two sides of the cover towards the direction of the arrow key shown in the following figure:
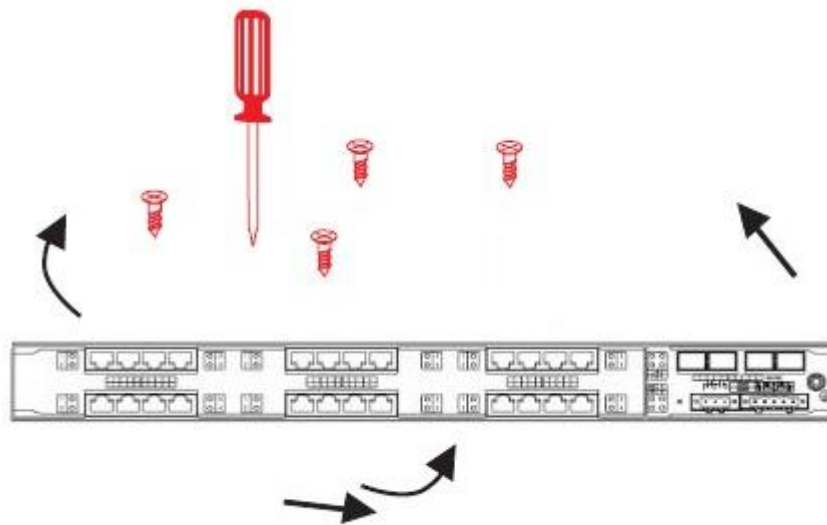
Figure 4-1 Opening Chassis

When the cover is opened, put it aside. The mainframe of the system appears.

Note:

After taking off the cover, put it horizontally and avoid it to be crushed or collided. Otherwise, the chassis is hard to install.

4.2   Sealing the Chassis

The section mainly describes how to put the cover and seal the chassis. Do as following:

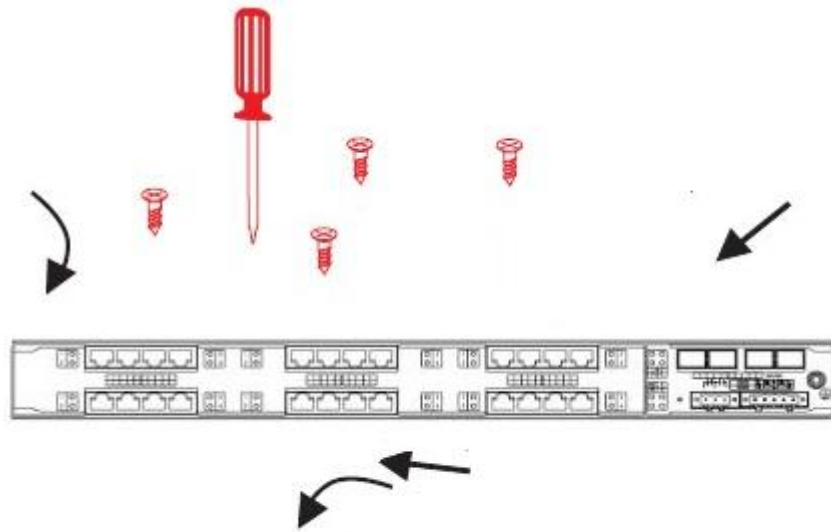(1) Put them well according to their locations and joint them together along their sides.

Figure 4-2   Sealing the Chassis

(2) According to the above figure, close up the edges of the bottom and cover of the chassis

(3) When the cover and the bottom are closely tied, let the cover slide the slot of the front template at the bottom.

(4) Nail the bolt and screw it tightly with the screwdriver.

(5) Reinstall the switch on the cabinet or the desk.

(6) Reconnect all cables of the switch.

5 Hardware Fault Analysis

The part describes how to remove the fault from the switch.

5.1 Fault Separation

The key for resolving the systematic fault is to separate the fault from the system. You can compare what the system is doing with what the system should do to detect the fault. You need to check the following subsystems:

● Power supply—primary and backup power supply

● Port, cable and connection—ports and cables connecting with ports of the DPCOM7000 Industrial Switch's front panel

5.1.1 Faults Relative with Power Supply

Do the following checkups to help remove the fault:

● The power supply connects correctly; power supply's negative pole connects with negative pole of European socket.

● Check the environment condition and keep the industrial switch away from hotness. Confirm that the air outlet and air inlet are clean. The working circumstance's temperature of DPCOM7000 Industrial Switch should be -40-85 Celsius degrees, and keep the circulation of air flow.

● If the switch cannot be started and the PWR LED is off, check the power.

5.1.2 Faults Relative with Port, Cable and Connection

Do the following checkups to help remove the fault:

● If the port of the switch cannot be linked, check whether the cable is correctly connected and whether the peer connection is normal.

● Check the power supply and the power cable.

● If the console port does not work after the system is started up, check whether the console port is set to a baud rate of 9600 bps, eight data bits, no sum check bit and one stop bit and no flow control.