C9000 Series
Serial Device Server
User's Manual V1.1

Contents

Preface

Version Description

Manual version: V1.0

Copyright Notice

The copyright of this manual is reserved to our company, who retains the final rights of explanation and revision to this manual and notice. No part of this manual may be photocopied, excerpted, reproduced, revised, transmitted, translated into other languages, or used for commercial purpose in full or in part, without the prior written permission of the Company.

Disclaimer

This manual is made according to currently available information and subject to change without further notice. Whilst every effort has been made to ensure the accuracy and reliability of the contents contained herein, the Company cannot be held liable for any harm or damage resulting from any omissions, inaccuracies or errors contained in the manual.

Brief Introduction

This User Manual describes the C9000 Series Serial Device Server. Before you use our device for the first time, please read all the included materials carefully, and install and operate this series of products in keeping with items listed in the manual, so as to avoid damaging the device resulting from malpractice. Thank you for choosing our products.

Environmental Protection

This product complies with the design requirements associated with environmental protection. The storage, use and disposal of the product should be conducted in accordance with related national laws and regulations.

We welcome you to put forward advice and suggestion to our work, which shall be viewed as the ultimate support to us.

Chapter 1 Introduction

The C9000 series serial device servers have many exceptional features. There are currently seventeen models in the C9000 series serial device servers. The main differences between the models are the number of ports and the type of network connection employed. All instructions and information presented for the C9000 apply to all models in the series. Any differences between models will be specified.

The following topics are covered in this chapter:

➢ Overview

➢ Product Features

➢ Physical Description

➢ Product Specifications

1.1 Overview

The C9000 series serial device servers can be used to connect any serial device to an Ethernet network, and supports many different operation modes. In particular, the C9000 series serial device servers also supports TCP Server, TCP Client, UDP and Virtual COM modes for security critical applications, such as banking, telecom, access control, and remote site management.

The C9000 series serial device servers have any baudrate feature,

which is based on FPGA, allows the use of non-standard baudrate. For example, a 500 Kbps baudrate may be required for some special applications.

For some applications, data must be delivered reliably even if communication is disrupted.

The C9000 series serial device servers provide a powerful function to ensure that data is buffered in case of a communication failure. When a communication failure occurs, the data is stored in it. Upon resumption of communication, the buffered data will be sent to the destination. The default size of the port buffer is 64 KB for each port. For the C9000 series serial device servers users may increase the buffer size by using an external Mini SD card for the buffer.

1.2 Product Features

● Data access modes, including Virtual COM, TCP Server, TCP Client，UDP

● Versatile socket operating modes, including TCP Server, TCP Client, UDP, and Virtual COM driver

● Port buffering function to prevent loss of serial data when communication is disrupted

● Any Baudrate feature for easy configuration for custom baudrate

● Support serial data backup to Mini SD memory card

- Auto-detecting 10/100Mbps Ethernet and 100Mbps SFP Ethernet port

- Web-based configuration，telnet and Console CLI

- Built-in 15 KV ESD protection for all serial signals
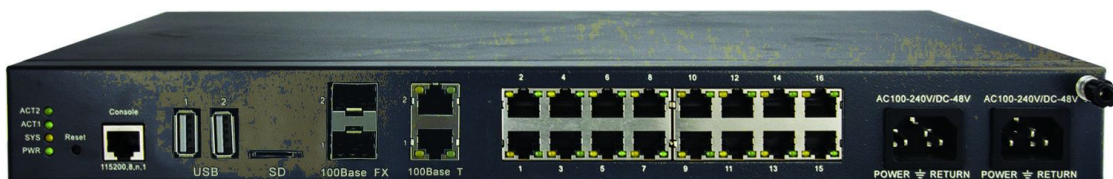
- Redundancy dual AC/DC power, Wide input voltage range

1.3 Physical Description

C9048

C9032

C9016

1.4 Product Specifications

Optical Fiber

Number of Ports: 2

Fiber Port: 100M SFP slot

Ethernet Interface

Number of Ports: 2

Speed: 10/100 Mbps, auto MDI/MDIX

Connector: 8-pin RJ45

Magnetic Isolation: 1.5 KV built -in

Ethernet Line Protection: EN 61000-4-5 (Surge) Level 2

Serial Interface

Number of Ports: C9016: 16

C9032: 32

C9048: 48

Serial Standards: RS-232/485

Serial Communication Parameters

Data Bits: 5, 6, 7, 8

Stop Bits: 1, 2

Parity: None, Even, Odd, Space, and Mark

Baudrate: 300 bps to 115.2 Kbps

Serial Signals

C9016-1600/C9032-3200/C9048-4800:

RS-232:   TxD, RxD, RTS, CTS, GND

C9016-0016/C9032-0032/C9048-0048:

RS- 485- 2w: Data+, Data-, GND

SD interface

Mini SD

USB interface

USB 2.0 Port ：2

Software

Network Protocols: ICMP, IP, TCP, UDP, HTTP, ARP

Configuration Options: Web, Serial Console, Telnet Console, and

Windows Search Utility

Windows Virtual COM Drivers: Windows XP/2003/Vista/2008/7/8

x86/x64

Linux Virtual TTY Drivers: Linux kernel 2.6.x

Management: SNMP V1/V2

Operation Modes

Standard: Virtual COM, TCP Server, TCP Client, UDP

Applications

Terminal Sessions: 4 sessions per port

Physical Characteristics

Housing: Metal

Weight: C9048: 3.4kg

          C9032: 3.2kg

          C9016: 2.6kg

Dimensions: C9048/C9032: 430 x 200 x 78mm

              C9016: 430 x 200 x 44.5mm

Environmental Limits

Operating Temperature: 0 to 50°C (32 to 122°F)

Storage Temperature: -40 to 85°C (-40 to 185°F)

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

Altitude: Up to 2000 m

Note: Please contact us if you require products guaranteed to function properly at higher altitudes.

Power Requirements

Input Voltage: Adaptive power 110V/220VAC or -48VDC

Power Consumption: <15walts

Standards and Certifications

Safety: UL 60950-1, EN 60950-1

EMC: CE, FCC

EMI: EN 55022 Class A, FCC Part 15 Subpart   B Class A

EMS:

EN 55024,

EN 61000-4-2 (ESD) Level 4,

EN 61000-4-5 (Surge) Level 2,

EN 61000-4-4 (EFT) Level 3,

Freefall: IEC-68-2-6, IEC-68-2 -34, IEC-68-2-32

Vibration: IEC-68-2-6, IEC-68-2-34

Green Product: RoHS, CRoHS, WEEE

Chapter 2 Getting Started

This chapter covers the hardware installation. Software installation is covered in the next chapter.

The following topics are covered in this chapter:

➢ Panel Layout

➢ Connecting the Hardware

   ✧ Wiring Requirements

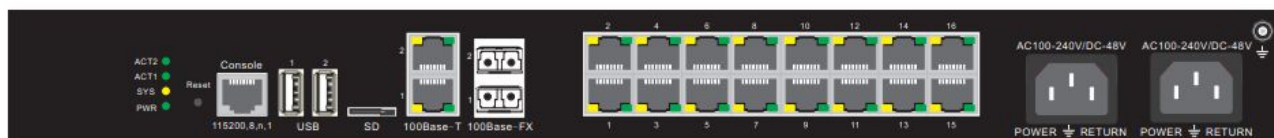   ✧ Connecting to a Serial Device

   ✧ LED Indicators

2.1 Panel Layout
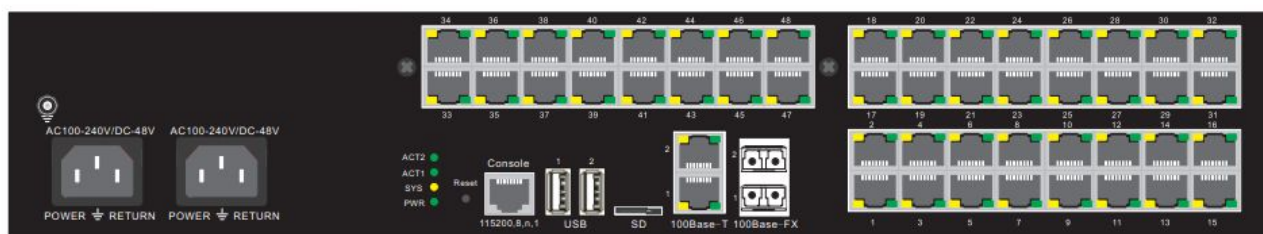
C9048 Front View
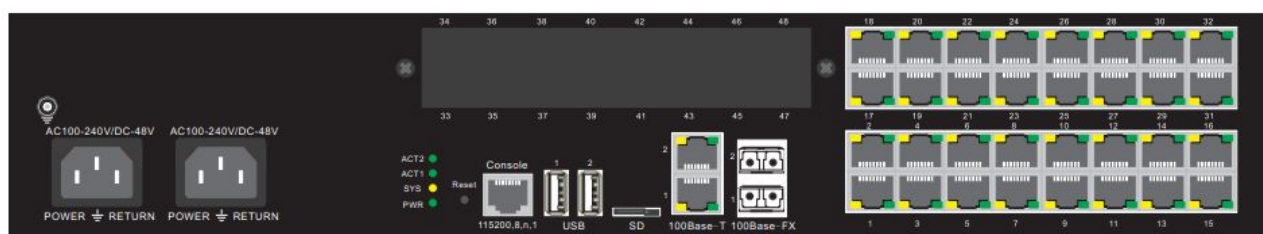
C9032 Front View

C9016 Front View

2.2 Connecting the Hardware

This section describes how to connect the C9016/C9032/C9048 to serial devices for the first time.

2.2.1 Wiring Requirements

Note:

Disconnect the power before installing and wiring

Disconnect the power cord before installing and/or wiring your C9016/C9032/C9048.

Do not exceed the maximum current for the wiring

Determine the maximum possible current for each power wire and common wire. Observe all electrical codes dictating the maximum current allowable for each wire size. If the current exceeds the maximum rating, the wiring could overheat, causing serious damage to your equipment.

Server may get hot, use caution when handling

Use caution when handling the C9016/C9032/C9048 after it has been plugged in. The internal components generate heat and the casing

may be hot to the touch.

2.2.2 Connecting to a Serial Device

Connect the serial data cable between the C9016/C9032/C9048 and the serial device. Serial data cables are available as optional accessories.

2.2.3 LED Indicators

The LED indicators on the front panel of the C9016/C9032/C9048 are described in the following table.

LED Name	LED Color	LED Function
PWR	Green	On- Unit is powered
		Off- Unit is off
SYS	Yellow	Blinking- System is working normally
		Off- System is abnormal
ACT1	Yellow	Blinking- SFP Ethernet link is up
		Off- SFP Ethernet link is down
ACT2	Yellow	Blinking- SFP Ethernet link is up
		Off- SFP Ethernet link is down

Chapter 3 Software instructions

In this chapter, we explain how to configure the virtual serial port Manager.

The following topics are covered in this chapter:

➢ Virtual serial port software installation

➢ Virtual serial port Software Description

3.1 Virtual serial port software installation

Users should follow these steps to install the application on a computer to the WINDOWS platform.

Step 1. Double-click to run installation program 'VcomSetup.exe'.

Step 2 In the Welcome windows; click "Next", the following screen.

Here you can modify the installation folder
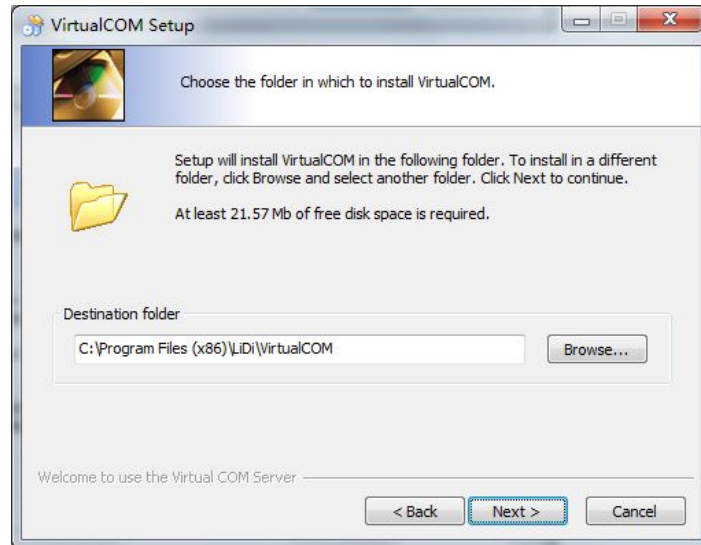
Step 3 Click 'Install' to start the installation software
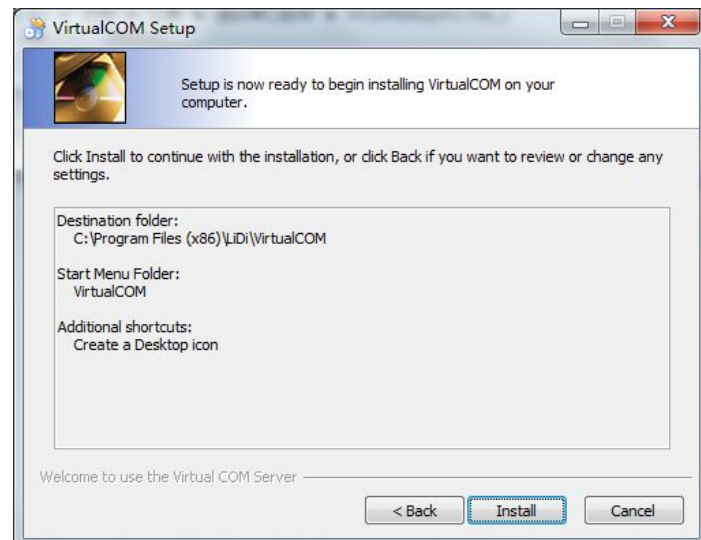
Then there will be the installation process, the installation will take

some time, please be patient:
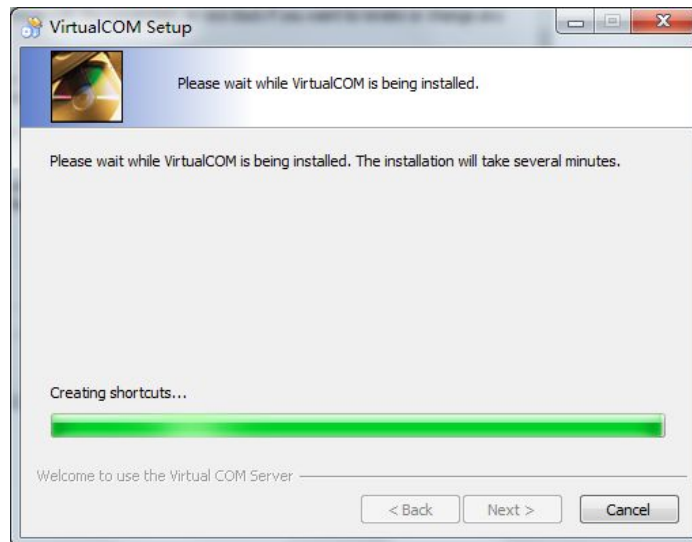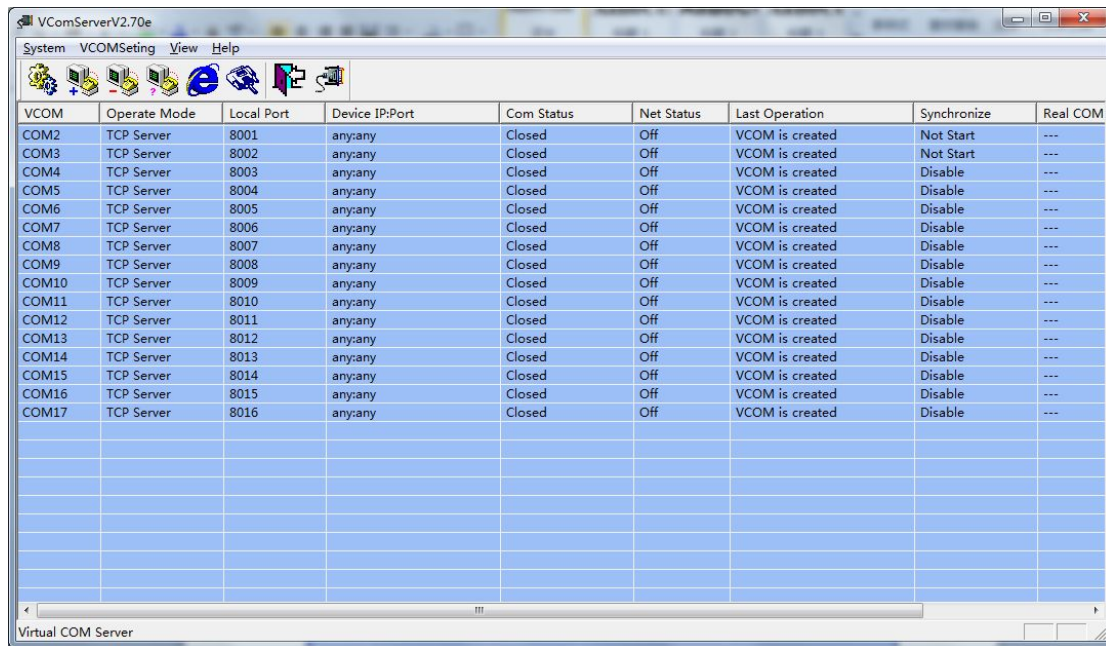
Step 4 Click 'Finish', then complete the installation process
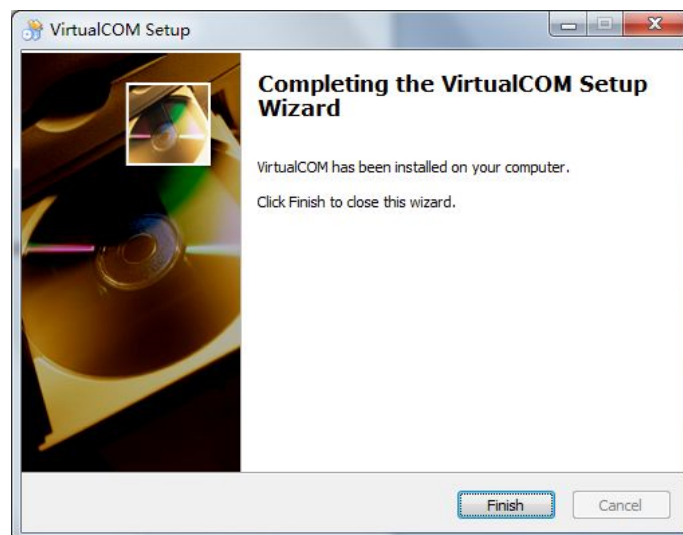
3.2 Virtual serial port Software Description

Virtual serial port software to simulate the serial port of the field devices on the computer. The user's management software simply pointing out of the communications port to virtual serial port, serial communication can be realized.

Virtual serial port software installed on your computer, open the software. (After opening, the default port is 32) as shown below:

Virtual serial port management

Add Virtual serial port:

Click the icon 🖧 to add serial ports, Pop-up dialog box as shown below. At this time under a different mapping mode selected will appear the following three different dialog boxes.

Parameter Description

Synchronous serial port parameters: This device does not support synchronization

Starting virtual serial port: Select the name of the starting virtual

serial port, COM2~COM512 selectable.

Number of Virtual serial: Disposable create a virtual serial port number, this device supports up to 8.

Remarks: Record created virtual serial port information.

Mapping mode: Select the operation mode UDP, TCP client and TCP server.

UDP mode:

The local port: Set the computer local port

Device Address: Set the IP address corresponding to the remote serial device server

Device Port: Set the corresponding port remote serial server

TCP client mode:

Device Address: Set the IP address corresponding to the remote serial device server

Device Port: Set the corresponding port remote serial server

TCP Server mode:

The local port: Set the computer local port

The following table lists the relevant parameters (The same applies to socket communication mode is):

Computer virtual serial port config (Assuming the computer's IP address is:IP A Port: Port A)	Device Config (Assuming the computer's IP address is:IP B Port: Port B)
Mapping mode : TCP server The local port : Port A	Working methods : TCP Client Listening port : -------(Pointless) Server IP : IPA Server Port : Port A
Mapping modes: TCP Client Device Address : IP B Device Port : Port B	Working methods : TCP server Listening port : Port B Server IP : -------(Pointless) Server Port : -------(Pointless)
Mapping modes : UDP The local port : Port A Device Address : IP B Device Port : Port B	Working methods : UDP Listening port : Port B Server IP : IP A Server Port : Port A

Deleting a virtual serial port

Select the corresponding virtual serial port, click the '' icon to delete.

Modify the virtual serial port

Select the corresponding virtual serial port, click the '' icon to edit.

3.3 WEB network management Profile

3.3.1 Using Your Web Browser

Open your browser, enter the device IP, and then enter the user name and password. As below.

Default IP

192.168.0.168

User name and password:

The default user and password are both "admin".

3.3.2 WEB function Setting Description

System Config

System info

This page can set the device description, system name, system location and contact information, and you can view the current page to the device's version number, MAC address, and system uptime.

Prompt：

Setting will be saved to the configuration file.

Network Config

This interface can set the device IP, mask, gateway

Prompt：

Address changes, please enter the new address in the browser to the device.

System reboot

Reboot the device or restore the factory configuration

Prompt：

Restore the factory configuration system will automatically reboot.

System Upgrade

This page can upgrade software, firmware, and configuration

Upgrade Tips:

Step 1: Upload the upgrade file；

Step 2: Follow the prompts to choose to upgrade software, firmware or configuration file；

After Software upgrade complete, the system automatically reboot; firmware, configuration files is complete, manually Reboot

Serial port settings

This page can be set to single serial port parameters, select the need to modify the serial number, and then enter the following parameters can be configured.

serial port information

Displays the current status information of the brightest serial

Serial Information

Serial No.	Operating Mode	Local Port	Remote IP	Remote Port	Baud Rate	Data Bit	Stop Bit	Parity	Flow Control	Minimum Sending Time	Minimum Transmit Byte
1	TCP Server	8001	---	---	115200	8	1	No Parity	None	10	960
2	TCP Server	8002	---	---	115200	8	1	No Parity	None	10	960
3	TCP Server	8003	---	---	115200	8	1	No Parity	None	10	960
4	TCP Server	8004	---	---	115200	8	1	No Parity	None	10	960
5	TCP Server	8005	---	---	115200	8	1	No Parity	None	10	960
6	TCP Server	8006	---	---	115200	8	1	No Parity	None	10	960
7	TCP Server	8007	---	---	115200	8	1	No Parity	None	10	960
8	TCP Server	8008	---	---	115200	8	1	No Parity	None	10	960
9	TCP Server	8009	---	---	115200	8	1	No Parity	None	10	960
10	TCP Server	8010	---	---	115200	8	1	No Parity	None	10	960
11	TCP Server	8011	---	---	115200	8	1	No Parity	None	10	960
12	TCP Server	8012	---	---	115200	8	1	No Parity	None	10	960
13	TCP Server	8013	---	---	115200	8	1	No Parity	None	10	960
14	TCP Server	8014	---	---	115200	8	1	No Parity	None	10	960
15	TCP Server	8015	---	---	115200	8	1	No Parity	None	10	960
16	TCP Server	8016	---	---	115200	8	1	No Parity	None	10	960
17	TCP Server	8017	---	---	115200	8	1	No Parity	None	10	960
18	TCP Server	8018	---	---	115200	8	1	No Parity	None	10	960
19	TCP Server	8019	---	---	115200	8	1	No Parity	None	10	960
20	TCP Server	8020	---	---	115200	8	1	No Parity	None	10	960
21	TCP Server	8021	---	---	115200	8	1	No Parity	None	10	960

Serial stats

Serial send, receive byte counts

Serial Statistics

[Refresh] [Cleared]

Serial No.	Received from the Ethernet	Sent to the Serial Port	Received from the Serial Port	Sent to the Ethernet
1	6154600	6154600	6154550	6154500
2	6152500	6152500	6152387	6152337
3	6149100	6149100	6149036	6148986
4	6145000	6145000	6144936	6144886
5	6141700	6141700	6141636	6141586
6	6137600	6137600	6137536	6137486
7	6133700	6133700	6133650	6133600
8	6130700	6130700	6130589	6130540
9	6126500	6126500	6126407	6126358
10	6122700	6122700	6122603	6122554
11	6119600	6119600	6119445	6119396
12	6116400	6116400	6116121	6116072
13	6111700	6111700	6111596	6111547
14	6107900	6107900	6107751	6107702
15	6104100	6104100	6103757	6103708
16	6099800	6099800	6098612	6098563
17	6096200	6096200	6095979	6095928
18	6092000	6092000	6091645	6091594
19	6088400	6088400	6088014	6087963
20	6083900	6083900	6083661	6083610
21	6079900	6079900	6079517	6079466

Template Settings

On this page you can set the serial batch job parameters, check the need to modify the parameters of the serial number, and then modify the following parameters point is set parameter modifications can be made to "Serial Information" option below to view parameters are not set up successfully.

Template Information

This page can be set to 5 group template information parameters, in the "Template Settings" option, you can check the serial number, and then a template applied to these serial numbers

Chapter 4 Accessories

This section describes how to:
➢ Making of Ethernet Interface Connecting Cable
➢ Making of Serial Port Connecting Cable
➢ Diagnostics and Troubleshooting
➢ Warranty Card

4.1 Making of Ethernet Interface Connecting Cable

Ethernet interface Connecting Cable adopts twisted pair line with its specific making methods divided into two international standards, which are EIA/TIA568A and EIA/TIA568B. Position the tail of crystal head downward (i.e. the flat side upward), determine the lines with figures as 1 2 3 4 5 6 7 8 from left to right, and the distributions of each line are as follows:
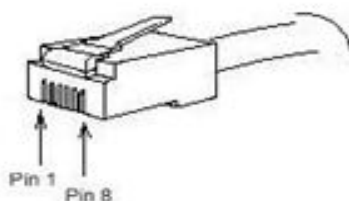
The following table shows the two international standards
(EIA/TIA568Bstandard)

Pin No.	1	2	3	4	5	6	7	8
Connection signal	TXD+	TXD-	RXD+			RXD-		
Sequence of twisted pair line	White and orange	orange	White and Green	Blue	White and Blue	Green	White and Brown	Brown

(EIA/TIA568Bstandard)

Pin No.	1	2	3	4	5	6	7	8
Connection signal	RXD+	RXD-	TXD+			TXD-		
Sequence of twisted pair line	White and Green	Green	White and orange	Blue	White and Blue	orange	White and Brown	Brown

Making of straight-through line: both heads are connected as per

T568B line sequence standard.

Making method of crossover line: one head is connected as per T568A line sequence while the other head is connected as per T568B line sequence.

4.2 Making of Serial ports Connecting Cable

RJ45: Each pin is defined as follows

Pin No.	RS-232	RS-485
1	CTS	DATA+/A
2	NC	DATA-/B
3	RXD	NC
4	GND	NC
5	GND	NC
6	TXD	GND
7	NC	NC
8	RTS	NC

Make serial line must know the peer serial definition, Ends sending and receiving butt, ground docking. 485 line receiver + send + corresponding receiving - correspondence sent -.

4.3 Making of Console Interface Connecting Cable

1. 2. 3. 4. 5. 6. 7. 8.

Pin3 is output pin(TXD)
Pin6 is input pin (RXD)
4, 5 pins are GND pins (GND)

4.4 Diagnostics and Troubleshooting

Phenomena	Potential Cause	Measures
Power indicator PWR fails	1. Control switch is not in place 2. Incorrect connection of power polarity 3. External power supply is not plugged	1. Press the switch in place 2. Change the polarity of power supply 3. Plug the external power supply

	in	4. Remove the conductor
	4. Conductor dropped into machine frame that leads the power supply to be short circuited with the ground.	5. Contact the supplier
	5. Malfunctions of power supply module	
Ethernet interface PING Connect, but Packet loss	1. The making of reticle cable is not crossover line.	1. Make the lines correctly.
	2. HUBER cascade excessive	2. Change the network structure, reduce HUBER cascade
	3. Working Mode does not correspond	3. Set the correct mode to work

4.5 Warranty Card

Our company is committed to provide users with the following terms:

1. Warranty service

   1) Within the charge free warranty term (within 36 months since the purchase of the product), damaged parts can be exchanged free of charge and maintenance charges will be free in the conditions that the device is considered to be malfunctioned in normal service by our company.

   2) Within the charged warranty term (more than 36 months and within 60 months since the purchase of the product), damaged parts will be charged for corresponding cost with free maintenance service in the conditions that the device is considered to be malfunctioned in normal service by our company.

2. Users can not enjoy warranty service with the following cases and corresponding cost of damaged parts replacing and maintenance service will be charged

Exceed 60 months since the purchase of the product

Can't provide certificate of purchasing date, and serial No. of product shows that ex-works term has exceeded 60 months;

Include but not limit to the abnormal service conditions such as violent knocking, extrusion, drop, liquid immersion that cause damages;

Fragile label on the device is damaged;

User disassembles this product himself

Force majeure that leads to product damage, such as earthquake, flooding and lightening stroke;

3. The newly installed parts after maintenance will be repaired free of charge within 36 months since the installation date.

4. When malfunction occurs, users can choose to send it to our company to receive maintenance service or to post it to maintenance points of our company all over the country to be repaired.

5. Our company does not undertake any responsibilities for losses caused by abnormal operation; for losses really caused by product itself, including but not limited to all direct or indirect losses due to data loss, our company will only undertake responsibilities within the selling price of products.

Repair and Maintenance Record

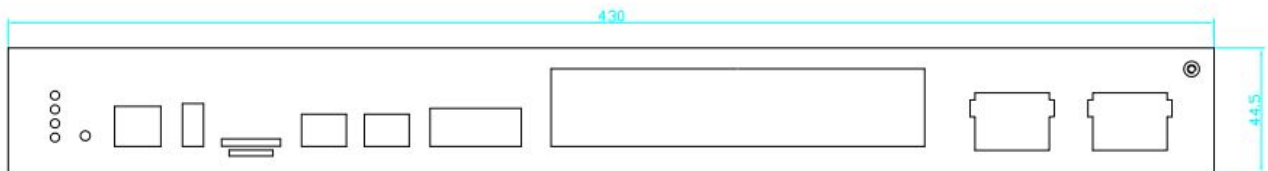| Product Name: C9000 Series Serial Device server		Device No.:
Maintenance date		**No. of Service Bill**
1		
2		
3		
4		
5		

4.6 Dimensions

C9048/C9032

C9016

C9048/C9032/C9016
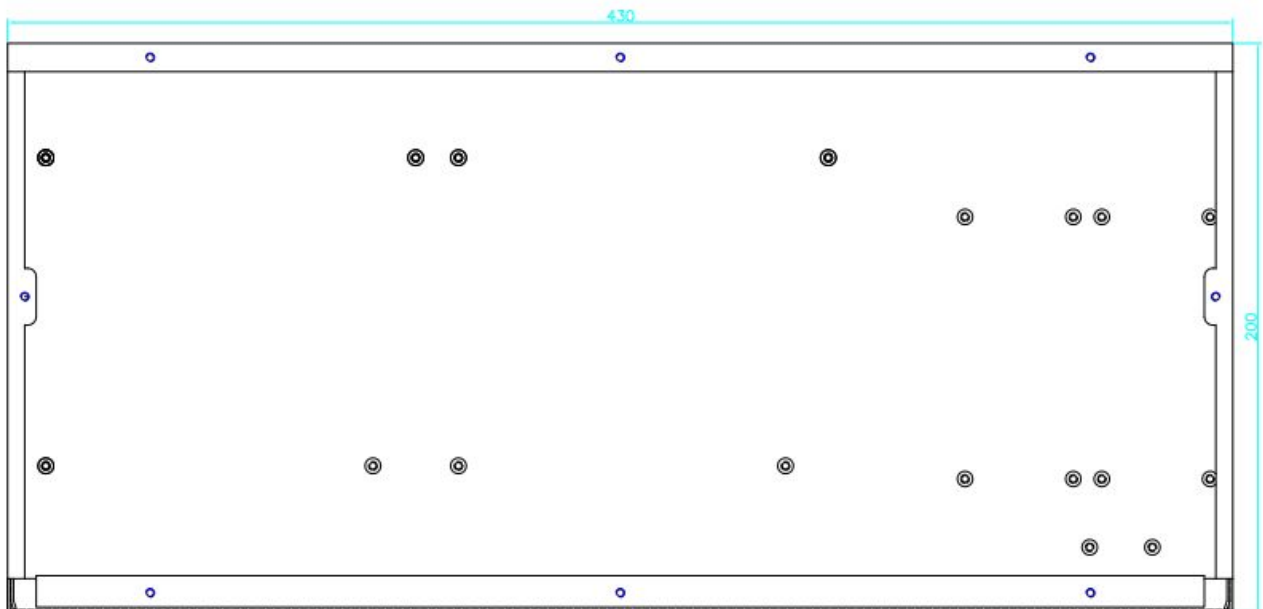
Unit: mm

4.7 Ordering Information

Type	Function Description
C9016-1600-A/D-R	16-port RS232(Baudrate: 300 bps to 115.2 Kbps) and 2-port 10M/100M Ethernet,19'' rack mounting installation, Build in 220VAC or -48VDC power supply
C9016-1600-AD-R	16-port RS232(Baudrate: 300 bps to 115.2 Kbps) and 2-port 10M/100M Ethernet,19'' rack mounting installation, Build in redundant 220VAC and -48VDC power supply
C9032-3200-A/D-R	32-port RS232(Baudrate: 300 bps to 115.2 Kbps) and 2-port 10M/100M Ethernet,19'' rack mounting installation, Build in 220VAC or -48VDC power supply
C9032-3200-AD-R	32-port RS232(Baudrate: 300 bps to 115.2 Kbps) and 2-port 10M/100M Ethernet,19'' rack mounting installation, Build in redundant 220VAC and -48VDC power supply
C9048-4800-A/D-R	48-port RS232(Baudrate: 300 bps to 115.2 Kbps) and 2-port 10M/100M Ethernet,19'' rack mounting installation, Build in 220VAC or -48VDC power supply
C9016-0016-AD-R	16-port RS485(Baudrate: 300 bps to 115.2 Kbps) and 2-port 10M/100M Ethernet,19'' rack mounting installation, Build in redundant 220VAC and -48VDC power supply
C9032-0032-AD-R	32-port RS485(Baudrate: 300 bps to 115.2 Kbps) and 2-port 10M/100M Ethernet,19'' rack mounting installation, Build in redundant 220VAC and -48VDC power supply
C9048-0048-A/D-R	48-port RS485(Baudrate: 300 bps to 115.2 Kbps) and 2-port 10M/100M Ethernet,19'' rack mounting installation, Build in 220VAC or -48VDC power supply