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Preface

Version Description

Manual version: V1.0

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Brief Introduction

This User Manual describes the installation and operation of Multi-service ring network system core equipment. 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

1.1 Brief

Multi-service ring network system core equipment is a new generation of bandwidth sharing capabilities with high level of integration access devices which based on the self-made software development. It can achieve 8 E1 channels to two Ethernet signals transmission. It also can be composed as point to point, chain, eight self-healing network, and the ring + chain hybrid networks with the same series of node devices. The device fully meets customer's demand in a flexible and economy maintenance and management of networking.

It can be widely used in telecommunications, electricity, water, finance, transportation, mining, environment, public security and other collected data transmission services. It can provide flexible and secure networking to users of network building to bring more security and economy.

1.2 Device Features

● High-density board design, It can improve system reliability, with easy installation, maintenance, performance and stability characteristics;

● Each panel provides instructions and data transceiver intelligent alarm indication function, and it immediately prompt communication situation of a variety of service equipment and transmission channels. Quite convenient installation for the project;

● System equipment can be connected to 8 node devices as point to point connection. Also, devices can be connected to multiple nodes network consisting of 8 chains or each of two E1 can also be composed of eight rings. Really flexible networking to meet a variety of different applications;

● When every two E1 formed ring networks, the node device can complete the line switching function at any time; Also it can be

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automatically turned into the chain network from ring; each ring work independently of each other and work independently;

● WEB can be configured on the device parameters. Check operation of equipment, as well as the status of each port. It can remotely reboot the device, upgrade.

● Two Ethernet uplink ports 10/100/1000Base-T；

● E1 mode: Non-frames, framed PCM31 and PCM30 framing. WEB page can be set for E1 mode, and you can set E1 rates;

● The system uses fast packet switching approach to statistical multiplexing principle footprint, breaking the old way of using slot allocation service which the resource utilization is low, poor support for multi-service problems. Effective on a number of different node device auto-configuration service interface bandwidth, which greatly improves the bandwidth utilization;

● On the core device, it can set up IP address for each node device settings, operating mode, each node of the serial port rate allocation, port settings to make the project more quickly and easily installed.

Chapter 2 Device Functions

2.1 Device Front Panel
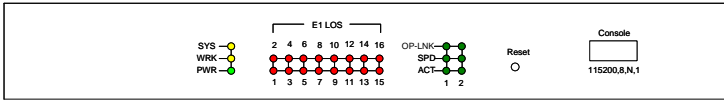
MRS3608E Front Panel

2.1.1 Front Panel LED Indication

LED	Color	Functions	Status	Description
PWR	Green	Power Indication	on	Power on
			off	Power off
WRK	yellow	Operating Indication	Flash	Device operating
			Off	Device abnormal
SYS	yellow	System us	flash	System operating
			on	System abnormal
			off	System booting normally
LOS1-16 only the first 8-way effective	Red	1-8 Channels Alarm	on	Channel Loss signal
			off	Normal
			0.5S flash	Data packet error
			2S flash	Channel local loop back
			flash	Transmitting data
ACT1~2	Green	Ethernet Activity	On	connected
			off	Disconnected
			flash	Data transmitting
SPD1~2	green	Ethernet Speed Rate	On	1G
			off	10OM
OP-LNK 1~2	green	Optical Status	on	Fiber connected
			off	Fiber Disconnected

2.1.2 Reset

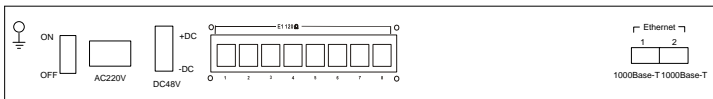Restore to factory default setting by pressing 10 second

2.1.3 Console

Console port which is connected to login into the device and use command-line to config and check deice information

2.2 Device Rear Panel

Device rear panel has power connection with 8 E1 ports and 2 Ethernet ports.
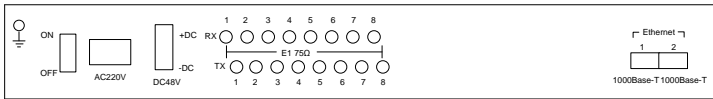
E1 75 ohm rear panel

E1 120 ohm rear panel

2.2.1 Power Supply

Power supply voltage is AC220V. Allows voltage fluctuates about 20%. DC48V interface rear panel label affixed invalid.

2.2.2 E1 Interface

75Ω Physical Interface： Q9
75Ω/RX： 75Ω E1 Receiving
75Ω/TX： 75Ω E1 Transmitting
120Ω Physical Interface： RJ45
120ΩE1： 120Ω E1 in & out

2.3.3 Ethernet Interface

2 switchable RJ45 ports are located on the rear panel. Self-adaptive of 10/100/1000M, full / half duplex, direct and cross-adaptive network cable.

Chapter 3 WEB Introduction

3.1 WEB Specification

Device default IP address: 192.168.0.168，Username: admin,
Password: admin

"System config"->"System infor"

Review device software and hardware version and revise system

description and name on this page.

"System Config"->"System upgrade"

Upgrade system here

"System config"->"System reboot"

Reboot system here.

"System config"->"System advance Config"

Enable Loopback detect function or SNMP function here.

"Network Config"->"Network Config"

Revise Device IP address and subnet mask here.

"Network Config"->"Network Service Config"

Alter network parameters on this page.

"Service Config"->"E1 Config"

Review and alter E1 mode here.

"Service Config"->"E1 Status"
Each E1 Channels' Status.

"Service Config"->"E1 Loopback Status"

Tip:
Automatic refresh every 5 seconds.

3.2 Config Example
3.2.1 Set up IP address

Set up IP address

Set up IP address as 192.168.5.168 on the page of "network

config"->"network config"

Network configuration

Attribute	State
IP address	192.168.0.168
Subnet mask	255.255.255.0
Default gateway	192.168.0.1
MAC address	A4:C2:AB:01:02:97

☐ System configuration
☐ Network configuration
   • Network configuration
   • Network service configuration
☐ Service configuration

Refresh Set

Tip:
Address changed, please in the browser, enter a new address to access equipment.

Set the connected computer under the same IP Network segment as device IP such as 192.168.5.XX, then reboot the device.

Input IP address: 192.168.5.168 on IE. If the page is shown as the following figure, it is successfully to change the IP address.

Network configuration

Attribute	State
IP address	192.168.5.168
Subnet mask	255.255.255.0
Default gateway	MAXLENGTH=254
MAC address	A4:C2:AB:01:02:97

☐ System configuration
☐ Network configuration
   • Network configuration
   • Network service configuration
☐ Service configuration

Refresh Set

Tip:
Address changed, please in the browser, enter a new address to access equipment.

3.2.2 Set UP E1 Mode

Set up E1 mode to frame PCM31.

According to the following figure 1: to select port number "1" on the

page of "service config"->"E1 config". Select "PCM31 Frame", and

click "select all" on E1 timeslot switch and click "set" bottom to

complete the setting.

As the figure 2 is shown, set the other E1 mode with the same

method.

E1 configuration

Attribute	Parameters
Port number	--
PCM mode	----
E1 time slot switch	☑00 ☑01 ☑02 ☑03 ☑04 ☑05 ☑06 ☑07 ☑08 ☑09 ☑10 ☑11 ☑12 ☑13 ☑14 ☑15 ☑16 ☑17 ☑18 ☑19 ☑20 ☑21 ☑22 ☑23 ☑24 ☑25 ☑26 ☑27 ☑28 ☑29 ☑30 ☑31 ☐Select all
	Refresh Set

E1 current time slot information

Port number	Frame mode	PCM mode	Time slot information
1	Non frame	----	All 32 slot
2	Non frame	----	All 32 slot
3	Non frame	----	All 32 slot
4	Non frame	----	All 32 slot
5	Non frame	----	All 32 slot
6	Non frame	----	All 32 slot
7	Non frame	----	All 32 slot
8	Non frame	----	All 32 slot

Figure 1

E1 configuration

Attribute	Parameters
Port number	--
PCM mode	----
E1 time slot switch	☑00 ☑01 ☑02 ☑03 ☑04 ☑05 ☑06 ☑07 ☑08 ☑09 ☑10 ☑11 ☑12 ☑13 ☑14 ☑15 ☑16 ☑17 ☑18 ☑19 ☑20 ☑21 ☑22 ☑23 ☑24 ☑25 ☑26 ☑27 ☑28 ☑29 ☑30 ☑31 ☐Select all
	Refresh Set

E1 current time slot information

Port number	Frame mode	PCM mode	Time slot information
1	into the frame	pcm31	--;1;2;3;4;5;6;7;8;9;10;11;12;13;14;15;16;17;18;19;20;21;22;23;24;25;26;27;28;29;30;31;
2	Non frame	----	All 32 slot
3	Non frame	----	All 32 slot
4	Non frame	----	All 32 slot
5	Non frame	----	All 32 slot
6	Non frame	----	All 32 slot
7	Non frame	----	All 32 slot
8	Non frame	----	All 32 slot

Figure 2

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Chapter 4 Technical Specification

4.1 Operating Environment

The device has a wide range of operating temperature and is able to work normally and stably in highly adverse environment.

Working Temperature	0℃ ～ +50℃
Storage Temperature	－40℃ ～ +70℃
Relative Humidity	10 %～95 %
Atmospheric Pressure	70～106 kpa

The environment should be free from corrosive and solvent gases, dust, and magnetic interference.

4.2 Power Supply

Using high-quality power adaptor, the device has a wide fluctuation tolerance and strong anti-interference and isolation quality to ensure a stable operation.

Input voltage	AC 220V
Voltage fluctuation	165VAC～265VAC
Power consumption	＜10 W

4.3 Mechanical Specifications

Dimension： 430mm*203mm*44.5mm

4.4 E1 Interface Specification

Electric Characteristics of Interface: compatible with ITU-T G.703 standard

Transfer Characteristics of Interface: compatible with ITU-TG.823 standard

Jitter Characteristics of Interface: compatible with ITU-T G.823 standard

Rate: transmission port 2048Mbps±50ppm

Line Code Pattern: HDB3

Interface Impedance: 75Ω/120Ω

Interface Connector: Q9(75Ω), RJ45(120Ω)

4.5 Ethernet Interface Specification

Ethernet Interface Speed rate: 10/100/1000M self-adaptive. Support MDI/MDIX cables auto-recognition. Compatible with IEEE 802.3 protocol, supports IEEE 802.1Q, support ELCP agreement.

Chapter 5 Installation

5.1 Safety Requirement

Please read the following safety items before installation to avoid physical injury and damage to this product or any other products connected. To avoid potential hazard, the product can be used only within specified scope. **Maintenance can be conducted only by technical personnel authorized by our company.**

1. Avoid fire or physical injury.

2. All power supply should be shut off during installation, which can be turned on only when all terminals have been connected correctly and checked to be free from mistakes.

3. Connect and disconnect in a properly. When device is powered up, do not connect or disconnect data cable without due cause.

4. Grounding. The product should be linked to the ground through earthed conductor. To avoid electric shock, the earthed conductor must be in connection with the ground. Make sure that the product is correctly earthed before connecting with the input or output terminals.

5. Correct connection. Users are expected to use accompanied accessories. In the event that special connections are needed, please pay attention to the corner allocation requirements.

6. Don't operate when there is no cover plate over the device. Do not operate the product if the cover plate or panel has been dismounted.

7. No contact with bare circuit is allowed. Do not touch bare connectors or components when power is on.

8. No operation is allowed if there is suspicion of failure. Call authorized maintenance personnel for examination and reparation should the product be suspected of damage.

9. Good ventilation. Do not operate under humid or explosive environment.

10. Maintain the surface of the product clean and dry.

5.2 Inspection upon Unpacking

After unpacking the product, inspect the type, quantity and condition of device and accessories inside according to the list of contents specified in this manual. Contact the Company or its distributors and agencies immediately should abnormal circumstances arise.

5.3 Power Supply

Check the power supply of the device. The power input should be configured in accordance with related requirements. Pay particular attention to the voltage and polarity if the power supply is DC.

Please disconnect the power supply before you plug in/out power cable. And operate the device under the environment which is suggested by the user manual.

5.4 Test

Test the following steps before operating: Connect correctly to the power supply and the PWR and LOS LED light on, SYS and WRK LED light flashing and other LED indicators are all off.

5.5 SET UP and CONNECTION

1. Each node in the E1 port device connected to each other, depending on the network topology demands, transport interface devices are connected to the corresponding transmit port. After connecting the Ethernet cable correctly, SPD and ACT LED lights on, LOS LED turns off.
2. It is required the two or three layer switches to turn off the STP function before networking.
3. 1U distance should be kept between to devices.

Chapter 6 Accessories

6.1 Method of making cables

6.1.1 How to make E1 connecting cable

75Ω Line Making Method:

120Ω Line Making Method:

Connection between core and follows:

the pins are arranged as

Core and between skin and skin;

No connection between skin and core

Core

Skin
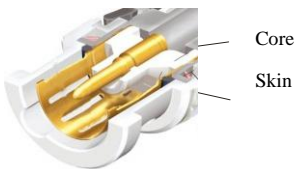
1，2，3，4，5，6，7，8

1（+）、2（-）pins are output ports

4（+）、5（-）pins are input ports

6.1.2 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:

(EIA/TIA568A standard)			(EIA/TIA568B standard)		
Pin No.	Connection signal	Sequence of twisted pair line	Pin No.	Connection signal	Sequence of twisted pair lines
1	TX+(transmission)	White and green 1	1	TX+(transmission)	White and orange
2	TX-(transmission)	Green	2	TX-(transmission)	orange
3	RX+(receive)	White and orange	3	RX+(receive)	White and green
4	Not to be used	Blue	4	Not to be used	Blue

5	Not to be used	White and blue	5	Not to be used	White and blue
6	RX-(receive)	Orange	6	RX-(receive)	Green
7	Not to be used	White and brown	7	Not to be used	White and brown
8	Not to be used	Brown	8	Not to be used	Brown

RJ-45 twisted pair line is specified as follows:

1)1, 2 used to send; 3, 6 used to receive; 4, 5，7, 8 are bi-directional lines.

2)1, 2 must be pair twisted; 3, 6 pair twisted; 4, 5 pair twisted; 7, 8 pair twisted.

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. The follows are specific connection conditions:

1) The device is connected with PC and router: straight-through line shall be adopted with the same connecting method on both ends of network line.

2) The device is concatenated with switch (or HUB): crossover line shall be adopted with different connecting method on both ends of network line.

6.2 Diagnosis 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 in 4. Conductor dropped into machine frame that leads the power supply to be short circuited with the ground. 5. Malfunctions of power supply module	1. Press the switch in place 2. Change the polarity of power supply 3. Plug the external power supply 4. Remove the conductor 5. Contact the supplier

LOS alert after the E1 connection	1. RX and TX of E1 are reversed. 2. The making of connection cable is not correct. 3. Transmission distance exceeds the standard specification. 4 The clock setting mode in the circuit line is incorrect.	1. Exchange RX and TX terminals. 2. Make the lines correctly. 3. 75Ω：300M 4. Set the clock mode of the other devices.
System not working, but no LOS alarming	1．E1 cable is not connected to the device properly.	1．Check the connection of each E1 cables.

6.3 Warranty Card

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

1. Warranty service

    1)   Within the charge free warranty term (within 12 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 12 months and within 36 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

    （1）Exceed 36 months since the purchase of the product

    （2）Can't provide certificate of purchasing date, and serial No. of product shows that ex-works term has exceeded 36 months;

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

    （4）Fragile label on the device is damaged;

    （5）User disassembles this product himself

    （6）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 12 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: MRS3608E		Device No.:
Maintenance date		**No. of Service Bill**
1		
2		
3		
4		
5		