1. 🕮General

1.1 Overview

Thank you for selecting the MX-30/60 product designed and made by Changzhou Bell Data Communication Equipments Co.,Ltd. The product can be used to provide E1 communication channels over Ethernet or IP networks.

The MX-30/60 has many optional parameters, which can be modified by the user to suite different application requirements. Please read this manual carefully before installing the product.

It is well known that the E1 signal comes from PCM technology which is TDM in nature. It transmits its information in a constant bit rate of E1_2048kbit/s, TDM technology occupies fixed transmission bandwidth, with QoS features suitable for real-time applications such as voice and video. The QoS features include short and stable transmission delay, low jitter and wander, etc.

On the other hand, Ethernet is based on statistical multiplexing, transmitting and exchanging information in packets. It does not take up a fixed transmission bandwidth, which is good for achieving higher bandwidth utilization. But Ethernet technology does not provide adequate QoS for real time applications.

Until recently, voice and data were, and still are to a large extent, transported over two separate networks. But the requirement for both types of information to be carried over a unified network is growing rapid. Packets over SONET/SDH techniques to integrate date into the TDM network have been around for many years. But for voice over packet based data networks, most of the efforts are spent on creating special equipment that packets voice or video signals, such as VoIP techniques.

However, to take advantage of the data network, it is neither cost effective, nor necessary to hastily replace all the TDM based equipment with new packet based equipment. The MX-30/60 can be used to emulate transparent E1 channels over an Ethernet with adequate QoS, so that most of the existing E1based applications can be readily setup over Ethernet LANs and WANs. One particular suited application is to build E1 links with low cost wireless LAN bridges, replacing much more costly microwave radios.

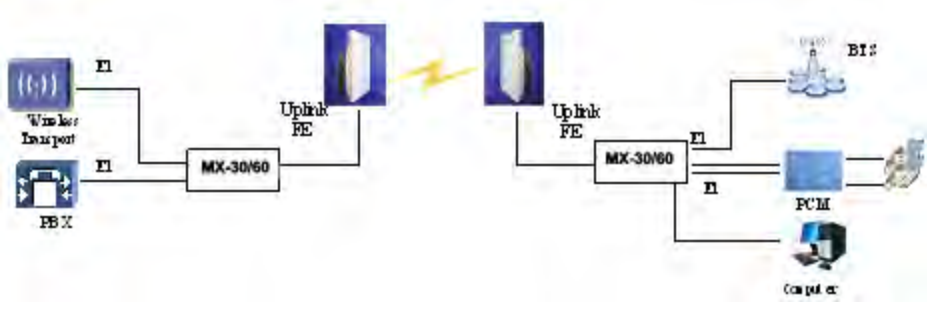
1.2 Features

- User-friendly Web server supported for easy setup and maintenance
- Support SNMP V1 and V2 network management
- Point to point and point to multipoint supported
- Uplink ports 1+1 backup supported

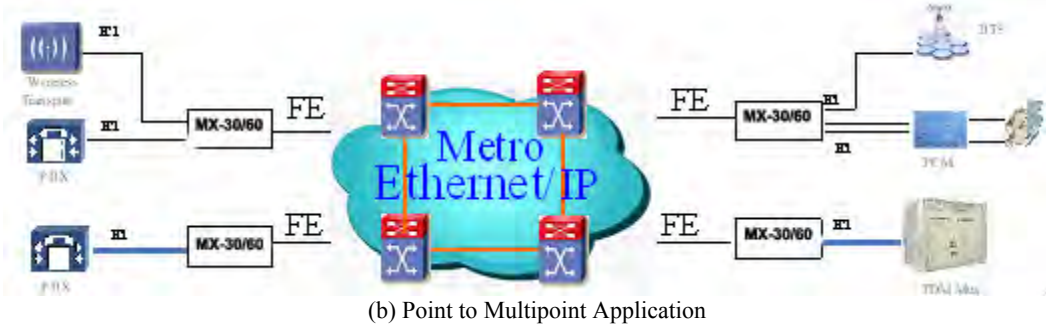
- MX-30 provide one E1 Port and MX-60 support two E1 ports
- Stable E1 clock recovery, low jitter and wander
- Low processing delay for E1 channels, high bandwidth usage efficiency
- Resist to packet loss, with PCM frame synchronization protection
- User definable encapsulation packet size for different application
- Support Ethernet encapsulation and UDP/IP protocol encapsulation
- Support VLAN settings for E1 service and in band VLAN management.
- Enough jitter buffer to resist packet delay variation (PDV)
- Local and remote E1 LOS and AIS and packet loss indication for trouble-shooting and maintenance
- Hardware and software program online upgrade

1.3 Applications

MX-30/60 is used to setup 1~8 tran sparent E1 channels over LAN or IP networks, as depicted in Fig. 1.3-1.



(a) Application in wireless



(b) Point to Multipoint Application

Fig. 1.3-1 MX-30/60 typical application

In the figure, a pair of MX-30/60 create 1~2 transparent E1 channels over the packet network, providing connec tions between the PBX and telephone exchange, or other term inal devices. At the same time, computers talk to each other

through the local Ethernet ports on th e MX-30/60 s. This configuration guarantees that the E1 channels get higher priority over com puter data for maximum QoS.

The m ost widely used application of MX-30/60 is to set up point to point wireless E1 links using low cost wireless LAN bridges. MX-30/60 can work with most LAN bridges on the m arket. It may be necessary to adjust different param eters such as packet size and packet jitter absorption buf fer size f or best operation f or different LAN bridges.

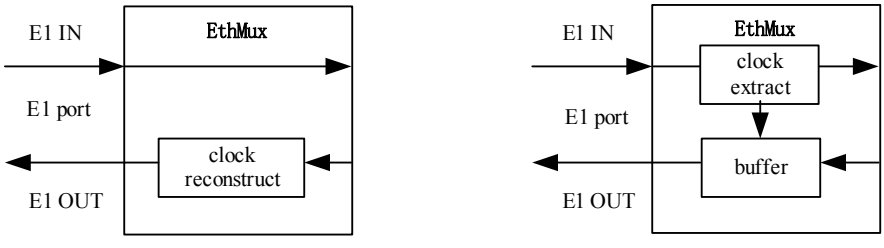
***WARNING*: When connecting to a wireless LAN bridge, the uplink Ethernet cable often connects to the outdoor unit, posing danger to lightning strikes that can seriously damage the equipment. To protect the equipment as well as people, surge protection devices with good earth connection is strongly recommended. Poor earth connection may also hinder the operation of the Ethernet port, causing severe packet losses.**

1.4 Timing modes

To emulate a clear E1 channel over a packet network, the MX-30/60 not only conveys data stream content correctly from the source to the destination, but also passes tim ing. Packet networks do not provi de such built-in tim ing transparency mechanism as TDM networks do. MX-30/60 uses its proprietary algorithm to reconstruct the E1 clock at the destina tion. The recovered clock is of very high quality, with low jitter and wander. Typi cal frequency offset is within ±5ppm, and jitter is below 0.1UI. It can be adopted in most applications. This tim ing m ode of rebuilding the E1 clock at the destination is called Adaptive Timing.

For applications where separate cloc k distribution network exists, another timing mode, Loop back Timing, may be used for maximum clock quality.

The two timing modes of MX-30/60 are depicted in Fig.1.4-1.



Adaptive Timing Loop back Timing

Fig.1.4-1 E1Timing modes

Correct timing mode setting is im portant for sm ooth operations. In m ost cases, setting both units to adaptive tim ing mode is suf ficient. But som etimes, setting one unit to loop tim ing m ode m ay work better. For exam ple, setting the MX-30/60 unit connected with the clock m aster (such as local exchange) to loop back m ode, and the other unit connected with the clock slave (such as PBX or remote module) to

adaptive mode, is probably better than setting both to adaptive modes.

One typical error in telecom applications is to connect two com munication devices that are both clock slaves. Neither will MX-30/60 support such operation no mater how the timing modes are set.

Note that E1 channel emulation takes several minutes to stabilize. During that period, clock drift may exceed the limit, errors and slips may occur.

Various timing schemes are enlisted in Ta ble 1.4-1, for applications depicted in Fig.1.4-2.

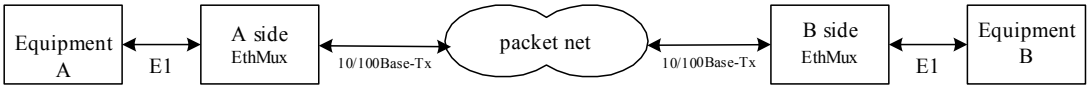


Fig.1.4-2 Timing mode scheme reference diagram

Table 1.4-1 Timing mode schemes

Equipment A clock mode	Equipment B clock mode	A side MX-30/60 Timing mode	B side MX-30/60 Timing mode	Note
master	master	loop back	loop back	Equipment A & B clocks synchronous
		adaptive	adaptive	
master	master	adaptive	adaptive	Equipment A & B clocks plesiochronous
master	slave	loop back	adaptive	
		adaptive	adaptive	
slave	master	adaptive	loop back	
		adaptive	adaptive	
slave	slave			Not allowed

Note that setting both units to adaptive timing mode works well for all the conditions, although the other option may work better.

2. 🕮System architecture

2.1 Block diagram

The internal functional structure of MX-30/60 is depicted below:

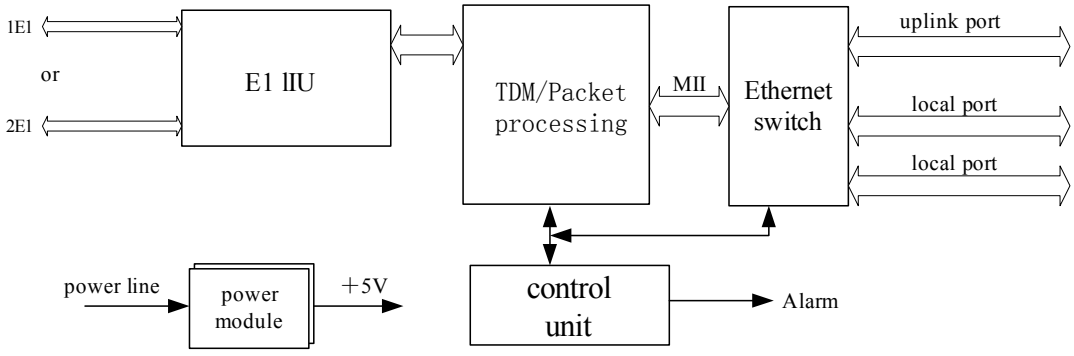


Fig. 2.1-1 Functional diagram

2.2 Description

The heart of MX-30/60 is the TDM/Packet processing unit. It truncates E1 data stream, putting the data into Ethernet packet with or without IP headers. The packets are passed to the Ethernet switch unit via MII interface, and are sent out adaptive the uplink ports. Ethernet data from two local data port are also sent out through the uplink ports, but with lower prio rity than those packets containing E1 data.

In the reverse direction, packets from the uplink ports are sorted at the switch unit. All but E1 packets are passed to th e local data ports. The packets containing E1 data are sent to the TDM/Packet pr ocessing unit for reassem bling the original data stream, and recovering the E1 clock which is the key elem ent of the device. Very sophisticated algorithm is used to ensure that the reconstructed clock will meet the stringent requirem ent of TD M applications. The m ost im portant parameters are jitter, wander, and signal delay.

The control unit interfaces with the user through console port so that various operational parameters can be modified.

2.3 Front panel

2.3.1 Diagram

MX-30/60 panel is shown as below:

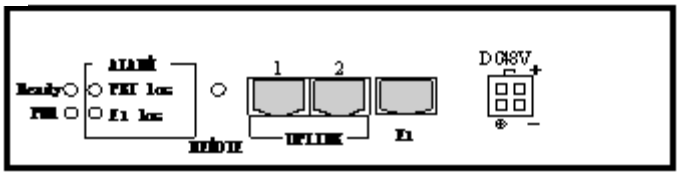


Fig. 2.3.1 MX-30 (-48V DC)

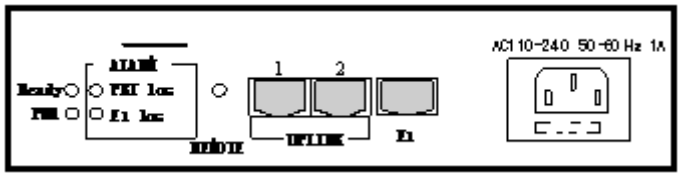


Fig. 2.3.2 MX-30 (220V AC)

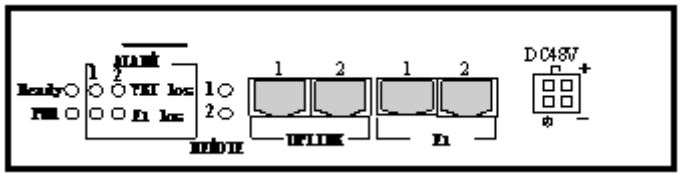


Fig. 2.3.3 MX-60 (-48V DC)

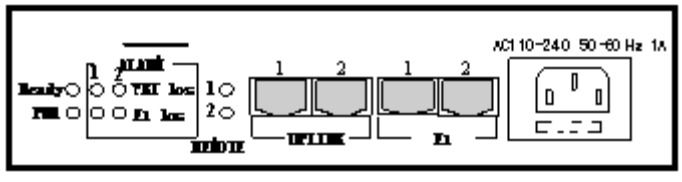


Fig. 2.3.4 MX-60 (220V AC)

2.3.2 LED's

MX-30/60 LEDs definition is as below table:

Table 2.3-1 MX-30/60 definition

Label	Color	Qty.	Definition	Note
Ready	G	1	System work state indicator: On: System abnormal or system initialization. Off: System abnormal or system not work. Blink: Normal operation	Located at the box panel
PWR	R	1	Power failure indicator Off: Normal On: Power Off / Failure	
PKT los 1～2	R	2	Packet loss indicator for 1~2 E1: On: E1 packet loss Off: no packet loss Blink: not receive packet	
E1 los 1～2	R	2	LOS indicator for 1~2 E1 ports On: LOS Off: Normal or disable Blink: AIS	

REMOTE 1～2	G	2	1~2 E1 addressing of rem ote equipm ent link state indication: On: E1 obtain MAC address of remote equipment; Off: E1 have not obtained MAC address of remote equipment;	
Link/Act	G	2	Ethernet link activity indicator On: Link Blink: Data Off: Inactive	located at the Etherne t socket
FDX	Y	2	duplex indicator On: Full duplex Off: Half duplex Blink: Conflict	

When power the device on, PW R indicator will be lit, indicator Ready will be on temporarily, which indicate the system is starting now. If the Ready light doesn't blink as above, which indicate the process runs abnormally, please restart the system again.

2.4 Dip Switches Definition

There are one 10-bit Dip Switch at the box bottom, the definition show as Table 2.4.1.

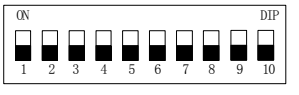


Fig 2.4-1 10-bit dip switch

Table 2.4-1 Dip Switches Definition

Dip		label	Definition
DIP-1	ON	CGND	E1 75Ω output terminal outer shield grounded
	OFF	OPEN	E1 75Ω output terminal outer shield open
DIP-2	**DIP-3**		E1interface impedance set
ON	OFF	120Ω	E1: 120Ω
OFF	ON	75Ω	E1: 75Ω
DIP-4～6		reserve	Reserved
DIP-7～9		reserve	Reserved
DIP-10	ON	IP Deflt	ON: Default IP address 192.192.192.192
	OFF	IP normal	OFF: User set IP address

2.5 Ethernet ports

There are two RJ45 Ethernet ports on MX-30 panel, anyone could support

uplink connection or access to NMS PC. Interface m ode support auto-negotiated, 100M full duplex, 100M half duplex, 10M full duplex and 10M half duplex. RJ45 Ethernet socket pins defined as:

Table 2.5-1 RJ45 socket definition

Pin	1	2	3	4	5	6	7	8
Definition	TxD+	TxD-	RxD+			RxD-		

Note: 10/100Base-Tx interface has HP auto-MDIX function and it can check the transmission and receiving sequence and make configuration. So both MDI and MDI-X interfaces are supported and both cross line and direct line can be selected.

2.6 E1 Port

There are 1 or 2 E1 ports on the r ear panel of MX-30/60 adopt RJ45 connector. The E1 ports im pendence are E1-120 Ω, but could be convert to 75 Ω unbalanced by external im pedance m atcher. Default E1 ports are 120 Ω. RJ45 connector and wire sequence and signal defined as below:

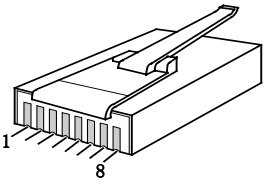


Fig 2.6-1 RJ45 connector pin sequence

Table 2.6-1 RJ45 120Ω-E1signal definition

Pin	1	2	3	4	5	6	7	8
Signal	—	+	GND	+	—	GND		
	E1-IN			E1-OUT				

2.7 Power

MX-30/60 support ~220V AC or -48V DC power supply. It should be specified at the time of purchase.

3. 🕮Installation

3.1 Electrical

3.1.1 Power connection

The MX-30/60 consumes less than 10W of power.

According to power option, -48V DC or 220V (110V) AC, select the right power supply for the equipment. For the -48V type, connect -48 supply to the power connector -48V port, and ground to the other port. The screws on the power connector must be tightly fastened. For ~220V equipment, connect the device to the ~220V outlet with standard power cord supplied with the equipment. Note that there is a 1A fuse in the ~220V socket which may be replaced when burned. The -48V equipment uses PPTC resettable fuse, no customer replacement is required.

It is recommended to turn off the power switch before connecting or disconnecting the power.

On the left corner of rear panel, a screw is used for connecting the chassis to the protective ground. Be sure to make this connection using a thick wire.

***WARNING*: The system must be securely connected to a good protective ground for safety. All interconnected equipment must be grounded for maintaining signal integrity as well. Ground potential may also damage the interface ports.**

***WARNING*: To avoid electric shock, the ~220V outlet must have good ground.**

3.1.2 E1 connections

The E1 ports on MX-30/60 are used for connecting to E1 equipment such as the telephone exchange or PCM terminals.

1/2 E1 Ports Supported. E1 ports impendence are E1-120 Ω for twisted pair cables or 75Ω for coax. **The E1-120Ω RJ45 sockets are default for ports.**

The E1-120Ω connection cable is made with RJ45 connectors and a length of 4-pair twisted cable. The cable is not provided with the equipment, and the user is responsible for making such cables in the field with length suitable for a particular installation. The signal definition is given in Table 3.1-1, and pin order is depicted in Fig. 3.1-1. Note that pin-1 and pin-2 should use the same twisted pair, so should pin-4 and pin-5.

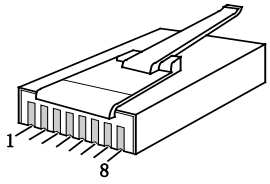


Fig. 3.1-1 RJ45 pin order

Table 3.1-1 120 Ω-E1 signal definition

Pin	1	2	3	4	5	6	7	8
Signal	-	+		+	-			
	E1—IN		GND	E1—OUT		GND		

The RJ45 sockets are default for E1-120Ω, when the 2nd and 3rd dip of 10-bit dip switch should be set to ON and OFF respectively; When the 2nd and 3rd dip of 10-bit dip switch are set to OFF and ON respectively, E1 interface impedance will be 75Ω .The cable BH4.851.122 is for one RJ45 connecter to two BNC (F) sockets conversion.

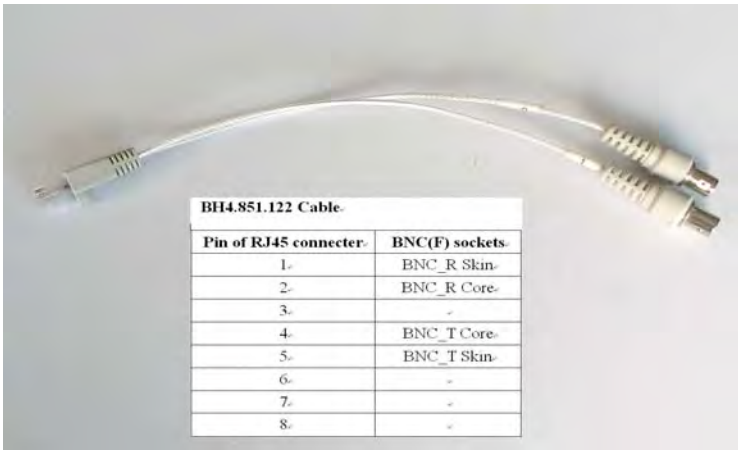


Fig. 3.1-2 75Ω converting cable

By NMS, E1ports provide local loop back and remote loop back, 1/2 E1 ports loop back can be set independently, and by the dip RA on front panel E1 indicators can be controlled to indicate local or rem ote ports LOS and AIS status. The local and remote loop back definition is shown as Fig 3.1-3:

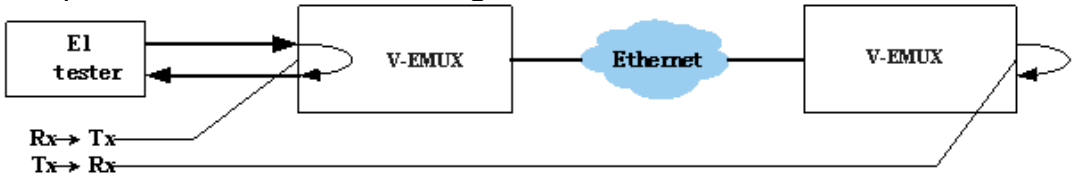


Fig 3.1-3 E1 loop back

Rx→Tx can test E1 connection cable, and Tx → Rx is used to test the whole circuit including MX-30/60 in the two ends and the link between them.

3.1.3 Ethernet connection

Connect the uplink Ethernet port to the Et hernet transport network, such as the wireless LAN bridge, and connect the local data port to com puters or an Ethernet switch for local data applications.

The signal definition of the two local Ethernet ports is given in Table 3.1.3-1.

Table 3.1.3-1 Ethernet signal definition

Pin	1	2	3	4	5	6	7	8
Signal	RxD+	RxD-	TxD+			TxD-		

Note: The ports confirm to HP auto-MDIX spec. It will automatically adapt to parallel or crossed cables.

The signal definition of the uplink Ethernet ports is given in Table 3.1.3-2.

Table 3.1.3-2 Ethernet signal definition

Pin	1	2	3	4	5	6	7	8
Signal	RxD+	RxD-	TxD+	GND	GND	TxD-	GND	GND

Note: The uplink port link parallel cable to LAN bridge.

***WARNING*: When connecting to a wireless LAN bridge, the uplink Ethernet cable often connects to the outdoor unit, posing danger to lightning strikes that can seriously damage the equipment. To protect the equipment as well as people, surge protection devices with good earth connection is strongly recommended. Poor earth connection may also hinder the operation of the Ethernet port, causing severe packet losses.**

4. Common faults

This paragraph describes com mon m istakes and faults that m ay occur during installation and m aintenance.

4.1 E1 Alarms

There are two groups of LEDs, PKT LOS and LOS for E1 alarms LEDs.

When E1 LOS LED is on, loss of E1 signal fault is detected by EthMux. Possible causes include:

- The downstream equipment such as telephone exchange or PCM terminal is powered off.
- The E1 cable connection looses or broken.

E1 LOS LED blinks when respective input E1 signal is AIS, i.e. the content of E1 data is all 1's. Such alarm indicates fault conditions on the part of the downstream equipment.

E1 LOS site is controlled by Dip Switch RA state. When RA Dip Switch ON, the red LEDs indicate **remote** E1 LOS state. When RA Dip Switch OFF, the red LEDs indicate **local** E1 LOS state.

The E1 PKT LOS lights are packet loss indicator, On for Ethernet packet loss, Blink for E1 Packet Loss, Off for Normal.

4.2 Lnk/Act LED off

Lnk/Act LED off means the corresponding Ethernet link is not working. Check the Ethernet cable connection, and the status of the device on the other end of the cable.

4.3 Ready LED does not blink

After power on, the Ready LED should start to blink. If not, try switch power off and on again. If this error persists, call for support.

4.4 Can not built communication

Two ends of equipments are in one Ethernet broadcast domain, check the IP dual relations is right and MAC address should be unique.

4.5 Downstream reporting slips

Check if the downstream equipment has correct clock mode. At least one of them must be clock master. Set the EthMux on master side to loop back timing.

If the downstream equipment on both sides is not synchronized, slips are not avoidable.

At the transition time after power on or reapplying the E1signal, slips and errors are acceptable. Such transition may take several minutes.

5. 🕮*Web Manager*

Both Web Server and SNMP management are supported through anyone of two Ethernet ports of MX-30/60

The management has four sections: Status, Line Test, Configuration and System. User name and password are required to enter the sections of Line Test Configuration and system. Both the default user name and password are "root". Customers can modify the user name and password in the System section.

Note that the modifications of system will be valid after submit and reboot,

while the modifications of Line Test (E1 loop-back setting) and Configuration can be valid only after submit.

Take MX-60 for example, following sections will introduce Web Server management detailedly.

5.1 Show current status menu

After input the IP address, status information of MX-60 will be displayed such as hardware version, software version, IP address, subnet mask, gateway address and MAC address. Details are shown in fig.5.1-1.

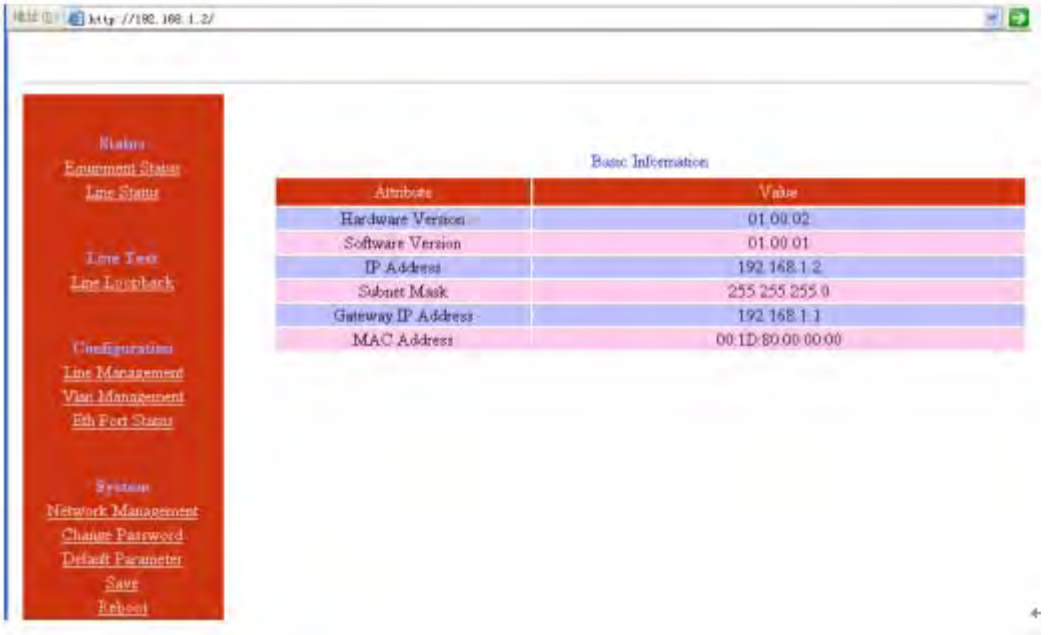


Fig5.1-1 Status Menu

Click on the line status option will bring the E1 line Status Information window showing LOS, AIS, loop-back status and power fail. The alarm could be masked by related Alarm Mask settings, once alarm mask is set, alarm log, panel alarm indicators and alarms in SNMP will all be masked, shown as Fig.5.1-2.

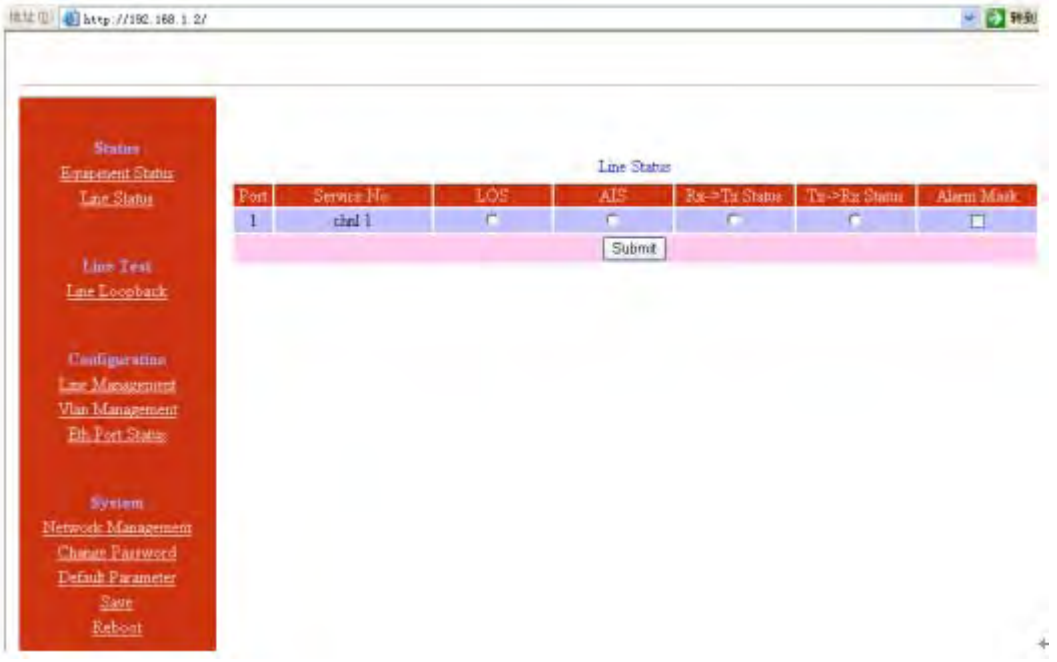


Fig.5.1-2 E1 line Status Information

5.2 Line Test

Loop back controls provide E1 line loop test function.

Click on E1 Loop back option will bring the window as fig5.2-2. E1 setting can be valid after submit but not saved, that is, Eight E1s will not loop back after restart.

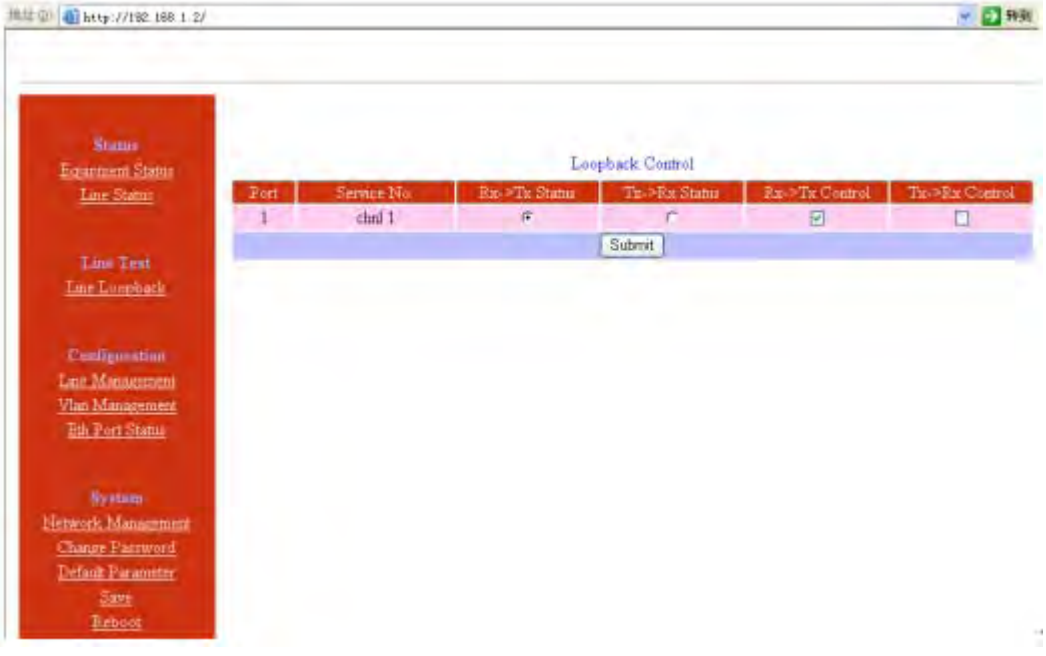


Fig.5.2-1 E1 Loop-back Management

5.3 Service Configuration

5.3.1 Service configuration and parameters instruction

This section includes E1 service management, VLAN management, Ethernet Management, SNMP configuration. Every section has many parameters setting. As Fig5.3-1.

Fig.5.3-1 E1 service Management

In the E1 service management menu, customers could set each E1 service number (Service No), service number support capital letter/small letter, digits and some special characters input, maximum 20 bits or 2 Chinese characters. Note: Service No. should not be some special characters such as "/", "\" etc. E1 service managed parameters settings are described as below:

Table 5.3-1 E1 service management parameters

Parameters		Selections	Explanations
E1 Management	E1	E1 T1	For MX-60 E1 set is for both 2 channels of E1 service. Default: E1

Parameters		Selections	Explanations
	Encapsulation Level	1~5	E1 data size encapsulated in E1 ， N =1~5 optional，corresponding to 256 ×Nbyte（E1）.The bigger the packet is the m ore data each packet encapsulated, the lower overhead it has. Bandwidth efficiency will be raised and delay will be increased. Default :2
	Use IP Encapsulation	Yes	Yes： IP encapsulation ， source and destination IP address should be set. Bandwidth efficiency will be reduced (default)No： do not use IP encapsulation ， high bandwidth efficiency
		No	
	Bandwidth	Uplink	Uplink: Set full duplex bandw idth for uplink Ethernet port，actual bandwidth should be higher than this value. Default 30000bps. Then data port bandw idth= U plink bandwidth=Uplink bandwidth-E1 occupied bandwidth. Data: limit local Ethernet ports full duplex bandw idth. Then Uplink bandw idth=data port bandw idth+E1 occupied bandwidth.
		Data	
	Enable		Enable this E1 channel. Default: enable
	Destination IP		Remote end IP address； 4 E1 line IP addresses can be set separately Default 192.168.1.3
	Timing Mode	Adaptive	Adaptive mode:E1 timing from remote E1 stream； Loop back mode:E1 tim ing com es from local E1 stream
		Loop back	
	Jitter Buffer	2~120ms	Jitter absorption buffer: worked with the link with bigger jitter, used to buffer the receiving packets. Coming packets buffer to eliminate jitter. Range：2~120ms。 Default 16ms
	From remote port		Select coresponding relation of local E1 ports to remote E1 port service.

Note: The sentence with underline is default settings.

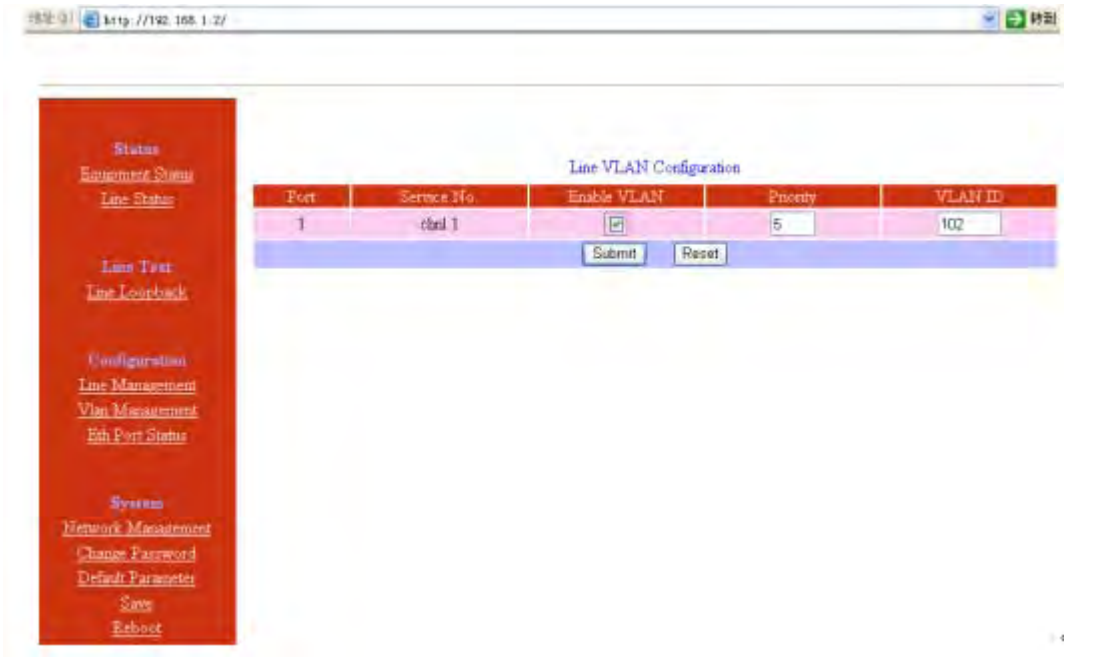


Fig.5.3-2 VLAN management

Table 5.3-2 VLAN management parameters

Parameters		Selections	Explanation
VLAN Management	E1 VLAN Configuration	Enable VLAN	Yes：with VLAN tag，support the VLAN network with priority to guarantee E1 QoS； (default)No：no VLAN tag
		Priority	Define users priority , including 8 levels (0-7), the number is bigger, the priority is higher. Default: 5
		Van ID	VLAN identify section, support 4096 VLAN identity . Range (0-4095). Default: 2662.
	Local Data VLAN Configuration	Data2	Add vlan tag in local Ethernet service packet, the selection is as E1 VLAN Configuration default: disable vlan, priority 0, valn ID:1
		Data1/ monitor	

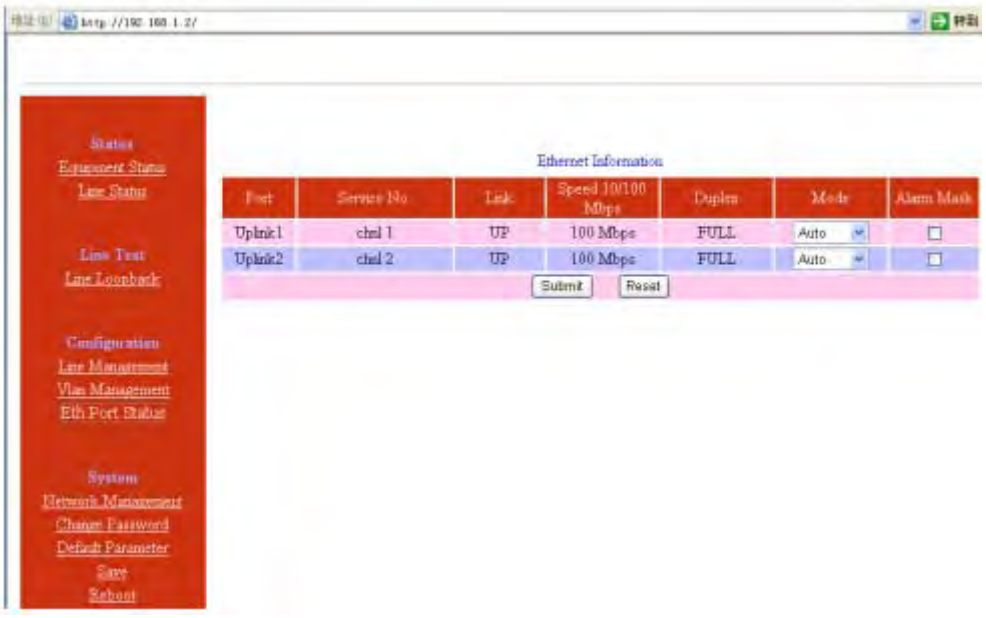


Fig.5.3-3 Ethernet management

Table 5.3-3 Ethernet management parameters

Parameters		Selections	Explanation
Eth Port Status	Port		2 Ethernet ports status indication: Port: 2 Ethernet ports. Link: indicate current Ethernet link(Up/Down) Speed 10/100Mbps: indicate current Ethernet port speed Duplex: indicate current Ethernet work mode (half/full)
	Link		
	Speed 10/100Mbps		
	Duplex		
	Mode		2 Ethernet ports work mode configuration: adaptive (default) 100Mfull 10Mfull 100M half 10M half
	Alarm mask		Set Ethernet port alarm mask

5.3.2 Service configuration indication

1. The MAC address of V-EMUX is fixed in the device. A RP is supported and the rem ote end MAC address can be got through auto-negotiation. So it is unnecessary to set the MAC address for the remote end, but IP address is needed.

NOTE：Each device should have only one MAC address in the broadcast domain!

2. In order to im prove the E1 data transm ission service quality, according to Ethernet provided transmission support IEEE 802.1Q and 802.1por not, V-EMUX-8 can set whether to add VLAN tag with priority in the encapsulate process. According to 802.1Q/802.1p standard to packing, the encapsulation overhead is bigger (more 4 bits is added in each Ethernet packet), but

it also can be transm it according to priority le vel. But to the network which doesn't support 802.1p, it is no sense to set VLAN but increase unnecessary bandwidth, so here should set VLAN to NO.

5.4 Network configuration

The sy stem configuration includes network configuration, change passw ord, default parameters settings, save param eters and reboot the equipm ent. The interfaces are shown as below:

5.4.1 System network management

Fig 5.4-1 network configuration system

Table 5.4-1 system network management parameters

Parameter	Options	Description
Network Management	Uplink1 Service No	Set uplink port service number
	Uplink2 Service No	
	IP Address	Set equipment IP address; default 192.168.1.2
	Sub mark	It is used to judge the resource and destination IP is in one subnet or not, please and the resource and destination IP address by bit, they are in one subnet if the result is sam e, otherwise, they are in different subnet, should use gateway router; default 255.255.255.0.

	Gateway IP Address	If resource and destination is not in one subnet, gatew ay IP address should be set, and gatew ay address should be in the sam e subnet w ith resource equipment. ARP is used to get address. Default 192.168.1.1

Same as E1 service N o in E1 service m anagement menu, Node ID, uplink Service N o. and Data service N o. also support capital letters/sm all letters, digits and som e special characters input, maximum 20 bits or 2 Chinese characters. N ote: Node ID and Service N o. should not be some special characters such as "/", "\" etc.

5.4.2 Change the password

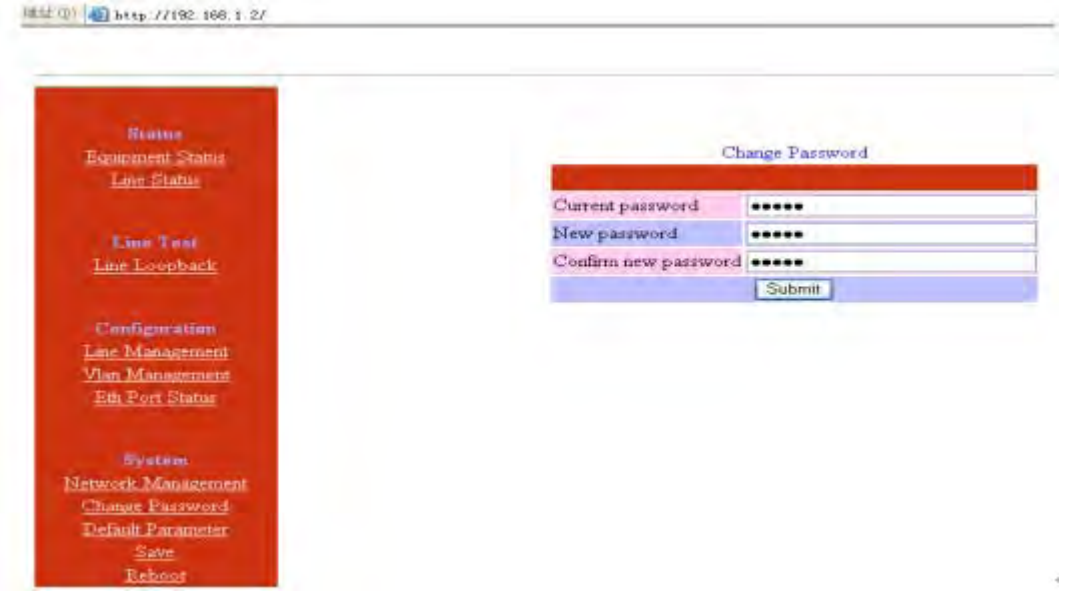


Fig 5.4-2 change the password

The change will be valid after confirm the submitting.

5.4.3 Default parameter recovery

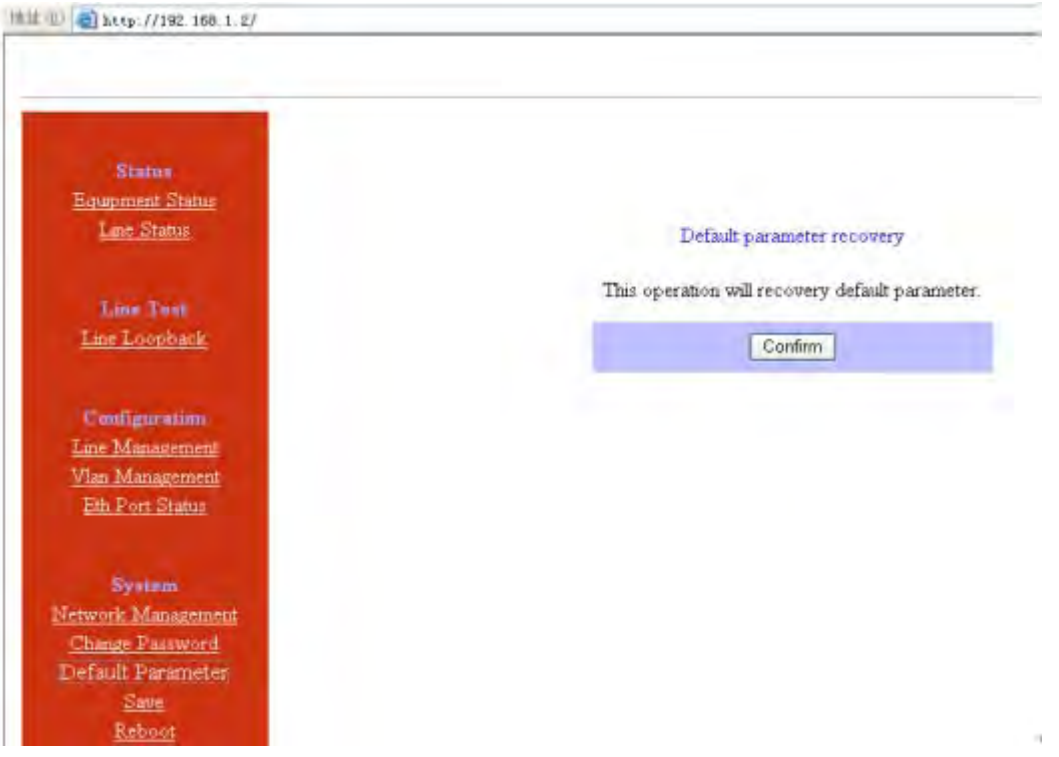


Fig 5.4-3 default parameters menu

5.4.4 Save parameter

Fig 5.4-4 Save parameter

5.4.5 Reboot system

Fig5.4-5 Reboot equipment

6. 🕮Specification

6.1 Capacity

It supports 1~2 E1 ports, two 10/100Base-Tx uplink Ethernet ports.

6.2 E1 interface

Comply with ITU-T G.703 recommendation

E1 port impedance E1-120Ω for twisted pair cables or 75 Ω for coax (The RJ45 E1-120Ω are default for ports)

End-to-end delay (minimum delay setting) ≤ 10ms

Output frequency offset (adaptive timing, stabilized) ≦5 ppm

Output jitter (adaptive timing) ≤ 0.1UI

6.3 10/100Base-Tx port

Comply with IEEE 802.3

10M/100M Adaptive

Half/Full Duplex Adaptive

Support 802.1Q MAC

Uplink ports 1+1 backup supported

Two user data ports supported. And Web manager supported through anyone of two user data ports.

6.4 Power

AC： 100V~260V/50Hz (fuse: 1A)

DC： -38V ~ -62V (optional)

Power Consumption： ≤4W

6.5 Operating condition

Temperature: (0 ～45) ℃

Humidity: ≤90％ (non-condensing)

6.6 Dimensions

Width × Height × Depth： 185×35×138 mm

6.7 Weight

≤ 1 kg