JXDH-6602B Stand Alone Scrambler

User Manual

V2.1

Chapter 1   Product Outline

1.1 Outline

JXDH-6602B stand alone scrambler is applied in the simultcrypt scrambling of input code stream. It can send fixed or agile word scrambling according to transport stream. The built-in simulcrypt synchronization controller transmits the exchange information with ECMG. When integrated with CA, the scrambler adjusts crypto period appropriately in order to make decoder function normally. This is a   highly integrated equipment for digital TV scramble.

1.2 Features

✧ DVB common scramble system description ETR289, common scramble system description;
✧ DVB Scramble designated program or transport stream;
✧ Comply with DVB standard arithmetic ,supports simultcrypt, compatible with multi- CA system;
✧ Comprehensive MPEG code stream analysis;
✧ Re-process PSI/SI information from TS;
✧ Channel protection for ASI output/input;
✧ Bit rate auto adaption ,PCR reset and re-mark;
✧ Remote real-time monitor of transport stream;
✧ Auto switch and input backup
✧ pocket format : auto adaption of 188/204 bit rate
✧ Network monitor
✧ PCR correction

Application

● Program collect/ distribute

● SDH network transport , satellite DVB-T, MMDS

● Digital CATV Front head end

● Video on demand (VOD)

● Digital swerve

● Video distribution for television network

- Program encrypt
- Transport stream disposal

1.3 Technical Parameter

Import interface	DVB/ASI	Dual alone input
Output Interface	DVB/ASI	Dual Same output
Output bit rate		1~100Mbps adjustable
Network port	Ethernet	10/100M
Miscellaneous	Dimension	44mm×482mm×330mm
	Temperature	0~45℃ （Operating）; -20~80℃（storage）
	Power supply	110V/220VAC±10%，50/60Hz，25W

1.4 Principle Frame
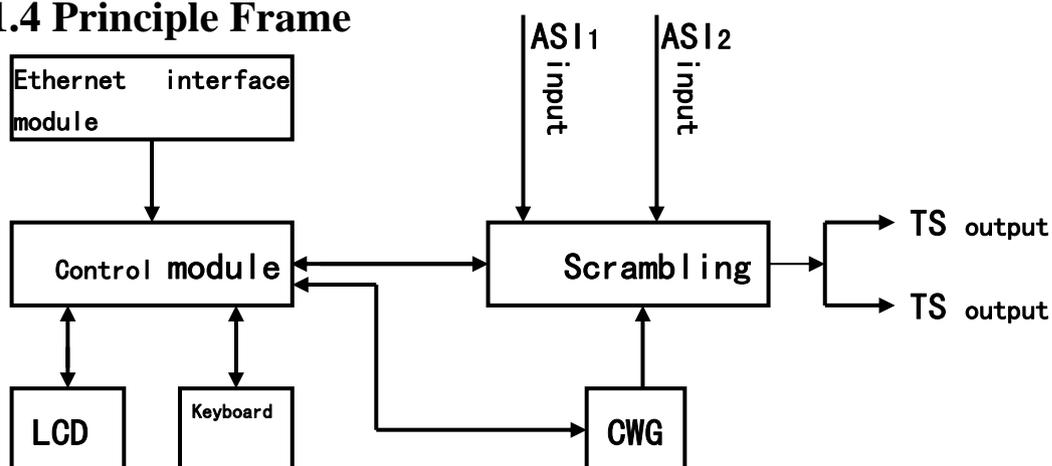
1.5 Appearance and description

Front panel illustration:
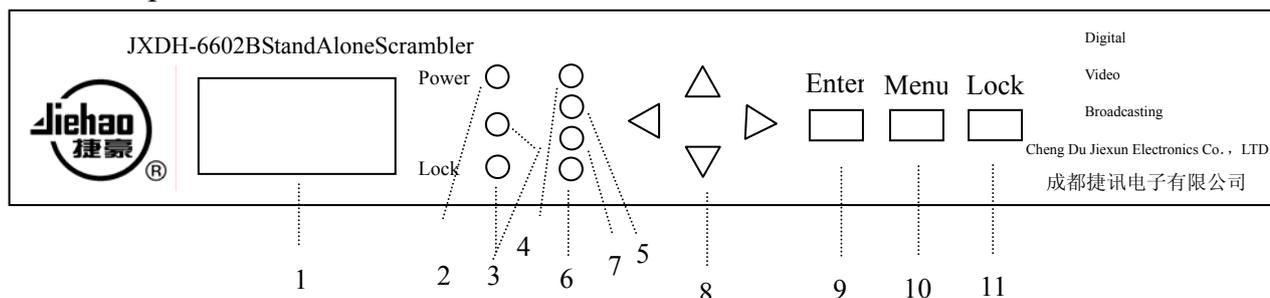
1	LCD Screen display
2	Power indicator (red)
3	Signal lock indicator
4	CA1 indicator
5	CA2 indicator
6	CA3 indicator
7	CA4 indicator
8	Up/down/left/right button
9	Confirm button
10	Menu button

Back panel illustration:
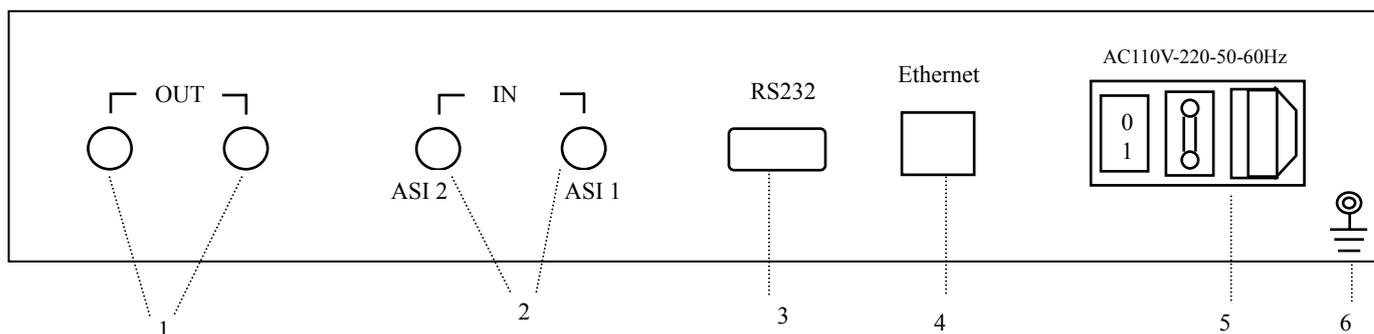
1	ASI rate stream dual Same output interface
2	Dual alone rate input interface, ASI 1 ASI 2
3	RS232 interface
4	Equipment net management Ethernet interface, RJ45
5	Power switch, Fuse socket , Power socket
6	Ground Column

Charter 2   Installation   Guide

2.1 Acquisition check

Open the device package and check the articles, do check the packing material of small parts, check packed goods according to packing list or below items:

- JXDH-6602B Stand Alone Scrambler   1 unit
- User manual   1copy
- Coaxial line with Q9 head for each ends   1 radix
- AC input power cord   1 radix

If there is any missing or mismatch of above items, please contact local dealer.

2.2 Installation preparation

Follow below steps when installing the device. The detailed installation will be described at the rest part of this chapter , the rear panel sketch is for the reference of specific position.   Following content is the main for this chapter:

- Checking if there any possible missing or damage device during transport.

- Checking if the situation is suitable for installing.

- Install Stand Alone Scrambler.

- Connecting signal wires
- Connecting communication port (for option)

2.2.1 Installation flowchart:

Acquisition Check → Fixing Device → Connecting Grouding Wire and Power Cord → Connecting Signal Wire → Setting Parameter → Running Device
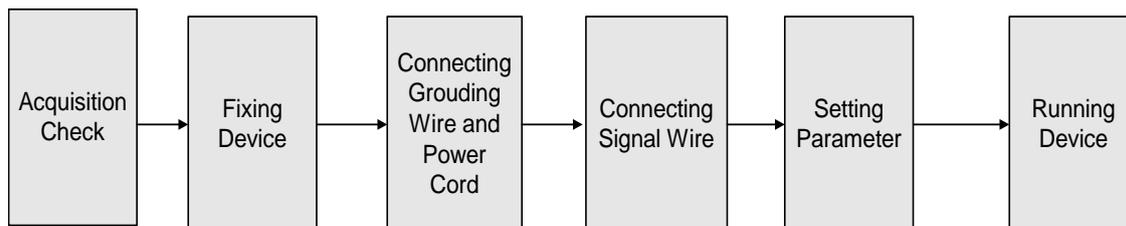
2.2.2 Environment Requirement

Item	Requirement
Machine hall space	When user install machines array in one machine hall, the distance between 2 row of machine frames should be 1.2~1.5m and the distance to wall should be no less than 0.8m。
Machine hall floor	Electric Isolation, Dust Free, Volume resistivity of ground anti-static material : $1x10^7 \sim 1x10^{10}\Omega$，Grounding current limiting resistance : 1 MΩ, Floor bearing should be greater than: 450Kg/m^2.
Environment temperature	Under 5~40°C operate for long time, under 0~45°C operate for short time，installing air-conditioning is recommended.
Relative temperature	Under 20%~80% operate for long time，under10%~90% operate for short time.
Pressure	86~105KPa。
Door & window	Installing rubber strip for sealing door-gaps and dual level glasses for window.
Wall	be covered with wallpaper, or brightness less paint, rather than easy pulverization dope.
Fire protection	Have Fire alarm system and extinguisher .
Power	Requiring device power, air-conditioning power and lighting power are independent to each other. Device power requires AC power 110V/220V 50Hz, 50W Please carefully check before running.

2.2.3 Grounding requirement

- All function modules' good grounding designs are the base of reliability and stability of device. Also, they are the most important guarantee of lightning arresting and interference rejection. Therefore, system must follow this rule.
- Coaxial cable's outer conductor and isolation layer should keep sound electric conducting with the metal housing of device.
- Grounding conductor must adopt copper conductor in order to reduce high frequency impedance, and the grounding wire must be as thick and short as

possible.

- The 2 terminals of grounding wire must make sure for well electric conducting, and process for antirust.
- It is prohibited that users use other devices as part of grounding wire's electric circuit
- The section of the conjunction between grounding wire and device's frame should be equal or greater than 25 mm2

2.2.4 Frame Grounding

All the machine frames should connect to protective copper strip. The grounding wire should be as short as possible and avoid circling. The section of the conjunction between grounding wire and grounding strip should be equal or greater than $25mm^2$.

2.2.5 Device Grounding

Connecting the device's grounding rod to frame's grounding strip with copper wire.

2.3 Wire's Connection

The power supply outlet is located at the left of rear panel, and the power switch is just above it. The protective grounding wire connective screw is located at the down-left side of power supply outlet

- Connecting Power Cord

    User can insert one end into power supply outlet, while insert the other end to AC power.

- Connecting Grounding Wire

    When the device solely connects to protective ground, it should adopt independent way, say, share the same ground with other devices. When the device adopts united way, the grounding resistance should be smaller than 1Ω

☞**Caution:**

Before connecting power cord to Encoder, user should set the power switch to "OFF".

2.4 Signal Wire Connection

The signal connections include the connection of input signal wire and the output signal wire. The signal connection wires are both ASI.

2.4.1 ASI input connection

User can find ASI IN1-IN8 input port on the Equipment, according to connector mark described in the rear panel illustration, and then, connecting the Q9 coaxial cable, one end to the ASI IN1-8 and the other end to the Encoder's or other equipment ASI output port

2.4.2 ASI Output Port Connection

User can find ASI output port on the Equipment, according to connector mark described in the rear panel illustration, and then, connecting the ASI cable (in the accessories), one end to the JXDH-6102 multiplexer's ASI output port and the other end to the scrambler's or Modulator's input port. multiplexer's ASI output port and its connected ASI cable connector illustrated as follow:

Chapter 3 Operation

The front panel of scramler is user's interface. Before normal operation, User can use factory default setting, reset system parameters or check equipment working state display. The modifications of system parameters includes: IP address set, subnet mask address , physics address, restoring factory default etc. Equipment working state display includes: the input channel effective rates shows, scrambling channel 1-4CA working state display. User can use the factory default parameters or execute the scrambling operation through the software of net management. Display interface provide users with perfect menus , below is panel operation introduction.

3.1 The keyboard function introduction of the front panel

Up/Down key：Modify the activation parameters and page up/down；

Left/Right Key：Enter the working state, parameters displaying. Then press up, down, left or right to choose the to-be-reset parameter.

ENTER Key：Activate the select of adjustment menu and save the corrected parameters；

MENU Key：enter/exit MENU

3.2 JXDH-6602B scrambler menu

JXDH-6602B scrambler main menu is divided into the system adjustment menu and the displaying menu of equipment working status

Scrambler main menu：

```
                                              System adjustment
    Scrambler main menu
                                              Working state displaying
```
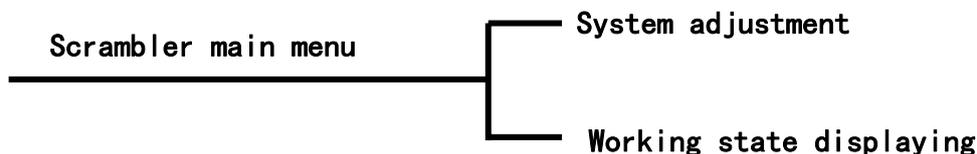
Adjustment of system submenu :

System adjustment menu

IP address
IP 地址设置

```
IP address
192.168.001.240
```

Netmask
子网掩码设置

```
Netmask
255.255.255.000
```

Physics   address
物理地址设置

```
Physics address
00：FF：FD：01：A8：00
```

Factory Settings
（恢复出厂设置）

```
Factory Settings
Yes    ※No
```

State displaying submenu

About System
（关于系统）

```
Standard Scrambler
Ver2.0
```

input
channels
effective
rate
displaying

Status
displaying
menu

CA2
working
state
displaying

CA2
working
state
displaying

CA2
working
state
displaying

CA2
working
state
displaying

```
ASI 1 Rate:50.00Mbps
ASI 2 Rate:50.00Mbps
```

```
ASI 1 Rate:00.00Mbps
ASI 2 Rate:00.00Mbps
```

```
ASI 1 Rate:00.00Mbps
ASI 2 Rate:00.00Mbps
```

```
Encrypt  CH 1:
Ecm  OK    Emm:OK
```

```
Encrypt CH 1:
Not be opened!!
```

```
Encrypt  CH 1:
Ecm …… Emm:……
```

```
Encrypt  CH 2:
Ecm  OK    Emm:OK
```

```
Encrypt  CH 2:
Not be opened!!
```

```
Encrypt  CH 2:
Ecm …… Emm:……
```

```
Encrypt  CH 3:
Ecm  OK    Emm:OK
```

```
Encrypt  CH 3:
Not be opened!!
```

```
Encrypt  CH 3:
Ecm …… Emm:……
```

```
Encrypt  CH 4:
Ecm  OK    Emm:OK
```

```
Encrypt  CH 4:
Not be opened!!
```

```
Encrypt  CH 4:
Ecm …… Emm:……
```

Displaying of normal
working state

Notice: Scrambling channel
is not opened , need to be
opened   by   network
management software

Displaying of abnormal
working state: Please
check   network
management   path

3.3 The operation of system adjustment and the working state display

After complete of scrambler installation as per requirement, Turn on the power, LCD showing：

> System initializing
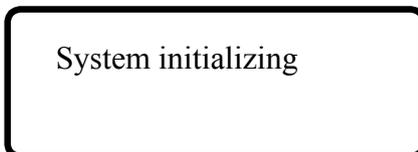
Then , LCD SHOWING：

（System startup ,please wait ）

> System   initializing ······
> ································
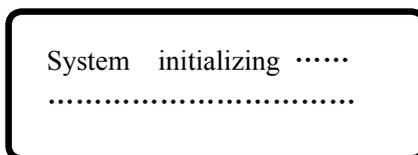
After the complete of startup, LCD showing below：

> **Scrambler**
> **ver2.0**

Now, the power indicator light of front panel is on. After a while of startup complete, LCD will have the notice of light off : version V2.0. LCD showing below normal working interface:

> **Scrambler**
> **ver2.0**

Enter system adjustment menu to press"menu" key；

Enter status display menu to press" ▷ "right key。

3.3.1 Entrance of system adjustment menu

After the complete of standard scrambler installation as per requirement, please turn on the power switch . After system startup finished, LCD showing the normal working interface:：

```
┌─────────────────────────┐
│                         │
│      Scrambler          │
│       ver2.0            │
│                         │
└─────────────────────────┘
```
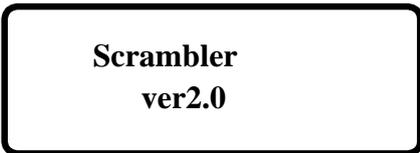
At the normal working interface，Press "Menu" key to enter system adjustment menu, LCD showing：

```
┌─────────────────────────┐
│                         │
│   ◆   IP  address       │
│       Netmask           │
│                         │
└─────────────────────────┘
```
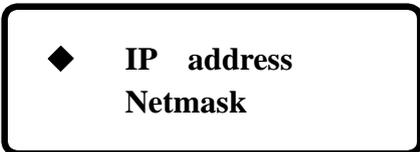
The notice of system adjustable menu，" ◆ " prompt means "IP address"(IP address setting)

※ For the entry of IP address setting , Press "ENTER" to enter IP address parameter setting , Now, LCD showing:：

```
┌─────────────────────────┐
│                         │
│   ◆   IP  address       │
│     192. 168. 001. 240  │
│                         │
└─────────────────────────┘
```
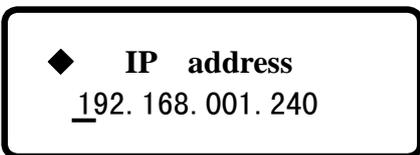
If IP address need to be modified, please move " ▬ "tabbing to the parameter location with "◁ "
" ▷"(left, right)key,　Press"▽ " " △ " (UP,DOWN)Key to modify parameter value, then confirm the value with "ENTER" key . Press "MENU" key , return to previous menu, now LCD showing :

```
┌─────────────────────────┐
│                         │
│   ◆   IP address        │
│       Netmask           │
│                         │
└─────────────────────────┘
```
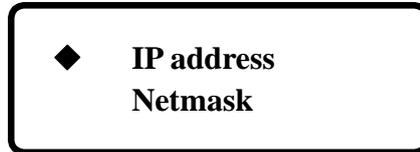
※For the entry of " Netmask " ,Please press " ▽" (down) key, Now LCD showing

```
┌─────────────────────────┐
│                         │
│       IP address        │
│   ◆   Netmask           │
│                         │
└─────────────────────────┘
```

" ◆ " prompt means " netmask " (subnet mask setting)

For the entry of Netmask set, please press "Enter" to enter Netmask parameter setting, now LCD showing

```
┌─────────────────────────┐
│                         │
│   ◆   Netmask           │
│     255. 255. 255. 000  │
│                         │
└─────────────────────────┘
```
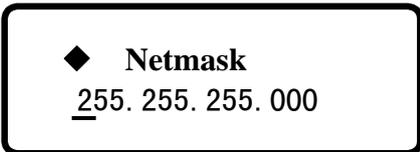
If Netmask need to be modified, please move" ▬ "tabbing to the to-be-reset parameter location

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with " ◁ " " ▷ "(left , right) key. Modify parameter value with " △ " " ▽ "(up, down) key, confirm the value with "ENTER" key.　Return to the previous menu with " menu " key, now LCD showing:

```
        IP address
   ◆    Netmask
```

※ For the entry of "physics address", please press " ▽ "(down)key, Now, LCD showing

```
   ◆   Physics address
       Factory settings
```
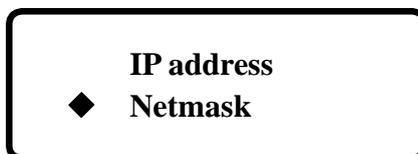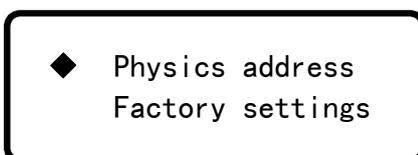
" ◆ "prompt means "Physics address" (Physics address setting)

For the entry of Physics address, please press " Enter " key to enter Physics address parameter setting ,
Now LCD showing:

```
   ◆ Physics address
     00:FF:FD:01:A8:00
```
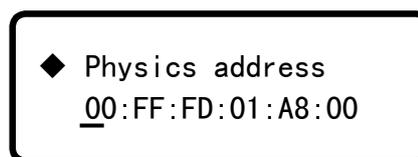
To press " ◁ " " ▷" (left, right) key can modify physics address set

Move " ＿ " tabbing to the to-be-reset parameter location, modify the parameter value with " △" " ▽ " (up, down) key, confirm the value with "ENTER" key.　Return to the previous menu by pressing "menu" key,　Now, LCD showing ：

```
   ◆   Physics address
       Factory settings
```

※For the entry of "Factory settings", please press " ▽ "(down) key,　now LCD showing

```
       Physics address
   ◆   Factory settings
```
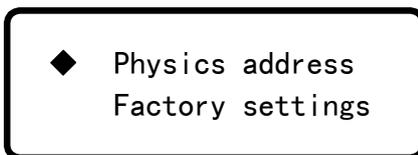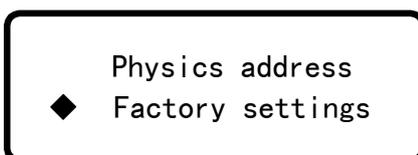
" ◆ " prompt means　"Factory setting" (Restoring Factory default setting)

For the entry of "Factory settings", please press "Enter" key to enter Restoring Factory default setting, now LCD showing：

```
◆   Factory settings
      Yes    ※No
```
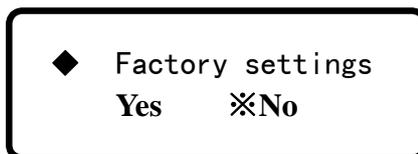
To press "◁ " " ▷"(left, right)key，can restore factory setting

Move" ※ "tabbing to the to-be-reset parameter location, then press "ENTER" for confirmation. Press " Menu " key , return to previous menu, now LCD showing;

```
        Physics address
   ◆   Factory settings
```
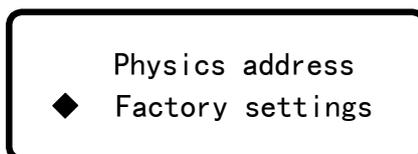
※For the entry of "About System", please press " ▽ "(down) key, Now LCD showing ：

```
◆   About System
```
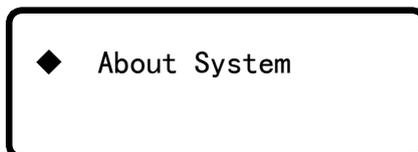
" ◆ " prompt means "About System"

For the entry of About system, please press " ENTER " key, now LCD showing：

```
   Standard Scrambler
          Ver2.0
```
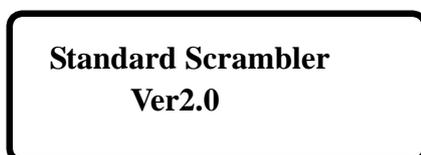
Return to previous menu by pressing "menu" key, now LCD showing：

```
◆   About System
```
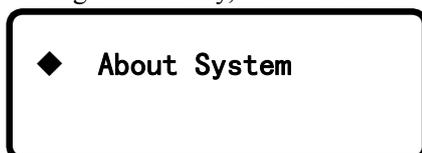
Return to the normal working interface, please re-press "menu" key, now LCD showing:

```
        Scrambler
          ver2.0
```
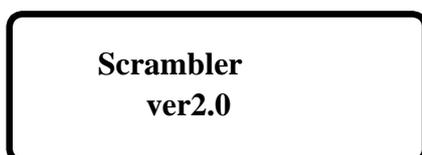
3.3.2 Entrance of the working state displaying menu

At normal working interface, press " ▷ " (right) key to enter state displaying in turn .

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At normal working interface, press " ▷ "（right）key once to enter ASI 1、ASI effective rate of 2 input channels displaying, LCD showing ：

```
ASI 1 Rate:50.00 Mbps
ASI 2 Rate:50.00 Mbps
```

Above indicates the size of 2 input channel effective rates (ASI 1,ASI 2)

※ At normal working interface, please press " ▷ "(right) twice to enter scrambling channel 1. CA working state displaying , LCD showing:

```
Encrypt  CH 1:
Ecm  OK    Emm:OK
```

Normal working state indication of both Ecm and Emm

As shown in photo on the right ：

Scrambling channel is not opened。

Need to be opened by operation network management software

```
Encrypt CH 1:
Not be opened!!
```

As shown in photo on the right：

Abnormal working state of scrambling，

Please check the set of network management software and physical connection path.

```
Encrypt  CH 1:
Ecm ······ Emm:······
```
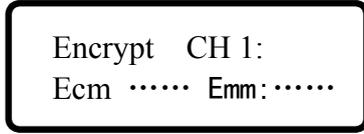
※ At normal working state, please press " ▷ " (left) 3 times to enter scrambling channel 2 CA working state displaying, LCD showing

Normal working indication of both Ecm and Emm

```
Encrypt  CH 2:
Ecm  OK    Emm:OK
```

As shown photo on the right：

Scrambling channel is not opened

need to be opened by operation network management software

```
Encrypt CH 2:
Not be opened!!
```

As shown photo on the right：

Abnormal working state of scrambling，

Please check the set of network management software

And Physical connection path。

```
Encrypt  CH 2:
Ecm ······ Emm:······
```

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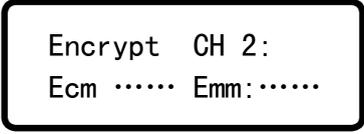
　※ At normal working interface, Please press " ▷ "(right) 4 times to enter scrambling channel 3

CA working state displaying , LCD showing：

The normal working indication of both Ecm and Emm

```
Encrypt  CH :
Ecm  OK    Emm:OK
```

　As shown photo on the right：

Scrambling channel is not opened
Need to be opened by operation network management software.

```
Encrypt CH 3:
Not be opened!!
```

　As shown photo on the right：

Abnormal working state of scrambling，
Please check the set of network management software
And Physical connection path。

```
Encrypt  CH 3:
Ecm ······ Emm:······
```

　※ At normal working state, please press" ▷ "(right) 5 times to enter scrambling channel 4 CA

working state display, LCD showing

　The normal working indication of both Ecm and Emm

```
Encrypt  CH 4:
Ecm  OK    Emm:OK
```

　As shown　photo on the right：

Scrambling channel is not opened
Need to be opened by operation network management software.

```
Encrypt CH 4:
Not be opened!!
```

　As shown photo on the right：

Abnormal working state of scrambling，
Please check the set of network management software
And Physical connection path。

```
Encrypt  CH 4:
Ecm ······ Emm:······
```

In the course of this operation, please press" ◁ " (left) to return previous interface , press" ▷"(right) 6

times to return to normal working state interface, LCD showing(below)

```
Scrambler
ver2.0
```

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3.3.3 Indicator light description of panel

POWER

Power indicator light is on, while power is working normally

Lock 1、Lock 2、

Input signal lock indicator light，   indicator light on, when input signal select is normal

CA1、CA2、CA3、CA4、

Each scrambled channel status indicator light, Light is on when CA is normal

3.3.4 The musts of safety：

1. Please read this introduction carefully, before use the equipment.
2. Initial use, please ensure that the video source connected normal.
3. Do not open the lid, to avoid electrical shock or damage the unit.
4. When the machine is not used in a long time, please unplug the power cord. Please do not use a damaged power lines to prevent fire or electric shock.
5. Do not touch power line with wet hands. When a liquid flows into the chassis, power must be off immediately.
6. Please put the encoder in a horizontal place and avoid pressing
7. Please do not pile heavy objects on   this   equipment , to avoid crush the equipment.
8. This equipment should be placed with ventilation and suitable temperature, to avoid the fierce light, moisture and severe vibration.
9. When the machine is moved to a new place with sharp different temperature, please keep it off for one or two hours.