Single Multiplexer

User Manual

Ver2.0

Chapter 1   Product Outline

1.1 Outline

single multiplexer, with our company own intellectual property rights, is a embeded digital video communication product, a digital broadcasting TV system TS stream re-multiplexer. Based on PID package interchange technology, it can combine several single-programs or multiple-programs, which are compressed, coded, and multiplexed according to customer request by head-end, into single transport stream. And it can insert EPG（Electronic Program Guide）、CA（Conditional Access）and data broadcast signal into the output TS stream. Choose one TS stream to multiplexer, and output is MPTS, and it can creat SI/PSI information automatically, also with service and PID filter, and re-multiplexer function. It can receive 8 routes TS stream, and can insert the SI table from the service information server in real time, thereby realize more value-added services, like EPG, data broadcast, etc. It adopted the solution of minimum volume and lowest price, and it meets MPEG-2 standard, can be used in TV station, digital video inspection, and so on.

1.2 Features

- Support up to 8 routes ASI inputs, can be cascading
- Output code rate continuously adjustable, max output real data rate to 100Mbps
- Support up to 155Mbps real data rate for each route input, and support package burst mode
- Input TS stream package length (188/204) adapting
- 3 routes ASI output interfaces

- **With input MPTS analysis function, display the input programs and output valid stream**
- High definition PCR adjustment, average PCR tremble keep in 20-60ns
- **PID filter/PID redefine function, the customer can add/delete programs and PID, also modify PID**
- **LCD panel, can inspect the system status in real time, and set the parameters of multiplexer remotely**
- **With ethernet interface, can control the multiplexer through PC remotely**
- **With parameters save function, will call out the parameters automatically when turn on the multiplexer**
- **Failure insulation function, one abnormal input TS stream will not impact other TS streams**
- Very low time delay, the time between input and output will keep in 1 ms
- **With bandwidth protection function**
- **Code rate** adapting. When VBR change, it can keep toal output code rate constant
- **Support CA system, EPG, EMM and ECM**
- **With PSI creating function. The customer can edit SDT and NIT, and extend their SI service via ethernet**

Application

l   Program gathering/distribution

l   SDH network transmission, satellite DVB-T, MMDS

l   **CATV headends**

l   **VOD**

l   **Digital transfering**

l   **Video distribution in TV network**

l   **Transmitting stream and re-multiplexer**

l   Transmitting stream processing
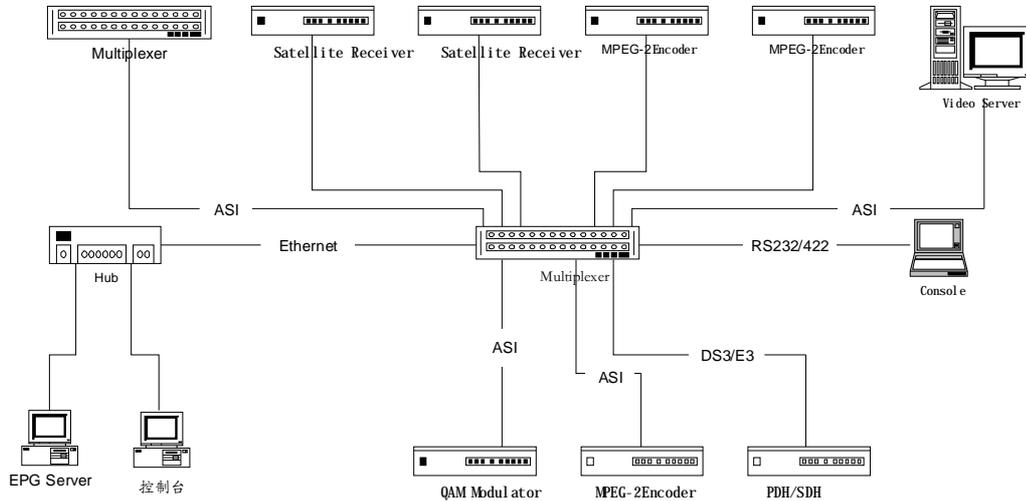
System connection illustration

1.3 Interface and Parameter

Input Interface	Connector	Package Format	Bit rate	Grammar/Character
DVB ASI Input Interface（**8 routes**）	**BNC,** **75Ω**	**188/204** adapting	**Up to 155Mbps, support equality mode and package b**urst mode	**Single and multiple program stream, comply with ISO-13818 standard**
DVB ASI Output Interface（**3 routes**，**same)**	**BNC,** **75Ω**	**188/204** adapting	**120Mbps**	**Single and multiple program stream, comply with ISO-13818 standard**
Ethernet interface	**RJ45**		**10Base-T**	**Can realize remote control, and EPG,PSI,SI service**
Basic	**Dimension**	44mm×482mm×330mm		

specification	Environment	0~45℃（**working**）；-20~80℃（**storage**）
	Power Supply	110~220VAC±10%，50/60Hz，25W

1.4 Principle Chart
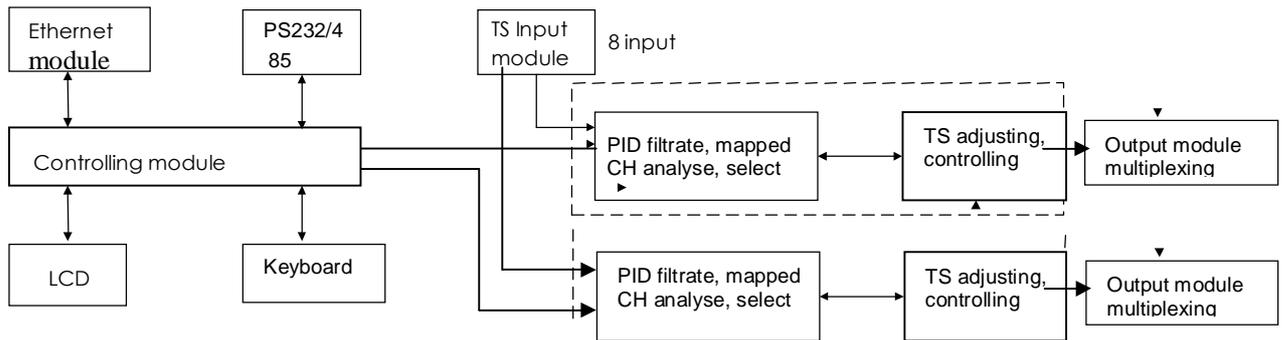
1.5 Appearance and Description

Front Panel Illustration：
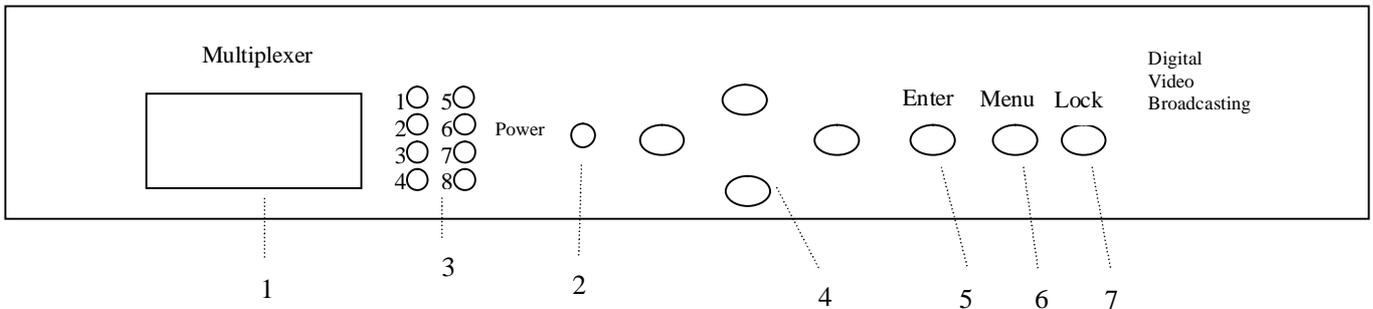
1	LCD Display Interface
2	Power Indicator
3	**Input TS stream indicator**
4	Up /Down/Left/Right Arrow

5	Enter key
6	Menu button
7	Lock button

Rear Panel Illustration:
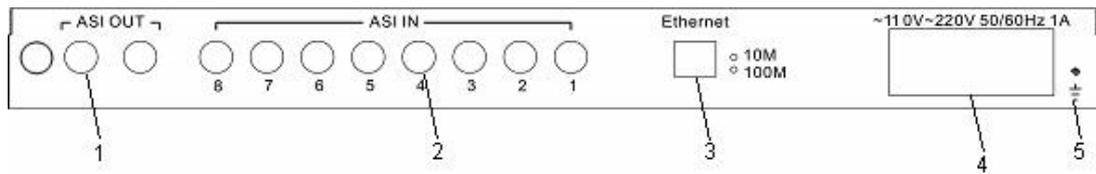
1	ASI output interface
2	1~8 ASI input interfaces 1 to 8
3	Ethernet interface
4	Power supply and filter all in one socket
5	Grounding

Chapter 2 Installation Guide

2.1 Acquisition Check

When users open the package of the device, it is necessary to check items according to packing list. Normally it should include the following items:

- l   Multiplexer·······································1
- l   User's Manual ······························ 1
- l   AC Input Power Cord···························1
- l   Output interface connecting cable ········2

If any item is missing or mismatch with the list above, please contact local dealer.

2.2 Installation Preparation

When users install device, please follow the below steps. The details of installation will be described at the rest part of this chapter. Users can also refer rear panel chart during the installation.

The main content of this chapter including:

- n   Checking the possible device missing or damage during the transportation

- n Preparing relevant environment for installation
- n Installing Multiplexer
- n Connecting signal wires
- n Connecting communication port (if it is necessary)

2.2.1 Device's Installation Flow Chart Illustrated as following：
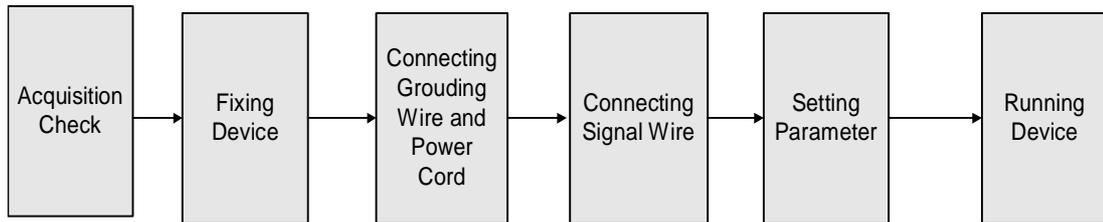
2.2.2 Environment Requirement

Item	Requirement
Machine hall space	When user install machine frame 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:1(107~1(1010(, Grounding current limiting resistance: 1M(。 Floor bearing should be greater than 450Kg/m2。
Environment temperature	5~40(C sustainable ，0~45(C short time， installing air-conditioning is recommended
Relative temperature	20%~80% sustainable 10%~90% short time
Pressure	86~105KPa。
Door & window	Installing rubber strip for sealing door-gaps and dual level glasses for window
Wall	It can be covered with wallpaper, or brightness less paint.
Fire protection	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 220V 50Hz,50W Please carefully check before running.

2.2.3 Grounding Requirement

n   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.

n   Coaxial cable's outer conductor and isolation layer should keep sound electric conducting with the metal housing of device.

n   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.

n   The 2 terminals of grounding wire must make sure for well electric conducting, and process for antirust.

n   It is prohibited that users use other devices as part of grounding wire's electric circuit

n   The section of the conjunction between grounding wire and device's frame should be equal or greater than $25mm^2$

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

l 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

l Connecting Power Cord: User can insert one end into power supply outlet, while insert the other end to AC power.

l 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

Notice: 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 connection of output signal wire. The signal connection wire 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 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

This multiplexer's front panel is user operation interface. Before operating, we should collocate input and output parameter. Input setting includes the select of multiplexed channels, output parameter includes setting of TS output. Equipment supply perfect menu for user select, detail operations go as follows:

1. Front Panel Keyboard Function Description

LOCK button: menu keyboard

ENTER：Activating and edit the parameters which needs modify, or confirming the change after modification and turn over;
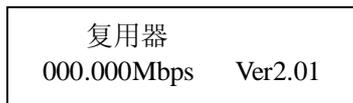
MENU： Cancel, back to the previous menu

LEFT、RIGHT：In modifying mode, change parameters or move cursor

UP、DOWN: In modifying mode, change parameters, in menu mode, page up and page down

2. Main page

2．1 Start-up interface：

```
            复用器
   000.000Mbps     Ver2.01
```

- **l** Ver2.01 indicate software version。
- **l** 000.000Mbps indicate output TS stream, if total output TS stream is less than valid TS stream, here will display "overflow"

3. Menu operation

press LOCK to enter main menu, In main menu, press UP and DOWN to page up and page down, press enter key to confirm.

```
1： *语言/language          5：*Apply Output
2：Output Parameter        6：NET Parameter
```

```
3：  Channel Search        7：*Resume Default
4：  Program Select        8：Reset System
```

3．1 【语言/language】Press LEFT and RIGHT to choose"English/*中文"，press ENTER to confirm, press MENU to exit.

```
1.1： *语言/language
      *English   中文
```
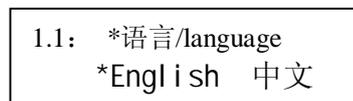
3．2【Output Parameter】press ENTER to entry,press UP and DOWN to page up and page down, press enter key to confirm. press MENU to exit.

```
2.1：*Total-Rate           2.5：PAT Interval
2.2：Special PID Ma        2.6：PMT Interval
```

| 2.3：*CA Output Enab
2.4：CAT Interval | 2.7：*SDT Interval
2.8：NIT Interval |

Note: "Special PID mapping/CA output Function", when configured with network management, should press NO when you choose the output on the panel, and can only be reconfigured by network management.

3.2.1 Total-Rate，Press UP and DOWN to modify the parameters, press ENTER to confirm, press MENU to exit.

| 2.1.1:   Total-Rate
        38Mbps |

3.2.2 Special PID Ma,   Press LEFT and RIGHT to choose"*NO/YES", press ENTER to confirm, press MENU to exit.

| 2.2.1:   Special PID Ma
     *NO   YES |

3.2.3   CA Output Enab , Press LEFT and RIGHT to choose"*NO/YES", press ENTER to confirm, press MENU to exit.

| 2.3.1:   CA Output Enab
       *NO   YES |

3.2. 4   CAT Interval   Press UP and DOWN to modify the parameters, press ENTER to confirm, press MENU to exit.

| 2.4.1:   CAT Interval
        150ms |

3.2.5   PAT Interval Press UP and DOWN to modify the parameters, press ENTER to confirm, press MENU to exit.

| 2.5.1:   PAT Interval
        40ms |

3.2.6　PMT Interval　Press UP and DOWN to modify the parameters, press ENTER to confirm, press MENU to exit.

```
2.6.1:   PMT Interval
         94ms
```

3.2.7　SDT Interval　　Press UP and DOWN to modify the parameters, press ENTER to confirm, press MENU to exit.

```
2.7.1:   SDT Interval
         300ms
```

3.2.8　NIT Interval　Press UP and DOWN to modify the parameters, press ENTER to confirm, press MENU to exit.

```
2.8.1:   NIT Interval
         500ms
```

3．3【Channel Search】Press LEFT and RIGHT to choose"NO　All　CH->1"
　, press ENTER to confirm, press MENU to exit.

```
3.1: Channel Search
  *NO    All   CH->1
```

3．4【Program Select**】**choose channel first, press ENTER to choose the program,Press LEFT and RIGHT to choose"*NO/YES", press ENTER to confirm, press MENU to exit.

```
4.1: *CH1                    4.1.1:   CCTV-1
4.2：CH2                              NO      *YES
```

3．5【Apply Output**】**After finish the above operations, you must do this operation. Press LEFT and RIGHT to choose"*NO/YES", press ENTER to confirm, press MENU to exit.

```
5.1:   Apply Output
         *NO      YES
```

3．6【NET Parameter】Press ENTER to entry. Must reboot the system after configuration. The client can use hard reboot or soft reboot.

```
6.1: *IP   Address
6.2：Port
```

```
6.3：*SubNet Address
6.4：MAC
```

【IP Address】/【Port】/【SubNet Address】/【MAC】。Press UP and DOWN to page up and page down, press ENTER to modify, press ESC to exit.

```
6.3.1:   SubNet Address
255.255.255.000
```

```
6.4.1:   MAC
00-03-64-00-01-21
```

3．7【Resume Default】Press ENTER to entry,Press LEFT and RIGHT to choose"*NO/YES", press ENTER to confirm, press MENU to exit.

```
7.1: Resume Default
       NO   *Yes
```

3．8 【Reset System】Press ENTER to entry,Press LEFT and RIGHT to choose"*NO/YES", press ENTER to confirm, press MENU to exit.

```
8.1:   Reset System
       NO   *YES
```

When all the configuration finished, the system will operate properly.