

# AD2700 DVB REMULTIPLEXER USER'S MANUAL



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# 1 Safety instruction

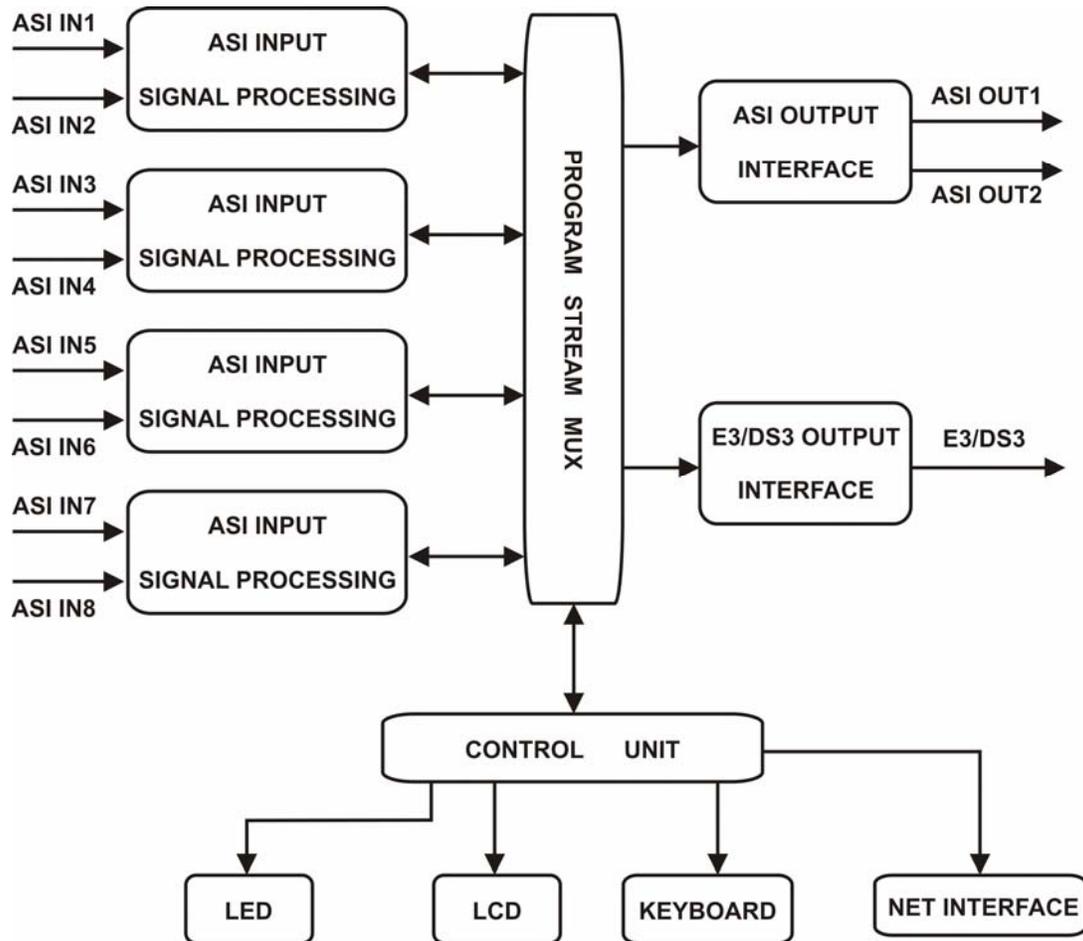
- 1.1 Before starting using this unit, please be sure to refer to this manual.
- 1.2 Do not to open the cabinet, otherwise the guarantee to repair are not available. Meanwhile touching the inside makes you in great danger of electric shock.
- 1.3 Please make sure to cut off the power supply if you will not use this unit in long term, and do not use any broken jack, which could result in fire or electric shock.
  
- 1.4 Wet hands are forbidden to touch the power jack, to avoid risk of electric shock.
- 1.5 Please pull the plug itself instead of the wire when you pull out power plug,.
- 1.6 Any thing flammable and metal or liquid, which will destroy the unit, must be kept out the box.
- 1.7 Do not place this unit in a location near a heat source such as radiator or air ducts, or in a place exposed to direct sunlight, excessive dust, moisture, rain, mechanical vibration.
- 1.8 Keep the device working in a good ventilative environment, if not the destruction will occur.
- 1.9 Please keep the packaging for the safety of transit.

NOTE: After all parameters are set up, please press the LOCK button. When LCD display is dark, the protection function takes effect.

## 2. System composition and operating principle

### 2.1. System composition

THE SYSTEM CONSISTS UNITS OF THE FOLLOWING CHART



#### 2.1.1 ASI input interface

ASI input, it's MPTS (Multi-Program Transport Stream) or SPTS. The useful data will be output and null packet, needless data will be filtered after processing.

#### 2.1.2 Program stream multiplexing

Multiplex the selected program of different interface, the below table will be available or updated while multiplexing, then insert them into MPTS.

- PAT
- CAT
- PMT
- NIT

### **2.1.3 Data output interface**

#### **A. ASI output interface**

ASI output, it's MPTS (Multi-Program Transport Stream) or SPTS. The output bit rate could be set up to 80Mbps.

#### **B. E3/DS3 output interface**

E3/DS3 output, DVB TS, standard: G.703

The output bit rate is fixed.

### **2.2 Operating principle**

AD2700 TS REMULTIPLEXER multiplex 2~8 MPEG-2 SPTS or MPTS into 1 MPTS, the null packet or needless packet will be filtered. The PID could be reset if necessary and pick-up the relevant information for further processing.

The processed program specific information (PSI) and service information (SI) is integrated with local data. Each input consists of SPTS, each program includes video、 audio、 auxiliary data.

Re-identify the program clock reference (PCR) with system time clock (STC).

### 3. Main features

- Multiplex 8 inputs (ASI) SPTS or MPTS, multilevel multiplexing is available
- Input data bit rate: 216Mbps(max)/channel
- Output bit rate: 2Mbps~120Mbps(tunable), available bit rate is up to 120Mbps
- PID filtering and PID re-setting, the user could add 、 delete the program as they wanted, and mapping the PID of selected program automatically. Support user-defined program's PID and input through channel
- ETHERNET interface, it could carry out the parameters setup and supervision from remote via network management unit.
- Statistic multiplexing
- PCR correction
- Insert network parameters and change program name
- MPTS automatic analysis
- Statistic input/output program bit rate
- Empty packet automatic filling and output bit rate invariableness
- 188 and 204 packet automatic identification
- Output TS packet is optional (188 and 204)
- E3/DS3/SPI is optional
- Failure alarming
- LCD display to carry out system status supervision and system parameters setup
- Power off memory

## **4. Technical Specifications**

### **4.1 Data input**

Input interface: 2~8 DVB ASI interface

Connector: BNC

Impedance: 75Ω

TS standard: ISO13818-1

Input valid bit rate: 214Mbps max (per channel)

TS packet format: 188/204 bytes (automatic identification)

TS input format: equality/ packet burst / inequality

### **4.2 Multiplexing data output**

#### **4.2.1 ASI interface**

Standard: DVB

Connector: BNC

Impedance: 75Ω

TS standard: ISO13818-1

Output valid bit rate: 2Mbps~120Mbps, tunable (1 Kbps step)

TS packet format: 188/204 bytes, optional (no RS encoding with 204 bytes)

TS input format: equality

#### **4.2.2 E3 output interface (optional)**

Standard: G703

Connector: BNC

Impedance: 75Ω

Encoding format: HDB3

TS packet format: 188/204 bytes

Data bit rate: E3 non-frame (34.368Mbps)

#### **4.2.3 DS3 output (optional)**

Standard: G703

Connector: BNC

Impedance: 75Ω

Encoding format: B3ZS

TS packet format: 188/204 bytes

Data bit rate: DS3 non-frame (44.736Mbps)

### **4.3 Net interface**

RJ45 ETHERNET interface, IEEE802.3 ETHERNET

Software protocol: SNMP protocol

### **4.4 Keep status of power off**

The unit will keep status with the power being cut off, in order to auto-reset when electrified again.

**4.5 Power supply:** 90V~250V A.C, 50Hz ±2%, 25W

### **4.6 Working Environment**

0—50°C for operation

-25—55°C for storage

10~75% for relative humidity

**4.7 Radiation and safety** GB13837-92 AND GB8898-88

### **4.8 Mechanic characteristics**

Dimension: 44.5mm(1U)\*483mm\*(19.0")\*400mm

Weight: 5kg

**NOTE:** The information contained herein is subject to change without notice.

## 5 Equipment connection

### 5.1 Panel display

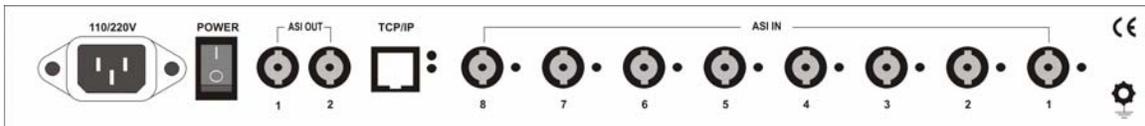
POWER  
STATUS  
ALARM

### 5.2 Front panel sketch



5-1: AD2700 Front panel as above

### 5.3 Rear panel sketch



5-2:AD2700 Rear panel as above

## 6. Operation

### 6.1 Keyboard Function

Move RIGHT/LEFT key: Recycle sub-menu/move cursor

Move UP/DOWN key: Setup cursor/change parameters

ENTER: Confirm operations, recycle main menu

LOCK: Lock/unlock the keyboard /remote-control/exit menu

MENU: Recycle menu and cancel operations

Note: 1. Be sure to press ENTER key after setup the parameters, all new parameters will take effect only without \*, otherwise the old parameters will be kept.  
2. Under any status of setting parameters, press LOCK key will make unit return to the status of showing operating parameters.

### 6.2 Select MENU (keyboard unlocked)

#### 6.2.1 Main menu display

Press MENU to display contents in main menu in recycle (+) or press ENTER to display contents in main menu in recycle (-)

ONCE: 1.0 VIEW ALARMS  
ALARMS LIST EMPT

TWICE: 2.00.0 CHA01 PROGRAMS  
ALL HAVE: 026

THRICE 3.00.0 CHA02 PROGRAMS  
ALL HAVE: 026

FOUR TIMES 4.00.0 CHA03 PROGRAMS  
ALL HAVE: 026

FIVE TIMES 5.00.0 CHA04 PROGRAMS  
ALL HAVE: 026

SIX TIMES 6.00.0 CHA05 PROGRAMS  
ALL HAVE: 004

SEVEN TIMES 7.00.0 CHA06 PROGRAMS  
ALL HAVE: 001

EIGHT TIMES 8.00.0 CHA07 PROGRAMS  
NO SIGNAL

NINE TIMES 9.00.0 CHA08 PROGRAMS  
UNKNOW FORMAT DATA

TEN TIMES 10.00.0 OUT PROGRAM PARA.  
OUT PROGRAMS:010

ELEVEN TIMES 11.0 NETWORK DESCRIPTOR  
T

TWELVE TIMES 12.0 MULTIPLEXER PARA.  
WORKING AS SETTING

### 6.3 How to change and setup parameters

#### 6.3.1 Setup system parameters

A: Press MENU THRICE: display as follows

1.0 VIEW ALARMS

ALARMS LIST EMPTY or INPUT SIGNAL LOSS or IN TS NO SIGNAL

B: Press UP/DOWN to view/change parameters or select function

▼ 1.0 VIEW ALARMS

CLEAR ALL ALARMS

C: Press ENTER to store /execute: display as follows

1.0 VIEW ALARMS

ALL ALARMS BE CLEARED

D. Move Left/right to recycle sub-menu

▶ 1 1.1 SET IP ADDR

120.120.120.160

▶ 2 1.2 SET NET MASK

255.255.255.000

▶ 3 1.3 SET NET GATE

120.120.120.001

▶ 4 1.4 NET STATUS

NOT CONNECTED or CONNECTED

▶ 5 1.5 SERIAL No.:

XXXXXXXXXXXXXXXXXXXX(18-digit)

▶ 6 1.6 VERSION

H:XX.XX S:XX.XX

▶ 7 1.7 GET PRESET PARAMETER

\*FACTORY PRESET

▶ 8 RELOAD IN INFO

\*RELOAD IN CHANNEL INFO.

Press ENTER to resume the factory setup.

E. In any status, press LOCK to exit. Press ENTER to exit current operation

#### 6.3.2 Setup input port parameters

A. Press MENU twice: display as follows

2.00.0 CHA01 PROGRAMS

ALL HAVE: 004

B. Press LEFT/RIGHT: view the program information

▶ 1 2.00.1 CHA01 IN SIGNAL

INPUT 188 TS PACKET

▶ 2 2.00.2 CHA01 TS\_ID

00001

▶ 3 2.00.3 CHA01 ON\_ID

00001

- ▶ 4 2.00.4 CHA01 RATE  
038.875Mbps
- ▶ 5 2.00.5 CHA01 EFFECTED  
026.491Mbps

Press MENU to exit.

C. Press UP/DOWN: view program name

- ▲ 1 2.01.0 PROG01 NAME  
DWtv
- ▲ 2 2.02.0 PROG02 NAME  
NN
- ▲ 3 2.03.0 PROG01 NAME  
RAI International  
|  
|  
|
- ▲ 25 2.26.0 PROG01 NAME  
RTPi

D. Press LEFT/RIGHT: view/change program parameters (in the menu of program name)

- 2.01.0 PROG01 NAME  
DWtv
- ▶ 1 2.01.1 PROG01 IN CHA01  
REMULTIPLIED

Press UP/DOWN to change and press ENTER to confirm.

- NOT BE REMULTIPLIED
- ▶ 2 2.01.2 PROG01 CODE RATE  
004.391Mbps
- ▶ 3 2.01.3 PROG01 PCR PID  
0A82(HEX) 2690(DEC)
- ▶ 4 2.01.4 PROG01 MPEG-2 V  
0901(HEX) 2305(DEC)
- ▶ 5 2.01.5 PROG01 MPEG-2 A  
0902(HEX) 2306(DEC)

The operation of other input interface is the same as above.

### 6.3.3 Setup output program parameters

A. Press MENU ten times or ENTER thrice: display as follows

10.00.0 OUT PROGRAM PARA.  
OUT PROGRAMS:010

B. Press LEFT/RIGHT: view/change TS identity No.

- ▶ 1 10.00.1 OUTPUT TS\_ID  
00008 (changeable)
- ▶ 2 10.00.2 OUTPUT ON\_ID  
04096 (changeable)

C. Press UP/DOWN: view program source

- ▲ 1 10.01.0 PROG01 FROM  
PROGRAM 01 IN CHA01
- ▲ 1 10.02.0 PROG02 FROM  
PROGRAM 02 IN CHA01
- ▲ 1 10.03.0 PROG03 FROM  
PROGRAM 01 IN CHA02

|  
|  
|

- ▲ 9 10.10.0 PROG01 NAME

D. In the following status, press UP/DOWN to view/change program information, press ENTER to confirm the operation, press MENU to exit.

- ▶ 1 10.01.1 PROG01 NAME  
1DWtv (changeable)
- ▶ 2 10.01.2 PROG01 CODE RATE  
004.391Mbps (read only)
- ▶ 3 10.01.3 PROG01 PCR PID  
0A82(HEX) 2690(DEC) (changeable)
- ▶ 4 10.01.5 PROG01 MPEG-2 V  
0901(HEX) 2305(DEC) (changeable)
- ▶ 5 10.01.5 PROG01 MPEG-2 A  
0902(HEX) 2306(DEC) (changeable)

\* The setup operation of other program parameters is the same as above.

### 6.3.4 Setup network information parameters

A. Press MENU eleven times or ENTER twice: display as follows

11.0 NETWORK DESCRIPTOR  
T (Press UP/DOWN to change)

B. Press LEFT/RIGHT to view/change network information, press ENTER to confirm, press MENU to EXIT.

- ▶ 1 11.1 NETWORK IDO  
02184 (changeable)
- ▶ 1 11.2 NETWORK FREQUENCY  
200.000MHz
- ▶ 1 11.3 NETWORK QAM MODE  
64 QAM (changeable)

- ▶ 1 11.4 NETWORK SYMBOL RATE (QAM modulation)  
6.875MBd (changeable)

### **6.3.5 Setup multiplexing parameters**

A. Press MENU twelve times or ENTER once: display as follows

12.0 MULTIPLEXER PARA  
WORKING AS SETTING  
or NEED REBUILDING PARA

Press UP/DOWN to display in second line:

REBUILDING PARAMETER

Press ENTER to confirm.

B. Press LEFT/RIGHT to view/change multiplexing output information

Press ENTER to confirm

Press MENU to exit.

- ▶ 1 12.1 TS OUT PORT  
TS OUTPUT TO ASI

Press UP/DOWN to display in the second line:

TS OUTPUT TO E3 (34M interface output)  
TS OUTPUT TO DS3 (45M interface output)

Press ENTER to confirm.

- ▶ 2 12.2 OUTPUT TS FORMAT  
188 BYTES TS PACKETTS  
or 204 BYTES TS PACKETTS (optional)

Press ENTER to confirm.

- ▶ 3 12.3 OUTPUT TS RATE  
050.000Mbps (settable)

## 7. System Error and Trouble Shooting

### 7.1 Indicator lights

There are three LED indicator lights on the panel:

- 1) "POWER" is the power supply indicator, illuminates (in red) to show power supply is working orderly.
- 2) "STATUS" illuminates (in green) to show the input signal is in order.
- 3) "ALARM" illuminates (in green) to show all parts are working orderly

### 7.2 Trouble Shooting

#### 7.2.1 The "POWER" indicator light does not illuminate.

Please check the wire to make sure the wire is connected to the socket properly and the power switch is on.

#### 7.2.2 "STATUS" illuminates (in red)

This means the parameters are been setting.

#### 7.2.3 "ALARM" flashes

This means the unit is out of order, pleas refer to following:

It shows " IN TS NO SIGNAL": The input signal of ASI interface is not in order or no input signal. Please check the ASI input signal source and connecting cable.

It shows "CH01 FIFO FULL": There is some data overflow from the first input interface, the signal will have the error coding and the unit can't work orderly. It needs to increase output data rate or deduce the output programs.

### 7.3 Note

- A. The output bit rate of MUX should be slight higher than the summation of input bit rate, otherwise the MUX will work unorderly.
- B. The output bit rate of MUX should be slight lower than the input bit rate of QAM modulator.
- C. The relation between input available bit rate of QAM modulator and symbol rate of IRD-C:

Input available bit rate =symbol rate \*  $m$  \*188/204

Input available bit rate is 188 bytes data.

For Example: Input available bit rate = 38.014Mbps (64 QAM modulation)

Symbol rate= Input available bit rate\* 204 /188/6=6875Kbps

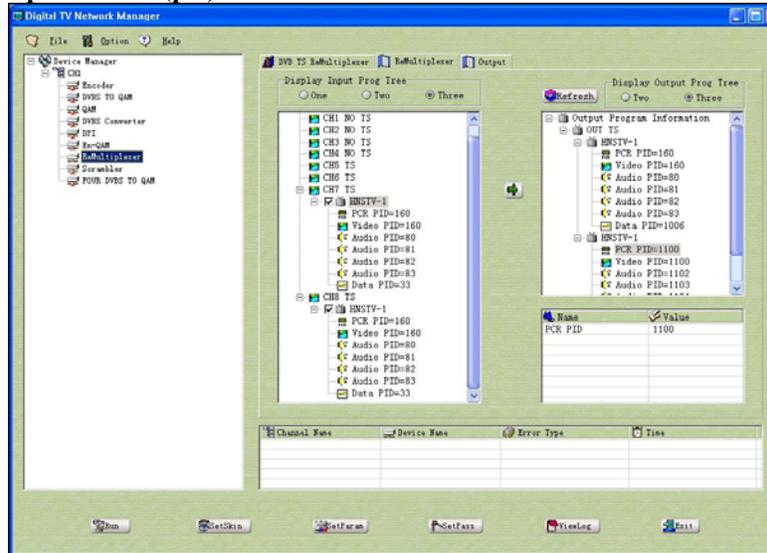
$m=2,4,5,6,7,8,$

correspondence to QPSK,16QAM,32QAM,64QAM,128QAM,256QAM

## 8. Network management

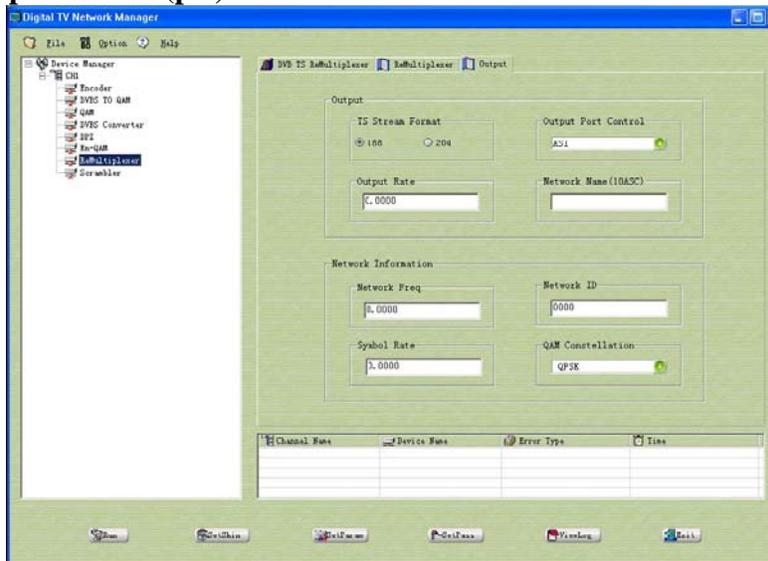
The unit could be controlled remotely via network management software. It needs authorization. Please refer to 《NMS user's manual》

### Multiplex parameters(pic)



**Operation:** Select the output program in the program's tree, click => to bring new program, right click program's tree to delete unwanted program, change selected program's info in the list of output program's tree, click APPLY to make the operation effective.

### Output parameters(pic)



**Parameters:** TS packet format、output port control、output bit rate、network name、network freq、network ID no、symbol rate、QAM mode