



IGS-800 DVB/IP Gateway

User Manual

Safety Instructions

- ❗ Read the user manual carefully before you open this equipment.
- ❗ Opening the equipment cover may cause harm to human body, and lead to equipment can't be guaranteed.
- ❗ This equipment can not be strike violently or fell from the height, otherwise may damage the internal hardware.
- ❗ Not to fall the flammable, metal liquid, etc into the equipment case, these things will damage the equipment.
- ❗ Do not install the equipment near the heat source, the place with sunlight or too much dust, the place with mechanical vibration.
- ❗ Please ensure the grounding pole connect to the earth during operation.
- ❗ Please use the correct external connection port to connect the network interface of equipment.
- ❗ Please don't quickly and frequently open and shut off the power supply, otherwise will easy to cause the semiconductor chip damage.
- ❗ Please plug and unplug follow the direction of electrical outlet.
- ❗ Please connect the grounding pole, the signal line before connect the power line.
 - ❗ Do not use wet hands to touch the power socket, to avoid the electric shock.
 - ❗ Please remove rings, necklaces, watches, bracelets and other ornaments before operate the energized equipment. Because the metal objects connect to the power supply of equipment or connect to the earth may cause a short-circuit lead to damage of components.
- ❗ Please unplug the AC input cable before operation or close to the power supply.
- ❗ Only allow the trained and qualified personnel make live line work on the equipment and maintenance.
- ❗ Please ensure that the equipment has good ventilation environment at work, otherwise it will cause equipment damage due to overheating.
- ❗ Please unplug this equipment when it is not used for a long period of time.

Content

Safety Instruction	2
Catalogue	
§ 1 Product Presentation.....	
§ 1.1 Outline:	4
§ 1.2 Main Feature:	4
§ 1.3 Technical Specifications:	5
§ 1.4 IGS-800 Front Panel.....	6
§ 1.5 IGS-800 Back Panel.....	6
§ 1.6 Application Diagram	7
§ 2 Instructions Before Use.....	10
§ 2.1 Equipment Requests.....	10
§ 2.1.1 Requests For Related Digital TV Equipment.....	10
§ 2.1.2 Requests For Network Equipment.....	10
§ 2.2 System Requests.....	11
§ 3 The Use Of Equipment.....	12
§ 3.1 First Time to Use: Quick Start.....	12
§ 3.2 NMS Operation	12
1、 Add Equipment.....	12
2、 Parameter Settings.....	13
3、 Settings And Configuration Instructions for RF Input Parameter.....	13
4、 IP Address Output Setting	14
5、 IP Channel Output Setting	15
6、 IP Channel Output Edit.....	16
7、 PID Transparent Transmission	17

§ 1.1 Outline:

IGS-800 is a RF Input All-In-One Headend Digital TV Platform which can receive multi modulation RF signal DVB-S/S2/C/T or TS stream in the format of ASI. Signal stream will be made in demodulating, multiplexing, scrambling and inserting local information. There are two output models: DVB or IPTV for your optional. IPTV output model realizes the way of IP output. DVB Model realizes 8 IP packages encrypted MPTS channels output. IPTV Model realizes 128 IP packages SPTS channels output.

IGS-800 is a new generation digital tv headend core processing equipment from IRENIS. Its signal input can be from all kinds of digital receiving equipment such as digital satellite, HFC network, IRD satellite receiver, encoder etc. This equipment receives, multiplexes, scrambles RF/ASI input signal and transfer it to receiving modulation equipment with IP input or IPTV Headend System or LAN.

IGS-800 is a RF input Digital TV Platform, which is a new generation highly integration and high performance module with 8 RF input demodulation/multiplexing/scrambling/IP gateway. Each 8 RF input demodulation/multiplexing/scrambling/IP gateway is designed by module, each demodulation/multiplexing/scrambling works independently. Module is integrated with 8 channel demodulator, 8 channels multiplexer, 8 channels standard scrambler and gigabit IP gateway. Output of Each demodulation/multiplexing/scrambling module is IP TS stream signal via GE or SFP port. DVB and IPTV output model are for your optional for different network requests. Output is 8 scrambled MPTS IP TS stream via GE or SFP port for DVB module. Output is 128 unscrambled SPTS IP TS stream for IPTV model. Max support 1 module for 1 U case. This equipment is high integration, high performance and low cost. It is very suitable for building cable/ wireless digital tv broadcasting system or IPTV broadcasting system. This equipment can be used not only for central headend but also for sub headend. It is the first choice for building cable/wireless digital tv broadcasting system or IPTV broadcasting system.

§ 1.2 Main Features:

This product has the following characteristics:

- ※、 Support DVB-S/S2、 DVB-C、 DVB-T receive and demodulate;
- ※、 Support ASI signal input;
- ※、 Support RF input interface and ASI input interface combination at will in even number according to requirements, at most 8 routes input;
- ※、 Can complete demodulating, multiplexing, scrambling of multi-routes frequency point/program stream and output IP signal via gigabit GE port or SFP fiber interface;
- ※、 Support VOD application is optional;
- ※、 A single equipment can complete a full digital TV streams processing and IP output function in addition to coding, bitrate conversion and transcoding
- ※、 Network parameters of data input, output can be configured flexibly, can

- automatically detect the input stream;
- ※、Support 4 simulcrypt CAS, support DVB-CAS scrambling;
 - ※、Multiplexing part support SI/PSI auto-generate and upload manually;
 - ※、Support PID filtering and transparent transmission;
 - ※、A single equipment can receiving and processing 8 RF input frequency points or 8 ASI (MPTS) input streams at most, output encrypted multi-programs(MPTS) IP streams of 8 IP addresses or single program (SPTS) IP clear stream of 128 IP addresses; the output bandwidth can transmit up to 800Mbps;
 - ※、Can automatically generate or manually edit the network information, support upload local network information sections;
 - ※、Have PCR automatic correction function;
 - ※、Automatically save the user configuration, in order to save the last working status;
 - ※、All built-in procedures of equipment, including FPGA procedure, can be intellectualized upgrade;
 - ※、Both equipment management page and related technical data support Chinese & English , to make products adapt to domestic and international market;
 - ※、Adopt Power PC processor as the core master control module ,adopt embedded Linux as the operating system of the master control program, with stable and reliable performance;
 - ※、Adopt the primary and the secondary double power to supply heat back-up ,with seamless handover;
 - ※、Adopt 1U standard case, both front and back appearance are aesthetic and elegant with meticulous design;
 - ※、The structure has good ventilation cooling system;
 - ※、Support Network Management (NMS), Support local and remote settings, modify each parameters of the equipment.

§ 1.3 Technical Specifications:

Characteristics	Item	Specifications Parameter
Input port	Interface type	Tuner (F Connector) / ASI (BNC Connector)
	Interface quantity	8
	RF Input Frequency	DVB-S2/S、950-2150MHz DVB-C、48-860MHz DVB-T、167-860MHz
	Input bitrate(each port)	≤90Mbps(MPEG Package)
Output port	Output interface type	RJ45 Port SFP Port
	Output interface quantity	2 GE port、2 SFP fiber interface
	Output total bitrate	≤800 Mbps
	Output mode	DVB/IPTV are optional Support unicast and multicast
	MAC	IEEE 802.3 1000BASE-T
	Network protocol	Unicast: UDP (RFC 768) Multicast: IGMPv2 (RFC 2236)
Management	Interface type	RJ45 Ethernet 10/100 Base-T

port	Interface quantity	1
	MAC	IEEE 802.3 1000BASET
	Network protocol	TCP/IP
	Application	HTTP4.0/HTML 1.1/XML/CGI(Web Management)NTP
Multiplexing and Scrambling	Multiplexing	Support intelligent searching program PSI/SI Form support automatically generate or insert manually
	Scrambling	Support program level scrambling Single TS scrambling bitrate up to 60Mbps Built-in 8 scramblers Support 4 simulcrypt CAS
	EMM bandwidth	Biggest bandwidth 3Mbps
Power supply	Input voltage	85~260V AC
	Input frequency	50/60Hz
	Power	<50W
Environment	Work temperature	5°C ~ 40°C
	Storage temperature	-25~ 85°C
	Work humidity	10%~90%
Physical characteristics	Size(W x H x D)	483mm x 44mm x 450mm
	Weight	<5Kg

§ 1.4 IGS-800 Front Panel

Front panel diagram as below:

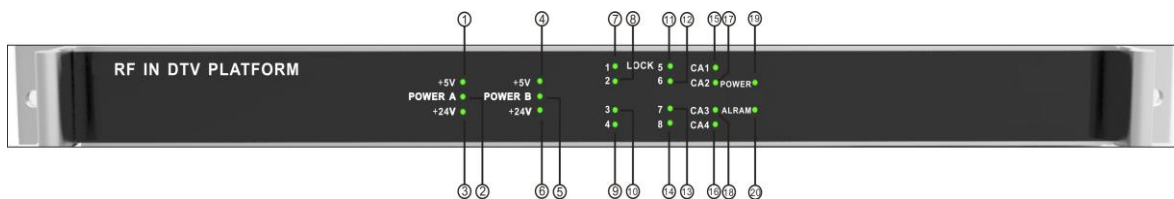


Figure1: IGS-800 Front Panel Diagram

- 1、 4: +5V power status light (A/B 2 groups) .
- 2、 5: power signal indicator light (A/B 2 groups) .

The light turns green when the power supply is switched on normal,

The light turns red when the power has failure, meanwhile the buzzer give an alarm.

- 3、 6: +24V power status indicator light (A/B 2 groups) .

- 7、 8、 9、 10、 11、 12、 13、 14: 1#channel-8# channel: input signal locked/ overflow light.

The green light is long on that is lock out when the signal is received.

The green light is off that is unlocked when the signal is not received;

The green light is twinkle that is stream signal overflow indication.

- 15、 16、 17、 18: 4 simulcrypt CAS scramble status indicator light, they are power on when scrambling.

19: Indicator Light is for Main Board Power.

20: alarm indicator light, the red light is on when equipment work abnormally.

Note : When the equipment is power on, you need to wait the indicator light to flicker 5 times, and then connect the network management to enter the parameters configuring interface.

§ 1.5 IGS-800 Back Panel

Back panel diagram as below:

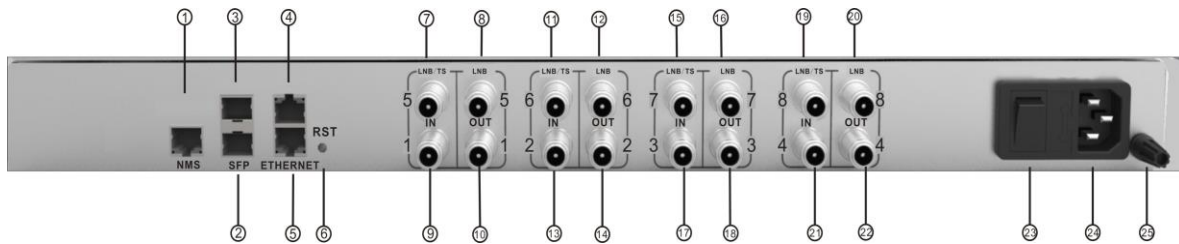


Figure2: IGS-800 Back Panel Diagram 1: NMS

- 1: Equipment network management interface RJ45;
- 2, 3: SFP, Equipment IP output channel interface;
- 4, 5: ETHERNET, Equipment IP output channel GE electrical interface;
- 6: RST, Equipment reset button;
- 9, 13, 17, 21, 7, 11, 15, 19: LNB/TS IN, 1#-8#input channel RF or ASI input interface;
- 10, 14, 18, 22, 8, 12, 16, 20: LNB OUT, 1#-8# channel LNB loop output interface;
- 23: Power switch, down is open, up is off;
- 24: Power supply socket;
- 25: Protective GND pole

Please note that the installation of equipment: turn off the power supply of signal source equipment, and connect the protective ground pole of the signal source with protective GND pole, then connect the other signal cable. And then plug in the power socket cable after turn off the power switch of this equipment.

IGS-800 back panel is composed by: NMS equipment network management port, SFP data output interface, GE data output interface, 1#-8# channels RF or ASI stream input interface, power switch, power supply input interface and a ground pole.

The power supply input interface is used for connect 100~240V AC supply input;

The power supply rocker switch is used for turn on/off the power supply of IGS-800;

Equipment network management port is a RJ45 electrical interface, it connect to the management station via 100M or gigabit Ethernet.

IGS-800 digital platform input is 1#-8# channels RF or ASI stream input interface, it should connect to the former satellite, DVB-C, DVB-T and other RF signal source or TS stream receiving equipment via coaxial cable. Output port is 1 group SFP fiber interface (main or backup port) and 1 group RJ45 GE electrical interface (main or backup port) data output port should connect to

various equipment with IP input for building a cable, wireless digital television head end or for building a IPTV live broadcasting/VOD signal source.

§ 1.6 Application Diagram

As bellows:

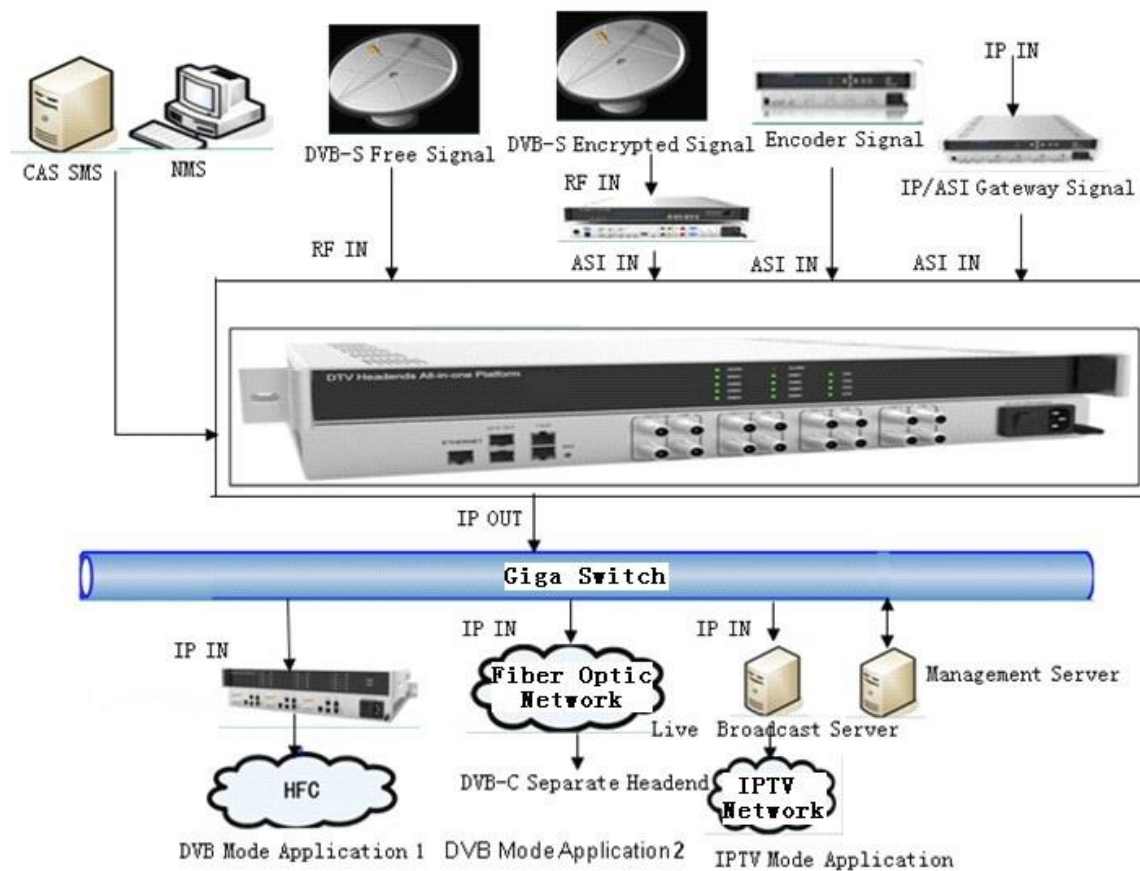


Figure 3, IGS-800 System Application Diagram

IGS-800 all-in-one platform receives RF Signals from FTA DVB-S Satellite, DVB-C HFC and DVB-T terrestrial Wireless Network. Above RF signal is demodulated and decoded by IRD and make output signal as ASI which can directly input into this equipment. Or ASI signal from encoder is also can directly into this equipment.

Equipment which can provide input signal for IGS-800 is as follows:

1. RF signal from DVB-S Satellite, DVB-C HFC network, DVB-T terrestrial wireless network can be directly into IGS-800.

2. The IRD with ASI transport stream output. This equipment receives the encrypted RF signal from satellite transponder, HFC digital TV network or DVB-T terrestrial wireless network. RF signal is demodulated and decoded by IRD and make output as ASI signal which can be directly into IGS-800. For example, IRD model No is IRD-6000 in our company.
3. Digital TV Encoder with ASI output. Encoder makes analog or uncompressed AV signal compressing encode and multiplex into TS stream which will be directly into ASI input port of IGS-800 via ASI output port of encoder.
4. IP to TS Gateway. IP to TS Gateway coverts IP stream into ASI stream which can be directly into IGS-800,

Equipment which can receive the signal output from IGS-800 is as follows:

- A. IP 8 QAM Modulator. With IGS-800, when you select DVB Model, output is 8 MPTS IP Package which is multiplexed and scrambled. After 8 MPTS IP package is into IP 8QAM modulator, the output of 8 frequencies RF signal (select 8 adjacent frequencies from 48-960 MHz) can be transmitted into HFC cable TV network or wireless TV station.
- B. IPTV Digital TV Live, VOD server. With IGS-800, when you select IPTV Model, output is 128 SPTS IP packages which will be into Giga Switch. With Giga switch, it can connect with IPTV Digital TV Live, VOD and management server. This equipment provides storage signal source for IPTV digital TV system.

【Note】 We suggest you to use our other equipment as input or output signal processing equipment of IGS-800. Because we have tested connection and performance between these equipments are reliable and stable. Equipments from other company can also be matched with IGS-800 only if they can meet all requirements from chapter § 2.1.1 , but compatibility and performance need to be tested in real working system.

§ 2 Instruction Before Use

§ 2.1 Equipment Requests

In order to ensure that IGS-800 can work normally, detailed requirements for other digital TV equipment or network which will be connected with IGS-800 are as follows:

§ 2.1.1 Requests For Related Digital TV Equipment

Output or Input stream of equipments which will provide input signal for IGS-800 or equipment which will receive output signal from IGS-800 should comply with following definition:

Transmitting Stream: It is composed by one or multi channels digital TV, digital audio broadcasting or other digital TV service which comply with DVB standard. It must contain PAT and PMT lists which can fully describe its service. For IGS-800, except above request of completeness PSI list, each input or output TS stream must carry UDP package and have destination IP address(can be unicast or multicast IP address) and destination port number. Each data length in TS package from UDP package should be 7times 188, and must be alignment with TS packet synchronization byte (0x47).

On the condition of meet above definition, transmitting stream can be multi ones for equipment which provide stream for IGS-800 or equipment which receive stream from IGS-800.

In order to avoid same destination IP address and UDP port number for different input stream, administrator should configure parameter of input and output equipment for IGS-800. If above situation happens, IGS-800 will not correctly analyze and process related stream and finally unpredictable error will occurs with exception of condition that insert some special information from some independent software system.

§ 2.1.2 Requests for Network Equipment

Connect RF ASI input of IGS-800 with previous equipment of IGS-800(IRD, Encoder and IP/ASI Gateway in Figure 3) and Switch with IP output (Giga Switch in Figure3).

Connect output of IGS-800 with coming equipment of IGS-800 (Fiber Network or Wireless Transmitter and Giga Switch in Figure3). Giga switch must be 3layers and can be management. Maximum data throughput of each port is no less than 1000 Mbps. Back exchange capacity is no less than 10 Gbps and must support IGMP2.0 protocol.

The switch which connect NMS port of IGS-800 and switch in management station must be 100M or 1 Giga. Maximum data throughput for each port is no less than 40 Mbps. Generally

speaking, this switch can be the one which connect data input or data output of IGS-800 and it must be configured before using, which will make data port and management port of IGS-800 into different segment of VLAN.

The output LAN of IGS-800 cannot be connected with other host which is possible to greatly increase network traffic, such as real-time communication tools, streaming media server, and workstation with Web server. These additional network signals possible affect digital TV stream signal in system and loss package, intensify network delay jitter and then cause mosaic when uses watch digital TV channels.

We suggest you to use different physical network for data input and output of IGS-800. That means: suggest you to use two switches at input and output port or two VLAN segments of one switch and there is no data loops between them. However, when total valid bit rate is less than 400 Mbps, data input and output of IGS-800 can connect with one switch even if we do not suggest you to do it like this.

§ 2.2 System Requests

CAS server must include network equipment and TCP/IP protocol. Other system requirements should be related with applied CAS.

Management host must include network equipment, TCP/IP and browser. We recommend you to install Windows 2000/XP or Windows operational system with higher version and install Web browser with Internet Explorer 7.0 or above and open browser support of JavaScript.

§ 3 The Use Of Equipment

§ 3.1 First Time to Use: Quick Start

If you are first time to use IGS-800 to build digital TV head end system, we suggest you to operate it as following steps:

1, Build up your equipment hardware environment: including rack installation, deployment of equipment power supply, connection between IGS-800, previous equipment of IGS-800 (IRD with ASI output, encoder etc), DVB-C terminal receiver, TV Monitor

& Management PC and CAS server (Consult O)

2, Plan management port, network IP address of data input and output and RF signal cable

Plan IP address of previous and coming equipment of IGS-800

Plan Port number of digital TV stream for IGS-800

Plan stream quantity of digital TV output stream, corresponding modulation frequency, FEC, modulation format for each stream

We suggest you to record all IP addresses, stream port number into files for future checking.

3, Open previous equipment of IGS-800 and configure all working parameters and make them normally receive/demodulate, decode/encode and output digital TV stream which will be correctly configured. Please refer to manual guides for how to configure previous equipment of IGS-800

4, Put IGS-800 in a good place, connect ground pole of back panel, then connect input/output cable and management port cable, finally plug in power cable and turn it on.

5, Start up IGS-800. If you have already known IP address of management port for IGS-800, and this IP address is in the same network as your management workstation, then you can configure IGS-800 directly in management workstation. Or else, you need network management PC to configure IP address of management port.


§ 3.2 Network Management Operation

IGS-800 is our new-launched module with RF input and all in one multiplexing/scrambling/ IP output which is a new generation RF input and 8multiplexing/scrambling/ IP output with high integration and high performance. IGS-800 is RF and 8multiplexing/scrambling/ IP output with module design, each multiplexing/scrambling/ IP output module works independently. Module integrates with 8demodulators, 8multiplexers, 8 standard scramblers and Giga IP gateway. Each demodulation/multiplexer/scrambler/IP output module outputs IP TS stream signals via 1 GE port. You can choose DVB or IPTV output to meet different network requirements. With DVB model, output is 8 scrambled MPTS IP TS stream signals via 1GE port; with IPTV model, output is 128 SPTS IP TS stream signal. Max support is 1 module for 1U case. This

equipment has the characteristics of high integration, high performance and low cost, which is very suitable for building new generation digital TV broadcasting system and IPTV TV broadcasting system. IGS-800 can be scrambled and non-scrambled. Following is a brief introduction for non-scrambled NMS of IGS-800

1、 Add Equipment

Open NMS management software and click “Add Equipment” and select “Other equipment” as

following Figure 1/2. After successfully adding, then click “Other equipment” as following interface in Figure3, then select  RF IN DTB Platform with right click to input name and IP address of equipment (This IP address must be the same as the one from hardware)

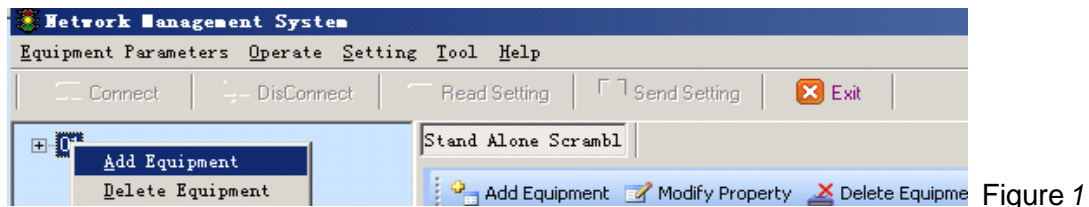


Figure 1

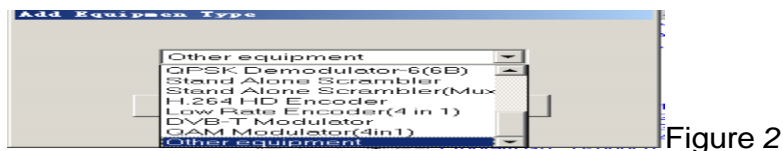
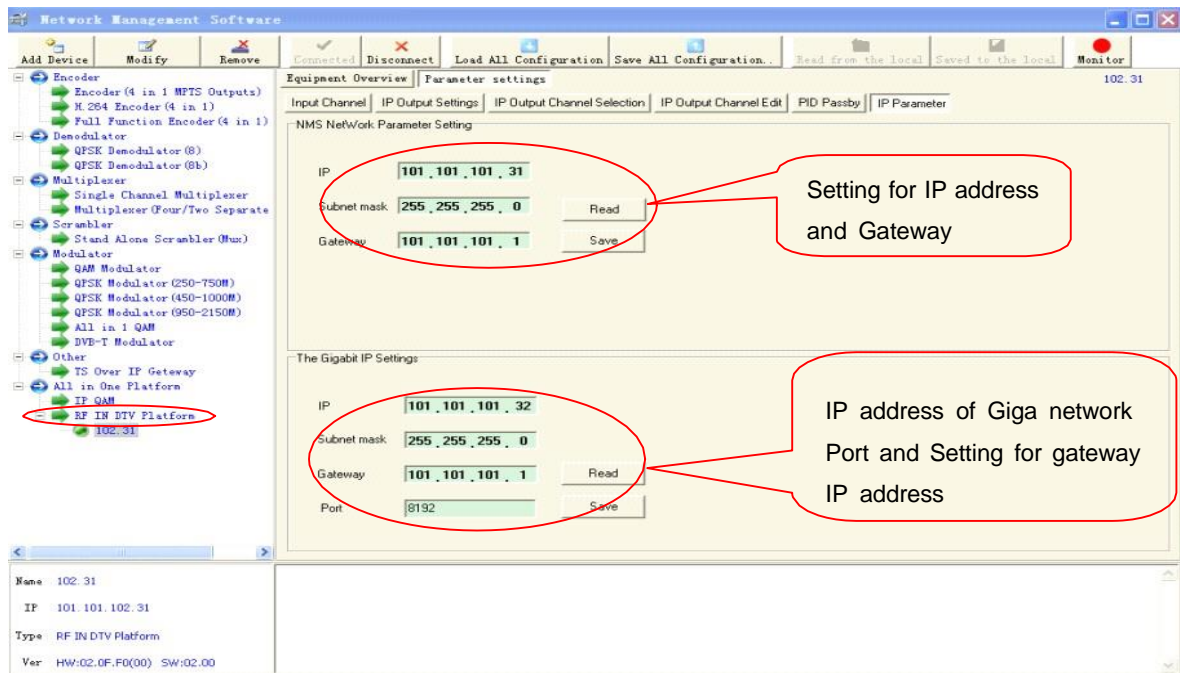


Figure 2

2、 Parameter Settings:

Network parameter settings: 1, IP address and NMS setting of equipment, IP address of Giga network output and NMS address setting as shown in Figure3



Figure

3

3、 Settings Configuration Instructions for RF Input Parameter:

RF Parameters setting” QPSK Demodulator Channel Parameters setting”, channel 1 is satellite forwarder

Parameters setting; Polarization model selection (with the same equipment and same satellite antenna, polarization model must be the same). Feeding switch setting (with the same satellite antenna, only 1 channel is opening and other channels can be off): When tuner is double oscillator, you need to open or close 22K. After making all configures, please click save and all configures will be saved and applied. When indicator is green and clicks “refresh status”, this channel is in clock condition. When indicator is red, this channel is in unlock situation: Consult following Figure 4 for channel 1 configures if signal input is from satellite.

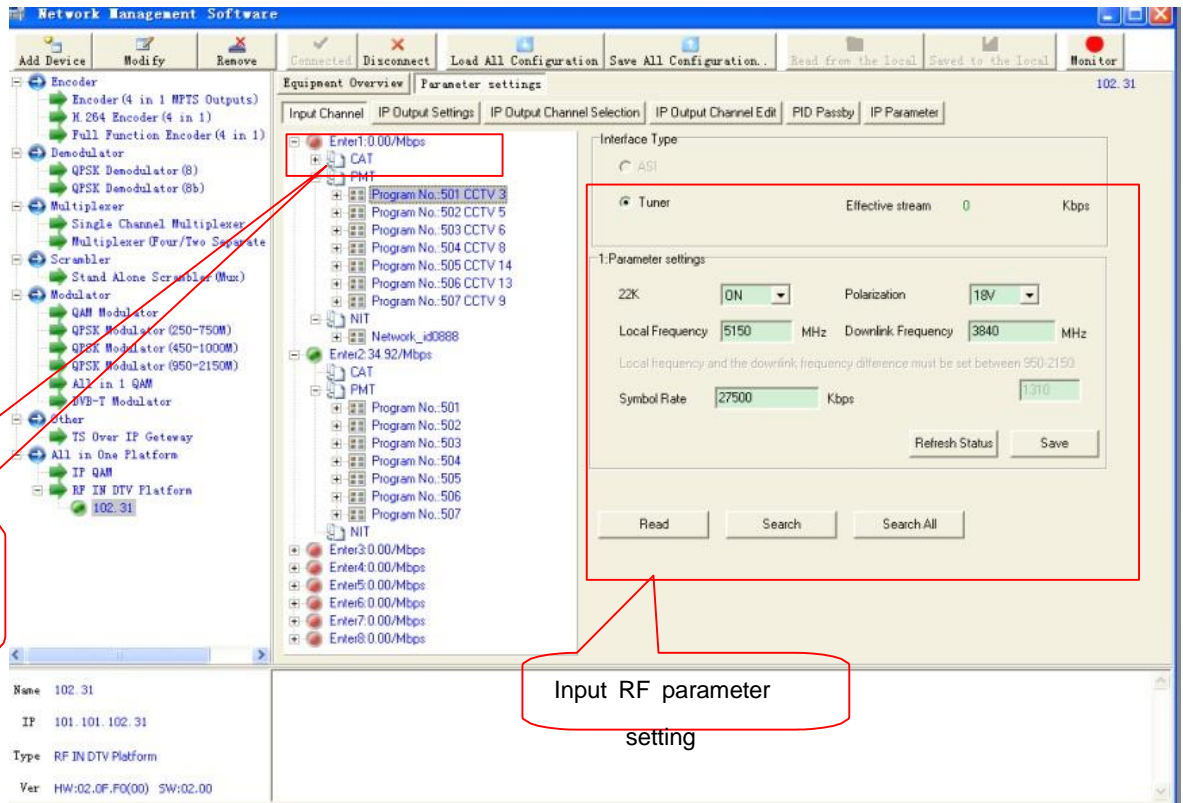
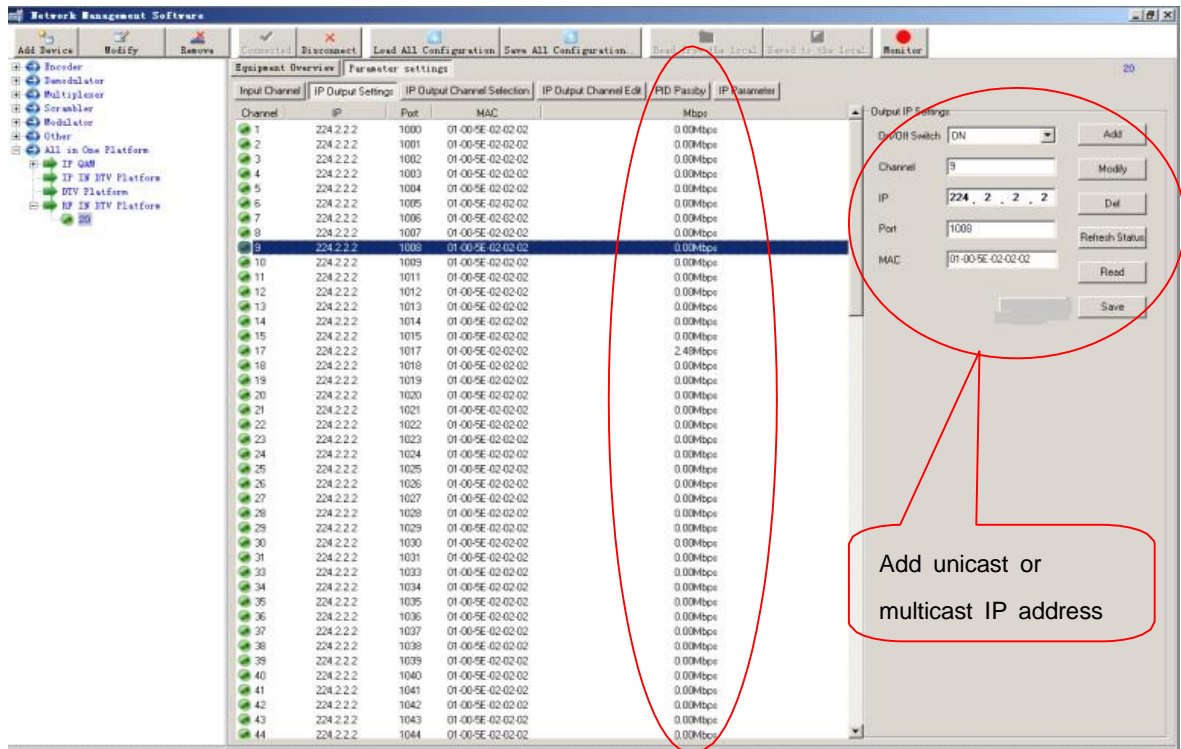


Figure 4

4. IP Address Output Settings:

You can configure unicast or multicast, max output is 128 IP addresses. You can open or close any IP address at random. It can display stream size for any IP address as following Figure

5



Figure

5. IP Channel Output Setting:

After IP address output is configured, you need to select channel for this IP address. Firstly you need to select IP address and then select channel to match this IP address. This IP address can be SPTS and also MPTS as shown in Figure6.

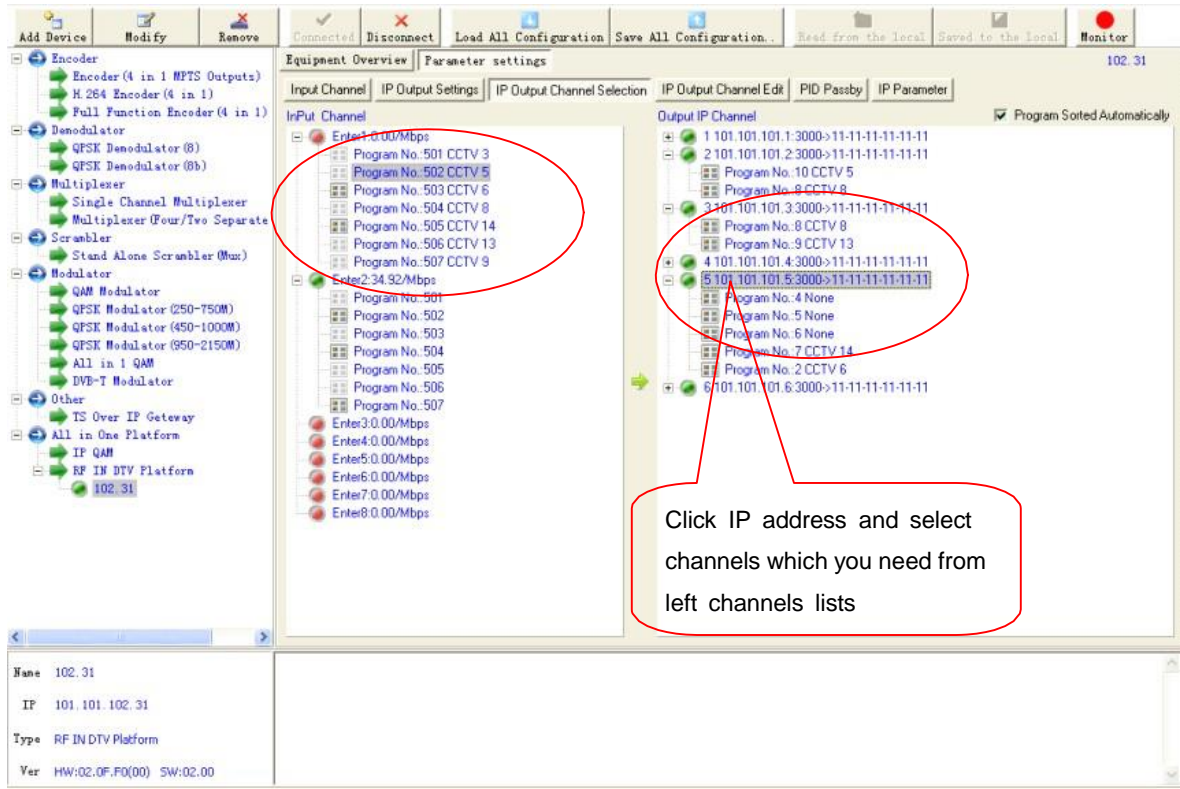


Figure 6

6、 IP Channel Output Edit:

You can edit channels with IP output. For example, you can edit channel name, channel number and PID value. And also you can insert private data for channel and NIT list as shown in Figure 7.

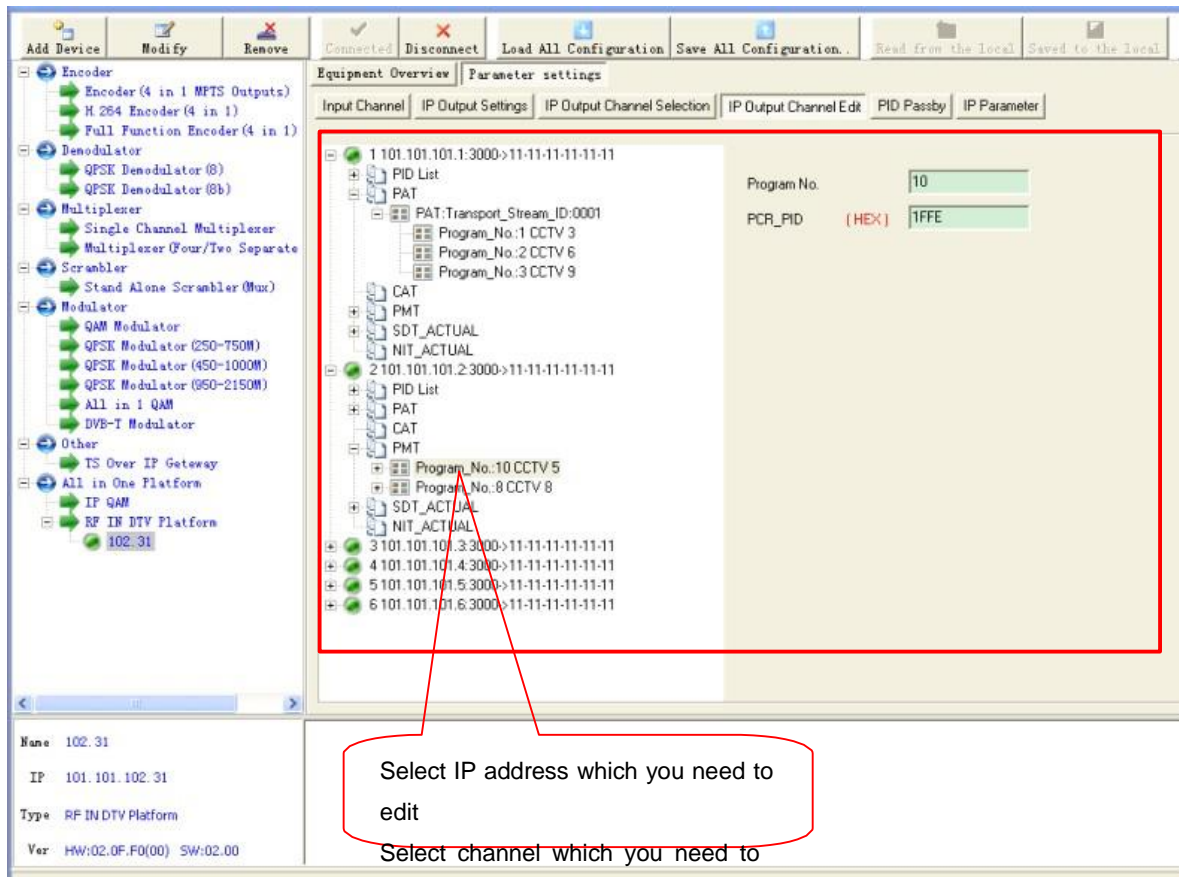


Figure 7

7. PID Direct Transmission:

PID direct transmission can be used EPG or user-defined Transmission.


The screenshot displays the 'Network Management Software' interface. On the left is a tree view of equipment components. The main window shows the 'IP Output Settings' tab, which includes a table for PID mapping. A callout points to this table, stating 'Transparent transmission information'. Below the table, there are dropdown menus for selecting input and output channels, and text input fields for the old and new PID values. Callouts point to these fields, explaining their function.

Input Channel	Output Channel	Old PID	New PID
1	1	0111	1235
1	1	0801	1120
1	4	0123	1120

Below the table, the 'PID' configuration area shows:

- Input Channel: 1
- Output Channel: 4
- Old PID (Hex(0001-1FFF)): 0123
- New PID (Hex(0001-1FFF)): 1120

Callouts indicate: 'Transparent transmission information' (pointing to the table), 'Select input and output' (pointing to the dropdowns), and 'Input PID value which you need to' (pointing to the Old PID field).

After any above operation is finished, you need to click "  " to save them.