IRENIS IGS-700
DVB/IP GATEWAY

Web-NMS Version: 1.03

Software: 1.00

Hardware: 0.40
About This Manual

Intended Audience

This user manual has been written to help people who have to use, to integrate and to install the product. Some chapters require some prerequisite knowledge in electronics and especially in broadcast technologies and standards.

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1.1 Outline

This IRD is our new design which integrates demodulation (DVB-C, T/T2, S/S2 optional), de-scrambler and multiplexing in one case to convert RF signals into TS output.

It is a 1-U case which supports 4 tuner inputs, 1 ASI and 4 IP inputs. The 4 CAMs/CIs accompanied can descramble the programs input from encrypted RF, ASI and IP. The CAM requires NO unsightly external power cords, cables, or additional remote control device.

1.2 Features

- 4 Tuner inputs (DVB-C, T/T2, S/S2 Optional)
- 1 ASI & 4 IP (UDP) input for de-mux
- One CAM can decrypt multiple programs from Tuners/ASI/IP
- IP (48 SPTS) over UDP and RTP/RTSP output;
- 4 groups of independent ASI out for tuner/IP passthrough (one-to-one)
- Support maximum 128 PID mapping per input
- LCD display, Remote control and Firmware, web NMS management
- Updates via web
- Best quality and breakthrough price

1.3 Specifications
Input
4x RF (DVB-C, T/T2, S/S2 optional), F type
1xASI input for de-mux, BNC interface
4xIP input for de-mux (UDP)

Tuner Section

**DVB-C**
- Standard: J.83A(DVB-C), J.83B, J.83C
- Input Frequency: 47 MHz~860 MHz
- Constellation: 16/32/64/128/256 QAM

**DVB-T/T2**
- Input Frequency: 44MHz ~1002 MHz
- Bandwidth: 6/7/8 M

**DVB-S**
- Input Frequency: 950-2150MHz
- Symbol rate: 2-45Msps
- Signal Strength: -65 -25dBm
- Constellation: 1/2, 2/3, 3/4, 5/6, 7/8 QPSK

**DVB-S2**
- Input Frequency: 950-2150MHz
- Symbol rate: QPSK 1~45Mbauds; 8PSK 2~30Mbauds

Output
- 48*SPTS over UDP, RTP/RTSP.
- IP: 1000M Base-T Ethernet interface (unicast / multicast)
- ASI: 4 groups BNC interface

System
- Local interface: LCD + control buttons
- Remote management: Web NMS Management
- Language: English

General
- Power supply: AC 100V~240V
- Dimensions: 482*400*44mm
- Weight: 3 kgs
- Operation temperature: 0~45 °C
1.4 Principle Chart

choose 4 channels from all inputs to descramble
CI 1 & 2 are designed to descramble tuner 1/2, ASI or IP 1-4.
CI 3 & 4 are designed to descramble tuner 3/4, ASI or IP 1-4.

1.5 Appearance and description

Front Panel Illustration:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>LCD Display</td>
</tr>
<tr>
<td>2</td>
<td>Indicators Area (Lock 1-4: they light up when the tuner signal are properly connected. Descram 1-4: they light up when the CI cards are properly inserted.)</td>
</tr>
<tr>
<td>3</td>
<td>Up/Down/Left/Right Buttons Enter Key for confirmation Menu Key for backward Lock Key</td>
</tr>
</tbody>
</table>
Rear Panel Illustration

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CAM/CI Slots 1 &amp; 2 (Applied to descramble tuner 1 &amp; 2, ASI input and IP input 1 to 4)</td>
</tr>
<tr>
<td>2</td>
<td>Tuner Input 1 &amp; 2</td>
</tr>
<tr>
<td>3</td>
<td>CAM/CI Slots 3 &amp; 4 (Applied to descramble tuner 3 &amp; 4, ASI input and IP input 1 to 4)</td>
</tr>
<tr>
<td>4</td>
<td>Tuner Input 3 &amp; 4</td>
</tr>
<tr>
<td>5</td>
<td>ASI output groups 1-4</td>
</tr>
<tr>
<td>6</td>
<td>ASI input port for de-mux</td>
</tr>
<tr>
<td>7</td>
<td>NMS Port (connect to PC for device management)</td>
</tr>
<tr>
<td>8</td>
<td>DATA Port (for IP stream input &amp; output, 1000M)</td>
</tr>
<tr>
<td>9</td>
<td>Power switch/Fuse/Socket/Grounding Wire</td>
</tr>
</tbody>
</table>
Chapter 2 Installation Guide

2.1 Acquisition Check

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

- 4-in-1 IRD 1pcs
- User’s Manual 1pcs
- Tuner Cables (for loop through) 2pcs
- Power Cord 1pcs

If any item is missing or mismatching with the list above, please contact our company.

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:

- Checking the possible device missing or damage during the transportation
- Preparing relevant environment for installation
- Installing modulator
- Connecting signal cables
- Connecting communication port (if it is necessary)

2.2.1 Device's Installation Flow Chart Illustrated as following:

2.2.2 Environment Requirement
<table>
<thead>
<tr>
<th>Item</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine Hall Space</td>
<td>When user installs machine frame array in one machine hall, the distance between 2 rows of machine frames should be 1.2~1.5m and the distance against wall should be no less than 0.8m.</td>
</tr>
<tr>
<td>Machine Hall Floor</td>
<td>Electric Isolation, Dust Free Volume resistivity of ground anti-static material: 1X10^7~1X10^{10} Ω, Grounding current limiting resistance: 1M (Floor bearing should be greater than 450Kg/m²)</td>
</tr>
<tr>
<td>Environment Temperature</td>
<td>5<del>40°C(sustainable ), 0</del>45°C(short time), installing air-conditioning is recommended</td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>20%~80% sustainable 10%~90% short time</td>
</tr>
<tr>
<td>Pressure</td>
<td>86~105KPa</td>
</tr>
<tr>
<td>Door &amp; Window</td>
<td>Installing rubber strip for sealing door-gaps and dual level glasses for window</td>
</tr>
<tr>
<td>Wall</td>
<td>It can be covered with wallpaper, or brightness less paint.</td>
</tr>
<tr>
<td>Fire Protection</td>
<td>Fire alarm system and extinguisher</td>
</tr>
<tr>
<td>Power</td>
<td>Requiring device power, air-conditioning power and lighting power are independent to each other. Device power requires AC power 100-240V 50-60Hz. Please carefully check before running.</td>
</tr>
</tbody>
</table>

2.2.3 Grounding Requirement

- All function modules’ good grounding is the basis of reliability and stability of devices. Also, they are the most important guarantee of lightning arresting and interference rejection. Therefore, the system must follow this rule.
- Coaxial cables outer conductor and isolation layer should keep proper 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.
- Users should make sure the 2 ends of grounding wire well electric conducted and be
antirust.

- It is prohibited to use any other device as part of grounding electric circuit.
- The area of the conduction between grounding wire and device’s frame should be no less than 25mm².

### 2.2.4 Frame Grounding

All the machine frames should be connected with protective copper strip. The grounding wire should be as short as possible and avoid circling. The area of the conduction between grounding wire and grounding strip should be no less than 25mm².

### 2.2.5 Device Grounding

Connecting the device’s grounding rod to frame’s grounding pole with copper wire.

### 2.3 Wire’s Connection

The grounding wire conductive screw is located at the right end of rear panel, and the power switch, fuse, power supply socket is just beside, whose order goes like this, power switch is on the left, power supply socket is on the right and the fuse is just between them.

- Connecting Power Cord
  
  User can insert one end into power supply socket, 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 this IRD, user should set the power switch to “OFF”.

### 2.4 Signal Cable Connection

The signal connections include the connection of input signal cable and the connection of output signal cable. The details are as follows:
2.4.1 4-in-1 IRD Cables Illustration:

- **IP Input/output Cable Illustration:**

- **Tuner Cable Illustration:**

- **ASI Input/output Cable Illustration:**
Chapter 3 Operation

The front panel of the 4-in-1 IRD is the user-operating interface and the equipment can be conveniently operated and managed according to the procedures displayed on the LCD:

Keyboard Function Description:

LEFT/RIGHT: Choose and set the parameters.
UP/DOWN: Modify activated parameter or paging up/down when parameter is inactivated.
ENTER: Activate the parameters which need modifications, or confirm the change after modification.
MENU: Cancel current entered value, resume previous setting; Return to previous menu.
LOCK: Lock the screen/cancel the lock state. After pressing the lock key, the LCD will display the current configuring state.

3.1 LCD Menu Structure

(See next page :)
Initializing

4 in 1 IRD
Bitrate: 70.865Mbps

1 Status
- Alarm
- Uptime

2 Input Sets
- 2.1 Tuner DVBS/S2
  - Tuner Parameters
    - Satellite frequency
    - LNB frequency
    - Symbol rate
    - LNB voltage
    - 22K
    - Signal Lock
    - Mux Program
      - TS Lock
      - Parse Program
      - Select Program

- 2.2 Tuner DVBS/S2
  - (Same content with ‘Tuner 1’ above)

- 2.3 Tuner DVBS/S2
  - (Same content with ‘Tuner 1’ above)

- 2.4 Tuner DVBS/S2
  - (Same content with ‘Tuner 1’ above)

- 2.5: ASI
  - 2.5.1 TS Lock
  - 2.5.2 Parse Program
  - 2.5.3 Select Program

- 2.6 IP
  - 2.6.1 IP Config
    - Input IP
    - Input Port
    - Multicast
    - IGMP Snooping
    - Service IP
  - 2.6.2 Mux Program
    - TS Lock
    - Parse Program
    - Select Program

- 2.7 IP
  - (Same content with ‘IP 1’ above)

- 2.8 IP
  - (Same content with ‘IP 1’ above)

- 2.9 IP
  - (Same content with ‘IP 1’ above)

3 CI Card
- 3.1 Card A
  - 3.1.1 Max Birate
  - 3.1.2 Input TS Mode
  - 3.1.3 Card Error Check
  - 3.1.4 Parse Program
  - 3.1.5 Descramble Program
  - 3.1.6 Rom Version
  - 3.1.7 Card Status
  - 3.1.8 Descramble Error

- 3.2 Card B
  - (Same content with ‘Card A’ above)

- 3.3 Card C
  - (Same content with ‘Card A’ above)

- 3.4 Card D
  - (Same content with ‘Card A’ above)
3.2 General Setting

Switch on the device and after a few seconds’ initialization, it presents start-up pictures as below:

- **4 in 1 IRD**: Device’s name
- **Bitrate: xx.xxx Mbps** indicates the current output bitrate.

Press LOCK key on the front panel to enter the main menu. The LCD will display the following pages where user can configure the parameters for the device:

User could do all the settings according to the 7 directions displayed on the LCD. User can press UP/DOWN and RIGHT/LEGTT buttons to specify menu item, and then press ENTER to enter the submenus as below:

### 3.2.1 Status

**Alarm**: The alarm indicator will turn on if there is no signal inputting or outputting bit rate overflows. User then can enter this menu to check the error type. Otherwise it shows the ‘system is normal’.

**Uptime**: It displays the working time duration of the device. It times upon power on.

### 3.2.2 Input Sets

This IRD supports 4 tuners input, 1 ASI input and 4 IP stream input. Users can enter ‘Input
Sets’ to configure the tuner/ASI/IP parameters to receive the transport streams and select programs to output via IP (SPTS) packages. It displays as below:

- **Tuner DVB-S/S2 (Submenus 2.1 – 2.4)**

  Press ENTER key to enter ‘2.1 Tuner DVBS/S2’ (or 2.2/2.3/2.4) to configure the corresponding tuner input according to rear panel. It displays as below:

  
  ```
  2.1 Tuner DVBS/S2 2.2 Tuner DVBS/S2
  2.3 Tuner DVBS/S2 2.4 Tuner DVBS/S2
  2.5 ASI 2.6 IP
  2.7 IP 2.8 IP
  2.9 IP
  ```

  Tuner Parameters:

  Users can enter this menu to configure the tuner parameters separately to receive the tuner programs.

  ```
  Tuner Parameters:
  Satellite frequency
  LNB frequency
  Symbol rate
  LNB Voltage
  22K
  Signal Lock
  ```

  Mux Program:

  Users can parse the Tuner input program list and select programs to out in this menu.

  ![](image)

  **NOTE:** Multiplexed programs can only be output through IP (48 SPTS).
Process of selecting programs to output through front panel:
[←]: to cancel program output;
[→]: to output the program
“✓”: a symbol indicating the corresponding program has been selected to output;
“X”: a symbol indicating the corresponding program has not been selected to output

‘1/7’ represents there are all 7 programs in the list and 1 program has been selected to mux out through ASI.

- **ASI (Submenus 2.5)**

Users can parse ASI input programs and select program(s) to output under this menu. The operating method is same with what explained above.

- **IP (Submenus 2.6 – 2.9)**

Press ENTER key to enter ‘2.6 IP’, it displays as below:

**IP Config:**

Users can enter this menu to configure IP parameters according to the IP source to receive the IP programs.
Mux Program:

Users can parse the IP input program list and select programs to output in this menu. The operating method is same with what explained above.

3.2.3 CI Card

The IRD supports 4 CI cards (Card A, B, C and D) to descramble encrypted programs from RF, ASI or IP. Users can press ENTER key to enter ‘3 CI Card’ to configure the 4 cards respectively.

Press ENTER key to enter Card A (or Card B/C/D):

- Max Bit rate
  CI Max Bitrate options range from 48-108Mbps. Move the triangle to select a value as principle: Actual Input Bitrate≤ Max Bitrate≤CI Max decrypting capacity

- Input TS Mode
  This IRD has 9 signal sources: Tuner 1-4, ASI, and IP1-4. One CI card can applied to descramble one channel input signal from the 9 signal sources. ‘Skip CI card’ means to skip the card which is used for FTA stream.

  **NOTE:** Card A & B are designed to descramble tuner 1 & 2, ASI input and IP input 1 to 4, while card C & D A are designed to descramble tuner 3 & 4, ASI input and IP input
1 to 4.

- **Card Error Check**

Users can decide whether to enable or disable the card error check function in this menu.

- **Parse Program**

Users can read the quantity of programs parsed from the de-scrambled channel.

- **Descramble Program**

Users can select program(s) from the searched out programs to descramble. The quantity to be descrambled depends on the CAM/CI performance you apply to.

- **Rom Version/Card Status/Descramble Error**

Users can read the other info about the CI card in the following menus.
3.2.4 TS Config

Users can press ENTER key to enter ‘4 TS Config’ to configure the parameters of TS output through ASI port groups. Submenus under TS Config are as follows:

- **TS Output bit-rate**: Users can set TS output bit rate in this menu.

- **ASI X out select**: This IRD is equipped with 4 pairs of ASI out ports. Each pair can transfer one channel of tuner or one channel of IP content of corresponding channel. For instance, user can select content from “tuner 1” or “IP 1” to output through “ASI 1”.

- **ASI X out bit-rate**: Users can set TS output bit rate for the corresponding channel.

- **TS ID**: Users can set TS ID in this menu.
ON ID: Users can set ON ID (original network ID) in this menu.

3.2.5 IP Stream

The IRD supports 48 SPTS over IP (UDP, RTP/RTSP) output. Users can set the IP output parameters in this menu.

3.2.6 Network

Users can set network parameters in this menu. Enter ‘Network’ submenus to separately set corresponding parameters.
3.2.7 System

Users can set the system parameters in this menu. Enter ‘System’ submenus to separately set corresponding parameters.

Choose yes to save settings and press ENTER to confirm.

Choose yes to restore the device into the last saved configuration.

Choose yes to restore the device into factory’s default configuration.

Press DOWN/UP key to select a time out for the LCD lighting duration (5-120 seconds).

Choose Yes to lock the keyboard, then the keyboard will be locked and cannot be applicable. It is required to

To set a 6-digit password for unlocking the keyboard.
Lock Keyboard?
Yes  ▶ No

User can view the serial number of this device. It is read-only and unique.

Language
▶ English  中文

User can shift the system language here.

4 in 1 IRD
SW x.xx  HW x.xx

It displays the version information of this device. Encoder Modulator: the name of the device; SW: software version number; HW: hardware version number.
Chapter 4 Web-based NMS Management

In addition to using front buttons to control the device, users can also control and set the configuration with the web browser in the PC.

4.1 login

The default IP address of this device is 192.168.0.136. (We can modify the IP through the front panel.)

Connect the PC (Personal Computer) and the device with net cable, and use ping command to confirm they are on the same network segment.

I.G. the PC IP address is 192.168.99.252, we then change the device IP to 192.168.99.xxx (xxx can be 1 to 254 except 252 to avoid IP conflict).

Use web browser to connect the device with PC by inputting the device’s IP address in the browser’s address bar and press Enter.

It will display the Login interface as Figure-1. Input the Username and Password (Both the default Username and Password are “admin”.) and then click “LOGIN” to start the device setting.

![Login Interface](image)

Figure-1

4.2 Operation

Summary:
When we confirm the login, it displays the WELCOME interface as Figure-2 where users can have an overview of the device’s system information and working status.

Parameters → Input 1/2/3/4 (Tuner Input 1-4):
From the menu on the left side of the webpage, clicking “Input 1” (or “Input 2/3/4”), it displays the interface where users can configure the 4 Tuner input parameters separately. (Figure-3)
Parameters → Input 5 (ASI Input):

“Input 5” refers to the ASI source, this page is not applicable as it does not need to configure ASI signal. (Figure-4)

![Figure-4](image)

Parameters → Input 6/7/8/9 (IP Input 1-4):

From the menu on left side of the webpage, clicking “Input 6” (or “Input 7/8/9”), it displays the interface where users can configure the IP input parameters separately. (Figure-5)

![Figure-5](image)

Parameters → CI Card:

This IRD supports 4 CI cards (Card A, B, C and D) to descramble programs from encrypted RF, ASI or IP. Users can click and enter ‘CI Card’ to configure the 2 cards respectively. (Figure-6)
- **CI Max Bit rate**

   CI Max Bitrate options range from 48-108Mbps. Select a value in the pull-down list as follows: Actual Input Bitrate ≤ Max Bitrate ≤ CI Max decrypting capacity.

- **Input TS Mode**

   This IRD has 9 signal sources: Tuner 1-4, ASI, and IP 1-4. One CI card can be applied to descramble one channel input signal from the 9 signal sources. ‘Skip CI card’ means to skip the card which is used for FTA stream.

**NOTE:** Card A & B are designed to descramble tuner 1 & 2, ASI input and IP input 1 to 4, while card C & D are designed to descramble tuner 3 & 4, ASI input and IP input.
Card Error Check

Users can decide whether to enable or disable the card error check function by checking the box.

After configuring the above CI card parameters, click the Apply button to apply the input data and then click the Search program button to parse programs from the channel selected in ‘Input TS Mode’.

The searched out programs will be listed in the ‘Descramble’ box below: (Figure 7)

Check the program(s) to be descrambled and click the Set descramble button to start descrambling the checked program(s). The program quantity to be descrambled will depend on the CAM/CI performance you apply to.
Parameters → TS Config:

From the menu on left side of the webpage, clicking “TS Config”, it displays the interface where users can configure the parameters of TS output through ASI port groups. (Figure-8)

**ASI X out select:** This IRD is equipped with 4 pairs of ASI out ports. Each pair can transfer one channel of tuner or one channel of IP content of corresponding channel. For instance, user can select content from “tuner 1” or “IP 1” to output through “ASI 1”.

**ASI X out bit-rate:** Users can set TS output bit rate for the corresponding channel.

After finishing the configuration, click **Apply** to confirm.
Parameters → Mux:

From the menu on left side of the webpage, clicking “Mux”, it displays the interface where users can configure the programs to be multiplexed. (Figure-9)

**NOTE:** Programs selected to multiplex can only output through the 48 SPTS.

![Image of configuration interface](image)

**Figure-9**

Configure ‘Input Area’ and ‘Output Area’ with buttons in ‘Operation Area’. Instructions are as below:

- **PID Remap**: To enable/disable the PID remapping
- **Refresh Input**: To refresh the input program information
- **Refresh Output**: To refresh the output program information
- **Select**: Select one input program first and click this button to transfer the selected program to the right box to output.
- **Cancel**: Similarly, user can cancel the multiplexed programs from the right box.
- **All Input**: To select all the input programs
- **All Output**: To select all the output programs
- **Parse program**: To parse programs, time limitation of parsing input programs

**Program Modification:**

The multiplexed program information can be modified by clicking the program in the
‘output’ area. For example, when clicking [input], it triggers a dialog box (Figure 10) where users can input new information.

![Image of Program Information dialog box](image)

Figure-10

Input new data and click ‘Save’ button at last to confirm the modification.

**Parameters → IP Stream:**

This unit supports TS output in IP (48 SPTS). Click “IP Stream” and it displays the interface where users can configure the SPTS out parameters. (Figure-13)

![Image of IP Stream interface](image)

Figure-13
Parameters ➔ Network:

From the menu on left side of the webpage, clicking “Network”, it will display the screen as Figure-14 where to configure the network parameters for the device.

![Figure-14](image)

System ➔ LCD/Keyboard:

From the menu on left side of the webpage, clicking “LCD/Keyboard”, it will display the screen as Figure-15 where to control the device’s front panel.

![Figure-15](image)

System ➔ Password:

From the menu on left side of the webpage, clicking “Password”, it will display the screen as Figure-16 where to set the login account and password for the web NMS.
Figure-16

System → Save/Restore:

From the menu on left side of the webpage, clicking “Save/Restore”, it will display the screen as Figure-17 where to save or restore your configurations.

Figure-17

System → Backup/Load:

From the menu on left side of the webpage, clicking “Backup/Load”, it will display the screen as Figure-18 where to backup or load your configurations.
System → Firmware:

From the menu on left side of the webpage, clicking “Firmware”, it will display the screen as Figure-19 where to update firmware for the device.

System → Reboot:

From the menu on left side of the webpage, clicking “Reboot”, it will display the screen as Figure-20 where to restart the device manually.
Some configuration will work after reboot the device such as Web Manage Port set Firmware update.

Reboot

Figure-20
Chapter 5 Troubleshooting

ISO9001 quality assurance system has been approved by CQC organization. For guarantee the products’ quality, reliability and stability. All our products have been passed the testing and inspection before ship out factory. The testing and inspection scheme already covers all the Optical, Electronic and Mechanical criteria which have been published by us. To prevent potential hazard, please strictly follow the operation conditions.

Prevention Measure

● Installing the device at the place in which environment temperature between 0 to 45 °C
● Making sure good ventilation for the heat-sink on the rear panel and other heat-sink bores if necessary
● Checking the input AC voltage within the power supply working range and the connection is correct before switching on device
● Checking the RF output level varies within tolerant range if it is necessary
● Checking all signal cables have been properly connected
● Frequently switching on/off device is prohibited; the interval between every switching on/off must greater than 10 seconds.

Conditions need to unplug power cord

● Power cord or socket damaged.
● Any liquid flowed into device.
● Any stuff causes circuit short
● Device in damp environment
● Device was suffered from physical damage
● Longtime idle.
● After switching on and restoring to factory setting, device still cannot work properly.
● Maintenance needed
Chapter 6 Packing List

- 4 in 1 IRD 1pcs
- User’s Manual 1pcs
- RF Cables 2pcs
- Power Cord 1pcs