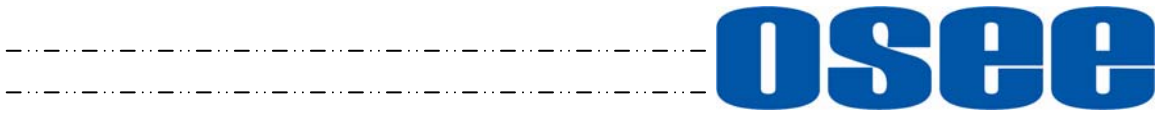
IRS Router

User Manual



OSEE TECHNOLOGY CO., LTD.

Product Information

Model: IRS3232 Router
Version: V010002
Release Date: April 29th, 2015

Company

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About this manual

Important

The following symbols are used in this manual:

Tips

- The further information or know-how for described subjects above which helps user to understand them better.

Warning

- The safety matters or operations that user must pay attention to when using this product.

Contents

The user manual applies to the following device types:

❖ **IRS3232**

The images of IRS3232 are adopted in the following descriptions.
Any of the different specifications between the device types are elaborated. Before reading the manual, please confirm the device type.

Contents

Chapter 1 Overview

The IRS Series routers are designed for easy control by the IRS Series remote control panels, the routers are a series of Matrix products developed by OSEE with high intelligent and low cost, which applied to medium and small sized broadcast system switching digital HD/SD signals. This series of products can support up to 32 embedded digital HD/SD signals which is transmitted in independent bus and meet the medium and small sized signal dispatching system's demands.

The IRS Series routers offer 32X32 type. The series products support network control which is easily accessible from any computer equipped with an Ethernet port, and the device configuration is performed using a simple user-friendly web page. Advanced functionalities such as locks and protects are fully supported. As the simple operation, the users can simply operate the switchers without mistake.

The IRS Series products can be applied to the broadcast system on the carrier signal scheduling, are suitable for broadcast room, master control room, studio, and other areas of a variety of real-time applications, to switch the SDI input signal to the output signal.

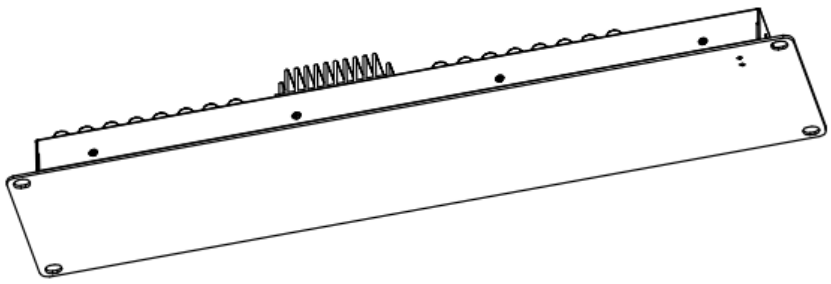

Figure 1-1 A Diagram of Remote Control Panel

Features

- Support up to 32 digital signals output switching, including HD, SD and 3G signals.
- Use Ethernet control and UDP protocol to achieve flexible and reliable control process.
- Support NETWORK protocol, which enables network control.
- Support computer remote control, which is easy and convenient.
- Dual redundant power supply and automatic balanced input cable ensure high-reliability and high-stability.

- Support power off memory, the output and the signal source will keep the relationship after power off or power restarted.

Functionality

- The buttons of the IRS series show the reality of the current work status of each signal. It would monitor and text each channel of input signal. The button is tri-color key. Normal signal lights GREEN while the non-normal signal lights RED.
- The IRS series support intelligent protection function in order to avoiding "misuse". When the input signal is detected abnormal, the switching operation for output would be invalid.
- Support automatic switching function. It has a direct access to BYPASS input signal. When the PGM main output signal is abnormal, the output will automatically switch to the BYPASS signal.
- Support network supervisory control, and use the network control page to supervise and configurate the Remote Control Panel.
- Support Ethernet control to the Remote Control Panel and the Router.
- Support multiple control modes: native panel control, remote panel control and remote computer control.
- Support dropping hints function. When in a broadcast system, there are several routers connecting with several remote control panels, when the remote control panel hasn't received the signal sending from the router in 4 seconds, all lights of the remote control panel would be flashing, and they will stop flashing when the signal recover.
- Output protection: if the signal source is vacant, it will not permit to switch to this channel in case of improper operation.

Flow Chart

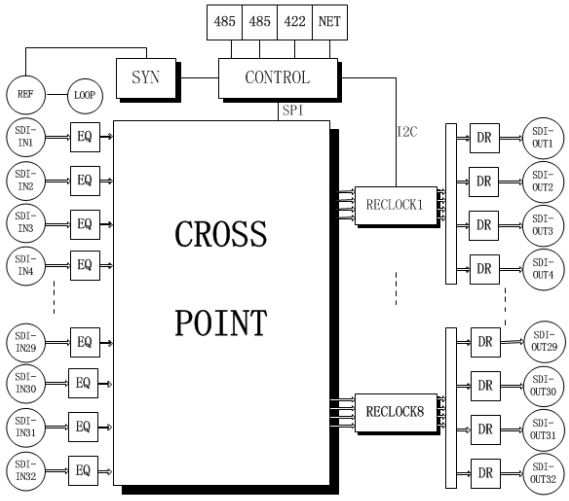

Figure 1-2 The Flow Chart of Data Processing for Router

Chapter 2 Safety

FCC Caution:

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules.
Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.
Increase the separation between the equipment and receiver.
Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
Consult the dealer or an experienced radio/TV technician for help.

Warnings:

Read, keep and follow all of these instructions for your safety. Heed all warnings.

⚠Warning

- **Device**
  - Do not beat with a hard object or scratch the device.
  - Install in accordance with the manufacturer's instructions.
  - Refer all servicing to qualified service personnel. Servicing will be required under all of the following conditions:
    - ☐ The unit has been exposed to rain or moisture.
    - ☐ Liquid had been spilled or objects have fallen onto the unit.
    - ☐ The unit has been damaged in any way, such as when the power-supply cord or plug is damaged.
    - ☐ The unit does not operate normally.
  - Clean only with dry cloth.
  - Specifications are subject to change without notice.

⚠Warning

- **Position**
  - Do not block any ventilation openings.
  - Do not use this unit near water.
  - Do not expose the unit to rain or moisture.
  - Do not use this unit near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that product heat.
  - A nameplate indicating operating voltage, etc., is located on the rear panel.

- The socket-outlet shall be installed near the equipment and shall be easily accessible.

Warning

- **Power Supply Cord**
  - Do not defeat the safety purpose of the polarized or grounding-type plug.
  - Do not damage the power cord, place the heavy objects on the power cord, stretch the power cord, or bend the power cord.
  - Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the unit.
  - If the power cord is damaged, turn off the power immediately. It is dangerous to use the unit with a damaged power cord. It may cause fire or electric shock.
  - Unplug this unit during lighting storms or when unused for long periods of time.
  - Disconnect the power cord from the AC outlet by grasping the plug, not by pulling the cord.
  - Should any solid object or liquid fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.

Chapter 3 Unpack and Installation

Unpack:

When unpacking the components of router, please verify that none of the components listed in Table 3.1 are damaged or lack. If there is any missing, contact your distributors or OSEE for it.

Table 3.1 Packing List

No.	Item	Quantity
1	Device	1
2	Power cord	2
3	adapter	2
4	User manual	1
5	warranty card	1
6	quality certification	1

Installation:

1. Prepare for installation

Please follow the procedures below before installing the device:

- Check the equipment for any invisible damage that may have occurred during transit.
- Confirm all the items listed on the packing list have been received.
- Remove all the packing material including electrostatic-resistant packing.
- Retain these packing for future use.

2. Install device in your desired location of a standard 1U rack or a standard cabinet. Adequate ventilation is required when installed to prevent possible damage to the router's internal components.
3. Connect required cables for signal input and output.
4. Connect AC power source using the included power cord.
5. Connect the power cord to the rear panel.
6. Fasten the power protect accessory.
7. As a final step, power the device on.

Tips

- Connect a standard signal line to the corresponding signal port. All BNC connector impedance must be 75Ω.
- Please use the power adapter supplied to avoid unnecessary trouble.
- The factory default value for IP address is 192.168.1.86.

Chapter 4 Device Features

This chapter describes the features of router. The features of router are as shown as follows.

4.1 Outward Appearance

Figure 4.1-1 the Front Panel of Remote Control Panel

The signals controlled by the IRS series are divided as follows according to their functions:

- ☐ Signal source: It is the video and audio signal which output by the IRS series devices.
- ☐ Output channel: Also be called as output target, it is the destination where the signal source will be transmitted to.
- ☐ Permanent signal: These signals should be normal and be ready for outputting. When it is detected abnormal, there will be alarm information.

  In the broadcast system, there are server permanent signals. When it is detected abnormal, if the button of signal source was red, it would be turning red flashing; if the button of signal source was green, it would be turning green flashing.

Tips

- For IRS1604 Router, set some signal sources to be permanent.

4.1.1 Front Panel Features

It will introduce the information afforded by the front panel.

Figure 4.1-2 the Front Panel of Router

As shown in Figure 4.1-2, the information afforded is as follows:

1. **Power Indicator**

Used to indicate the power on or off, corresponding to the power inputs sequentially from up to down at the rear panel.

2. **Product LOGO**

Show the product logo.

4.1.2 Rear Panel Features

As shown in Figure 4.1-3, there are various input and output interfaces at the rear panel of the router.

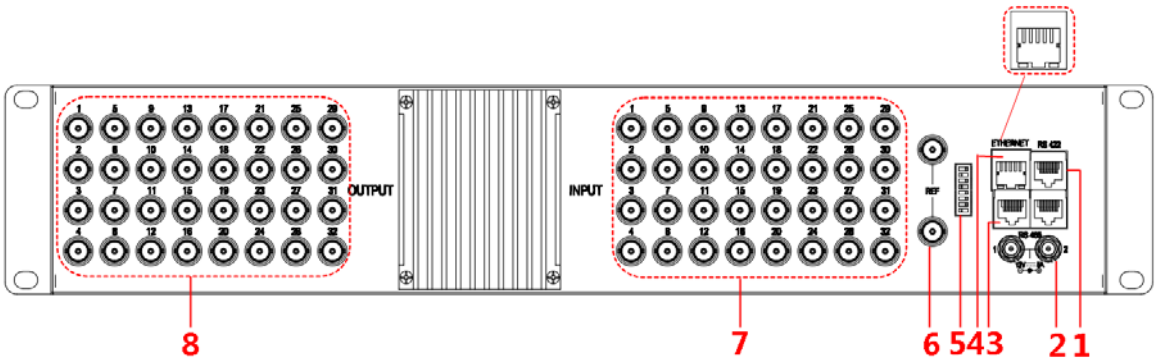

Figure 4.1-3 The Rear Panel of Router

The interfaces numbered from 1 to 8 are described as follows:

1. RS422

It offers one RS422 interface to access the network control page and receive the data based on the NetWork protocol. The baud rate is 19200bps.

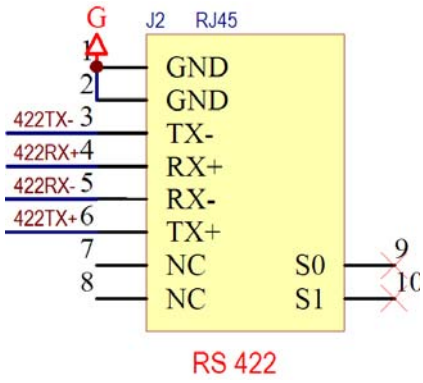

Table 4.1-1 The Relationship of Pins and Interfaces for RS422

Pins	RS422 Input	RS422 Output
1,2	GND	GND
3	Tx-	Tx-
4	Rx+	Rx+
5	Rx-	Rx-
6	Tx+	Tx+
7,8	NC	NC

2. Power Input

It offers two redundant power interfaces, 12V 5A.

Warning

- Only use the adapter and the power cord specified by the manufacture for your safety!

3. RS485 Interface (RJ-45)

It offers two RS485 interfaces which are used to realize the remote control between the router and the remote control panel, the baud rate is 115200bps. You can use the RS485 interface to restore an old software version and realize downward compatible.

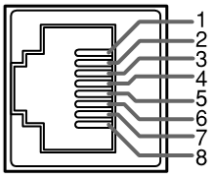

Figure 4.1-4 RS485

Table 4.1-2 The Comparison of Pins and Input/output connectors for RS485

PIN No.	RS485 IN Terminal Signal	RS485 OUT Terminal Signal
1,2	GND	GND
3	Tx-	Tx-
4	Rx+	Rx+
5	Rx-	Rx-
6	Tx+	Tx+
7,8	NC	NC

4. Ethernet (RJ-45)

It is used to connect with a computer to access the network control page or run the device control tool to modify the network settings, set up a network system, or update the software of the device.

5. Dip switch

There is a Dip switch both in the rear panel of remote control panel and router, which is used to configure the address of these units.

The Dip switch has 8 bits, numbered from 1 to 8 in sequence, from lower bit to higher bit, as shown in Figure 4.1-5:

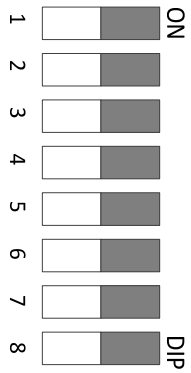

Figure 4.1-5 Dip switch

The lower 4 bits are reserved, and the higher 4 bits are used to restore the factory originals.

The default IP addresses of router is 192.168.1.86.

The formula of device address:

The device address＝2^0*K1+2^1*K2+2^2*K3+2^3*K4

Thereinto, Ki=0 represents the “i” bit is at the position of ON, Ki=1 represents the “i” bit is at the position of OFF (the opposite direction of ON), i=1~4.

Tips

- For a router, if the higher 4 bits are ON, it will restore the default IP, the default value of IP address is 192.168.1.86.
- When the remote control panel is cooperating with the router, the valid range of the address of remote control panel is from 1 to 254.

6. REF

It offers REF inputs to realize genlock to ensure the coincidence of signals in time at a combining or switching point.

7. **INPUT*(1-N)**

It is used to connect with the input source signals. The signal from SRC*will be transmit to a pointed DEST*.

8. **OUTPUT*(1-N)**

It is used to connect with the output destinations. Select an output channel to send a signal.

Chapter 5 Device Application

This chapter describes the usages, operations and cautions of the IRS series devices.

5.1 Network

In an application of IRS series devices, the router is usually cooperating with the remote control panel as an integrated system. The process of the construction is usually called network control.

1. One to One system

   If the system is composed of only one router and one remote control panel, thus it is called as One to One system, also called as simple system.

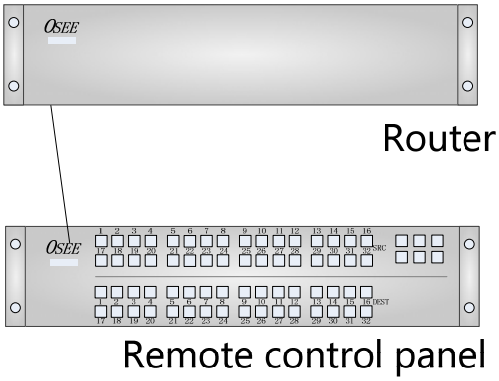

Figure 5.1-1 A Simple System

2. Complex System

   Relatively, if there is more than one router or one remote control panel in a system, thus we call it as a complex system. Generally, it contains router, remote control panel and other connection devices.

   In complex system:

- Use IP address as the unique marker for each IRS series device, the number of these devices in a complex system shall not exceed 254.
- Use the network control web page to point the LVL button and the LVL list with a remote control panel.
- Each panel will check itself whether the signal goes offline, if it is not restored in 4 seconds, all buttons of this panel will be red flashing until the communication recovers.

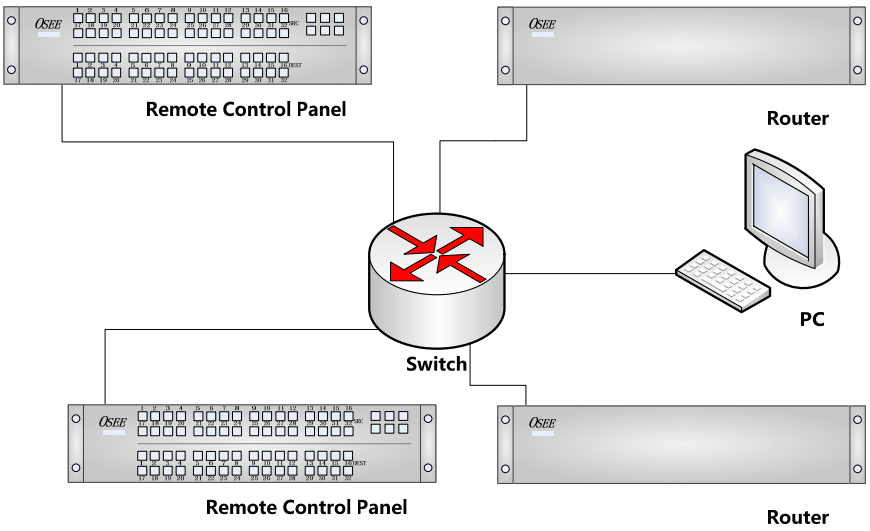

Figure 5.1-2 A Complex System

- Connection principle: use the Ethernet interface to connect the router and the remote control panel.

Tips

- The IP address should not be repeatable in a network system.

5.2 Operations

You can do the following operations to a router before operating:

Step 1 Connect the input resource signals **INPUT** at the rear panel of the router.

Step 2 Connect the output lines to **OUTPUT** at the rear panel of the router.

Step 3 Connect the power lines.

Step 4 Connect the reference voltage line to **REF** at the rear panel of the router.

Step 5 Connect the routers and the remote control panels through **ETHERNET** using a switch.

Chapter 6 Network Control

All IRS router and panel devices come with a built-in web page interface which is used to configure this device. Connect a computer and the IRS devices through the Ethernet interface using twisted-pair cables, achieving the network control to the IRS devices.

Tips

- The network address of the computer which is connected with the IRS series and the network address of the IRS series must be in the same segment.

This chapter will introduce how to set and check the parameters of the IRS series in Internet Explorer.

6.1 Access the settings

Use Internet Explorer as your web browser to enter into a web control page, input the default network IP address of the device. For example, input http://192.168.1.86 in address bar, then press Enter key, the management interface of IRS3232 is shown as in Figure 6.1-1:

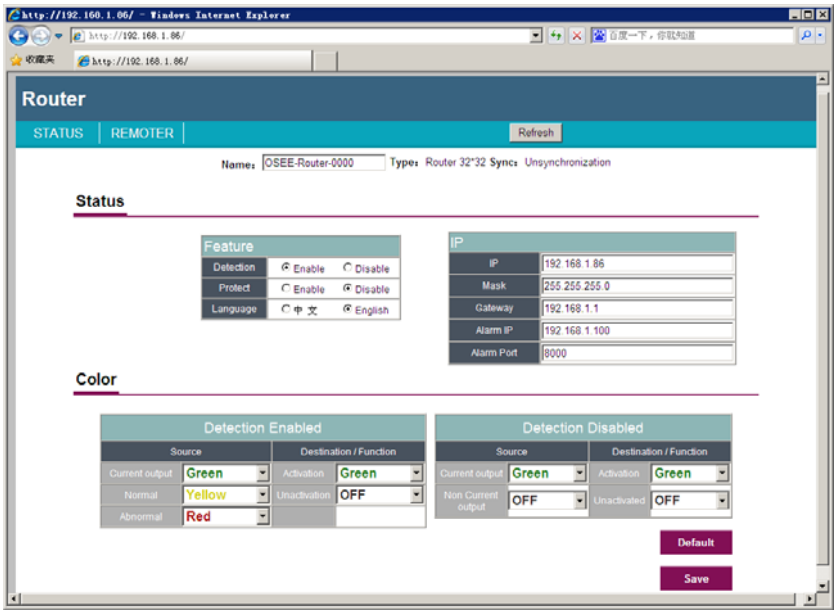

Figure 6.1-1 Network Control Page

Tips

- You can select **Status→Language** command to change the language setting.
- Either the router or the remote control panel can only access the network control page of itself.
- The default IP address of remote control panel is 192.168.1.7.

6.2 Network Control

Open the management interface as shown in Figure 6.2-1, and there are two menu tabs:

- STATUS
- REMOTER

6.2.1 STATUS

It will introduce STATUS tab in this section.The STATUS tab is used to show the default parameters of the IRS series, such as the basic information of the device, the illustration of the panel information. Click STATUS, it displays the parameters as shown in Figure 6.2-1, the details are as follows:

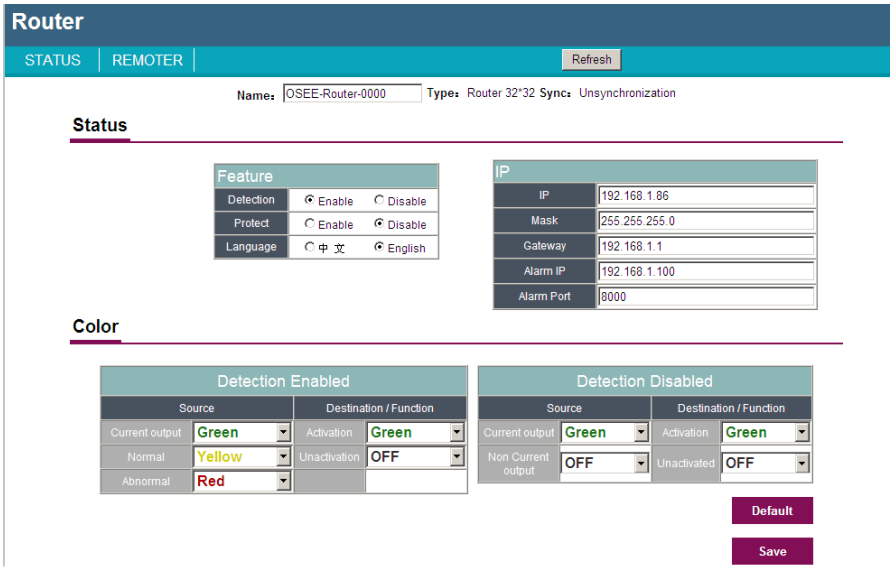

Figure 6.2-1 System Page

1. Basic Information

It displays the name and type of the remote control panel.

It is used to set up the name of the device, and it already displays the default parameter including Name and Type.Input a customized name in the field of NAME, the default value is “OSEE-Panel-0000”, you can use any characters, and the length of name can be up to16 characters.

For Example:

As shown in Figure 6.2-2, the **Name** is “OSEE-Panel-0001”, and the **Type** is “Router 32*32”. The value item of **Sync** is Unsynchronization.

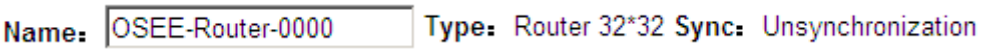

Figure 6.2-2 Status Page-Basic Information

2. Status

It shows the basic information of the remote control panel in Status table, as shown in Figure 6.2-3:

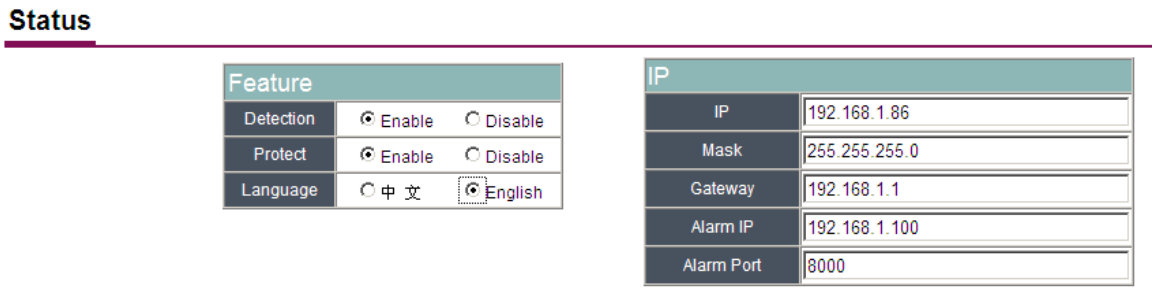

Figure 6.2-3 Status-Basic Information

The relationship of Items, Default Value and Description of the sub-item is shown in Table 6.2-1:

Table 6.2-1 The Description of System Menu Items

Classify	Items	Default Value	Description
Feature	Detection	Enable/Disable	It expresses whether to detect the sources or not.
	Protect	Enable/Disable	It expresses whether to enable or disable the protect function.
	Language	Chinese/English	It is used to set the language of the network control page.
IP	IP	192.168.1.7	It displays the IP address of the remote control panel.
	Mask	255.255.255.0	It displays the subnet mask.

Classify	Items	Default Value	Description
	Gateway	192.168.1.1	It displays the IP address of the gateway.
	Alarm IP	192.168.1.100	It displays the IP address which is used to receive the alarm information.
	Alarm Port	8000	It displays the communication port which is used to receive the alarm information.

Tips

- Remember to enter a new IP address into your Web browser's address bar, if the device's IP address has changed.
- The value of **Protect** must be set as **Disable** when you switch the signal source for an output destination in REMOTER page, otherwise, you can't make it successfully.

3. Color settings

It is used to set up the color information for detecting the signal source (Detection Enable) and not detecting the signal source (Detection Disable), as shown in Figure 6.2-4, it contains the following items:

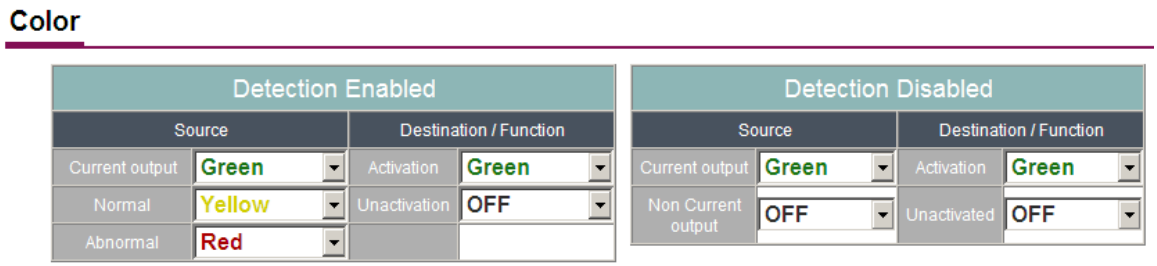

Figure 6.2-4 Router Page-Color Settings

■ Enable Function

Detection Function	Type	Items	Description
Detection Enable(detecting signal source)	Source	Current Output	Select a color for a signal source when it is the current output.
		Normal	Select a color for a signal source whose status is normal

Detection Function	Type	Items	Description
			and when it is not the current output.
		Abnormal	Select a color for a signal source whose status is abnormal and when it is not the current output.
	Destination/ Function	Activation	Select a color for the output channel when it is the current output.
		Unactivated	Select a color for the output channel when it is not the current output.
Detection Disable(not detecting signal source)	Source	Current Output	Select a color for a signal source when it is the current output.
		Non current output	Select a color for a signal source when it is not the current output.
	Destination/ Function	Activation	Select a color for the output channel when it is the current output.
		Unactivated	Select a color for the output channel when it is not the current output.

■ Function Setting

Click button to display a drop down list for the item value, as shown in Figure 6.2-5. Select an item value according to the actual needs. The item in black color is selectable, but the item in gray color is not selectable.

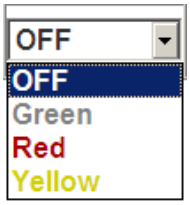

Figure 6.2-5 Router Page-Color Items List

Press **Default** button Default to restore the default setup.

All the setup would be effected after pressing Save **SAVE** button.

Tips

- In STATUS page, check the information of router in “ROUTER” page, and check the information of remote control panel in “REMOTER” page.

6.2.2 REMOTER

It will introduce REMOTER tab in this section.
The REMOTER tab is used to set the signal source for the output destination connecting to the buttons of the IRS series devices.

Click REMOTER, it displays the page as shown in Figure 6.2-6:

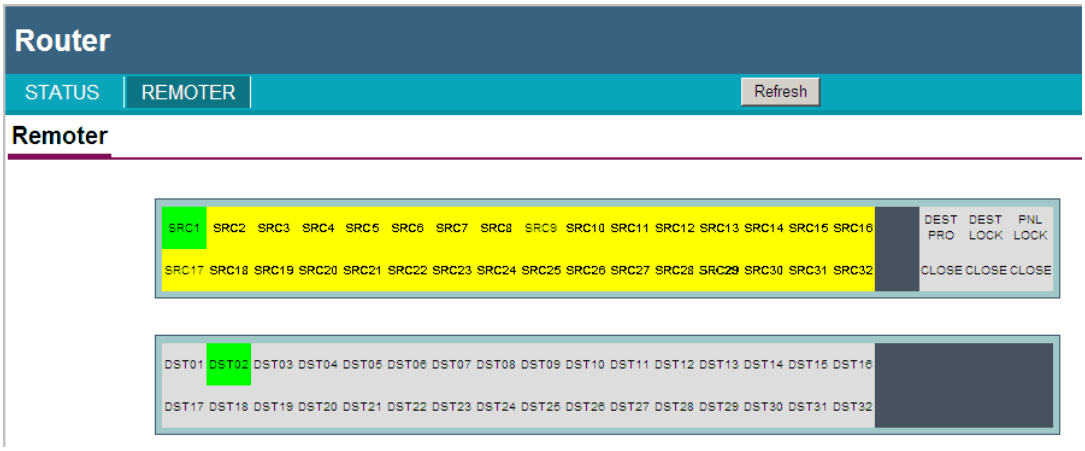

Figure 6.2-6 Remoter Page

Tips

- The default signal source for each output destination (DEST*) is SRC1.

The buttons in this control panel are in accordance with the buttons of the remote control panel, you can do the following two operations in this page:

- Signal source switch: you can assign a signal source for your destination output channel.

  At first, click the output destination (DEST*) button, then click a signal source (SRC*) button for it, thus to realize the assignment.

For Example:

The original signal source for DEST1 is SRC1, switch the signal source to SRC10, the instructions are as below:

Step 1 Click DEST1 for selecting the target output channel, as shown in Figure 6.2-7, the DEST1 button turns green.

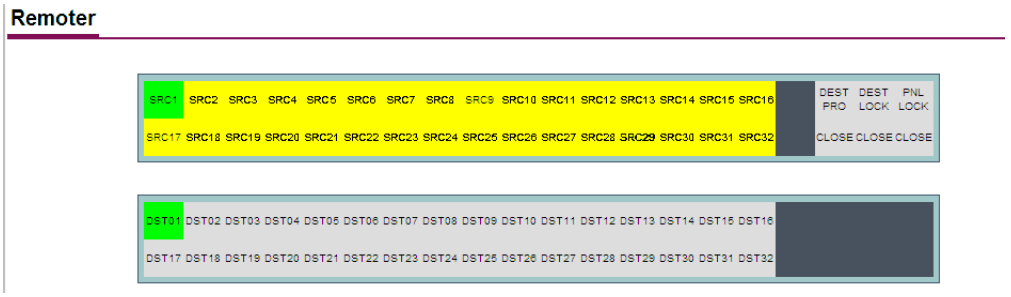

Figure 6.2-7 Shortcut Button Settings

The default signal source for DEST1 is SRC1.

Step 2 Switch signal source

Click SRC10 button, as shown in Figure 6.2-8, the SRC10 button turns green, thus the signal source of DEST1 is switched to SRC10.

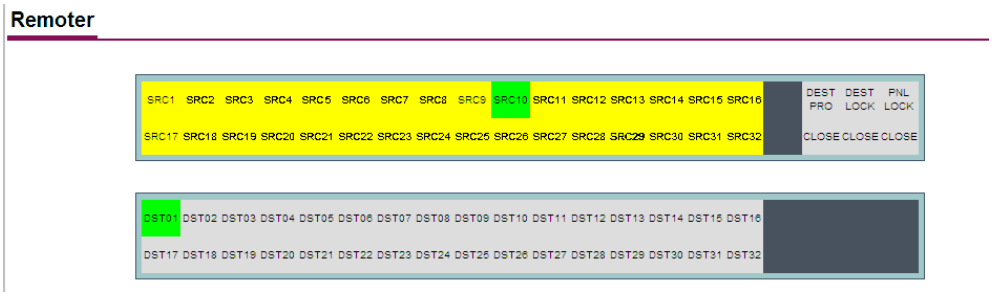

Figure 6.2-8 Shortcut Button Settings

- Rename the button name: you can rename the button name of signal source button and output destination button.

The name of button is composed of alphabets, numbers and underline, and the length should not exceed 16 characters.

At first, right click the signal button, it will prompt a Button Names dialog box, as shown in Figure 6.2-9:

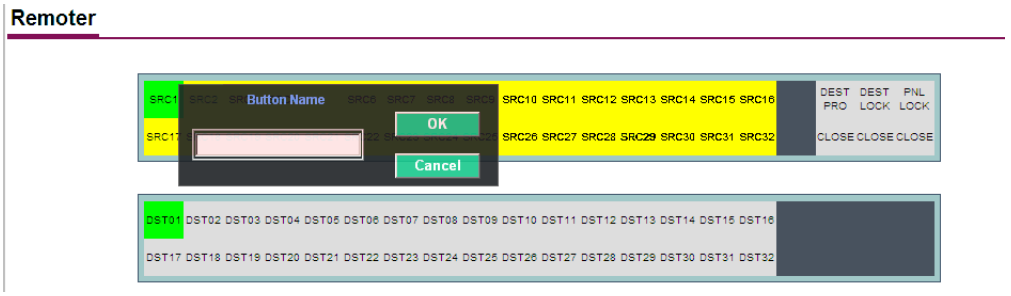

Figure 6.2-9 Shortcut Button Settings

Type a new name for the button in the name field. For example, type "CCTV1" as the name of SRC1 button, after modifying the renaming, click OK button OK to save the modification, the result is as shown in Figure 6.2-10.

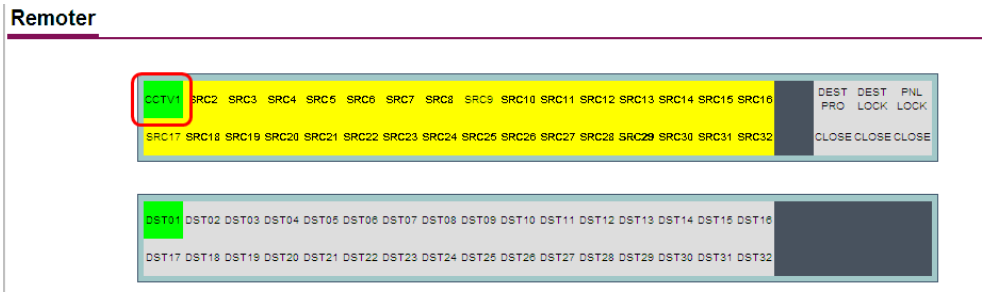

Figure 6.2-10 Rename the Button Name

Likewise, rename the other signal buttons as you wish.

Tips

- The value of **Protect** must be set as **Disable** when you switch the signal source for an output destination in REMOTER page, otherwise, you can't make it successfully, but the rename operation is without this limitation.

6.3 Example

For example: there is a complex system with one remote control panel and two routers, use the LEVEL1 and the LEVEL2 button of the remote control panel to control these routers.Set the device settings as shown in Table 6.3-1:

Table 6.3-1 The Settings Information to the Devices

Type	Name	IP Address	Level
Remote Control Panel	OSEE-Panel-0001	192.168.1.7	--
Router	OSEE-Router-0000	192.168.1.86	LEVEL1
Router	OSEE-Router-0001	192.168.1.87	LEVEL2

Use the network control page to set the information. The Level setting is shown as in Figure 6.3-1:

Figure 6.3-1 The Level Settings of the Device

Chapter 7 Specifications

1. Product detailed information

Specification	Values
Signal Format	SMPTE 424M, SMPTE 292M, SMPTE 259M, SMPTE 297M
Connector	BNC per IEC 169-8
Impedance	75 ohms
Return Loss	>18 dB 5 to 270 MHz
	>15 dB 270 MHz to 1.5 GHz
	>10 dB up to 3 GHz
Maximum Signal Level	800 mV pk-pk 10%
Signal Amplitude	800 mV pk-pk 10%
DC Offset	0V ±0.5V
Overshoot	<10%
Total Jitter	<0.2 UI
Work Temperature	0° C~35° C
Rise and Fall Time	<700 ps for SD
	<270 ps for 1.5 Gb/s HD
	<135 ps for 3 Gb/s HD
Extinction Ratio	>8
Back Reflection	<-14 dB
Power Consumption	36W
Work Temperature	-10° C~+55° C
Work Humidity	10%~90%

2. Dimensions

The description of the product dimensions of IRS3232 is shown as in the following figures:

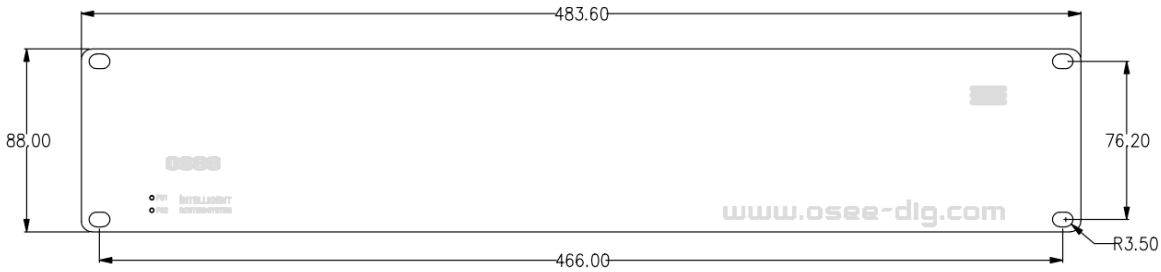

Figure 7-1 Front Panel(Unit: mm)

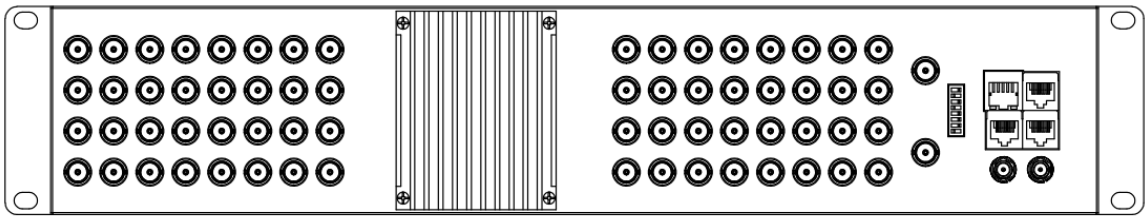

Figure 7-2 Rear Panel(Unit: mm)

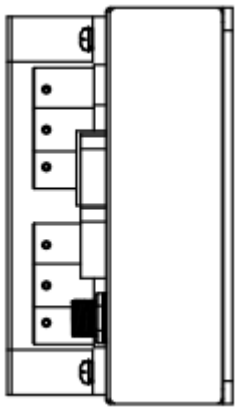

Figure 7-3 Side View(Unit: mm)

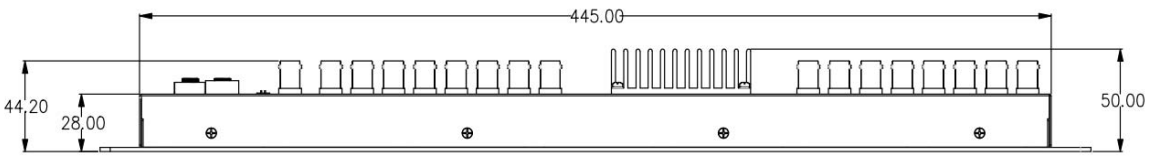

Figure 7-4 Top View(Unit: mm)

The label of IRS3232 is shown as below:

Figure 7-5 Label for IRS3232 in Front Panel

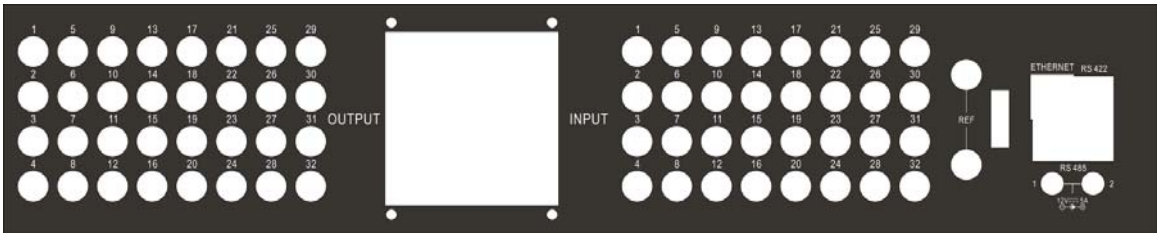

Figure 7-6 Label for IRS3232 in Rear Panel

Tips

- Specifications are subject to change without notice.

----------No Text Below----------

FOR MORE INFORMATION PLEASE VISIT: http://www.osee-dig.com/
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