ST-VC-IP4K18GBRS
Video Over IP Controller

User Manual
Thank you for purchasing this product

For optimum performance and safety, please read these instructions carefully before connecting, operating or adjusting this product. Please keep this manual for future reference.

Surge protection device recommended

This product contains sensitive electrical components that may be damaged by electrical spikes, surges, electric shock, lighting strikes, etc. Use of surge protection systems is highly recommended in order to protect and extend the life of your equipment.

Table of Contents

1. Introduction .................................................................................................. 1
2. Features ...................................................................................................... 1
3. Package Contents ................................................................................ 1
4. Specifications ....................................................................................... 1
5. Operation Controls and Functions ......................................................... 2
7. ASCII control command ...................................................................... 17
8. Application Example .............................................................................. 20
1. Introduction

The ST-VC-IP4K18GBRS is a TCP/IP network IP controller. When connected to an IP switch (minimum 10Gpbs and with IGMP Snooping support) within the same network it will provide matrix control over many ST-IP4K18GB-L/R/RS Video over IP Encoders and Decoders. The controller has a built-in Web GUI and API allowing the user easy control to manage all Encoder and Decoder connections.

2. Features

☆ 1.2GHz Quad-Core ARM Cortex-A53 CPU
☆ Linux based OS
☆ Built-in Web GUI for easily system setup and management
☆ Supports Web GUI control.
☆ 10/100M Ethernet Port for TCP/IP control
☆ RS-232 port for API control
☆ 4x USB2.0 host ports (Reserved)
☆ Compact design for easy and flexible installation

3. Package Contents

① 1× Video Over IP Controller
② 1× 12V/1A Locking Power Adapter
③ 1× User Manual Slip

4. Specifications

<table>
<thead>
<tr>
<th>Technical</th>
<th></th>
</tr>
</thead>
</table>
| Control ports | 1× RS-232 [Terminal block]  
1× LAN [RJ45]  
4× USB [Type A, reserved port] |
| ESD Protection | Human-body Model:  
±8kV (Air-gap discharge) , ±4kV (Contact discharge) |
| Housing | Metal Enclosure |
| Color | Black |
### 5. Operation Controls and Functions

<table>
<thead>
<tr>
<th>Number</th>
<th>Name</th>
<th>Function Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Power LED</td>
<td>Power LED indicator. The white LED will illuminate when the product is connected to a power supply.</td>
</tr>
<tr>
<td>2</td>
<td>Reset button</td>
<td>Press this button up to 3 seconds to reset controller to factory default mode. Includes IP address reset to static 169.254.23.100.</td>
</tr>
<tr>
<td>3</td>
<td>LAN port</td>
<td>Connect to switcher with UTP cable.</td>
</tr>
<tr>
<td>4</td>
<td>USB port</td>
<td>Reserved port- not used as of this printing.</td>
</tr>
<tr>
<td>5</td>
<td>RS-232</td>
<td>Control system can use RS-232 or LAN port to control video over IP products. Please contact your supplier for detailed API doc.</td>
</tr>
<tr>
<td>6</td>
<td>DC 12V</td>
<td>Plug the 12V/1A DC power supply into the unit and connect the adapter to an AC outlet.</td>
</tr>
</tbody>
</table>

#### Dimensions

- **Dimensions:** 100mm(W)×130mm(D)×26mm(H)

#### Weight

- **Weight:** 371g

#### Power Supply

- **Input:** AC100~240V 50/60Hz, **Output:** DC12V/1A (US/EU standards, CE/FCC/UL certified)

#### Power Consumption

- **Power Consumption:** 4W

#### Operating Temperature

- **Operating Temperature:** 0°C ~ 40°C / 32°F ~ 104°F

#### Storage Temperature

- **Storage Temperature:** -20°C ~ 60°C / -4°F ~ 140°F

#### Relative Humidity

- **Relative Humidity:** 20~90% RH (non-condensing)
6. Web GUI User Guide

You can use Controller’s Web GUI to control all products at the Switcher. You have to know the Controller’s current IP address. The default IP address is 169.254.23.100. The operation method is shown as below:

**Step 1:** The LAN port of the Controller is connected directly to a Switcher and a PC is also connected. Other IP products you need to control are connected to the Switcher. The connection diagram is shown below.
Setup the Switcher used to make your connections as follows:

Configure the 10Gbps network switch:

a. Enable IGMP Snooping.
b. Enable IGMP Snooping on VLAN 1. (Note that all ports should, by default, belong to VLAN 1.)
c. Enable Filter / Drop unregistered Multicast traffic. *
d. Disable Unregistered Multicast Flooding. *
e. Enable IGMP Querier.
f. Enable IGMP Querier on VLAN1.
g. Set IGMP Version to IGMP V2. *
h. Enable FASTLEAVE on port X. *
i. Enable FASTLEAVE for VLAN1. *

*Note: Some switches might not have the options shown in steps c, d, g, h, and i. If some options can be found in the configuration page of the 10G switch, the user has to implement the related steps. If some options are not found, the user should skip the corresponding steps.
Step 2: On the PC, go to **Control Panel > Network and Internet > Network Connections > Local Area Connections**, right click on it, choose **Properties**.

Double click **Internet Protocol Version 4 (TCP/IPv4)**.
Choose “Use the following IP address”, for instance, input 169.254.23.30 as your PC IP address, 255.255.255.0 as Subnet mask, and then click on OK, click on OK again.

![Internet Protocol Version 4 (TCP/IPv4) Properties](image)

**Notice:** The IP address of the PC, Controller and other IP products should be in the same subnet. Since the Controller’s IP address is 169.254.23.100, the computer's IP should be set to 169.254.23.X (X contains any number 1~255 except for 100).

**Step 3:** Input the Controller’s IP address into your browser on the PC to enter the Web GUI page.

![Web GUI](image)

When you enter the Web GUI page, first you will enter the Login page. Please input User and Password, the default User and Password are “admin”. At the same time, please select the product you need to control. Then click the “Sign In” button to enter Web GUI function pages.
**Notice:** When you select a type of product on the Login page, you can only select the type of products connected to the Switcher to control. To use in conjunction with the ST-IP4K18GB-L/R-RS, select "4K60 over IP Uncompressed(10G switch)".
You need to click the “Search” button to search all Encoders and Decoders you have connected. Encoders (Transmitters) are shown in green in the top area and Decoders (Receivers) are shown in blue in the bottom area. The small text in each block representing the Encoders or Decoders shows the product’s name, IP address and software version.

You can obtain detailed information when you click the lower right corner. Please see below “Picture 1” and “Picture 2”.
You can modify every Encoder’s and Decoder’s alias name (the alias name can not have any spaces).

You can check current input and output source video resolution.

If there is no source connected, the “Video Resolution” is shown as “No Signal”.

With the Encoders and Decoders connected to the network you are ready to setup the Zones by which to manage them. Zones are groups of Decoders paired with Encoders building a matrix of extended video source and display connections.
You can set up zones on the Zones page. Up to 16 zones are supported. You can modify every zone’s alias name (the alias name does not have spaces and supports up to 12 characters).

Click on pencil to open window to edit name.

Click the plus in the upper left corner on the small zones interface to enter the following page (Picture 2). In this page, select the Decoders that will be used in this zone. They can then be paired with Encoders on the matrix page (Picture 3). If you do not select Decoders, there will be no Decoders to match Encoders on the matrix page (Picture 3).
Double-click on the Zone window to open the configuration page (above). Each Zone has three individual configuration pages called Preset1 thru Preset3. The configuration page is broken into three frames, the top where Encoders and Decoders are paired, the middle where available Encoders are indicated, and the bottom where the Decoders selected for that zone are available.

You can drag an Encoder or a Decoder to be paired into the top frame. Each Zone supports up to 50 pairings creating a matrix of video combinations and every Zone has three presets to manage those pairings.

You can switch between presets to check current settings. You can not use the same Decoder more than once (the Decoder has been paired to an Encoder if it displays in gray).

If you drag an Encoder into the “All RX” frame, that encoder will be paired with all Decoders in the configuration automatically.

You can click the deselect button (trash can) on the frame upper right to deselect current pairing.

Note: Changes made on the configuration pages have immediate effect.
You will see the EDID option frame when you click the upper right corner on Encoder. Please see the below EDID option frame.
The default EDID for all Encoders are 4K60 420. The Encoder’s EDID includes 1080P, 4K30, 4K60_420, 4K60_444_SDR and 4K60_444_HDR. You can also upload EDID file from external for using (Upload EDID). When you drag a Decoder to an Encoder, it means to copy the current Decoder’s EDID to the Encoder device. At this time, the EDID option frame will automatically select “Copy from RX” option. If the Decoder is showing in gray, it means the Decoder has not been connected to an output device.

You can download an Encoder’s EDID to preserve the file. Please see the following picture.
Serial page:

You can select destination (to all or one of boxes) and you also can send serial commands through any one of encoders or decoders.
Server page

The Server page displays some basic information about a Controller’s network, serial port.

1 **RS-232 settings**
You can set the serial port of the Controller including Baud Rate, Parity, Stop Bits and Data Bits. Then click the “Apply” button to save current information.

2 **IP settings**
   - In DHCP open status:
     DHCP switch: Obtain automatically the network configuration information, including IP, Subnet, MAC and Gateway address.
In DHCP close status:
If the DHCP switch is closed, you can manually set IP and Gateway address. You must make sure the Gateway address and the IP address are in the same subnet. IP address and Gateway address can not have the same last digits. You don’t need to change the Subnet or MAC address. Click the “Apply” button to save current status information. Now, the Web GUI will jump automatically to the Login page. You need to login to the Web GUI again.

**Note:**
1) The Controller will reboot when the DHCP switch is changed.
2) If you have changed the Network Configuration and clicked the “Apply” button and if you have changed the IP address, you can continue to use current Web GUI function, but next time you connect to the Web GUI, you need to use the new IP address you have set.

### ③ Web controller Password
You can set a new password, and the password must be 4 to 16 characters, letters or numbers. Then click the “Apply” button to save current information. The Web GUI will jump automatically to the Login page. You will need to enter the Web GUI again using the new password.

### ④ Web controller Commands
1) The Controller will reboot when you click the “Reboot” button. After reboot, Web GUI will jump automatically to the Login page.
2) The Controller will reset to factory default status when you click the “Reset To Factory Default” button. The IP address will return to default address 169.254.23.100. The serial port will return to default settings. The pairing will be dissolved between Matrix and Serial and all scenes will be dissolved. The Web GUI will jump automatically to the Login page after the controller has rebooted.

### ⑤ Commands
You can input commands manually to configure the product.

### ⑥ Log
Display current operating information about the last 20 recorders.
The Update page can upgrade controller and IP product firmware. The “Server Firmware update” upgrades the Controller and the “Firmware update” upgrades IP product. Click the “Choose File” button to choose update file. When the file has finished loading, you need to click the “Burning” button to perform the update. The Controller will reboot when the firmware has finished updating. Then the Web GUI will jump automatically to the Login page. When you want to update IP product, first you need to select to update “ALL”, ALL-TX” or “ALL-RX”, then you need to click the “Choose File” button to choose the update file. When the file has finished loading, you need to click the “Burning” button to perform the update.
7. ASCII control command

The product also supports ASCII control. You need to wire a RS-232 terminal block connector with a female DB9 connector. You also need an RS-232 cable with DB9 male to USB male serial transfer cable. The terminal block will connect to the RS-232 port of the Controller, and the USB end of the serial cable is connected to a PC. Open any of a Serial Command tool on PC such as “Docklight” to send commands to control the Controller and IP product. Please see the following connection diagram.

![3-pin Terminal block to USB diagram]

Figure 3: 3-pin terminal block to USB

Double click the “Docklight” shortcut icon. Please see the following picture 1.

![Docklight icon]

Picture 1
You will see the following page.

Click the “COM” area. A “Project Settings” page will appear. Choose the COM port to connect the software, set the Baud Rate, Data Bits, Parity, Stop Bits and then click the “OK” button. Please see the following page.
Double click the “1” blank area. You will see the following page. At “2”, you can enter a sequence definition. At “3”, you need to choose the sequence mode. At “4”, input the RS-232 command of the product. Then click the “OK” button.

Finally, click the Send button ("5" on page 17) to send the command.

See the downloads page of this product for the Serial API Commands list available.
8. Application Example
Quick Notes to Setup the ST-VC-IP4K18GBRS Video over IP Controller with ST-IP4K18GB-RS 4K60 HDMI Video Extender over IP:

1. Configure the 10Gbps network switch that supports IGMP snooping:
   a. Enable IGMP Snooping.
   b. Enable IGMP Snooping on VLAN 1. (Note that all ports should by default belong to VLAN 1.)
   c. Enable Filter / Drop unregistered Multicast traffic. *
   d. Disable Unregistered Multicast Flooding. *
   e. Enable IGMP Querier.
   f. Enable IGMP Querier on VLAN1.
   g. Set IGMP Version to IGMP V2. *
   h. Enable FASTLEAVE on port X. *
   i. Enable FASTLEAVE for VLAN1. *

*Note: Some switches might not have the options shown in steps c, d, g, h, and i. If some options can be found in the configuration page of the 10G switch, the user has to implement the related steps. If some options are not found, the user should skip the corresponding steps.

2. Connect the ST-IP4K18GB-L/R-RS local and remote units and the ST-VC-IP4K18GBRS controller to the 10G switch.

3. Connect a PC to the 10G switch, change its IP address:
   a. IP Address: 169.254.23.x (x can be any number between 1 and 255 except 100).
   b. Subnet Mask: 255.255.255.0
   c. Default Gateway: 169.254.23.1

4. Log into the web interface (169.254.23.100) of the controller, then follow the earlier pages of this manual to configure the video matrix, RS232 Baud rate, etc.

Notes for using ST-IP4K18GB-RS Extender for many-to-many application with ST-VC-IP4K18GBRS Controller

1. If you are using the ST-VC-IP4K18GBRS controller to configure a many-to-many application, you don’t need to follow "Configure VLAN Groups Using a Cisco Managed Network Switch" on our webpage.

2. In the web management page of ST-VC-IP4K18GBRS, up to 16 zones can be set up. Each zone supports 50 local-remote unit pairs. Each remote unit belongs to only one zone and can only connect to one local unit. Each local unit can be used in multiple zones and connect to multiple remote units. In total, each ST-VC-IP4K18GBRS controller can manage up to 800 local-remote unit pairs.