

JOSAWA

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ALFATRON ELECTRONICS GmbH GERMANY

ALF-MU4K HUB

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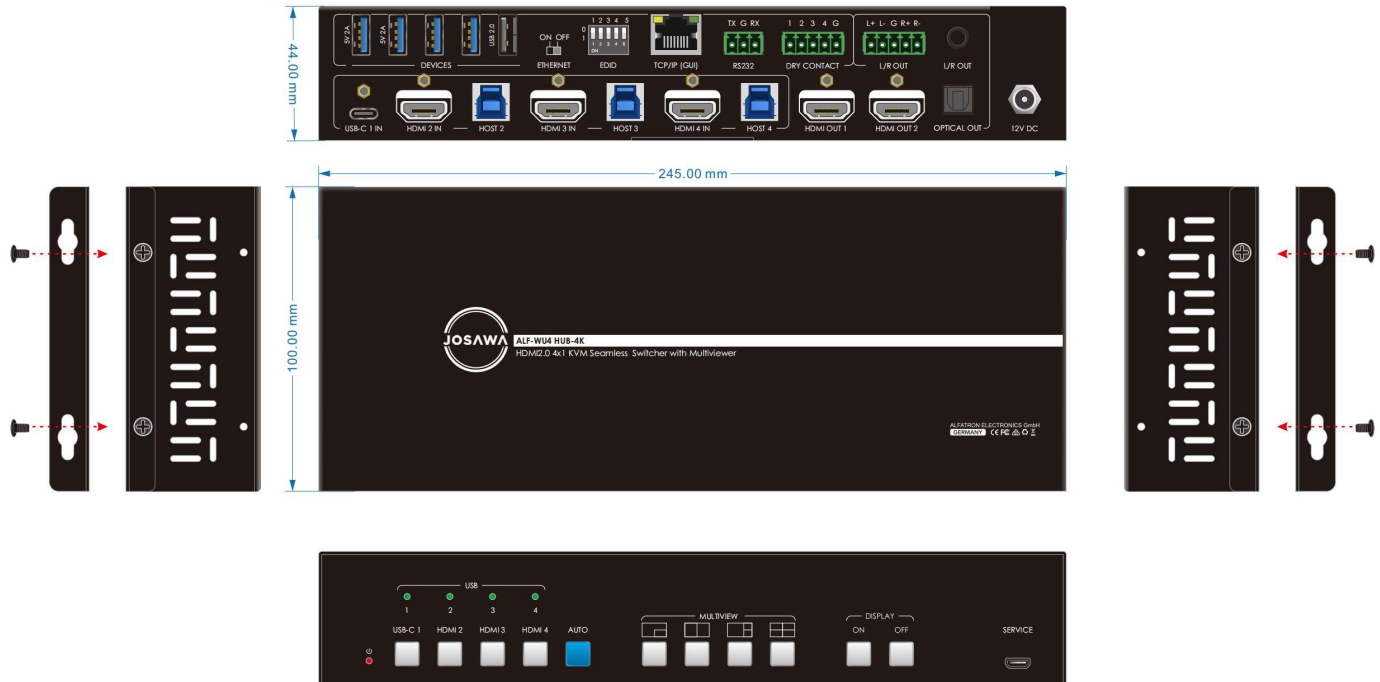
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1 Description

ALF-MU4K HUB is an HDM2.0 conference switching hub, with 4 inputs, one output & USB KVM Hub.

It supports up to 18G and USB3.2 with 10G bandwidth, also the USB2.0 port can support the hot key function, versatile control via TCP/IP (GUI), RS232 or GPIO with 3rd party control system.

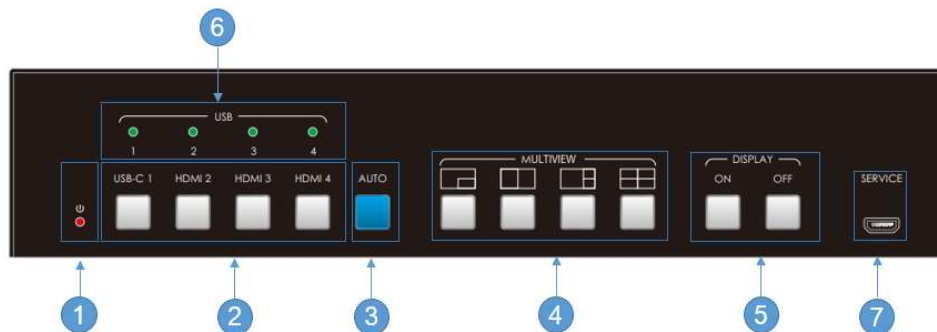
2 Drawing



3 Key Function

- HDMI2.0, 18G, 4K@60 4:4:4, HDCP2.3 and backward compatible
- Seamless switching between the inputs
- 2 HDMI Mirror outputs
- Multiview with different modes selection and user define setting
- USB3.2 KVM switching at 10G bps
- KVM auto-switching based on TMDS/5V detection
- KVM supports hot-key control (only for the USB2.0 port)
- Must have Ethernet over all the HOST USB & Must have Ethernet ON/OFF control via a switcher
- De-embedded audio with digital and analog
- EDID & HDCP management via DIP switch
- Supports Auto switching for the inputs
- TCP/IP (GUI) & RS232, buttons & GPIO control
- Support HDR
- Support CEC control
- TCP/IP is to allow the FW upgrade to be done over the network & to be discoverable via third part management system
- Including 24V 2A PSU

4 Panels Definition



Front Panel		
NO.	Name & Description	Remark
1	Power LED indicator	The LED illuminates RED when it is powered on
2	Input buttons	The button will backlit blue when the input is connected
3	Auto Switch button	The button will backlit blue when in Auto switch status
4	Display button	

Rear Panel		
NO.	Name & Description	Remark
1	USB-C input port	Connects to USB-C source
2	HDMI & HOST input port	HDMI connects to HDMI source, USB-B supports USB3.2
3	HDMI & HOST input port	HDMI connects to HDMI source, USB-B supports USB3.2
4	HDMI & HOST input port	HDMI connects to HDMI source, USB-B supports USB3.2
5	HDMI output 1 port	Connects to displayer
6	HDMI output 2 port	Connects to displayer
7	Optical audio output	Digital de-embedded audio at fibre connector
8	USB3.2 ports	4 × USB-A support USB3.2
9	USB-A port	Supports USB2.0 devices and Hot key function
10	Ethernet switch	Select the Ethernet status, ON/OFF
11	5 DIP EDID switch	Each switch has 2 settings, 0 & 1 (UP=0, DOWN=1)
12	TCP/IP Port	Connect to LAN switches for Ethernet and IP control
13	RS232 Port	Send RS232 code for control
14	GPIO Port	Connect to 3 rd party control system
15	Balanced audio output	Analogy de-embedded balanced audio out with 5 pins phoenix
16	3.5 mm jack	Analogy de-embedded unbalanced audio out
17	Power supply port	Connect to 12V 2A power supply

5 Specification

VIDEO	
HDMI Input	1. HDMI V2.0, supports resolution up to 4K@60Hz 4:4:4, HDR 10 and Dolby Vision. 2. Supports up to LPCM 7.1, Dolby® TrueHD, Dolby Digital® Plus, and DTS-HD® Master Audio™.
USB-C	1. Supports up to 4K UHD 60Hz 4:2:0.
AUDIO	
HDMI Audio	Supports up to LPCM 7.1, Dolby® TrueHD, Dolby Digital® Plus, and DTS-HD® Master Audio™.
Optical	Supports up to LPCM 7.1, Dolby® TrueHD, Dolby Digital® Plus, and DTS-HD® Master Audio™.
Analog (Balanced)	PCM 2.0 CH
USB	
USB supports USB3.2, bandwidth up to 10G bps	
HDCP	
HDCP Management	Input: HDCP 2.3 and backward compatible
	Output: Manageable (Default follow the display).
	For example: it will output HDCP 1.4 when source is HDCP 2.3 or 2.2 when connect to HDCP 1.4 display. It will turn off HDCP if display does not support HDCP.
EDID	Provided when project starts
Management	
GUI	CUI control is available
USB	The firmware can be updated
Operating temperature	When testing on Room temperature, the average temperature at the top of the housing is 41.5°, the bottom averages 45.2°.

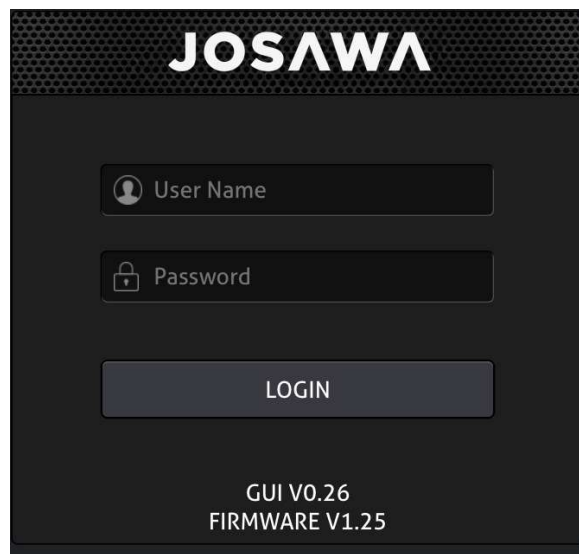
6 GUI Control

The video distributor can be controlled via TCP/IP, the default IP settings are:

IP Address: 192.168.1.101

Subnet Mask: 255.255.255.0

Type **192.168.1.101** in the internet browser, it will enter the below log in webpage:



The login page features a dark background with the JOSAWA logo at the top. Below the logo, there are two input fields: 'User Name' with a person icon and 'Password' with a lock icon. A 'LOGIN' button is positioned below these fields. At the bottom, the text 'GUI V0.26' and 'FIRMWARE V1.25' is displayed.

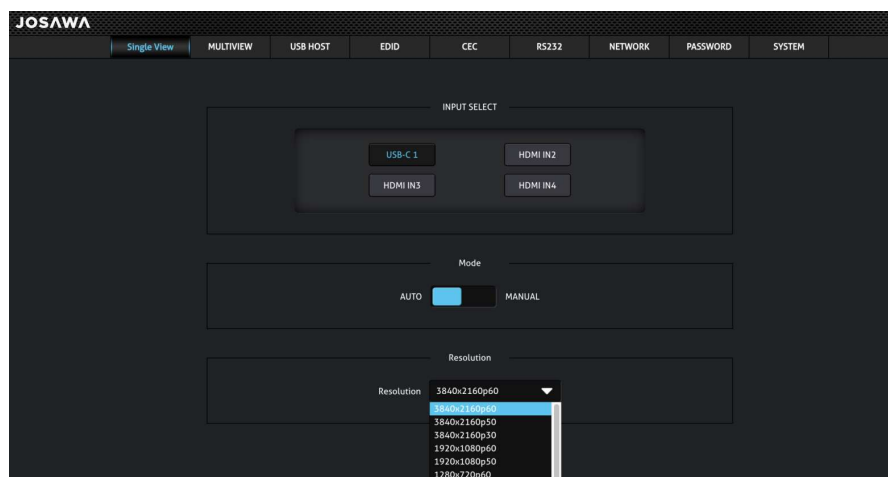
User Name: admin

Password: admin

6.1 Single View

Input sources, switching model and output resolution can be selected on this page.

Note: On Auto model, the input signal source automatically switches the last connected HDMI signal.

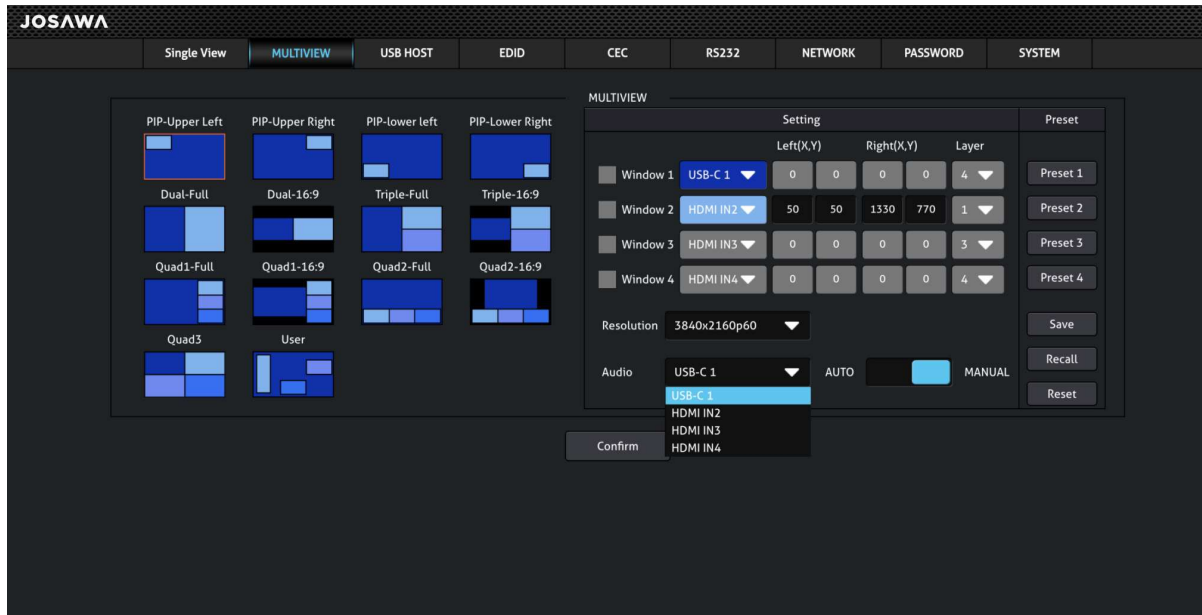


The 'Single View' control interface includes a top navigation bar with tabs: Single View, MULTIVIEW, USB HOST, EDID, CEC, RS232, NETWORK, PASSWORD, and SYSTEM. The main area is divided into three sections: 'INPUT SELECT' with buttons for USB-C 1, HDMI IN2, HDMI IN3, and HDMI IN4; 'Mode' with a toggle switch between AUTO and MANUAL; and 'Resolution' with a dropdown menu. The dropdown menu is open, showing a list of resolutions: 3840x2160p60, 3840x2160p50, 3840x2160p30, 1920x1080p60, 1920x1080p50, and 1280x720p60.

6.2 Multiview

① **Multi-View Adjustment:** Click to select the desired screen display mode, there are fourteen modes available.

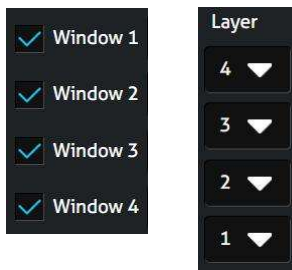
② **PIP Adjustment: In the PIP mode:** You can switch the location and size of the PIP and set the user-defined PIP, as follow rule: The upper left and lower right corners of each small window correspond to the X, Y coordinate values on the display screen (For example at 4K resolution, the display screen is 3840x2160, the coordinates in the upper left corner are (0, 0), and the coordinates in the bottom right corner are (3840, 2160)), and the coordinates can overwrite each other.



③ **Preset setting:** After finishing the Multiview setting, then click 'Confirm' → select 'Preset x' → click 'save'.

If you want to select a preset, click the 'Preset x' first, then click 'Recall'.

④ **Windows select and Layer:** They are enabled only when set the user-defined, you can set Window priority on 'Layer'.



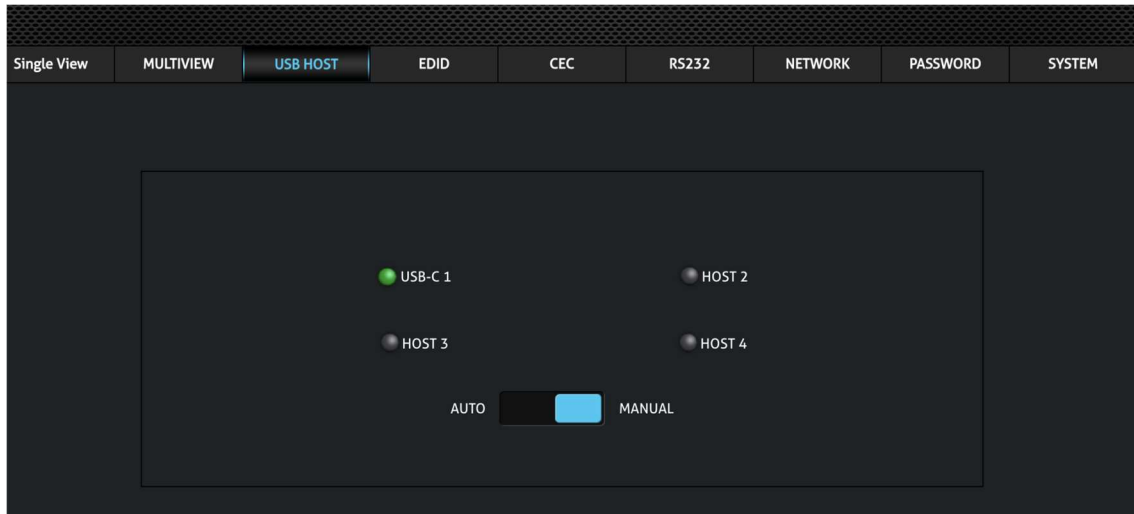
⑤ **Input source select:** They are enable for all modes, you can set the input source for each window.



- ⑥ **Auto Switch:** Enable or disable the function of automatically switching input audio signal source.
- ⑦ **Output Setting:** Set the output resolution.

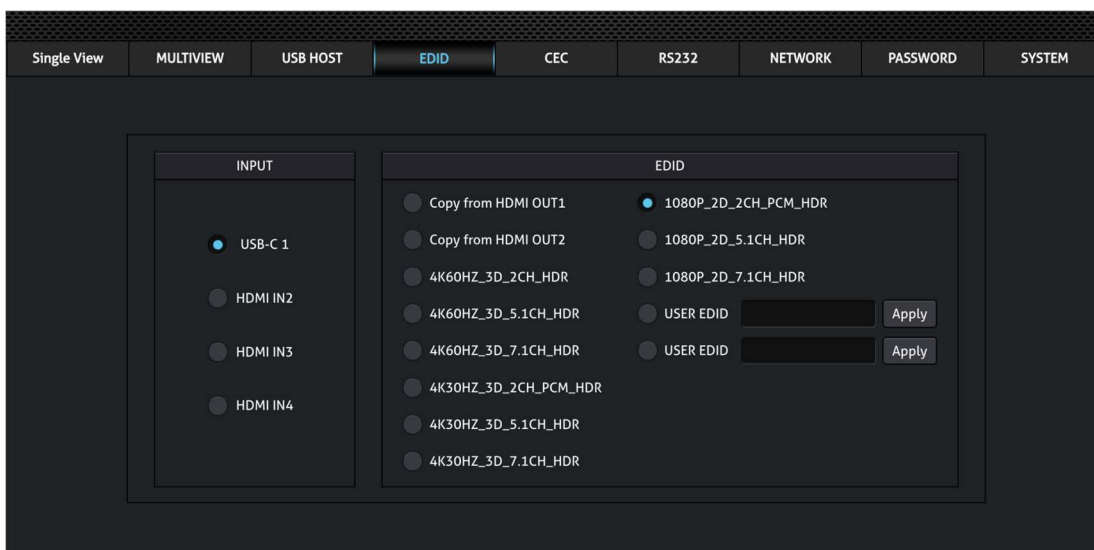
6.3 USB HOST

You can set which source the USB HOST signal follows when it's in manual mode, the signal will automatically switch to the last connected host signal when it is in automatic mode.



6.4 EDID Setting

When the DIP switch is set to '11111' on the rear panel of the device, you can set the EDID to the input source on the GUI.



Back panel DIP switch setting parameter table

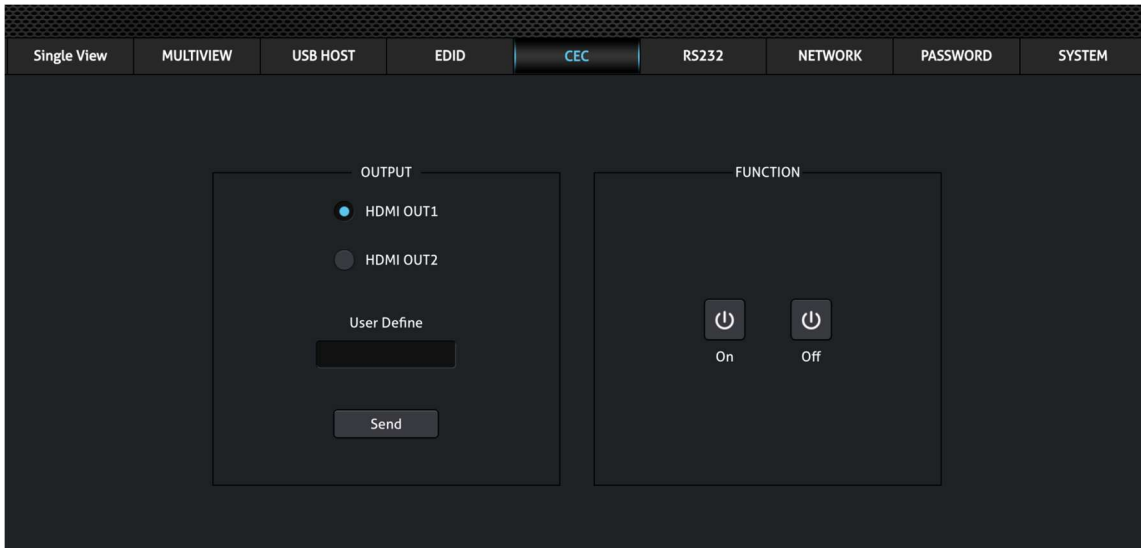
EDID SETTING				
JUMPER	DIP-1	DIP-2	DIP-3	DIP-4
4K60Hz_3D_2CH(PCM)	0	0	0	0
4K60Hz_3D_6CH	1	0	0	0
4K60Hz_3D_8CH	0	1	0	0
4K30Hz_3D_2CH(PCM)	1	1	0	0
4K30Hz_3D_6CH	0	0	1	0
4K30Hz_3D_8CH	1	0	1	0
1080P_2CH(PCM)	0	1	1	0
1080P_6CH	1	1	1	0
1080P_8CH	0	0	0	1
user1 EDID	1	0	0	1
user2 EDID	0	1	0	1
copy output1	1	1	0	1
copy output2	0	0	1	1
Enable serial port settings EDID	1	1	1	1
HDCP SETTING				
		DIP-5		
DEBUG MODE ON		1		
DEBUG MODE OFF		0		

6.5 CEC Function

Control the display status via CEC commands.

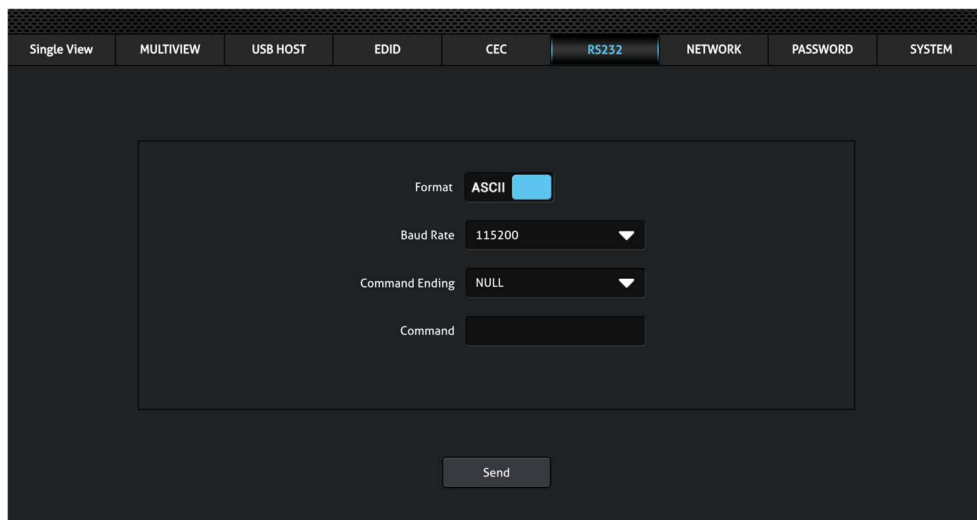
The control steps are as follow: Choose HDMI output → click CEC function button.

You can define CEC function, then click 'Send' to control display. (e.g, control the volume of output 1, increase the volume, you can send command 's cec hdmi out 1 cmd 40.44.1.41!')



6.6 RS232 Control

Connect the RS232 port to control device (e.g. PC) with RS232 cable. The splitter can be controlled by sending RS232 commands. Two command formats can be selected, ASCII and HEX.



6.7 Network Setting

Can set the network parameters on this page.

- ◆ Static IP or Dynamic Host Configuration Protocol (DHCP).
- ◆ Modify the port, static IP address, Subnet Mask and Gateway.

The screenshot shows the 'NETWORK' tab selected in the top navigation bar. The main content area contains a form for IP Configuration. At the top, there are two radio buttons: 'DHCP' (which is selected) and 'Static IP'. Below this, there are five input fields: 'MAC Address', 'Port', 'IP Address', 'Subnet Mask', and 'Gateway'. The 'MAC Address' field is currently empty. The 'Port', 'IP Address', 'Subnet Mask', and 'Gateway' fields are also empty. At the bottom of the form, there is a 'Confirm' button.

6.9 Password Setting

Modify the User Name, Password.

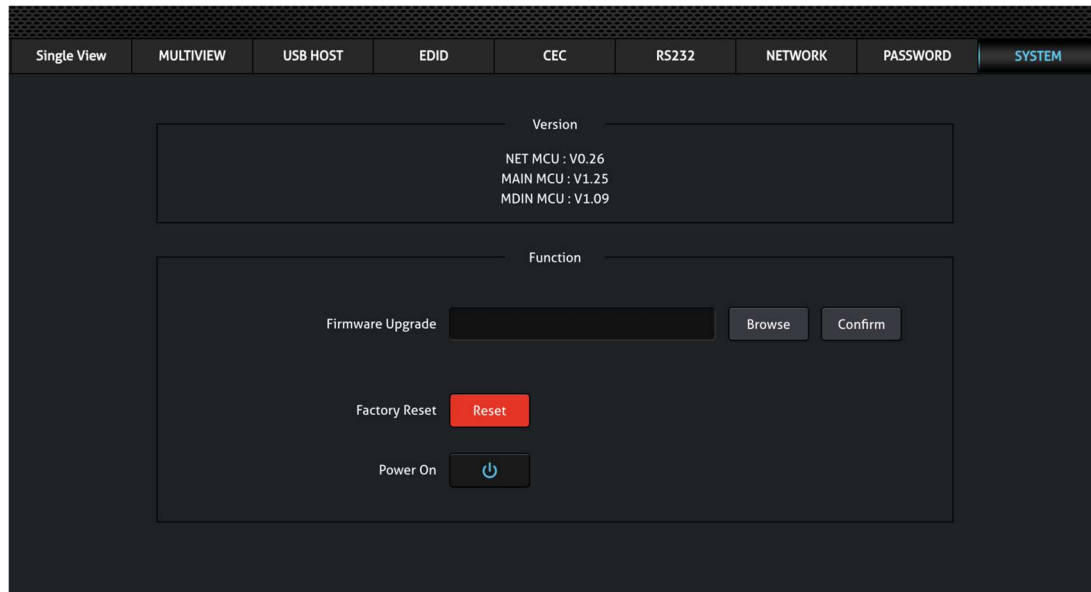
The screenshot shows the 'PASSWORD' tab selected in the top navigation bar. The main content area contains a form for password settings. It has five input fields: 'Old User Name' (with the value 'admin'), 'New User Name', 'Old Password', 'New Password', and 'Confirm New Password'. All fields except 'Old User Name' are currently empty. At the bottom of the form, there is a 'Confirm' button.

7.0 System

Firmware can be upgraded via GUI.

Factory reset: All Settings are restored to their factory state.

Power on: Control the power status of the device.



8 Control

Serial port protocol. Baud rate: 9600, Data bits: 8bit, Stop bits:1, Check bit: 0

TCP/IP Control Port: 4000

CRLF Required

Command	Description
System Setting	
help!	Lists all commands
q type!	Get device model
q status!	Get device current status
q fw version!	Get Firmware version
s power z!	Set power, z=0~1(0 off, 1 on)
q power!	Get power state
s reset!	Reset to factory defaults
s reboot!	Reboot the device
s baudrate z!	Set System BaudRate to z (z= 1-6), 1. 9600, 2. 14400, 3. 19200, 4. 38400, 5. 57600, 6. 115200
q baudrate!	Get System BaudRate

s usb host z!	SET Usb Host Number z(z=1-4)
q usb host!	Get Usb Host Number
s auto host z!	Set Auto Host follow input mode z, where z = 0-1 (0= Off, 1 = On)
= q auto host!	Get Auto Host follow Input Mode State
= s lock z!	Lock/Unlock front panel button, z=0-1(z=0 lock off, z=1 lock on)
q lock!	Get panel button lock state

Output Setting	
s display mode z!	Set output display mode z(z=0-1), 0. matrix mode, 1. multi-view mode
q display mode!	Get output display mode
s outp y hdcp z!	Set output hdcp z {[y=1], [z=1-2]}(1. follow display, 2. off)}
q outp y hdcp!	Get output y hdcp status {[y=1]}
s force sdr z!	Set Force Video SDR enable/disable {z=0-1(0:enable, 1:disable)}
q force sdr!	Get Force Video SDR status

Matrix Setting	
s inp x av outp y!	Set input x video & audio stream to output y,x=1-4,y=1
q av outp y!	Get output y signal status y=1
s outp y res z!	Set output y(y=1) resolution z (1-7) 1. 3840x2160p60, 2. 3840x2160p50, 3. 3840x2160p30, 4. 1920x1080p60, 5. 1920x1080p50, 6. 1280x720p60, 7. 1280x720p50
q outp y res!	Get output y resolution {[y=1]}
s auto switch z!	Set auto switch feature, where z =0-1 (0= Off, 1 = On)
q auto switch!	Get AUTO MODE State

Multiview Setting	
s multiview z!	Set multi-view display mode(z=1-14) 1. pip: top-left, 2. pip: top-right, 3. pip: bottom-left, 4. pip: bottom-right, 5. dual full, 6. dual 16:9, 7. triple full, 8. triple 16:9, 9. quad1 full, 10. quad1 16:9, 11. quad2 full, 12. quad2 16:9, 13. quad3, 14. user
q multiview!	Get multi-view display mode
s window y inp x!	Select input source x for window y (x=1-4, y=0-4, 0=all)
q window y inp!	Get input source for window y (y=0-4, 0=all)
s multiview res z!	Set multiview output resolution z (1-7) 1. 3840x2160p60, 2. 3840x2160p50, 3. 3840x2160p30, 4. 1920x1080p60, 5. 1920x1080p50, 6. 1280x720p60, 7. 1280x720p50
q multiview res!	Get multiview output resolution

Audio Setting	
s mv audout inp x!	Set multiview output audio source x (x=1-4)
q mv audout!	Get multiview output audio source
s auto mv audio x!	Set Multiview Auto follow the window1 to , where x=0-1 (0=Off, 1=On)
q auto mv audio!	Get Multiview Auto follow the window1 MODE State

8 Chassis Design

Dimension (W × D × H)	220×100×44mm
Raw Materials	Steel

9 Accessory

Package Contents		
No.	Name	Description
1	ALF-MU4K HUB	1 x Set
2	Power Supply	1 x 24V, 2A (Interchangeable Plug)
3	Mounting Ear	2 x Sets
4	Screw	4 x M2.5
5	User manual	1 x QR Code Card
6	Phoenix terminal	2 x 5 pin & 1 x 3 pin
7	Rubber Feet	4 x Pieces
8	RS232 Cable	1 x Piece